ACCOUNTING *for* Management



T Vijayakumar

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ACCOUNTING FOR MANAGEMENT

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ACCOUNTING FOR MANAGEMENT

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In Loving Memory of my Revered

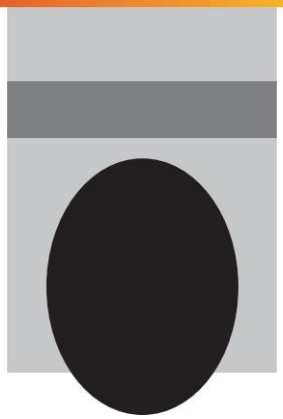
Father Mr. S. Thangiah

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and

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Preface

Modern thinking in accounting for management accords great importance to management decision-making and policy. A business enterprise today operates in a dynamic and complex environment which creates many problems. Tremendous industrial growth marked by an increased number of products, product improvement and diversification and enhanced commanding market area have posed new challenges to the problem of financial planning. As a result of this complex environment the management of an enterprise has to carry out its basic functions of cost minimisation and maximisation of profit. The use of computers and development of financial techniques like linear programming and operations analysis have made it possible for the accounting department to cater to every need of management. Management and accounting functions are now closely knitted together and the accounting department works in close collaboration with the management. Today managers do not perform the passive role of store keepers of financial data and information, and of arranging of funds, whenever directed to do so. Rather, they occupy key positions in top management areas and play a dynamic role in solving complex management problems. Realising the growing needs of young managers and management students, this book is written to provide scientific, systematic and comprehensive treatment to this technical paper 'Accounting for Management'. There is no doubt that there are some very good books on this subject but none of them has dealt exhaustively with the various practical aspects of this paper.

A series of discussions with corporate financial executives and my students has revealed that they want a young-manager-and-student friendly book, simple and straight in language, written with total clarity and an easy to remember style wherever accounting concepts occur. With the recent upsurge in admissions in MBA programmes the non-commerce students, especially, have been more vocal in explaining their difficulties in understanding the subject.

OBJECTIVES OF THE BOOK

I wrote this book on Accounting for Management with the following objectives:

1. To explain the concepts and theories of accounting in a simple way to readers so that they could grasp them very easily and be able to put them into practice.
2. To provide a text book that has a comprehensive coverage for MBA and other post graduate as well as professional courses.
3. To demonstrate to readers that the subject of accounting is very simple to understand, interesting to learn and relevant in practice.

Many universities have also begun to give more importance in examinations in allocating a good number of marks to objective type questions for the subject, but existing books have not given exhaustive coverage for this new area from the view-point of university examinations. Students desire to have

a book filling these gaps. This book, ***Accounting for Management***, presents the concepts, accounting techniques and application of accounting in a simple, lucid and reader-friendly manner. Special efforts and care have been made to explain the context of the problems through a step-by-step approach.

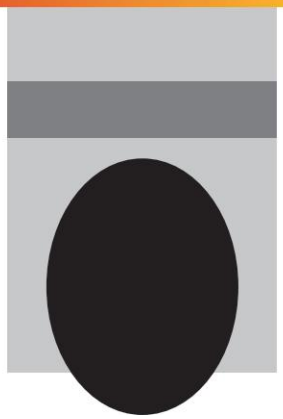
DISTINCTIVE FEATURES

- It includes the major and modern aspects in financial accounting, management accounting and cost accounting.
- Learning objectives are provided at the beginning of each chapter to tell the students what they will learn after studying the chapter.
- Pictorial illustrations and diagrams are incorporated for the readers' better understanding.
- It provides more insight about the subject to non-finance executives and students.
- Step-by-step approach has been adopted in the explanation of problems.
- Accounting formulae are explained in the light of concepts to illustrate their meaningful association.
- The subject matter has been divided into convenient chapters as required by the course curriculum.
- It gives a lucid explanation to the basic concepts of accounting with plenty of illustrations.
- At the end of each chapter, objective type questions have been included.
- Review questions are incorporated at the end of every chapter for students' understanding of the concepts.
- Practical problems for students' practice are annexed at the end of each chapter.
- At the end of each chapter, live cases are incorporated for better application of chapter concepts.
- Key concepts have been provided at the end of each chapter for recapitulation and better grasp over the subject.

This book not only covers the UGC syllabus of MBA students comprehensively, but also covers the syllabus of foreign universities. It aims to meet in a full measure, the requirement of students preparing for and appearing in MBA, MCA, M.Com, MBM, MCS, MIBM, ICWA, ACA, ACS, BBA, B.Com., BCA and B.E. in various branches of examinations of the Indian universities/ Indian Institutes as well as foreign universities. I am sure this book will prove an indispensable asset for the students of the above degree programmes.

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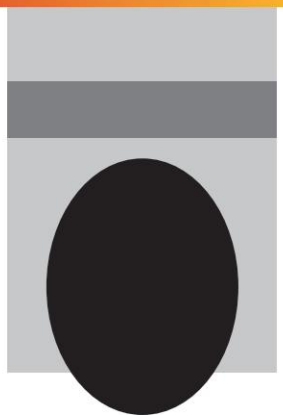
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It is my continued hope that this book will proved to be of value to students, teachers and practitioners in the subject. If the book enlightens the student for whom it is written, I shall consider my labour amply rewarded.

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Contents

Preface *vii*

Acknowledgements *ix*

Section 1: Financial Accounting

1. Financial Accounting: Perspectives **1.3**
Introduction *1.3*
Accounting *1.3*
Accounting: The Modern Concept *1.4*
Accounting Principles *1.7*
Accounting Conventions and Policies *1.8*
Summary *1.11*
Review Questions *1.12*

2. General Accounting Principles and Accounting Standards **2.1**
Introduction *2.1*
Meaning of Transaction of Financial/Monetary Nature *2.2*
Classification of Accounting Principles *2.2*
Systems of Accounting *2.7*
Accounting Standards *2.8*
Summary *2.29*
Review Questions *2.30*

3. Accounting Mechanics: Basic Records **3.1**
Introduction *3.1*
Systems of Accounting *3.2*
Journal *3.6*
Classification of Goods Account *3.6*
Ledger *3.11*
Trial Balance *3.16*
Subsidiary Books *3.18*
Bank Reconciliation Statement *3.30*

The McGraw-Hill Companies

Errors and Rectification *3.41*
Summary *3.59*
Review Questions *3.59*

4. Preparation of Financial Statements — Profit and Loss Account and Balance Sheet **4.1**
Introduction *4.1*
Trading Account *4.2*
Profit & Loss Account *4.4*
Balance Sheet *4.5*
Preparation of Trial Balance *4.8*
Summary *4.17*
Review Questions *4.18*

5. Revenue Recognition **5.1**
Introduction *5.1*
The Accounting Principles *5.2*
Methods *5.4*
Summary *5.15*
Review Questions *5.16*

6. Inventory Pricing and Valuation **6.1**
Introduction *6.1*
Inventory Control and Valuation *6.2*
Costs for Inventory Decisions *6.8*
Methods of Inventory Control *6.10*
Valuation of Inventories *6.13*
Summary *6.22*
Review Questions *6.22*

7. Depreciation Policy **7.1**
Introduction *7.1*
Methods of Depreciation *7.4*
Modern Depreciation *7.11*
Summary *7.18*
Review Questions *7.19*

8. Human Resource Accounting **8.1**
Introduction *8.1*
The Concept of Original Cost *8.5*
Human Resource Value Accounting *8.8*
Summary *8.10*
Review Questions *8.11*

The McGraw-Hill Companies

Section 2: Cost Accounting

9. Cost Accounting: Perspectives **9.3**
Introduction *9.3*
Objects and Functions of Cost Accounting *9.6*
Distinction Between Cost Accounting and Financial Accounting *9.10*
Classification of Costs *9.13*
Summary *9.30*
Review Questions *9.30*

10. Costing and Control of Overheads **10.1**
Introduction *10.1*
Various Methods of Calculating Oncost *10.2*
Allocation of Office and Administrative Expenses *10.7*
Allocation of Selling and Distribution Expenses *10.8*
Departmentalisation of Overheads *10.9*
Summary *10.17*
Review Questions *10.18*

11. Costing and Control of Labour **11.1**
Introduction *11.1*
Methods of Remuneration *11.6*
Bonus Schemes or Premium Plans *11.8*
Co-Partnership and Profit-Sharing Schemes *11.11*
Summary *11.25*
Review Questions *11.26*

12. Job Order Costing and Target Costing **12.1**
Introduction *12.1*
Contract Costing *12.2*
Type of Contracts *12.13*
Summary *12.18*
Review Questions *12.18*

13. Process Costing and Activity Based Costing **13.1**
Introduction *13.1*
Special Features of Process Costing *13.2*
Direct and Indirect Expenses *13.2*
Activity Based Costing (ABC) *13.10*
Target Costing *13.11*
Summary *13.11*
Review Questions *13.12*

The McGraw·Hill Companies

14. Profit Planning-I: Marginal Costing **14.1**
Introduction *14.1*
Concept of Marginal Costing *14.2*
Practical Applications of Marginal Costing *14.9*
Concept of Decision–Making *14.13*
Advantages and Limitations of Marginal Costing Technique *14.25*
Meaning of Key Factor *14.32*
Cost Volume Profit Relationship *14.36*
Summary *14.53*
Review Questions *14.53*

15. Profit Planning-II: Break Even Analysis **15.1**
Introduction *15.1*
PV Ratio: Meaning—Its Improvement and its Aplication *15.2*
Determination of Break Even Point *15.4*
Summary *15.35*
Review Questions *15.35*

16. Standard Costing and Analysis of Variances **16.1**
Introduction *16.1*
Standard Cost and Other Cost Systems *16.3*
Advantages of Standard Costing *16.9*
Variance Analysis *16.10*
Classification of Variances *16.16*
Summary *16.35*
Review Questions *16.35*

Section 3: Management Accounting

17. Management Accounting: Perspectives **17.3**
Introduction *17.3*
Functions of Management Accounting *17.4*
Difference Between Management Accounting & Financial Accounting *17.4*
Role of Management Accountant *17.5*
Role of Management Accounting *17.6*
The Utility and Limitations of Management Accounting or a Managerial Tool *17.6*
The Various Tools of Management Accounting *17.7*
Limitations of Management Accounting *17.8*
Summary *17.9*
Review Questions *17.9*

18. Planning for Liquidity-I: Statement of Sources and Application of Funds **18.1**
Introduction *18.1*
Concept of Funds *18.2*

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Fund Flow Statement *18.2*
Advantages of Funds Flow Statement *18.5*
The Technique of Preparing a Funds Flow Statement *18.5*
Analysis of Flow of Funds *18.7*
Summary *18.35*
Review Questions *18.35*

19. Planning for Liquidity-II: Cash Flow Statement **19.1**
Introduction *19.1*
Concept of Funds *19.2*
Constructing the Cash Flow Statement *19.3*
Summary *19.21*
Review Questions *19.22*

20. Profit Planning-III: Budget and System of Budgetary Control **20.1**
Introduction *20.1*
Objective of Budgetary Control System *20.2*
Essentials of Good Budgetary Control System *20.4*
Meaning of Fixed Budget and Flexible Budget *20.7*
Various Kinds of Functional Budget *20.8*
Benefits and Limitations of the Budgetary Control Systems *20.9*
Budgetary Control Organisation *20.32*
Planning and Budget *20.12*
Planning for Profit-Budgets *20.47*
Review Questions *20.48*

21. Understanding Financial Statements **21.1**
Introduction *21.1*
Balance Sheet and Income Statement *21.1*
Nature of Financial Statements *21.2*
Limitations of Financial Statements *21.3*
Computation of Trend Percentages *21.10*
Rest of Solvency or Analysis of Long-Term Financial Condition *21.23*
Test of Overall Profitability *21.28*
Analysis of Capital Structure *21.33*
Role of Ratio Analysis *21.35*
Summary *21.37*
Review Questions *21.38*

22. Performance Measurement and Control **22.1**
Introduction *22.1*
A Division—An Independent Profit Centre *22.2*
Quantitative Evaluation of a Division *22.3*
Requirements for Profit Performance Measurement *22.4*

The McGraw-Hill Companies

Computing Divisional Investment *22.10*
Transfer Price *22.11*
Performance Appraisal in Public Sector Undertakings *22.13*
Summary *22.15*
Review Questions *22.16*

23. Financial Statements Analysis: Accounting Ratios **23.1**
Introduction *23.1*
Current Ratio *23.2*
Acid Test Ratio *23.2*
Inventory Turnover Ratio *23.3*
Debtors' Turnover Ratio *23.4*
Debt to Equity Ratio *23.5*
Revenue Statement Ratios *23.7*
Summary *23.17*
Review Questions *23.18*

24. Management Reporting Systems **24.1**
Introduction *24.1*
Reporting Needs of Different Management Levels *24.2*
Types of Reports *24.3*
General Principles of Reporting *24.4*
Modes of Reporting *24.6*
Preparation of Reports *24.10*
Uses of Reports by Management *24.10*
Methods of Reporting *24.11*
Summary *24.18*
Review Questions *24.19*

Glossary *G.1-G.14*
Index *I.1-I.6*

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SECTION

1

Financial Accounting

Chapters

1. Financial Accounting: Perspectives
2. General Accounting Principles and Accounting Standards
3. Accounting Mechanics: Basic Records
4. Preparation of Financial Statements — Profit & Loss Account and Balance Sheet
5. Revenue Recognition
6. Inventory Pricing and Valuation
7. Depreciation Policy
8. Human Resource Accounting

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CHAPTER 1

Financial Accounting: Perspectives

"Accounting is the process of identifying, measuring and communicating economic informations to permit informed judgments and decisions by the users of the information."

—American Accounting Association

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *Accounting*
- *Accounting—Modern Concept*
- *Management Accounting Vs Traditional Accounting*
- *Functions of Accounting*
- *Types of Accounting*
- *Comparison between Management and Financial Accounting*
- *Accounting Principles*
- *Accounting Conventions and Policies*
- *Considerations in the Selection of Accounting Policies*
- *Applications of Different Accounting Policies*

INTRODUCTION

Accounting is concerned with the qualification and interpretation of past and prospective economic transactions. It helps in preparing the financial statements of a business, which are a fundamental source of financial information. In recent years, changes in technology have brought about a remarkable change in the field of accounting. A new branch of accounting popularly termed 'Management Accounting' has come into existence.

The present chapter provides a bird's eye view of this new branch of accounting.

ACCOUNTING

Accounting can rightly be termed as the language of the business since, through it, the results of business operations are communicated to various parties interested in the business viz. the proprietor, creditors, investors, government, etc. According to the American Accounting Association, accounting is "the process

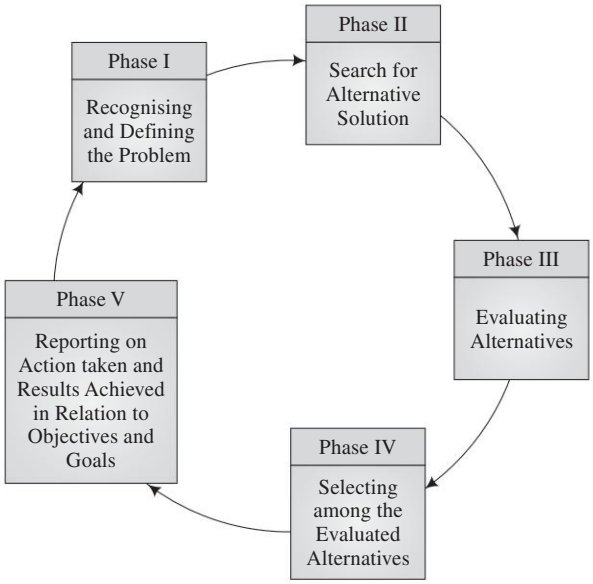


FIG. 1.1 Accounting Function

of identifying, measuring and communicating economic information to permit informed judgments and decisions by the users of the information".

The definition given by the American Institute of Certified Public Accountants brings out more clearly the meaning and functions of accounting. According to the Institute, accounting is "the art of recording, classifying and summarising in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character, and interpreting the results thereof".

ACCOUNTING: THE MODERN CONCEPT

Developments in the field of accounting seek to fulfill the informational needs of management; this has led to the assignment of a vital role for accounting in the management function. In recent years, changes in technology have had a pronounced effect on all fields of knowledge. Developments in the field of science and mathematics have found applications practically in every field of life. Their impact in the field of accounting has also been significant. The whole concept of accounting has changed. Demands made on the accountant have increased tremendously and the tools of accounting have also become more powerful. Accounting is not used only at the firm level, but also at the macro level. It can also be described as a "tool designed to help the master our economic struggle". In the context of developing economies, this assumes great significance.

Many accountants view different fields of accounting, viz, cost accounting, management accounting, governmental accounting, financial accounting etc, as separate areas of accounting. This suggests that accounting is not an integrated field. This is a misconception. Accounting is one cohesive and comprehensive system.

In the context of modern business and industry, accounting has to be a versatile system serving a large number of varying goals simultaneously. The goal requirements of taxation, credit worthiness, earning power, resource control, managerial efficiency, share holders' satisfaction, government policy, industrial peace and public image are different and sometimes conflicting. It is but natural that some goal requirements are more important than the others.

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But a separate system for each goal requirements would create chaos at the decision-making level in the absence of any possibility of reconciliation. Necessarily, a single system capable of handling voluminous and varied information has to be created wherein reconciliation is a reality. Only thus can the basic concept of 'objectivity' or 'total measurement of business as accounting entity' be achieved. This has become easier with the aid of computers, wherein quantity and variety of information is no problem. The thought process of an entrepreneur based on information given by an integrated system leads to monetary decisions helpful to concern as a whole, especially in the long run.

Later Developments (Management Accounting vs Traditional Accounting)

Accounting has traveled far from its traditional position of helping the management to have adequate control over properties and assets, and of preparation of the annual statements of account. These statements, it will be understood, only portray the past. They show whether the management has been efficient and wise in the past. But, as a guide to the future, these are not of much use.

Accounting is now playing an increasing role in providing such information to the management as it needs for planning, decision-making and controlling. Decisions always relate to what has to be done in future—immediate or in the long run. For this, management requires various types of information, both quantitative and qualitative. Accounting has Increasingly taken on the task of providing the quantitative information and, in this, it has assumed the character of management accounting. This term also includes provision of such information as will enable the management to exercise control over the day-to-day operations with a view to ensuring maximum efficiency and adherence to the plans of the management. This control is different from control over property and assets; it involves seeing two things: (i) that the work which has to be done has been done without loss of time; and (ii) that the costs incurred in doing the work are not excessive and are within the prescribed limits. It is only in this manner that the various resources placed at the disposal of an undertaking can be utilised to the best advantage of the firm.

Functions of Accounting

On the basis of the above definition, the following can rightly be termed as the functions of accounting:

- Recording This is the basic function of accounting. It ensures that all business transactions of a financial character are correctly recorded in an orderly manner. The recording is done in the book popularly termed as a "journal".
- Classifying Classification involves systematic analysis of the recorded data with the objective of grouping transactions or entries of one nature at one place. This work is done in the book termed as a "ledger".
- Summarising This is concerned with presenting the classified data in a readily understandable manner to both internal as well as external users of accounting information. It involves preparation of the following statements:
  a) Trial Balance, b) Income Statement, and c) Balance Sheet
- Dealing with Financial Transactions. Accounting records only those business transactions which are of a financial character. Transactions which are not of a financial character are not recorded in the books of account.

Interpreting Accounting also interprets the recorded financial data in a manner that the end users can make a meaningful judgment about the financial position and profitability of the business. It also provides data for formulation of future policies and plans.

1.6 ACCOUNTING FOR MANAGEMENT

Types of Accounting

Accounting can broadly be classified into two categories.

i. Financial Accounting, and ii Management Accounting

Financial accounting is mainly concerned with recording, classifying and summarising the financial transactions. In the initial stages, accounting developed mainly as a technique for recording, classifying and summarising the financial transactions, i.e., on the line of financial accounting. However, in recent times, the role of accounting as an instrument to guide and control the operations of a business enterprise, has gained considerable significance. Management accounting is a direct result of such changed role.

Management accounting refers to accounting for the management, i.e., accounting which provides necessary information to the management for discharging its functions. The functions of the management are: planning, organising, directing and controlling. Management accounting provides the required information to the management for effective and efficient performance of these functions.

According to the Institute of Cost Management Accountants, London, management accounting is, "the application of professional knowledge and skill in the preparation of the accounting information in such a way as to assist the management in the formulation of policies and in the planning and control of the operations of the undertaking. The definition given by the management accounting team of the Anglo American Council of Productivity is more precise. It defines management accounting as, "the presentation of accounting information in such a way as to assist the management in the creation of policies and day-to-day operations of an undertaking.

Comparison between Financial Accounting and Management Accounting

Both management accounting and financial accounting are two branches of accounting and, hence, they are closely inter-related. As a matter of fact, management accounting is, to a large extent, a re-arrangement of the data provided by financial accounting. However, there are certain points of differences between the two. These are as follows:

- Objectives: Financial accounting is designed in a way to supply information to external parties like shareholders, creditors, banks, investors etc. Management accounting is designed principally for providing information for internal uses by the management.
- Analyzing performance: Financial accounting portrays the position of the business as a whole. The income statement and the balance sheet prepared under financial accounting, gives a picture of the overall performance and the financial position of business. Management accounting on the other hand, provides detailed information about the different divisions, departments, etc, of the business. Thus, it gives more intensive information.
- Data used: Financial accounting records past transactions. It is, thus, historical. Management accounting is accounting for the future. It supplies data in a way that the management cannot only judge its present performance, but also plan for the future.
- Monetary events: Financial accounting considers only transactions and events capable of being expressed in monetary terms. Management accounting is also interested in non-monetary economic events. Hence, management accounting takes such events into consideration. For example, while effecting an insurance policy on an assets, the management will also take into account, besides its present cost, the likely change in its value on account of constant erosion in the value of the rupee.
- Periodicity of reporting: The period of reporting is much longer in financial accounting as compared to in management accounting. The income statement and balance sheet are usually prepared in case of financial accounting at the end of a year. However, management requires

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information about sales, cost of production, material wastage etc. at regular and short intervals. Management accounting provides such information.

- Legal compulsion: Every business is required to have a proper system of financial accounting on account of legal provisions of one or the other act. However, installation of the system of management accounting lies at the discretion of the management.

ACCOUNTING PRINCIPLES

The statement of accounts is used by various segments of people, on various occasions and for various purposes. Under this condition, the statement of accounts should communicate the same meaning to everybody. This will be possible only if a common principle is followed everywhere. To meet this requirement, the accounting principles are divided into concepts of accounting and conventions of accounting.

This forms the back-bone of accounting. Actually, these are not rules, but principles accepted worldwide. There is no specific number of concepts, however, the following are the important ones.

Business Entity Concept

This is the most vital concept and gives very simple but important information. This says that the business and its owner are different from each other. Thus 'business' here means 'business organisation' and owner is the one who supplies the capital to the business organisation.

Under this concept, even though the owner brings money as capital, runs the organisation, enjoys the profit or bears the loss, both the owner and business are treated separately. Both have separate lives and identities. This concept applies whether there is one or more than one owner. So the death or retirement of the owner does not mean end of the business organization. Also, the assets and liabilities, or profit or loss of the business organization are recorded separately and it is not clubbed with the owner's personal account.

If this was not the case, the private financial affairs of the owner would get mixed up with the profit or loss of business and the statement of account will not reveal the true position of the business. Due to this concept, capital contributed by the owner is treated as borrowing by the business in the business account. Thus, whenever the owner contributes, it is assumed that the business borrows money from the owner and to that extent, business becomes liable to the owner. Here, the capital account is credited. In the same manner, whenever the owner withdraws money from business, it is assumed that the liability of the business is reduced and this is known as drawing and is debited.

Going Concern Concept

This assumes that the business has a long and indefinite life. Life of the business cannot be determined like that of any living thing.

Money Measurement Concept

As we have seen earlier, for a transaction to be identified as an accounting transaction, it should have monetary value. Thus, unless a transaction gives answer for the question, 'how much?', it cannot be considered as an accounting transaction. Here, the currency, whether it is in terms of rupee or dollar or pound or yen, it is immaterial.

Cost Concept

Whenever an asset is purchased, it is recorded in the books of accounts at its cost value. There is no consideration for the market or realisable value. If the market value is taken into consideration, it will

lead to the risk of fluctuation. So, only the purchase price or cost price of the asset is considered. This concept is applied only in the case of fixed assets. While determining profit for a particular period, two important points are considered. They are: the revenue recognised during the period, and expired cost to be allocated to the period. It is, thus, a problem of matching revenues and expired costs, the residual amount being the net profit or net loss for the period. It may be remembered that revenue is considered to be earned on the date on which it is realised, i.e., on the date when the goods are delivered to the customer, even though payment may be received at some future date. Similarly, all costs incurred during the period are not taken— only costs related to the period are considered. Expenses paid in advance are excluded from the total costs incurred to arrive at the expired costs.

Dual Aspect Concept

This assumes that every transaction is two fold. Whenever something is received a compensation must be paid. For example, a purchase of Rs.1000 worth of goods is made. Here on the one hand goods are received and on the other money is paid.

Thus, whenever there is some inflow, necessarily there must be some outflow.

Conventions are made out of practices and customs. There are four popular conventions, namely, conventions of consistency, convention of full disclosure, convention of materiality and convention of conservation.

ACCOUNTING CONVENTIONS AND POLICIES

Accountancy often depends upon a few assumptions. Also, it has a liberty of choosing any of the methods available for a given problem. For example, depreciation is charged while valuing the fixed assets. Depreciation is reduction in value of assets due to usage, obsolescence etc. It can be calculated by adopting different methods, for the same asset. The accountant can choose any of the methods.

However, once a particular method is adopted to value a particular fixed asset, then throughout the life of that asset, the same method of providing depreciation should be followed. Change of method every year is not encouraged. This is called the convention of consistency.

While preparing the accounting statement, hiding of any information or fact is not allowed. All the details should be brought out. The same point is stressed legally also.

Convention of materiality is slightly against the previous convention. While it is in agreement regarding disclosure of all information, it also stresses on materiality. Materiality, here depends upon the amount involved in the transaction. For example, the cashier is left with Rs. 100/- to meet miscellaneous expenses. Miscellaneous expenses for a month are say, hospitality Rs. 10, stationery Rs. 6, tips to a worker Rs. 2 … etc.

Let us also say, the total number of transactions are 15, the total amount spent is Rs. 82 and balance amount is Rs. 18. Under this situation, showing all the transactions is meaningless. Instead, a single transaction of miscellaneous expenses (Rs. 82) will be sufficient and also will save 14 transactions. So, while keeping the convention of full disclosure in mind, the convention of materiality should not be forgotten.

Convention of conservatism stresses on ‘playing safe’. When it allows inclusion of all incurred and expected expenditure of a particular period, it permits only the received and earned income and not the expected income. Thus, it says, include all possible losses and expenditure and do not anticipate any profit or gain.

For example, there is fire in the godown, and the expected loss is Rs. 1 lakh. This convention allows the accountant to provide for the loss.

But, at the same time, raw material purchased for Rs. 10,000 one week earlier has risen to Rs.15,000 due to increase of price. Now the convention does not permit to value the stock at Rs.15,000 but only at Rs.10,000. Since this raw material is still in the godown. The price may come down in the future. If it is called at a higher price now, and prices crash later, then it will lead to a bad position. This convention is applicable only in the case of short-term assets.

It should be noted that accounting is a man-made art, designed to help man in achieving certain objectives. The accounting principles, therefore, cannot be derived from, or proven by law of nature. The American Institute of Certified Public Accountants has correctly observed, "Accounting principles are in the categories of conventions or rules developed by man, by experience, to fulfill the essential and useful needs and purposes in establishing reliable financial and operating information control for business activities. In this respect, they are similar to principles of commercial and other social disciplines".

The International Accounting Standards Committee (IASC) came into existence on 29th June, 1973 with its head-quarters at London. The objective of the committee is to formulate and publish in the public interest, standards to be observed in the presentation of audited financial statements, and to promote their world-wide acceptance and observance. The formulation of such standards will bring uniformity in terminology, approach and presentation of results. The committee has so far laid down standards regarding 30 matters by issuing various International Accounting Standards (IAS). Disclosure of Accounting Policies I (IAS I) was first of such standards to be issued.

The Institute of Chartered Accountants of India and the Institute of Cost and Works Accountants of India are both members of the International Accounting Standards Committee. On 22nd April, 1977, the council of the Institute of Chartered Accountants of India established an Accounting Standards Board (ASB). The main function of the Accounting Standards Board is to formulate accounting standards so that such standards are established by the council of the Institute of Chartered Accountants of India. The ASB has so far issued eleven accounting standards. Disclosure of Accounting Policies happens to be first accounting standard issued by the ASB.

The International Accounting Standard – I (IAS –I) and Accounting Standard I (AS – I), contain certain fundamental accounting assumptions regarding disclosure of accounting policies. These assumptions underline the preparation and presentation of financial statements. They are usually not stated because their acceptance and use are assumed. Disclosure is necessary, if they are not followed.

The standards issued by ASB are: Disclosure of Accounting Policies (AS1) Valuation of Inventories (AS 2), Changes in Financial Position (AS 3), Contingencies & Events Occuring after the Balance Sheet Date (AS 4), Prior Period & Extraordinary Items and Changes in Accounting Policies (AS 5) and Depreciation Policy (AS 6), Accounting for Construction Contracts (AS 7) Accounting for Research & Development (AS 8), Revenue Recognition (AS 9), Accounting for Fixed Asset (AS 10), and Accounting for Effects of Changes in Foreign Exchange Rates (AS 11).

According to the Accounting Standards Board, accounting policies refer to the specific accounting principles and the methods of applying those principles adopted by the enterprise in the preparation and presentation of financial statements. There is no single list of accounting policies which is applicable to all circumstances. The selection of accounting policies by an enterprise calls for considerable judgement by the management of the enterprise.

Considerations in the Selection of Accounting Policies

The major consideration governing the selection and application of accounting policies are as follows:

- Prudence–In view of the uncertainty attached to future events, profits are not anticipated but recognised only when realised, though not necessarily in cash. Provision is made for all known liabilities and losses, even though the amount cannot be determined with certainty and represents only a best estimate in the light of available information.
- Substance over form–The accounting treatment and presentation in financial statements of transactions and events should be governed by their substance and not merely by the legal form.
- Materiality–Financial statements should disclose all "material" items, i.e., all such items which are known to influence the decisions of the user of the financial statements.

Application of Different Accounting Policies

The following are the examples of the areas in which different policies may be adopted by different enterprises:

(a) Methods of depreciation, depletion and amortisation.
(b) Treatment of expenditure during construction
(c) Conversion or translation of foreign currency items
(d) Valuation of inventories
(e) Treatment of goodwill
(f) Valuation of investments
(g) Treatment of retirement benefits
(h) Recognition of profit on long-term contracts
(i) Valuation of fixed assets
(j) Treatment of contingent liabilities.

The Accounting Standards–I (AS – I) requires disclosure of all significant accounting policies adopted in the preparation of the financial statements. Any change in the accounting policies, which has a material effect in the current period, or, which is reasonably expected to have a material effect in the later periods, should be disclosed. In the case of a change in accounting policies which has a material effect in the current period, the amount by which any item in the financial statements is affected by such change, should also be disclosed to the extent ascertainable. Where such amount is not ascertainable, wholly or in part, the fact should be indicated.

The differences between financial and cost accounting

FINANCIAL ACCOUNTING

1. It provides information for the entire business as a whole for one year.
2. Maintenance of accounts under double entry system is compulsory under the companies Act and as well under the Income Tax Act.
3. Main aim is to find out the Profit and Accounting
4. It is only recording of transactions after the transactions are over.
5. Accounts are complied at the year end to get overall results.
6. Profit or loss of each department or each unit are not disclosed by this accounting.

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7. All transactions are recorded and the profits are ascertained.
8. All opportunity costs are ignored.
9. Monetary information only analysed.
10. Stocks are valued either at cost price or market price whichever is less.

COST ACCOUNTING

1. It provides information for planning, coordination and control to the management.
2. Only for some manufacturing companies, maintenance of Cost Accounting is compulsory under the Company Act.
3. Main aim is to control the costs and to facilitate cost audit.
4. It involves estimation and judgement to determine the costs in advance.
5. It gives information to the management, as and when required, for decision-making and control.
6. Costs are collected department wise and product wise and this information is used to evaluate the efficiency and effectiveness.
7. Items such as income tax, dividend payments and interest on debentures are not included.
8. All opportunity costs and imputed costs are taken into account.
9. Non-monetary qualitative information like idle time, idle capacity, production capacity etc, are analysed.
10. Stocks are valued only at cost price.

Summary

Accounting is the language of business. It is the medium through which the results of business operations are communicated to various parties interested in the business viz. proprietor, creditors, investors, government, etc. Accounting conventions are made out of practices and customs. The accounting principles, therefore, cannot be derived from, or proven by law of nature. Accounting Policies refer to the specific accounting principles and the methods of applying those principles adopted by the enterprise in the preparation and presentation of financial statements. There is no single list of accounting policies which is applicable to all circumstances. The selection of accounting policies by an enterprise calls for a considerable judgement by the management of the enterprise. Accounting Standards require disclosure of all significant accounting policies adopted in the preparation of the financial statements. Any change in the accounting policies which has a material effect in the current period, or which is reasonably expected to have a material effect in the later periods, should be disclosed. In the case of a change in accounting policies which has a material effect in the current period, the amount by which any item in the financial statements is affected by such change, should also be disclosed to the extent ascertainable.

KEY CONCEPTS

- Accounting
- Financial Accounting
- Management Accounting
- Cost Accounting
- Accounting Principles
- Accounting Conventions
- Cost Concept
- Money Measurement Concept
- Business Entity Concept
- Going Concern Concept
- Dual Aspect Concept

Review Questions

OBJECTIVE QUESTIONS

1. Connect the two parts of the following sentences properly.

(a) Accounting is generally done through	(a) management by objectives.
(b) Through the function of financial management at large.	(b) the business organisation has become answerable to the society
(c) A planned management can be otherwise known as	(c) an information center.
(d) Accounting information has to be suitably presented.	(d) according to the purpose for which information is required.
(e) With the development of corporate	(e) a proper management of finance is achieved
(f) The accounts department is simply	(f) double entry system of book-keeping

[Ans. (a) – f; (b) – e; (c) – a; (d) – d; (e) – b; (f) – c]

2. Pick out the appropriate word and put in the blank.
   (a) The accountant of a company is directly answerable to ..... (the Board, the Auditors, the Shareholders).
   (b) Policy decision-making is the responsibility of ..... (the Accountant, the Finance Manager, the top management)
   (c) By management, we mean ..... (Board of Directors, the General Manager; all those who hold authority and responsibility).
   (c) The role of the accountant in control function is to ..... (pass orders, take control decisions, to pass on information)

   [Ans. (a) the Board, (b) Top Management; (c) all those who hold authority and responsibility; (d) to pass on information]

3. Encircle the 'T' if the statement is 'True', or 'F' if 'False'
   (a) In double entry book-keeping there are a few instances where debits may be made without corresponding credits. T F
   (b) The balance sheet represents an expansion of the equation "Assets = Liabilities + Proprietorship". T F
   (c) Assets are credited when increased. T F
   (d) A credit entry is required to increase the proprietorship. T F
   (e) The "Tee" shape account is a formal device used in keeping a set of books. T F
   (f) Only commercial enterprises use accounting records. T F

   [Ans. (a) – F; (b) – T; (c) – F; (d) – T; (e) – T; (f) – F]

4. (a) Complete each statement by selecting the letter which stands for the appropriate words:
   (A) Business; (B) Private Accountant (Employee); (C) Expenses; (D) Audit (E) Liabilities; (F) Proprietorship; (G) Double entry Book-keeping; (H) Economics; (I) Balance Sheet.
   (i) In a new trading business 'cash' minus 'Accounts payable' plus 'merchandise' equals .....
   (ii) The rights of creditors in the assets of a business are known as .....
   (iii) The theory of debit and credit is a fundamental concept of .....
   (iv) A review of an employee accountant's books by an independent account is called .....
   (v) The completion of each business period in accounting is marked by the preparation of a .....

   [Ans. (i) – F; (ii) – D; (iii) – G; (iv) – E; (v) – I]

5. Indicate where the corresponding entries would lie for the following posting by completing the table:

Account to which posted	*Side in which Posted*	*Account/Book where-from posting done*
(i) Cash purchased	Dr.	.....
(ii) Salaries payable	Dr.	.....
(iii) Interest received	Dr.	.....
(iv) Accounts payable (payment)	Dr.	.....
(v) Accounts receivable (sales)	Dr.	.....
(vi) Accounts payable (purchases)	Cr.	.....
(vii) Accounts receivable (payment received)	Cr.	.....
(viii) Sales (cash)	Cr.	.....

Ans. (i) Cashbook; (ii) Outstanding salaries account; (iii) Cashbook: (iv) Cashbook (v) Sales book; (vi) Purchase book; (vii) Cashbook; (viii) Cashbook]

6. Indicate in which of the financial statements each of the following are most likely to be shown: (a) Current Assets; (b) Current Liabilities; (c) Current Revenues; (d) Current Expenses or (e) None of these
   (1) Advances to Salesmen
   (2) Account Receivable
   (3) Sales Returns
   (4) Bad Debts
   (5) Bills Receivable
   (6) Depreciation of Office Equipment
   (7) Goods in Transit
   (8) Investment in short-term Government Securities
   (9) Loss on Sale of Equipment
   (10) Office Salaries
   (11) Share Premiums
   (12) Raw Materials inventory
   (13) Royalties Earned.

   [Ans. (1) – a; (2) – a; (3) – c; (4) – d; (5) – a; (6) – d; (7) – a; (8) – a; (9) – d; (10) – d; (11) – e; (12) – a; (13) – c.]

Indicate the best answer for each of the following questions

7. The prime function of accounting is to
   (a) Record economic data
   (b) Provide the informational basis for action
   (c) Classifying and recording business transaction
   (d) Attain non-economic goals
8. The basic function of financial accounting is to
   (a) Record all business transactions
   (b) Interpret the financial data
   (c) Assist the management in performing functions effectively
9. Book-keeping is mainly concerned with
   (a) Recording of financial data relating to business operations
   (b) Designing the systems in recording, classifying and summarising the recorded data.
   (c) Interpreting the data for Internal and External end-users

   [Ans. 7-c, 8-a, 9-a]

DESCRIPTIVE QUESTIONS

1. Define Financial Accounting. State its functions and explain how it differs from Management Accounting.
2. Define Accounting Principles. Explain the various generally accepted Accounting Principles
3. Explain the differences between Financial and Cost Accounting
4. State the fundamental accounting assumptions adopted by International Accounting Standards Committee and Accounting Standards Board.
5. Explain the role of accountant in the present-day economy.
6. Why is accounting regarded as an aid to management?
7. Do you agree with the following equations:
   (i) Equity = Assets (ii) Equity = Owner's equity + Creditors' equity
   If yes, state reasons.
8. Define "Accounting Policies". State the considerations in selecting accounting policies. Give examples of the areas where different accounting policies may be adopted by different enterprises.

PROBLEMS

1. The following selected accounts have been posted. Prepare entries in general journal from:

Cash		*Thompson*		*Sales*		*Purchases*	
Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*
1,000	400		600		400	200	
400	200				500	600	
200	100				200		
	100						
	50						

Advt. Expenses		*Insurance Expenses*		*Carriage Expenses*	
Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*
50		100		100	

J.Waller (Customer)		*Whimper (Capital)*		*Rent Expenses*		*Outstanding Expenses*	
Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*
500		400	1,000	200			200

2. On December 31, the trial balance of Hardware Company Limited showed the following accounts and balances:

Cash		Rs.56,000
Accounts receivable		1,70,000
Inventory (Commencement)		3,05,000
Machinery and equipment	1,50,000	
Less: Depreciation on above	90,000	60,000
Furniture and fixtures		50,000
Accumulated allowance for depreciation on above		15,000
Purchases (Materials)		3,20,000

Office salaries	Rs.3,000
Accounts payable	1,20,000
Share capital	2,00,000
Reserve	1,06,000
Sales	6,00,000
Wages (manufacturing)	40,000
Miscellaneous expenses	37,000
(Including Rent – Rs.6,000 and Insurance Rs.4,000)	

The accountant wished to adjust the following expenses which he felt were applicable to the month of December:

1. Insurance expenses – Rs.200
2. Rent – Rs.1,000
3. Depreciation to be charged – 10% of cost of assets.
4. Wages owed but not paid – Rs.4,000
5. Annual inventory on 31st December (cost) – Rs.2,25,000
6. Outstanding for salaries – Rs.600.

Prepare in good form an income statement for the year and a balance sheet as on December 31 (Balance sheet need not be in the prescribed form).

3. The Trial Balance of M/s Gladstone & Co. Limited as on 31st December 2006 was as follows:

Debit	
Cash	Rs. 2,88,000
Temporary investments	1,77,000
Book debts	9,16,000
Inventory of merchandise – 1st January	8,90,000
Prepaid insurance	19,000
Other prepaid expenses	13,400
Land	1,60,000
Buildings	4,58,000
Sales returns	1,20,000
Purchases	34,45,000
Advertising	12,000
Salaries and wages	1,64,000
Miscellaneous selling expenses	58,000

Property taxes	33,000
Insurance premiums	5,250
Miscellaneous general expenses	84,350
Interest paid	32,000
Total	68,75,000

Credit	
Accumulated depreciation on building	Rs. 81,000
Accounts payable	1,88,000
Mortgage loan	4,50,000
Equity share capital	15,00,000
(Share of Rs.10 each)	
Authorised Rs.25,00,000	
General reserve	5,31,000
Sales	41,20,000
Interest (income)	4,800
Total	68,75,000

Adjustments to be made:

1. Accrued interest payable on loan — Rs. 4,000
2. Wages outstanding — 2,400
3. Depreciation to be charged on buildings — 12,400
4. Inventory on 31st 2006 — 8,64,400
5. Merchandise received on 31st December 2006 but not recorded in accounts and not included in accounts — Rs. 9,750
6. Cash discounts available to customers — 8,900

Prepare the profit and loss account and balance sheet in accordance with the companies Act 1956.

4. The following is a pre-closing trial balance of the Madras Traders Limited as at 31st March, 2006:

Debit		*Credit*	
Goodwill	50,000	Capital	1,25,000
Leasehold building	67,450	Sales	1,78,000
Loose tools	7,000	Income from services	19,630
Workmen's wages	25,860	Purchases returns	940
Rent, rates and taxes	8,700	Loan (secured)	20,000
Purchases	96,420	Accounts payable	25,220
Stock inventory	38,610	Bank overdraft	4,530
Sales returns	400	Provision for doubtful debts	3,000
Carriage on purchases	2,240	Retained earnings	14,000
Insurance on buildings	1,180		
Salaries	11,470		
Motor lorry	27,000		
Furniture	3,200		
Interest charges	1,000		
Accounts receivable	39,910		
Power	1,070		
Advertising	9,750		
	3,91,260		3,91,260

Closing stock on March 31, 2006 is Rs.40,000. Prepare an Income Statement and Position Statement from the above trial balance.

5. A business prepares accounts annually on 31st October and stock-taking takes place in the following week-end. In one year, 31st October fell on Wednesday, stock-taking commenced on 3rd November and the value of stock then actually on the premises was found to be Rs.15,919. You need to ascertain the following additional facts:
   (i) Goods outwards are entered in the sales day book as on the day of despatch.
   (ii) Goods inwards are entered in the bought day book as on the date of invoice.
   (iii) Sales during the period 1st to 3rd November as shown by the sales day book and the cash sales book amounted to Rs. 196.
   (iv) Purchases during the same period as shown by the bought day book amounted to Rs. 151 but, of these goods to the value of Rs. 54, were not received until after 3rd November.
   (v) Goods invoiced during October and not received until November, totaled Rs. 160. Of these, goods to the value of Rs. 131 were actually received during the period 1st to 3rd November and Rs. 29 after 3rd November.
   (vi) The average ratio of the gross profit to turnover is 28 percent.
   (vii) In October, goods were sent to a customer on sale or return basis. The sale price was Rs. 2,000. The goods were still returnable by the customer on 31st October.

You are instructed to ascertain the value of the stock as on 31st October, for inclusion in the year's accounts on the assumption that the purchases account is not to be adjusted.

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CHAPTER

2

General Accounting Principles and Accounting Standards

"Book keeping is the science and art of correctly recording in books of accountant, all those business transactions that result in the transfer of money or money's bank."

—Prof. R. N. Carter

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *Meaning of Transaction of Financial/Monetary Nature*
- *Accounting Principles*
- *Accounting Concepts*
- *Accounting Conventions*
- *Accounting Standards*
- *Systems of Accounting*

INTRODUCTION

Accounting is the art of recording, classifying and summarising business transactions of financial and monetary nature in a scientific manner.

Let us break the above into small pieces and see what accounting is.

Transaction is an event or activity. From the accounting point of view, transaction means business transaction, or business event or business activity.

For example, 'India defeated England in the 1993 cricket season'; is an event. On the other hand, is manufacturing of chemical by an organisation a business event? No, it is not, since it is an ongoing process.

But, if the same organization purchases a chemical, it is a business transaction. So transaction in accounting language includes only business events or events connected with business.

Financial/monetary nature:

You will wonder now if all the transactions or events of a business should be included in 'accounting'?

No. All the business transactions cannot be included in accounting. Then what all can be included?

All the transactions are classified under two heads, namely, i.e., (1) transactions of financial/monetary nature and (2) transactions of non-financial and/or non-monetary nature. Let us see the relevant concepts of general accounting principles and standards.

MEANING OF TRANSACTION OF FINANCIAL/MONETARY NATURE

Any transaction which can be defined in terms of 'money value' or 'currency value' is called a transaction of financial/monetary nature.

For example, in a business we shall come across a lot of events as mentioned below:

(i) The Managing Director retired.
(ii) Rs. 20,000 worth of Chemical A was purchased.
(iii) The Board of Directors have decided to expand the capacity of the plant.
(iv) The rent of Rs. 15,000 was paid.

Here, what all can be described in terms of money? Item nos. (ii) and (iv) alone and not (i) and (iii). Even though item nos. (i) and (iii) are business transactions, they cannot be defined in terms of money. So, these are not considered as accounting transactions. We can conclude that: "All business transactions are not accounting transactions". Since item nos. (ii) and (iv) are defined in terms of money value, they can be called business-cum-accounting transactions. We can further derive the conclusion that. "All accounting transactions are business transactions".

Here afterwards, wherever we use the word, 'transaction', it means business transactions of monetary/financial nature.

Recording, Classifying and Summarising in a Scientific manner:

Accounting is complete only if the transactions are recorded, classified and summarised in a scientific manner.

An Accounting statement is prepared periodically by considering all the transactions that have taken place during that period, say a month. During this period, i.e, one month, thousands of transactions would have taken place.

This individual transaction should necessarily be noted in some place, date-wise. This act of noting down the individual transaction is called recording.

This individual transaction, if presented as it is, cannot give a consolidated picture. Hence, further classification is done by applying the rules of accounting in a scientific manner and then a summary is made.

For example, in a particular month, wages, rent, purchases, sales etc. would have been paid/received several times, to and from several people. As soon as the events take place, these are immediately entered in the accounting book, one by one, date-wise. At this stage, everything is entered. But one cannot say, how much was paid for wages, how much for purchases, etc., during the month.

To know the exact picture of how much was paid or received under a particular head during a particular period, items of similar nature are taken together. This is called classification. When all these classifications are totaled, it is known as summarising.

The above are done in a systematic way, based on a set of rules and regulations and principles. That is why this is considered a scientific method.

CLASSIFICATION OF ACCOUNTING PRINCIPLES

Accounting principles can broadly be classified into two categories:

(i) Accounting Concepts and
(ii) Accounting Conventions

(i) **Accounting Concepts**. These include those basic assumptions or conditions upon which the science of accounting is based.

(ii) **Accounting Conventions**. These include those customs or traditions which guide the accountant while preparing the accounting statements.

Each of the above concepts and conventions are being explained below:

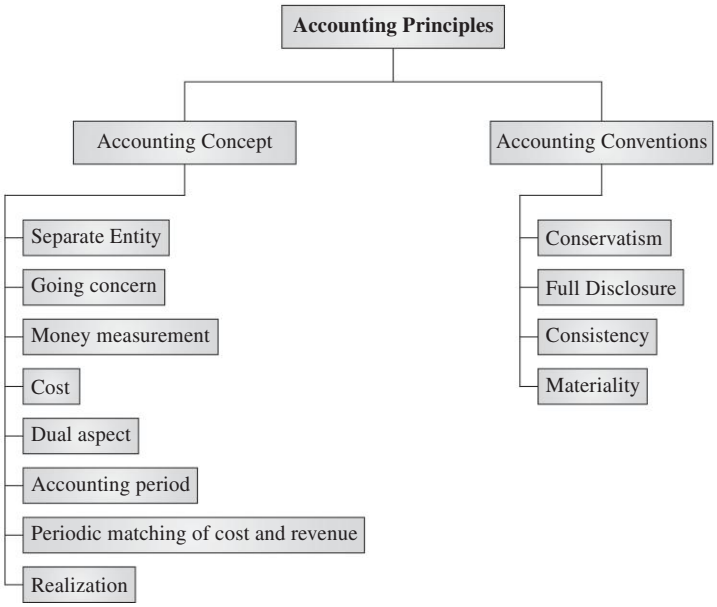


FIG 2.1 Classification of Accounting Principles

Accounting Concepts

The concepts related to accounting are explained below.

Separate Entity Concept

In accounting, the business is considered to be a separate entity from its proprietor(s). This principle of separate entity is applicable whether this is accepted by law or not. For example, if a married couple starts a small unincorporated retail store, though in the eyes of law there is no distinction between the financial affairs of the store and those of the people who own it, in accounting, the accounts of the store will be shown as a liability in the books of the business. Similarly, any money withdrawn by them from the business will be charged to them and the net amount payable by the business to them will stand decreased in the books of the business. The objective of making this distinction between the business and those whose own it, is to provide the owners and the outsiders complete information about the results of operations of the business and its financial position.

Going Concern Concept

According to this concept, unless there is a good evidence to the contrary, it is assumed that the business will continue to operate for a fairly long time to come. On account of this concept, the accountant,

while valuing the assets, does not take into account forced sale value of the assets. Similarly, he charges depreciation on fixed assets on the basis of their expected life rather than their market values. Of course, if the accountant has a good reason to believe that either the whole or some part of the business is going to be liquidated, it will be appropriate for him to report the relevant resources/assets at their liquidation values.

Money Measurement Concept

Accounting records only monetary transactions. Events or transactions which cannot be expressed in money are not shown in the books of account though they may be very useful for the business.

Measurement of business events in money terms helps in understanding the state affairs of the business in a much better way. For example, if a business owns Rs. 10,000 cash, 6,000 kgs, of raw materials, 2 trucks, 10,000 sq.mt. of building space etc., all these amounts cannot be added together to produce a meaningful total of what the business owns. However, if these items are expressed in monetary terms, such as Rs.1,00,000 in cash, Rs.15,000 of raw materials, Rs. 2,00,000 in trucks and Rs. 1,00,000 of building, all such items can be added and a more precise and intelligible estimate of the asset of business will be available.

Cost Concept

This concept is closely linked with the going concern concept. According to this concept:

(a) An asset is ordinarily entered in the accounting records at the price paid to acquire it; and

(b) This cost is the basis for all subsequent accounting for the asset.

For example, if a business purchases a plot of land for Rs. 50,000, it will be recorded in the books as Rs. 50,000, though its market value may be higher or lower than this amount. In other words, the subsequent changes in the market value of the assets are not ordinarily recorded in the books of account.

The cost concept does not mean that all assets remain on the accounting records at their original cost for all times to come. As stated above, cost becomes the basis for all future accounting for the asset. This would mean that the asset is recorded at cost at the time of its purchase but later on, may systematically be reduced in its value by charging appropriate depreciation.

It also follows from cost concept that if a firm pays nothing for acquisition of an item, it will not usually appear on the accounting records of the firm as an asset. For example, a business may build up its reputation or goodwill over a period of time. The business has not paid for it and, therefore, it is generally not shown in the books of account. However, in exceptional cases, e.g. where adjustments are required for admission or retirement of a partner, goodwill may be shown in the books of account.

The cost concept has the advantage of bringing objectivity in the preparation and presentation of financial statements. In the absence of this concept, the figures in the accounting records would have depended on the subjective views of a person. However, the cost concept also results in distortion of the financial position of the business, as depicted by the financial statements on account of continuous inflationary tendencies. The historical costs have largely become irrelevant for judging the financial position of the business. This is the reason for the growing importance of inflation accounting these days.

Dual Aspect Concept

This is the basic concept of accounting. According to this concept, every business transaction has a dual effect. Such effect is either on the assets only, or assets and equities, or on equities only. The term 'assets' denote the resources owned by a business. The term 'equities' denote the claims of various parties against these assets. Equities can be of two types; (i) outsiders' equities i.e. claims of creditors, and (ii) owners equities i.e. the claims of the proprietor(s) or shareholders against the business. Since all assets

of the business belong either to the owners or to the outsiders, the total of their claims cannot exceed the amount of assets of the business. This relationship can be expressed as follows:

Assets = Equities (Claims)

This is also termed as accounting equation. The working of this equation can be understood as follows:

A proprietor starts business with a capital of Rs.10,000. In this case, business has Rs.10,000 with it. It is the asset of the business. However, the business has also to pay a sum of Rs. 10,000 to the proprietor which represents his capital. Thus, the assets of the business are equal to the equities of the business, as shown below:

Equities		Assets
Capital Rs. 10,000	=	Cash Rs. 10,000

Subsequently, the business purchases furniture of Rs. 5,000 for cash. The position of the business will be as follows.

Equities		Assets
Capital Rs. 10,000	=	Cash Rs. 5,000 + Furniture Rs. 5,000.

The entire system of double entry book-keeping is based on this accounting equation. The equation can be technically stated as: for every debit, there is an equivalent credit.

Accounting Period Concept

According to this concept, the life of the business is divided into appropriate accounting segments for studying the results shown by the business after each segment. This is because, though the life of the business is indefinite as provided by the going concern concept, the measurement of income and studying the financial position of the business after a very long period would not be helpful in taking proper corrective steps at the appropriate time. It is, therefore, absolutely necessary that after each segment or time interval, the businessman must stop and look back to see how things are going. In accounting, such a segment or time interval is called accounting period, which is usually of a year.

Periodic Matching of Cost and Revenue

The cost concept is based on the accounting period concept. The paramount objective of running a business is to earn profit. In order to ascertain the profit made by the business during the period, it will be necessary to match or compare the revenues of the period with the expense (or cost) incurred during the period for earning that revenue. The first step must always be to determine the revenues earned during a particular accounting period, and then the expenses incurred in order to generate or earn that revenue should be determined. The question as to when the payments was made or received is irrelevant. For example, if a salesman is paid commission in January, 1983 for sales made by him in December, 1982, the commission payable to the salesman in January, 1983, should be taken as the cost of sales made by him in December 1982.

Accural Concept

This concept is closely linked with the matching of cost and revenue concept. According to this concept, revenues and costs are recognised as they are earned or incurred (and not as money is received or paid) and recorded in the financial statements of the periods to which they are related. For example, if a business has invested a sum of Rs.10,000 in government securities on which interest at 10 percent per annum is payable on 31st December each year, revenue of Rs.100 will be deemed to be earned by the business for the accounting year ending 31st December, though it might be received in the following next year. The same holds good for costs also.

Realisation Concept

According to this concept, revenue is recognised to be earned at the point when the property in the from of goods passes on to the buyer and he becomes legally liable to pay. This is because it is not certain that the goods produced will always be sold at a profitable price. Market conditions always change and the goods produced might have to be sold at a loss. This is the reason for the accountants to take a conservative position. They refuse to record a sale unless the third party has committed itself to pay the price for the goods and only on the happening of this event, can it be said that the profit has been earned by the firm. Of course, in those cases where it is reasonably certain that the goods produced will have to be sold at a loss, the accountant will record such loss, (as stated later), while explaining the convention of the conservation.

Accounting Conventions

Conservatism

According to this convention, accountants follow the policy of playing safe while recording a business transaction. On account of the principle, expected losses are taken into account but expected profits are not. For example provision is made for bad and doubtful debts, stock is valued at cost or market price, whichever is less.

The convention of conservation has become the target of serious criticism these days. The excessive application of conservatism could result in the creation of secret reserves, a practice which is contrary to the convention of full disclosure.

Full Disclosure

According to the convention, all accounting statements/reports should be absolutely honest and should give a full and fair disclosure of all significant accounting information. The convention has thus placed an obligation on the accountants to see that the books, records and accounting statements, prepared on behalf of others, are as reliable and informative as circumstances permit. This convention is gaining more importance these days because most of the big businesses are run by joint stock companies where ownership is divorced from the management. The Companies Act, 1956, not only requires the preparation of the income statement and the balance sheet of a company, but also gives a prescribed form in which the balance sheet has to be prepared.

Consistency

According to this convention, accounting rules and practices should remain unchanged from one period to another. For example, if depreciation is charged on fixed assets according to diminishing balance method, it should be done so year after year. This is necessary for purposes of comparison.

The convention of consistency serves to eliminate personal bias and to even out personal judgement. However, it does not preclude changes if they are desirable and if their effects are made known in the financial statements.

Materiality

According to the convention, the accountants should attach importance to material details and ignore insignificant details. However, the term materiality is a subjective term. The accountants should consider an item as material if there is reason to believe that its knowledge would influence the decision of the informed investor.

SYSTEMS OF ACCOUNTING

There are three main systems of recording the business transactions, namely-Cash System, Single Entry System and Double Entry System.

Cash System

This system considers only actual receipts and payments and shows balance of cash available. The main drawback of the system is that, it does not consider credit transactions and cannot help in preparing the profit or loss statement and balance sheet.

Single Entry System

The single entry system does not follow the dual aspect concept and considers only the personal aspect of the transactions. It does not include impersonal aspect of transactions other than cash. Again, the main drawback is that, it cannot give the correct picture of profit and loss account and balance sheet.

Double Entry System

This system is the most popular method followed throughout the world, as it eliminates the major drawback of the previous two systems of accounting. The double entry system was first introduced by an Italian merchant named Luco Pacioli. He brought this concept in his book '***De Computis Et Scripturis***' on double entry accounting in the year 1494.

This adopts the dual aspect concept and it has various stages and is the most scientific method of entering the business transactions. As we have seen earlier, this is the most widely followed method all over the world and is based on three major rules. This system operates under a simple principle, "Every debit has a corresponding credit and every credit has a corresponding debit".

Rules of Double Entry System

There are three simple, but very effective rules. All business transactions of monetary nature are processed through these rules. They are personal account, real account and nominal account.

Personal account

Rule: Debit all receivers and credit all givers.

This is applicable wherever an individual indentify like individuals or organisations or government are involved in any transaction.

How to identify the involvement of an individual identity?

It depends upon the business relationship. A business relationship is not like a social relationship. Business relationship is assumed to exist, whenever there is any commitment either way, i.e. there is outstanding payment or receipt between two parties. If there is no commitment, no business relationship exists.

For example, let us consider a transaction. Ram has purchased goods worth Rs.1,000 from X & Co for cash. Here, Ram an individual has purchased from X & Co. An individual is there, but how to ensure that business relationship exists or not? It is very simple. Here, purchase is made for cash. So, on one side cash is received and on the other side goods were delivered. Commitment from both the sides is over immediately. Now, we can say there is no business relationship. Let us consider another situation: Ram has purchased goods worth Rs. 2000 from X & Co on credit. Here, goods were delivered, but no cash was received. Ram still has not fulfilled his commitment. He will pay on a later date. So, here we can assume that the business relationship is still existing.

Real account

Rule: Debit what comes in and credit what goes out.

This rule is applicable wherever assets/liabilities are involved. Assets/liabilities are taken in a broad perspective here. Assets, here, means something of realisable value and liability means something to be paid.

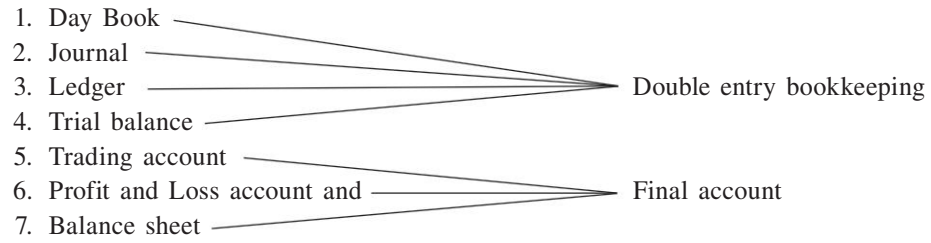
Nominal account

Rule: Debit all expenses and losses and credit all income and gain.

This rule will come into effect wherever the expenses, income, profit and loss of regular and day-to-day nature occurs.

Stages of Accounting

It has seven major stages and is a chain of activities as given below.



First four stages put together is called bookkeeping and the remaining three are known as final account. These stages of accounting truly represent the act of recording, classifying and summarising.

ACCOUNTING STANDARDS

Accounting Standards are the guidelines, principles, methods, customs, usage and business environment for accounting. In India, the Accounting Standards are authorised by the Accounting Standard Board (ASB) constituted by Institute of Charted Accountants of India (ICAI) in the year 1977. The main objective of the accounting standards is to harmonise the diversified accounting practices and policies. The international body to monitor the accounting standards is International Accounting Standards Committee (IASC)

The ICAI issues the accounting standards for the presentation of general purpose financial statements which include statement of Profit and Loss, Balance Sheet and other statements and explanatory notes as a part thereof published for the use of shareholders, members, creditors, employees and public. These accounting standards are frequently revised and updated. The council of the ICAI has issued 28 Accounting Standards so far.

Sl.No	*Accounting Standards*	*Title*	*Date of commencement*	*Applicable to*
1	AS 1	Disclosure of Accounting Policies	1-4-1991. for companies governed by Companies Act 1956 as well as for enterprises other than specified in note 1	All

2	AS 2 (Revised)	Valuation of Inventories	1-4-1999	All
3	AS 3 (Revised)	Cash Flow Statements	1-4-2001	Note 2
4	AS 4 (Revised)	Contingencies and Events occurring after Balance Sheet date	1-4-1995	All
5	AS 5 (Revised)	Net profit for the period, Prior Period Items and Change in Accounting Policies	1-4-1996	All
6	AS 6 (Revised)	Depreciation Accounting	1-4-1995	All
7	AS 7	Accounting for Construction Contracts	As incase of AS1	All
8	AS 8	Accounting for Research and Development	As incase of AS1	All
9	AS 9	Revenue Recognition	As incase of AS1	All
10	AS 10	Accounting for Fixed Assets	As incase of AS1	All
11	AS 11 (Revised)	Accounting for Effects of Changes in Foreign Exchange Rates	1-4-1995	All
12	AS 12	Accounting for Government	1-4-1994	All
13	AS 13	Accounting for Investments	1-4-1995	All
14	AS 14	Accounting for Amalgamations	1-4-1995	All
15	AS 15	Accounting for Retirement Benefits in the Financial Statements of Employers	1-4-1995	All
16	AS 16	Borrowing Costs	1-4-2000	All
17	AS 17	Segment Reporting	1-4-2001	Note 2
18	AS 18	Related Party Disclosures	1-4-2001	All
19	AS 19	Leases	In respect of all assets leased during accounting periods commencing on or after 1-4-2001	All
20	AS 20	Earnings per Share	1-4-2001 Note 3	
21	AS 21	Consolidated Financial Statements	1-4-2001 note 4)	Note 4
22	AS 22	Accounting for Taxes on Income	Note 5	Note 5
23	AS 23	Accounting for Investment in Association in Consolidated Financial Statements	1-4-2002	Mandatory
24	AS 24	Discontinuing Operations	1-4-2002	Recommendatory
25	AS 25	Interim FinancialReporting	1-4-2003	If Required to Present Interim Financial Report
26	AS 26	Intangible Assets	1-4-2002	Note 6
27	AS 27	Financing Reporting of Interests in Joint Venture	1-4-2004	Mandatory for All
28	AS 28	Impairment of Assets	1-4-1991	Note 7
29	AS 29	Provisions, Contingent Liabilities and Contingent Assets.	1-4-2004	Recommendatory

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Note 1:

(a) Proprietary Concerns or Individuals
(b) Partnership Firms
(c) Societies Registered under the *Societies Registration Act*
(d) Trusts
(e) Hindu Undivided Families
(f) Association of Persons.

Note 2:

(i) Enterprises whose equity or debt securities are listed on a recognised stock exchange of India, and enterprises that are in the process of issuing debt securities that will be listed on a recognised stock exchange in India as evidence by the Board of Directors resolution in this regard.
(ii) All other commercial, industrial and business reporting enterprising, whose turnover for the accounting period exceeds Rs. 50 crores.

Note 3: AS 20 is mandatory in nature in respect of enterprises whose equity shares or potential equity shares are listed on a recognised stock exchange in India. An enterprise which has neither equity shares nor potential equity shares, but which discloses earnings per share that need to be calculated, should disclose earning per share in accordance with AS20.

Note 4: AS 21 is mandatory if an enterprise presents consolidated financial statements. In other words, the accounting standard does not mandate enterprises to present consolidated financial statements, but if the enterprise presents consolidated financial statements for complying with the requirements of any status or otherwise, it should prepare and present consolidated financial statements in accordance with AS 21.

Note 5: AS 22 comes into effect in respect of accounting period commencing on or after 1-4-2001. It is mandatory in nature for:

(a) All the accounting periods commencing on or after 1-4-2001, in respect of following:
  (i) Enterprises whose equity or debt securities are listed on a recognised stock exchange in India and enterprises that are in the process of issuing equity or debt securities that will be listed on a recognised stock exchange in India as evidence by the Board of Director's resolution in this regard.
  (ii) All the enterprises of a group of the parent consolidated financial statements and the accounting standard, is mandatory in nature of respect of any of the enterprises of that group in terms of (i) above.
(b) All the accounting periods commencing on or after 1-4-2002 in respect of companies not covered by (a) above.
(c) All the accounting periods commencing on or after 1-4-2002 in respect of all other enterprises.

Note 6: Enterprises whose equity or debt securities are listed on a recognised stock exchange of India and enterprises that are in the process of issuing equity or debt securities that will be listed on a recognised stock exchange in India as evidenced by the Board of Directors resolution in this regard.

Note 7: All commercial, industrial and business reporting enterprises whose turnover for the accounting period exceeds Rs.50 crores.

The accounting profession has developed accounting standards (ASs) to provide guidelines relating to the accounting treatment as well as reporting of important accounting items which have bearing, inter-alia, on income determination, asset valuation and presentation of financial statement (namely, income

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statement, balance sheet and cash flow statement). The primary objective of ASs is to standardise the diverse accounting policies and practices. The guidelines contained in ASs are mandatory in nature.

The mandatory status of an Accounting Standard implies that while discharging their audit functions, it will be the duty of the members of the ICAI to examine whether the Accounting Standard(s) is (are) complied with, in the presentation of financial statements covered by their audit. In the event of any deviation from the Accounting Standard(s), the onces lies with the ICAI numbers to make adequate disclosures in their audit reports so that the users of financial statements are aware of such deviation.

AS-1: Disclosures of Accounting Policies (Issued in 1979)

AS-I deals with the requirement of disclosing significant accounting policies adopted in the preparation of financial statements and the manner in which they are to be disclosed in the financial statements. Its objective are — (i) to facilitate better understanding of financial statements, and (ii) to facilitate meaningful comparison between financial statements of different enterprises.

Accounting Policies

Accounting policies refer to the specific accounting principles and the methods of applying those principles adopted by the enterprise in the preparation and presentation of their financial statements. The areas in which differing accounting policies are encountered relate, inter-alia, to — (i) Methods of Depreciation, Depletion and Amortisation, (ii) Treatment of Expenditure during Construction, (iii) Conversion/Translation of Foreign Currency items (iv) Valuation of Inventories, (v) Treatment of Goodwill, (vi) Valuation of Investment (vii) Treatment of Retirement Benefits, (viii) Recognition of Profit on Long-term Contracts, (ix) Valuation of Fixed Assets and (x) Treatment of Contingent Liabilities.

Major Considerations in the Selection of Accounting Policies

The primary consideration in the choice of an accounting policy is that the financial statements prepared and presented on the basis of such accounting policies should represent a true and fair view (i) of the state of affairs of the enterprise as at the balance sheet date, and (ii) of the profit or loss for the period ended on that date. The other considerations are

(i) *Prudence:* Anticipate no gains and provide for all losses,
(ii) *Substance over form:* The accounting treatment and presentation of transactions and events should be goverened by their substance and not merely by the legal form, and
(iii) *Materiality :* Financial statements should disclose all "material" items.

Fundamental Accounting Assumptions: The generally accepted fundamental accounting assumptions are **going concern**, **consistency** and **accrual.** These govern the preparation and presentation of financial statements.

Disclosure of Accounting Policies

The disclosure requirements are:

- All significant accounting policies adopted while preparing financial statements should be disclosed.
- The disclosure of the significant accounting policies as such should form part of the financial statements and the significant accounting policies should normally be disclosed in one place.
- Any change in the accounting policies, which has a material effect in the current period or which is reasonably expected to have a material effect in a later period(s) should be disclosed. An indication should be made of any item that causes a change in the amount of the financial statement.

- If the fundamental accounting assumptions, namely, going concern, consistency and accrual are not followed in financial statements, the fact should also be disclosed.

AS-2: Valuation of Inventories(Issued in 1981 and Revised in 1999)

AS-2 lays down the principles to be considered in computing the value of inventories and also ensures adequate disclosure of the policy adopted by an enterprise. Inventories are defined as assets — (a) held for scale in the ordinary course of business, (b) in the process of production for such sale, and (c) in the form of materials or supplies to be consumed in the production process or in the rendering of services.

Measurement of Inventories Inventories should be valued at the lower cost and net realisable value. Net realisable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and the estimated cost necessary to make the sale. The cost of inventories should comprise all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition.

Cost of Inventories The cost of inventories should comprise the following:

- Cost of Purchase: This includes duties and taxes (other than those subsequently recoverable by the enterprise from the taxing authorities like MODVAT), freight inwards and other expenditures directly attributable to the acquisition. Trade discounts, rebates, duty drawbacks another similar items are deducted in determining the costs of purchase.
- Cost of Conversion: This includes costs directly related to the units of production, such as direct labour and a systematic allocation of fixed and variable production overheads that are incurred in converting materials into finished goods.
- Other Costs: This includes the cost that are incurred in bringing the inventories to their present location and condition.

The following costs should be excluded from inventories:

(i) Abnormal wastages of material,
(ii) labour or other production costs, unless they are necessary in the production process.
(iii) Administrative overheads which do not contribute to bringing the inventories to their present location and condition, and
(iv) Selling and distribution overheads.

Cost Formula: The cost of inventory should be arrived at by using first-in-first-out or weighted average cost formula. However, for inventories of items that are not ordinarily interchangeable and goods or services produced and segregated for specific projects, should be assigned by specific identification of their individual costs.

Disclosure: The financial statements should disclose:

(i) the accounting policies adopted in measuring inventories, including the cost formula used; and
(ii) the total carrying amount of inventories and its classification appropriate to the enterprise.

AS-3: Cash Flow Statement

While most of the items to be included in the CFS are self-explanatory in nature, some transactions/ items merit more explanation. These relate to:

(i) Foreign Currency
(ii) Extraordinary items

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(iii) Interest
(iv) Dividends
(v) Taxes on income
(vi) Deferred taxes
(vii) Investment in subsidiaries and joint ventures
(viii) Acquisitions and disposals of subsidiaries and other business units
(ix) Non-cash transactions and
(x) Other disclosures

Cash flows arising from transactions in a foreign currency should be recorded in an enterprise reporting currency, by applying to the foreign currency amount the exchange rate between the reporting currency and the foreign currency, on the date of cash flow.

AS-4: Contingencies and Events Occurring After the Balance Sheet Date (Issued in 1982, Revised in 1995)

The AS-4 deals with the treatment in the financial statements of (a) contingencies and (b) events occurring after the balance sheet date. Contingency is defined as a condition or situation, the ultimate outcome of which, gain or loss, will be known or determined only on the occurrence, or non-occurrence, of one or more uncertain future events. Events occurring after the balance sheet date are those significant events (both favourable and unfavourable) that occur between the balance sheet date and the date on which the financial statements are approved by the Board of Directors in case of a company, and by the corresponding approving authority in the case of any other entity.

Contingencies and Accounting Treatment of Contingent Losses and Gains: The company needs to estimate the amount for many ongoing and recurring activities of an enterprise, for example, depreciation. The estimation of depreciation is an event. However, it should distinguish between an event which is certain and one which is uncertain. The fact that an estimate is involved does not, by itself, create the type of uncertainty, which characterise a contingency. In the example of depreciation, just the eventual expiry of the useful life of the asset is certain. The uncertainty relating to future events is generally described, but where reasonable quantification is practicable, it is quantified.

The accounting treatment of a contingent loss is determined by the expected outcome of the contingency. If the contingency is likely to result in a loss, then it is prudent to provide for that loss in the financial statements. The amount of a contingent loss should be provided for by a charge to the statement of profit and loss if: (i) it is probable that future events will confirm that, after taking into account any related probable recovery, an asset has been impaired or a liability has been incurred as on the balance sheet date, and (ii) a reasonable estimate of the amount of the resulting loss can be made. A potential loss to an enterprise may be reduced or avoided because a contingent liability is matched by a related counterclaim, or claim against a third party, if measurability or collectivity does not exists.

Contingent gains are not recognized in financial statements since their recognition may result in the recognition of revenue which is never realized. And, if the gain is virtually certain, then it is no more a contingency and therefore, is accounted for in the financial statements.

Events Occurring after the Balance Sheet Date

Adjustments to assets and liabilities are required for events those account between the balance sheet date and the date on which the financial statements are approved only if they provide additional information materially, addicting the determination of the amounts relating to conditions existing at the balance

sheet date. At the same time, they should also indicate that fundamental accounting assumption of going concern is not appropriate. For instance, dividends proposed or declared after the balance sheet date, but before approval of the financial statements, in respect of the period covered by the financial statements, should be reflected in the financial statements.

Disclosure

The following information regarding events occurring after the balance sheet date should be disclosed:

(i) the nature of the contingency
(ii) the uncertainties which may affect the future outcome, and
(iii) an estimate of the financial effect or a statement that such an estimate cannot be made.

AS-5: Net Profit or Loss for the Period, Prior Period Items and Changes in Accounting Policies (Issued in 1982 and Revised in 1997 and 2001)

The objective of this AS is to prescribe the classification and disclosure of certain items in the statement of profit and loss so that all enterprises prepare and present such a statement on a uniform basis. This enhances the comparability of the financial statements of an enterprise. Accordingly, the AS-5 requires the classification and disclosure of extraordinary and prior period items and the disclosure of certain items within profit or loss from ordinary activities. It also specifies the accounting treatment for changes in accounting estimates to be made in the financial statements regarding changes in accounting policies.

Ordinary activities are defined as activities which are undertaken by an enterprise as part of its business. Extraordinary items are defined as incomes or expenses that arise from events or transactions that are clearly distinct from the ordinary activities of the enterprise, and therefore, are not expected to recur frequently or regularly. Prior period items are income or expenses which arise in the current period as a result of errors or omissions in the preparation of the financial statements of one or more prior periods.

Accounting Treatment: The requirements are:

- All items of income and expense which are recognised in a period should be included in the determination of net profit or loss for the period unless and until the accounting standard requires or permits otherwise.
- Extraordinary items (such as attachment of property of the enterprise and an earthquake) should be disclosed in the statement of profit and loss as a part of net profit or loss for the period. The nature and the amount of each extraordinary item should be separately disclosed in the statement of profit and loss in a manner that its impact on current profit or loss can be perceived.

Disclosure: The Disclosure Requirements are:

- When items of income and expense within profit or loss from ordinary activities are of such size, nature or incidence that their disclosure is relevant to explain the performance of the enterprise for the period, the nature and amount of such items should be disclosed separately. Circumstances which may give rise to the separate disclosure of items of income and expense include:
  (i) the write–downs of inventories to net realisable value of such write-downs of inventories to net activities of an enterprise and the reversal of any provisions for the costs of restructuring,
  (ii) disposals of items of fixed assets,
  (iii) disposals of long-term investments,
  (iv) legislative changes having retrospective application,

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(v) litigation settlements and
(vi) other reversals of provisions.

- The nature and amount of prior period items should be separately disclosed in the statement of profit and loss in a manner that their impact on the current profit or loss can be perceived.
- Accounting policy should be changed only if the adoption of a different accounting policy is required by statute or for compliance with an accounting standard, or if it is considered that the change would result in more appropriate presentation of the financial statements of the enterprise. The effect of any change in an accounting policy, if it has a material effect, should be disclosed in the financial statements of the period in which such change is made. If the effect of such change is not ascertainable, wholly or in part, the fact should be disclosed, or, if the change is expected to have a material effect in later periods, still the fact of such change should be disclosed in the period of change.

AS-6 : Depreciation Accounting (Issued in 1982 and Revised in 1994)

The AS-6 deals with disclosure of accounting policy followed in respect of depreciation by an enterprise. Depreciation is a measure of the wearing out, consumption or other loss of value of a depreciable asset arising from use efflux ion of time or obsolescence due to technology and marker changes. Depreciation is allocated so as to charge a fair proportion of the depreciable amount in each accounting period during the expected useful life of the asset. It includes amortisation of assets whose useful life is predetermined. Depreciable assets are assets which:

(i) are expected to be used during more than one accounting period.
(ii) have a limited useful life, and
(iii) are held by an enterprise for use in the production or supply of goods and services, for renting to others, or for administrative purpose of sale in the ordinary course of business. Useful life is either, (i) the period over which a depreciable asset is expected to be used by the enterprise, or (ii) the number of production or similar units expected to be obtained from the use of asset by the enterprise. Depreciable amount of a depreciable asset is its historical cost, or other amount substituted for historical cost in the financial statements, less the estimated residual value.

Accounting Treatment: Assessment of depreciation is usually based on the historical cost, expected useful life of the depreciable asset and estimated residual value of the depreciable asset. Any addition or extension to an existing asset which is of a capital nature and which becomes an integral part of the existing asset is depreciated over the remaining useful life of the asset at the rate which is applied to an existing asset, but, if such addition or extension remains a separate identity, and is capable of being used after the existing asset is disposed off, then, it is depreciated independently on the basis of an estimate of its own useful life. If the original estimate of useful life of an asset is revised, the unamortised depreciable amount of the asset is charged to revenue over the revised remaining useful life.

There are several methods of allocating depreciation. Those most commonly employed are the straight line method and the reducing balance method. The management of a business selects the most appropriate method based on various important factors such as type of asset, nature of the use of such an asset, and the circumstances prevailing in the business. A method once chosen has to be applied consistently. A change from one method to another is made only if the adoption of the new method is required by statute or for compliance with accounting standard, or if it is considered that the change would result in a more appropriate preparation or presentation of the financial statements of the enterprise. Such a change is treated as a change in accounting policy, and its effect is quantified and disclosed.

If a change in the method of depreciation is made, depreciation is recalculated in accordance with the new method from the date of the asset coming into use. The deficiency of surplus arising from retrospective re-computation is adjusted in the profit and loss account in the year in which the method of depreciation is changed (surplus credited to the profit and loss account and deficiency debited to it).

Disclosure

The requirements of disclosure are:

- The depreciation method used, the total depreciation for the period for each class of assets, the gross amount of each class of depreciable assets and the related accumulated depredation are disclosed in the financial statements along with the disclosure of other accounting policies. The depreciation rates or the useful lives of the assets are disclosed only if they are different from the capital rates specified in the statute governing the enterprise.
- In case the depreciable assets are revalued, the provision for depreciation is based on the revalued amount on the estimate of the remaining useful life of such assets. In case the revaluation has a material effect on the amount of depreciation, the same is disclosed separately in the year in which revaluation is carried out.
- A change in the method of depreciation is treated as a change in an accounting policy and is disclosed accordingly.

AS-9: Revenue Recognition (Issued in 1985)

This AS-9 provides the basis for recognition of revenue arising in the ordinary course of activities of the enterprise. Revenue is the gross inflow of cash receivables or other consideration arising in the course of ordinary activities of an enterprise—from the sale of goods, from the rendering of services and from the use by others of enterprise resources yielding interest royalties and dividends. In an agency relationship, the revenue is the amount of commission and not the gross inflow of cash receivables or other consideration.

Accounting Treatment Revenue Recognition This is mainly concerned with the timing of recognition of revenue in the statement of profit and loss of an enterprise.

Sale of Goods: It is recognised at the time of transfer of significant risk and rewards of ownership to buyer.

Rendering of Services: It is usually recognised either by the proportionate completion method or completed service contract method. Proportionate completion method is a method of accounting which recognises revenue in the statement of profit and loss proportionately with the degree of completion of services under a contract. Completed service contract method is a method of accounting in which contract is completed or substantially completed.

Revenue arising from the other enterprise resources yielding interest, royalties and dividends should only be recognised when no significant uncertainty as to measurability or collectability exists. These revenues are recognised on the following basis:

(i) Interest: on a time proportion basis taking into account outstanding and the rate applicable.
(ii) Royalties: on an accrual basis in accordance with the terms of the relevant agreement, and
(iii) Dividends from investments in shares: when the owner's right to receive payment is established.

When recognition of revenue is postponed due to the effect of uncertainties, it is considered as revenue of the period in which it is recognised.

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Disclosure: In addition to the disclosures required by the AS-1, an enterprise should also disclose the circumstances in which revenue recognition has been postponed pending the resolution of significant uncertainties.

AS-9

Revenue recognition (AS-9) is primarily concerned with the timing of recognition of revenues in the income statements. Revenues from sales or service transactions should be recognised when the goods have been sold and services have been provided to the buyer. Revenue/income in the form of interest, royalties and dividends from investments, should be recognised when no significant uncertainty as to their measurability or collectability exists. The income should be accounted for, on an accrual basis.

AS-10: Accounting for Fixed Asset (Issued in 1985)

Fixed assets often comprise a significant portion of the total assets of an enterprise and, therefore, are important in the presentation of financial position. Furthermore, the determination of whether an expenditure represents an asset or an expense can have a material effect on an enterprise's reported results of operations. The AS-10 deals with the accounting for fixed assets. Fixed assets is defined as an asset held with the intention of being used for the purpose of producing goods or providing services, and is not held for sale in the normal course of business. Fair market value is defined as the price that would be agreed to, in an open and unrestricted market between knowledgeable and willing parties dealing at arm's length who are fully informed and are not under any compulsion to transact. Gross book value of a fixed asset is its historical cost or other amount substituted for historical cost in the books of account or financial statements. When this amount is shown net of accumulated depreciation, it is termed as net book value.

Components of Cost: The cost of a fixed asset should consist of its purchase price including import duties and other non-refundable taxes or levies and any directly attributable cost of bringing the asset to its working condition for its intended use. Trade discounts and rebates, if any, are deducted in arriving at the purchase price. The cost of a fixed asset may undergo changes subsequent to its acquisition of construction on account of exchange fluctuations, price adjustments, changes in duties or similar factors.

Financing costs on borrowed funds attributable to construction or acquisition of fixed assets should be included in the gross book value of the asset to which they relate upto the completion of construction or acquisition of fixed assets. However, financing costs should not be capitalised to the extent that such costs relate to periods after such assets are ready to be put to use.

The expenditure incurred on start-up and commissioning of the project including the expenditure incurred on test runs and experimental production, is usually capitalised as an indirect element of the construction cost.

Self-Constructed Fixed Assets: The cost of a self-constructed fixed asset should comprise those costs that relate directly to the specific asset and those that are attributable to the construction activity in general and can be allocated to the specific asset. Any internal profits are eliminated in arriving at such costs.

Non-Monetary Consideration: When a fixed asset is acquired in exchange for shares or other securities in the enterprise, it is usually recorded at its fair market value or the fair market value of the securities issued, whichever is more clearly evident.

Improvement and Repairs: Subsequent expenditures related to an item of fixed asset should be added to its book value only if they increase the future benefits from the existing asset, beyond its previously assessed standard of performance.

Revaluation of Fixed Asset: When a fixed asset is revalued in financial statements, an entire class of assets should be revalued or the selection of assets for revaluation should be made on a systematic basis. This basis should be disclosed. The revaluation in financial statements of a class of assets should not result in the net book value of that class being greater than the recoverable amount of assets. An increase in net book value arising on revaluation of fixed assets, in general, should be credited to revaluation reserve and not to profit and loss account. A decrease in net book value arising on revaluation of fixed assets should be charged directly to the profit and loss statement except to the extent that such a decrease is related to an increase which was previously recorded as a credit to revaluation reserve, and which has not been subsequently reversed or utilised However, it may be charged directly to revaluation reserve account.

Fixed Assets of Special Types: Goodwill should be recorded in the books only when some consideration in money or money's worth has been paid for it. Whenever a business is required for a price (payable in cash or in shares or otherwise) which is in excess of the value of the net assets of the business taken over the excess, should be termed as goodwill. As a matter of financial prudence, goodwill should be written-off over a period.

The direct costs incurred in developing patents should be capitalised and written-off over their legal term of validity or over their working life whichever is shorter.

The amount paid for know-how for the plans layout and designs of buildings and/or design of the machinery should be capitalised under the relevant asset heads such as building plants and machinery and so on. Depreciation should be calculated on the total cost of those assets including the cost of the know-how capitalised.

Disclosure:

(i) Gross and net book values of fixed assets at the beginning and end of an accounting period showing additions, disposals, acquisitions, and other movements,

(ii) Expenditure incurred on account of fixed assets in the course of construction or acquisition and

(iii) Revalued amount subsisted for historical costs of fixed assets the method adopted to compute the revalued amounts of the nature of indices used in the year of any appraisal made and whether an external value was involved in case where fixed assets are stated at revalued amounts.

AS-13 Accounting for Investments (Issued in 1993)

This AS deals with accounting for investments in the financial statements of an enterprise and related disclosure requirements. Investments are defined as assets held by an enterprise for earning income by way of dividends, interest and rentals for capital appreciation, or for other such items related to the investing enterprise. The cost of an investment includes acquisition charges such as brokerage fees and duties. Investments are classified into long-term investments and current investments. A current investment is one that is by its nature, readily realisable and is intended to be held for not more than one year from the date on which such investment is made. A long-term investment is an investment other than a current investment. An investment property is an investment in land or buildings that are not intended to be occupied substantially for use by or in the operations of the investing enterprise.

Interest dividend and rentals receivable in respect of such; investments are treated as income, except where such interest or dividend relates to pre-acquisiton period in which case such interest or dividend received is reduced from the acquisition cost.

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Carrying Amount of Investment: Current investments should be carried in the financial statements at the lower cost and fair value determined either on an individual investment basis, or by category of investment, but not on; an overall basis. In respect of investments for which an active market exists, market value generally provides the best evidence of fair value.

Long-term investments should be carried at cost. However, provision for diminution should be made to recognise a decline other than temporary, in the value of the investments such; reduction being determined and made for each investment individually. Any reduction in the carrying amount and any reversals of such reductions, should be charged or credited to the profit and loss statement.

Disposal of Investments: On disposal of an investment, the difference between the carting amount and the net sale proceeds should be charged or credited to the profit and loss statement.

Disclosure: The disclosure requirements are:

(i) The accounting policies for determination of carrying amount of investments
(ii) Classification of investments
(iii) The amounts included in profit and loss statement for interest, dividends, rentals, profits and losses and disposal of investments and changes in the carrying amount of investments
(iv) Significant restriction on the light of ownership reliability of investments or the remittance of income and proceeds of disposal, and
(v) The aggregate amount of quoted and unquoted investments giving the aggregate market value of quoted investments.

AS-17: Segment Reporting

An enterprise that applies AS-17: Segment Reporting should disclose the following for each reportable segment based on an enterprise' primary format (as defined in AS-17): (a) the amount of impairment losses recognised in the statement of profit and loss and directly against revaluation surplus during the period; and (b) the amount of reversals of impairment losses recognised in the statement of profit and loss and directly in revaluation surplus during the period.

AS-20: Earnings Per Share (Issued in 2001)

The objective of this accounting standard is to prescribe the principles for the determination and presentation of earnings per share (EPS). The standard is applicable to the enterprises whose equity shares or potential equity shares are listed at recognised stock exchange. In respect of consolidated financial statements, the information required to be presented by this standard, will be on the basis of consolidated information.

Presentation: An enterprise should present basic and diluted earnings per share on the face of the statement of profit and loss for each class of equity shares. This information should be represented with equal prominence for all periods reported and information should be presented irrespective of whether the amount disclosed is positive or negative (i.e. profit per share or loss per share)

Basic Earnings Per Share: This is measured on the following basis:

$$\text{Basic earnings per share} = \frac{\text{Net profit or loss attributable to equity shareholders}}{\text{Weighted average number of equity shares outstanding during the period.}}$$

Weighted average number of equity shares outstanding during the period is completed as follows: Number of equity share outstanding at beginning of the year.

$$\text{Plus} \left(\frac{\text{Number of shares issued during the period} \times \text{Days/Months remaining after relevant date}}{\text{365 days/12 months}} \right)$$

$$\text{Minus} \left(\frac{\text{Number of shares bought back during the period} \times \text{Days/Months remaining after relevant date}}{\text{365 days/12 months}} \right)$$

In most cases, the relevant date is the date on which consideration is receivable subject to the substance of the contract associated with the issue.

In the case of party paid shares, the equivalent number of fully paid shares is to be calculated to the extent that they are entitled to participate in dividends. In case of equality shares with different nominal values, but same dividend rights, the equivalent number of shares of the same nominal value is to be calculated. The weighted average number of equity shares outstanding during the period and for all periods presented, should be adjusted for events other than the conversion of potential equity shares that have changed the number of equity shares outstanding without a corresponding change in resource:

(a) *For a Bonus Issue:* Weighted average number of equity shares outstanding should be adjusted for the proportionate change in the number of equity shares outstanding as if the event has occurred at the beginning of the earliest period reported.

(b) *Rights Issue:* Weighted average number of equity shares outstanding for all periods prior to the rights issue = Number of equity shares outstanding prior to the issue (adjusted with right factor).

$$\text{Adjusted factor} = \frac{\text{Fair value per share immediately prior to exercise of rights}}{\text{Theoretical ex-rights fair value per share}}$$

$$\text{Theoretical ex-rights} = \frac{\text{Fair value of all outstanding shares immediately prior to exercise of rights} + \text{Total amount received from Exercise of the rights}}{\text{Number of shares outstanding prior to exercise} + \text{Number of shares issued}}$$

Diluted Earnings Per Share: It is calculated in situations where there are potential equity shares in capital structure of the enterprise. Examples of potential equity shares are

(i) debt instructions of preference shares, that are convertible into equity shares,

(ii) share warrants,

(iii) options including employee stock option plans under which employees of an enterprise are entitled to receive equity shares as part of their remuneration and other similar plans, and

(iv) shares which would be issued upon the satisfaction of certain conditions resulting from contractual arrangements (contingently issuable shares), such as the acquisition of a business or other assets, or shares issuable under a loan upon default of payment of payment of principal of interest, if the contract so provides.

$$\text{Diluted Earnings Per Share} = \frac{\text{Adjusted net profit or loss attribute to equity shareholders}}{\text{Adjusted weighted average number of equity shares outstanding}}$$

The adjusted net profit or loss attributable to equity shareholders is determined as follows:

Net profit or loss attributable to equity shareholders

(+) Dividend recognised in period for dilutive potential equity shares as adjusted for attributable change in tax expense for the period.

(+) Interest recognised in period for dilutive potential equity shares as adjusted for attributable change in tax expense for the period.

(+/-) After tax amount of any other change in expense or income as a result of conversion of diluted potential equity shares.

The adjusted weighted average number of equity shares outstanding during the period is determined as follows:

Weighted average number of equity shares outstanding during the period

(+) Weighted average number of additional equity shares which would have been outstanding assuming the conversion of all dilutive potential equity shares.

Earnings – Diluted: To calculate the diluted earnings per share, the amount of net profit or loss for the period attributable to equity share shoulders be adjusted after taking into account any attributable change in tax expense for the period. The important items of adjustment are:

(i) any dividends on dilutive potential equity shares which have been deducted in arriving at the net profit attributable to equity shareholders;

(ii) interest recognised in the period for the dilutive potential equity share; and

(iii) any other changes in expenses or income that would result from the conversion of the dilutive potential equity shares.

Per Share-Diluted: To calculate earnings per share, the weighted average number of equity shares, which would be issued on the conversion of all the dilutive potential equality shares, into equity shares, should be considered. To calculate the diluted earnings per share, an enterprise should exercise the dilutive options.

Disclosure: The disclosure requirements are:

(i) the amounts used as the numerators in calculating basic and diluted earnings per share, and a recognition of those amounts to the net profit or loss for the period

(ii) the weighted average number of equity shares used as the denominators to each other

(iii) the nominal value of shares along with the equal prominence.

AS-22: Accounting for Taxes on Income (Issued in 2001)

The objective of this AS is to prescribe accounting treatment for taxes on income. Taxable income is calculated in accordance with tax laws. In some circumstances, the requirements of these laws to compute taxable income differ from the accounting policies (as per matching concept) applied to determine accounting income, may not be the same.

The difference between taxable income and accounting income can be classified into permanent differences and timing differences. Permanent differences are those differences between taxable income and accounting income which originate in one period and do not reverse subsequently. For instance, if, for the purpose of computing taxable income, the tax laws allow only a part of an item of expenditure, the disallowed amount would result in a permanent difference. Timing differences are those differences between taxable income and accounting income for a period that originate in one period and are capable of reversal in one or more subsequent periods. Timing differences arise because the period in which some items of revenue and expenses are included in taxable income do not coincide with the period in which such items of revenue and expenses are included or considered in arriving at accounting income. For example, machinery purchased for scientific research related to business is fully allowed as deduction in the first year for tax depreciation over its useful life. The total depreciation charged on the machinery for accounting purposes, and the amount allowed as deduction for tax purposes, will ultimately be

the same, but periods over which the depreciation is charged and the deduction is allowed, will differ. Another example of timing difference is a situation where, for the purpose of computing taxable income, tax laws depreciation on the basis of the written down value method, whereas for accounting purposes, straight line method is used. Unabsorbed depreciation and carry forward of losses which can be set off against future taxable income are also considered as timing differences and result in deffered tax assets, subject to consideration of prudence.

Accounting Treatment: The requirements are:

- Tax expense for the period comprising current tax and deferred tax should be included in the determination of the net profit or loss for the period.
- Deferred tax assets should be recognized and carried forward only to the extent that there is a reasonable certainty that sufficient future taxable income will be available against which such deferred tax assets can be realised.
- Where an enterprise has unabsorbed depreciation or carry forward of losses under tax laws, deferred tax assets should be recognised only to the extent that there is virtual certainty supported by convincing evidence that sufficient future taxable income will be available against which such deferred tax assets can be realised.
- Current tax should be measured at the amount expected to be paid to the taxation authorities, using the applicable tax rates and tax laws.
- Deferred tax assets and liabilities should be discounted to their present value. The carrying amount of deferred tax assets should be reviewed at each balance sheet date. An enterprise should write-down the carrying amount of a deferred tax assets to the extent of future taxable income only that will be available against which deferred tax asset can be realised.
- Deferred tax assets and liabilities should be distinguished from assets and liabilities representing current tax for the period. Deferred tax assets and liabilities should be disclosed under a separate heading in the balance sheet of the enterprise, separately from current assets and current liabilities.
- The break-up of deferred tax assets and deferred tax liabilities into major components of the respective balances should be disclosed in the notes to accounts.
- The nature of the evidence supporting the recognition of deferred tax assets should be disclosed if an enterprise has unabsorbed depreciation or carry forward of losses under tax laws.
- Taxes on income should include all the domestic and foreign taxes which are based on taxable income.
- While accounting for taxes on income for the first time in accordance with this standard, the enterprise should consider in its financial statements, the deferred tax balance that was accumulated prior to the adoption of this standard as either deferred tax liability or income. The amount thus credited or changed in the revenue reserves should equal the amount, which would have resulted if this AS was adopted from the beginning.

Presentation and Disclosure: The requirements are:

- An enterprise should offset assets and liabilities representing current tax if the enterprise:
  (a) has a legally enforceable right to set off the recognised amounts and
  (b) intends to settle the asset and the liability on a net basis.
- An enterprise should offset deferred tax assets and deferred tax liabilities if:
  (a) the enterprise has a legally enforceable right to set off assets against liabilities representing current tax and

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(b) the deferred tax assets and the deferred liabilities relate to taxes on income levied by the same governing taxation laws.

- Deferred tax assets and liabilities should be distinguished from assets and liabilities representing current tax for the period.
- The break-up of deferred tax assets and deferred tax liabilities into major components of the respective balances should be disclosed in the notes to accounts.
- The nature of the evidence supporting the recognition of deferred tax assets should be disclosed if an enterprise has unabsorbed depreciation or carry forward of losses under tax laws.

AS-24: Discounting Operations (Issued in 2002)

Cash inflows from operating activities primarily accrue from the major revenue producing activities of the enterprise. Therefore, they generally result from the transactions and other events that enter into the determination of net profit or loss. Examples of cash flows from operating activities are as follows:

- Cash receipts from the sale of goods and the rendering of services
- Cash receipts from royalties, fees, commissions and other revenues
- Cash payments to suppliers for goods and services
- Cash payments to and on behalf of employees

Since the focus is on determining cash flows due to business operating activities, non-operating expenses as well as non-operating incomes are excluded.

AS-25: Interim Financial Reporting (Issued in 2002)

An enterprise is required to report cash flows from operating activities using either direct or indirect method. An enterprise is required to report separately major classes of gross cash receipts and gross cash payment arising from investing and financing activities. The cash flows from operating, financing and investing activities are to be reported on a net basis.

AS-26: Intangible Assets (Issued in 2002)

The objective of AS-26 is to prescribe the accounting treatment for triangle assets. It requires an enterprise to recognise an intangible asset only if certain criteria are met. The AS also specifies how to measure the carrying amount of intangible assets and requires certain disclosures about intangible assets.

This AS applies to, inter alia, expenditure on advertising, training, startup, research and development activities. Research and development activities are directed to the development of knowledge. Therefore, although these activities may result in an asset with physical substance (for example, a prototype), the physical element of an asset is secondary to its intangible component, that, is the knowledge embodied in it.

This AS also applies to rights under licensing agreements for items such as motion picture films, video recordings, plays, manuscripts, patents and copyrights.

An asset is a resource: (a) controlled by an enterprise as a result of past events and (b) from which future economic benefits are expected to flow to the enterprise. An intangible asset is defined as an identifiable non-monetary asset without physical substance held for use in the production or supply of goods or services, for rental to others, or for administrative purposes. The cost of the physical substance containing the intangible assets, such as compact disk (in the case of computer software), legal documentation (in case of a licence or patent), or a film (in the case of motion pictures), is usually not significant.

Accordingly, the physical substance containing an intangible asset though tangible asset, though tangible in nature, is commonly treated as a part of the intangible asset contained in it.

An enterprise controls an asset if it has the power to obtain the future economic benefits flowing from the underlying resource and also can restrict the access of others to those benefits. The capacity of an enterprise to control the future economic benefits from an intangible asset would normally stem from legal rights that are enforceable in a court of law. In the absence of legal rights, it is more difficult to demonstrate control. However, legal enforceability of a right is not a necessary condition for control since an enterprise may be able to control future economic benefits in some other way also.

The future economic benefits flowing from an intangible asset may include revenue from the sale of products or services, cost savings or other benefits resulting from the use of the asset by the enterprise. For example, the use of intellectual property in a production process may reduce future production costs rather than increase future revenues.

Accounting Treatment: The requirements are:

- An intangible asset should be recognised, if and only if
  (a) it is probable that the future economic benefits that are attributable to the assets will flow to the enterprise;
  (b) the cost of the asset can be measured reliably.
- If an intangible asset is acquired separately, the cost of the intangible asset can usually be measured reliably. This is particularly so when the purchase consideration is in the form of cash or other monetary assets.
- The cost of an intangible asset comprises its purchase price, including any import duties and other taxes (other than those subsequently recoverable by the enterprise from the taxing authorities), and any directly attributable expenditure on making the asset ready for its intended use. Directly attributable expenditure includes, for example, professional fees for legal services. Any trade discounts and rebates are deducted in arriving at the cost.
- If an intangible asset is acquired in exchange for shares or other securities of the reporting enterprise, the asset is recorded at its fair value, or the fair value of the securities issued, whichever is more clearly evident.
- An intangible asset acquired in an amalgamation in the nature of purchase is accounted for accordingly.
- Intangible asset acquired free of charge or for nominal consideration by way of government grant is recognised at a nominal value or at the acquisition cost, as appropriate. Any expenditure that is directly attributable to making the asset ready for its intended use, is also included in the cost of the assets.
- An intangible asset may be acquired in exchange or part exchange for another asset. In such case, the cost of the asset acquired is determined in accordance with the principles laid down in this regard in AS-10, Accounting for Fixed Assets.
- Internally generated goodwill should not be recognised as an asset.
- No intangible asset arising from research (or from the research phase of an internal project) should be recognised. Expenditure on research (or on the research phase of an internal project) should be recognised as an expense when it is incurred. An intangible asset arising from development (or from the development phase of an internal project) should be recognised, if, and only if an enterprise can demonstrate

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(a) the technical feasibility of completing the intangible asset so that it will be available for use of sale;
(b) its intention to complete the intangible asset and use or sell it;
(c) its ability to use or sell the intangible asset;
(d) how the intangible asset will generate probable future economic benefits. Among other things, the enterprise should demonstrate the existence of a market for the output of the intangible asset or the intangible asset itself or if it is to be used internally, the usefulness of the intangible asset;
(e) the availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset; and
(f) its ability to measure the expenditure attributable to the intangible asset during its development reliability.

- Subsequent expenditure on an intangible asset after its purchase or its completion should be recognized as an expense when it is incurred, unless
  (a) it is probable that the expenditure will enable the asset to generate future economic benefits in excess of its originally assessed standard of performance, and
  (b) the expenditure can be measured and attributed to the asset reliably.
- The depreciable amount of an intangible asset should be allocated on a systematic basis over the best estimate of its useful life. There is a debatable presumption that the useful life of an intangible asset will not exceed ten years from the date when the asset is available for use.
- The amortisation method used should reflect the pattern in which the asset's economic benefits are consumed by the enterprise. If that pattern cannot be determined reliably, the straight-line method should be used. The amortisation charge for each period should be recognised as an expense.
- The residual value of an intangible asset should be assumed to be zero unless: (a) there is a commitment by a third party to purchase the asset at the end of its useful life; or (b) there is an active market for the asset (c) residual value can be determined by reference to that market; and (d) it is probable that such a market will exit at the end of the asset's useful life.
- An intangible asset should be derecognised (eliminated from the balance sheet) on disposal or when no future economic benefits are expected from its used and subsequent disposal. Gains or losses arising from the retirement or disposal of an intangible asset should be determined as the difference between the net disposal proceeds and the carrying amount of the asset and should be recognised as income or expense in the statement of profit and loss.

Review of Amortisation Period and Amortisation Method: The amortisation period and the amortisation method should be reviewed at least at each financial year-end. If the expected useful life of the asset is significantly different from previous estimates, the amortisation period should be changed accordingly. If there has been a significant change in the expected pattern of economic benefits from the asset, the amortisation method should be changed to reflect the changed pattern.

Disclosure: The financial statements should disclose the following for each class of intangible assets, distinguishing between internally generated intangible assets and other intangible assets:

(i) the useful lives or the amortisation rates used
(ii) the amortisation methods used
(iii) the gross carrying amount and the accumulated amortisation (aggregated with accumulated impairment losses) at the beginning and end of the period
(iv) a reconciliation of the carrying amount at the beginning and end of the period showing:

(a) additions indicating separately those from internal development and through amalgamation
(b) retirements and disposals
(c) impairment losses reversed in the statement of profit and loss during the period (if any):
(d) amortisation recognised during the period, and
(e) other changes in the carrying amount during the period

(v) if an intangible asset is amortised over more than ten years, the reasons why it is presumed that the useful life of an intangible intangible asset will exceed ten years from the date when the asset is available for use. In giving these reasons, the enterprise should describe the factor(s) that played a significant role in determining the useful life of the asset. The financial statements should disclose the aggregate amount of research and development expenditure recognised as an expense during the period.

AS-27: Financial Reporting of Interests in Joint Venture (Issued in 2002)

Enterprises having investment in subsidiaries, associates and joint ventures are required to report in the CFS, the cash flows between themselves and the investee/joint venture, for example, cash flows relating to dividends and advances.

AS-28: Impairment of Assets (Issued in 2002)

The objective of AS-28 is to prescribe the procedure that an enterprise applies to ensure that its assets are carried at no more than their recoverable amount. An asset is carried at more than its recoverable amount if its carrying amount exceeds the amount to be recovered through use or sale of the asset. If this is the case, the asset is described as impaired and this AS requires the enterprise to recognise an impairment loss. This AS also specifies when an enterprise should reverse an impairment loss and it prescribes certain disclosures for impaired assets.

Accounting Treatment: An enterprise should assess at each balance sheet date (based on external and internal sources of information), whether there is any indication that an asset may be impaired. If any such indication exists, the enterprise should estimate the recoverable amount of the asset. Recoverable amount should be higher than the asset's net selling price and its value in use. Value in use is the present value of estimated future cash flows expected to arise from the continuing use of an asset and from its disposal at the end of its useful life. Net selling price is the amount obtainable from the sale of an asset in an arm's length transaction between knowledgeable willing parties, less the costs of disposal.

The recoverable amount is determined for an individual asset, unless the asset does not generate cash inflows from continuing use that are largely independent of those from other assets or groups of assets. If this is the case, the recoverable amount is determined for the cash-generating unit (it is the smallest identifiable group of assets that generates cash flows from other assets or groups of assets), to which the assets belongs. The determination of recoverable amount requires estimation of the asset's net selling price and value in use.

The best evidence of an asset's net selling price, is a price in a binding sale agreement in an arm's length transaction adjusted for incremental costs that would be directly attributable to the disposal of the asset. If there is no binding sale agreement, but an asset is traded in an active market, net selling price is the asset's market price less than costs of disposal. If there is no binding sale agreement or active market for an asset, net selling price is based on the best information available to reflect the amount that an enterprise, could obtain at the balance sheet date, from the disposal of the asset.

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Estimating the value-in-use of an asset involves the following steps:

(a) estimating the future cash inflows and outflows arising from the continuing use of the asset and from its ultimate disposal; and

(b) applying the appropriate discount rate to these future cash flows. The cash flow projections should be based on reasonable and supportable assumptions that represent management's best estimate of the set of economic conditions that will exist over the remaining useful life of the asset. Greater weight should be given to external evidence. Moreover, the estimate of net cash flows to be received for the disposal of an asset at the end of its useful life should be the amount that an enterprise expects to obtain from the disposal of the asset in an arm's length transaction between knowledgeable, willing parties, after deducting the estimated costs of disposals.

The discount rate(s) should be a pre-tax rate(s) that reflect(s) current market assessments of the time value of money and the risks specific to the asset. To avoid double counting, the discount rate should not reflect risks for which future cash flow estimates have adjusted. When the basis for the rate is post-tax, that basis is adjusted to reflect a pre-tax rate.

If the recoverable amount of an asset is less than its carrying amount, the carrying amount of the asset should be reduced to its recoverable amount. This is known as an impairment loss. An impairment loss should be recognised as an expense in the statement of profit and loss immediately, unless the asset is carried at revalued amount in accordance to AS-10: Accounting for Fixed Assets, in which case any impairment loss of a revalued asset, should be treated as a revaluation decrease under that accounting standard.

After the recognition of an impairment loss, the depreciation (amortisation) charge for the asset should be adjusted in future periods to allocate the asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

An enterprise should assess at each balance sheet date whether there is any indication that an impairment loss recognised for an asset in prior accounting periods may no longer exist or may have decreased. If any such indication exists, (based on external and internal sources of information), the enterprise should estimate the recoverable amount of that asset.

An impairment loss recognised for an asset in prior accounting periods should be reversed if there has been a change in the estimates of cash inflows or discount rates used to determine the asset's recoverable amount since the last impairment loss was recognised. If this is the case, the carrying amount of the asset should be increased to its recoverable amount. That increase is a reversal of an impairment loss.

Disclosure The disclosure requirements are:

- For each class of assets, the financial statements should disclose:
  (a) the amount of impairment losses recognised in the statement of profit and loss during the period and the line item(s) of the statement of profit and loss in which those impairment losses are included
  (b) the amount of reversals of impairment losses recognised in the statement of profit and loss during the period and the line item(s) of the statement of profit and loss in which those impairment losses are reversed
  (c) the amount of impairment losses recognised directly against revaluation surplus during the period, and
  (d) the amount of reversals of impairment losses recognised directly in revaluation surplus during the period.

- If impairment losses recognised (reversed) during the period are material in aggregate to the financial statements of the reporting enterprise as a whole, an enterprise should disclose a brief description of the following:
  (a) the main class of assets affected by impairment losses (reversals of impairment losses) for which no information is disclosed; and
  (b) the main events and circumstances that led to the recognition (reversal) of these impairment losses for which no information is disclosed.
- An enterprise is encouraged to disclose key assumptions used to determine the recoverable amount of assets (cash-generating units) during the period.

AS-29: Provisions, Contingent Liabilities and Contingent Assets

The objective of this AS is to ensure that appropriate recognition criteria and measurement bases are applied to provisions and contingent liabilities and that sufficient information is disclosed in the notes to the financial statements to enable users to understand their nature, timing and amount. The objective of this AS is also to lay down appropriate accounting for contingent assets.

A provision is a liability which can be measured only by using a substantial degree of estimation. A contingent liability is

(a) possible obligation that arises from past events and the existence of which will be confirmed only by the occurence or non-occurence of one or more uncertain future events not wholly within the control of the enterprise or
(b) a present obligation that arises from past events but is not recognised because: (i) it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation or (ii) a reliable estimate of the amount of the obligation cannot be made.

A contingent asset is a possible asset that arises from past events the existence of which will be confirmed only by the occurence or non-occurence of one or more uncertain future events not wholly within the control of the enterprise.

Disclosure: The requirements are:

- For each class of provision, an enterprise should disclose:
  (a) the carrying amount at the beginning and end of the period
  (b) additional provisions made in the period including increase to existing provision;
  (c) amounts used (i.e. incurred and charged against the provision) during the period and
  (d) unused amounts reversed during the period.
- An enterprise should disclose the following for each class of provision:
  (a) a brief description of the nature of the obligation and the expected timing of any resulting outflows of economic benefits;
  (b) an indication of the uncertainties about those outflows. Where necessary to provide adequate information, an enterprise should disclose the major assumptions made concerning future events, and
  (c) the amount of any expected reimbursement stating the amount of any asset that has been recognised for that expected reimbursement.
- Unless the possibility of any outflow in settlement is remote, an enterprise should disclose for each class of contingent liability and where practicable
  (a) an estimate of its financial effect
  (b) an indication of the uncertainties relating to any outflow; and

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(c) the possibility of any reimbursement.

- Where any of the information required for contingent liability is not disclosed because it is not practicable to do so, that fact should be stated.
- In extremely rare cases, disclosure of some or all of the information required by the AS-29 can be expected to prejudice seriously the position of the enterprise in a dispute with other parties on the subject-matter of the provision or contingent liability. In such cases, an enterprise need not disclose the information but should disclose the general nature of the dispute together with the fact that and reason why the information has not been disclosed.

Summary

Accounting is the art of recording, classifying and summarising the business transaction of financial and monetary nature in a scientific manner. Accounting policies refer to the specific accounting principles and the methods of applying those principles adopted by the enterprise in the preparation and presentation of their financial statements. Generally Accepted Accounting Principles (GAAPs) and Accounting Standards provide sound conceptual framework for financial accounting records and preparation of credible and reliable financial statements, namely, profit, and loss account balance sheet and cash flow statement. Important GAAPs are: money measurement separate entity, duality, going concern, cost accounting period conservatism, realisation, accrual, matching consistency and materiality. According to money measurement concept, financial accounting should record only those business events/transactions which are expressed in money terms; transactions which cannot be quantified in financial terms, irrespective of their importance, are outside the scope of accounting records. A further assumption of the money measurement concept is that the unit of measurement remains constant in terms of purchasing power over time. Financial accounting, thus, does not record all information about the operations of a firm. Business entity concept implies that the financial accounts should be prepared on the premise that a business form has a separate entity from its owners. Accordingly, every item in financial accounts should be considered from the view point of the firm and not from the perspective of owners. Therefore, profits (since payable to owners) should be considered liabilities and losses (to be charged against owners) should be reckoned assets of the firm. Duality concept implies that financial accounting records should be based on double entry system, in that two accounting items are affected by each transaction. The total assets of a firm shown on one side of balance sheet are always equal to the total liabilities shown on its other side. This equality, in turn, is the basis of fundamental accounting equation: Owners equity + External liabilities = Assets. Apart from liabilities, payable and assets owned basis of presenting balance sheet; another equally useful basis is that it is a statement which indicates sources of fundes /finances and resources in which funds have been invested. Sources represent liabilities as they are payable, and resources are assets as their ownership belongs to the firm. A balance sheet is always with reference to a particular point of time say as on 31st December 2007. Going concern concept implies that the business firm will continue to operate in future and will not cease doing business, sell its assets and make final payments to its creditors and owners. Therefore, current resale value of assets is not relevant. Their valuation is to be judged in terms of the likely value of goods and product/services rendered by their use in future. Accordingly, assets should be valued at their acquisition cost (cost concept) less depreciation and not at their liquidation value. The operational implication of the going concern and cost concepts is that assets (in particular long-term assets such as land and building and plant and machinery) do not reflect their current market value. The accounting period concept enables the management of the firm to assess its financial performance in terms of profit earned or loss suffered at periodic intervals (say monthly, quarterly or yearly). For taxation purposes, the required time span is 12 months and for internal/managerial purposes the time span is 1-3 months. Most of the domestic companies in India, choose April 1-March 31 period (corresponding to fiscal year of the Government) and multinational companies follow January 1-December 31 period. The conservatism principle implies conservative/cautious approach in determining income by providing for all possible losses and ignoring profits till they are realised. In relation to the valuation of assets, the basis would be the cost or the current replacement value, whichever is lower. Realisation concept closely related to a conservatism concept requires conservative basis to be followed in revenue recognition. Accrual concept requires that expenses related to a particular accounting period (say April 1, 2007

to March 31, 2008) should be considered as expenses of the same period irrespective of whether they have been paid in cash or not (say to be paid in May 2008 or already paid in March 2007). Likewise, revenues earned in a specific accounting year are considered as revenues for the same period whether they are realised in cash or not. The expenses paid in advance and revenues/income received in advance should be adjusted. The matching concept involves two steps in computing net income: first, to determine revenues earned in a specific accounting year and second, to determine expenses incurred to realise these revenues. The more perfect this matching is, the more correct will be the determination of income (revenues-expenses). In estimating, expenses can be easily split between two or more accounting periods on the basis of time (as required by accrual concept). Capital expenditures and deferred revenue expenses (benefiting more than one accounting year, should be spread over in the form of depreciation / amortisation on the basis of some objective equitable and scientific criterion. Consistency concept requires that there should be a consistency in accounting treatment of items (where there exists more than one basis of dealing them) year after year. The notable examples are depreciation methods used in the case of tangible long-time assets amortisation period in respect of intangible assets and methods of inventory valuation. Materiality concept requires full disclosure of all material information and events. The primary objective of Accounting Standards (ASs) is to standardise accounting policies and practices. Unlike GAAPs, ASs are mandatory in nature. Though the International Accounting Standard Board (IASB) formulates international accounting standards, most of the individual countries have their own accounting standard boards. In India, ASs formulated by the Accounting Standard Board (ASB) and are issued by the Council of the Institute of Chartered Accountants of India (ICAI). Being mandatory in nature, auditors are duly bound to examine whether the ASs are complied with, in the preparation/presentation of financial statements or not. Their compliance is mandatory for (a) enterprises whose securities are listed or are in the process of being issued and will be listed on a recognised stock exchange in India, and (b) all other commercial enterprises whose turnover for the accounting year is more than Rs.50 crore. The ICAU has issued 29 ASs till June 2006. Since AS-8 has been subsequently merged with AS-26, there are presently 28 ASs in operation.

KEY CONCEPTS

- Accounting Principles
- Accounting Concepts
- Accounting Conventions
- Cash System of Accounting
- Mercantile System of Accounting
- Accounting Standards

REVIEW QUESTIONS

OBJECTIVE QUESTIONS

Choose the correct answer:

1. Accounting Principles are generally based on
   (a) Practicability
   (b) Subjectivity
   (c) Convenience in Recording
2. The system of Recording transactions based on Dual Aspect Concept is called
   (a) Double account system
   (b) Double entry system
   (c) Single entry system
3. According to money-measurement concept, the following will be recorded in the books of account of the business
   (a) Health of Managing Director of the company
   (b) Quality of company's goods
   (c) Value of Plant and Machinery

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4. The practice of appending notes regarding contingent liabilities in accounting statements is in pursuant to
   (a) Convention of consistency
   (b) Money measurement Concept
   (c) Convention of conservatism
   (b) Convention of disclosure
5. The convention of conservatism is applicable
   (a) In providing for discount on creditors
   (b) In making provision for bad and doubtful debts
   (c) Providing for depreciation
6. The convention of conservatism when applied to the balance sheet results in
   (a) Understatement of assets
   (b) Understatement of liabilities
   (c) Overstatement of Capital

   [Ans. 1-a, 2-b, 3-d, 4-c, 5-b, 6-a]

DESCRIPTIVE QUESTIONS

1. What is financial/monetary nature?
2. What are recording, classifying and summarising?
3. Why is Accounting Principles concept required?
4. Why Accounting Principles concept is necessary?
5. Explain various concepts and conventions of accounting.
6. Describe the rules of accounting and stages of accounting.
7. What do you understand by Dual Aspect Concept of accounting? Explain.
8. Explain the term Convention of Disclosure.
9. Explain the term Convention of Materiality.
10. Explain the term Convention of Conservation.
11. What are the accounting concepts and conventions?
12. Explain any two accounting concepts.

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CHAPTER 3

Accounting Mechanics: Basic Records

"The application of professional knowledge and skill in the preparation and presentation of accounting information, in such a way as to assist the management in formulation of policies and in the planning and control of the operations of the undertaking".

—Institute of Cost and Management Accountants, England

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *Single-entry System*
- *Double-entry System*
- *Cash System of Accounting*
- *Mercantile System of Accounting*
- *Personal Accounts*
- *Real Accounts*
- *Nominal Accounts*
- *Journal*
- *Ledger*
- *Trial Balance*
- *Bank Reconciliation Statement*

INTRODUCTION

A business enterprise engages in a variety of transactions which have to be recorded expeditiously and analysed, if the basic financial statements are to be prepared. It is helpful at this stage to recognises the flow of accounting data in so far as the design and preparation of basic accounting records is involved in sequential order. The mechanics of accounting may be summarised as:

1. A business transaction takes place.
2. A transaction is recorded in a document providing all necessary details of transaction.
3. The transaction recorded in the document or voucher is then analysed in order to decide upon the accounts that need to be credited and debited.

4. The transaction is then recorded in either one of the special journals, like the cash book, the sales day book and the purchase day book in the journal proper.
5. From the book of original entry or the journal, the relative accounts are posted to the debit and credit sides of the relative accounts in the ledger.

SYSTEMS OF ACCOUNTING

Let us examine the two different systems of Accounting for recording the business transactions.

(a) Cash System of Accounting

Under this system, only actual cash received and cash paid are recorded. No entry is made for a receipt which is merely due; however, any payment outstanding will be accounted for. Government accounting is based on the cash system only. Professional people like lawyers, chartered accountants, etc., maintain accounts under this system.

(b) Mercantile System or Accrual System of Accounting

Under this system of accounting, entries are made not only for actual receipt or payment of cash, but also for amount having become due for payment or receipt. In other words, both cash transactions and credit transactions are recorded in the book of accounts. All commercial establishments and even non-trading concerns follow this system only.

Further, Accounting records can be prepared under any one of the following systems.

(i) Single-entry System

Under this system, only the personal aspects of the transactions are recorded in the books and the impersonal aspects are ignored. It is not based on the 'dual' aspect concept and is incomplete, inaccurate and unscientific.

(ii) Double-entry System

It is most common system of keeping records, whereby the two aspects of every transaction-the given aspect and the receiving aspect-are recorded in the books of accounts. Each aspect will be recorded in one account and this method of writing every transaction in two accounts is known ad Double-entry system of book-keeping. This is the most scientific, complete and accurate system of accounting.

Advantages of Double-entry System

(i) This system gives full accounting information about the business transactions because both the aspects of each transaction are recorded;
(ii) The accuracy of accounting records can be verified by preparing a Trial Balance at the end;
(iii) The correct trading results can be ascertained by preparing the final accounts; and
(iv) The values of assets and liabilities can be known at any time by constructing the Balance Sheet.

Factors Common to Every Business There are certain factors which are common to every business:

(1) Every business normally enters into transactions with a number of persons or firms such as the customer or the suppliers in the course of its activities. To record the transactions with these persons, accounts are to be opened in the name of such person or firm. Such accounts are known as personal Accounts. Examples: Mohan's Account, Rama Ltd. Account, etc.

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(2) Every business must necessarily have certain assets, such as buildings, stocks, cash, etc., for carrying on its activities. For each such asset, a separate account is opened and such accounts are known as Real or Property Accounts.

(3) Every business earns incomes and gains in various ways and incurs expenses and losses of different types to carry on its activities. Therefore, an account of each expense and loss, and, income or gain, is opened in the books. Such accounts are known as Nominal or Fictitious Accounts. Examples: Rent Account, Commission Account, etc.

Thus, there are three types of accounts, namely, personal Account, Real or Property Account and Nominal Account, opened in the books of Account to keep a complete record of the financial transactions of the business.

Every transaction of the business has two aspects and if a transaction is to be recorded in the books, both the aspects should be recorded. The two aspects are

(i) 'Receiving' aspect otherwise known as 'Debit' aspect and

(ii) 'Giving' aspect otherwise known as 'Credit' aspect. For example, if goods are sold for cash, the two aspects involved are:

(a) Receiving benefit in the form of Cash-Debit aspect, and

(b) Giving benefit in the form of Goods-Credit aspect.

The value of cash received is exactly equal to the value of goods given. In other words, the debit is always followed by a credit and the value of debit is equal to the credit. Thus, the basic rule for Double-Entry is that 'for every debit there is a corresponding and equal credit'.

However, there are separate rules for debit and credit in respect of Personal, Real and Nominal Accounts which are based on the aforementioned basic rules:

1. Personal Accounts Personal Accounts are meant for recording transactions with persons or firms. A person may be either a receiver of benefit or a giver of benefit. For example, if cash is paid to Rama, Rama is a receiver. If goods are purchased from Mohan, Mohan is the giver. The rule is:

Debit the Receiver; and Credit the Giver.

Apply this rule to the above example. Rama is to be debited since he is a receiver of benefits and Mohan is to be credited since he is the giver of benefit.

2. Real or Property Accounts Real accounts are meant for recording transactions connected with assets. When an asset is received, it is to be debited and when an assets goes out of the business, the asset account is to be credited. The rule is:

Debit what comes in; and

Credit what goes out.

Example 1 Goods are sold for cash; cash comes in and goods go out. The transaction, thus, has two aspects and to record it, we need two accounts, namely, the Cash Account and the Goods Account. Applying the above rule, Cash Account is debited, since cash comes in and Goods Account is credited, since goods go out.

Example 2 Goods are sold to Rama on credit. Here, two accounts are involved: (i) Rama's Account and (ii) Goods Account. Rama's Account is a Personal Account and Goods Account is a Real Account. Rama is a receiver, Goods go out of the business. Thus, applying the above two rules for Personal Accounts and Real Accounts, Rama's Account is to be debited and Goods Account is to be credited.

3. Nominal Accounts: These accounts are opened in the books to simply explain the nature of the transaction, but do not exist actually. For example, in a business, salary is paid to the manager. It means cash goes out on account of salary. It is real, but salary as such does not exist. A **salary account** is maintained just to explain how cash has been spent. In the absence of such an account, it may be difficult for the person concerned to explain how the cash at his disposal was utilised. Hence, these accounts are also known as **fictitious accounts**. These accounts are meant for recording incomes and gains or expenses and losses. The rule is:

Debit all expense and losses; and

Credit all gains and incomes.

Example 1 Rent paid is an expense. Cash goes out. The accounts involved are Rent Account and Cash Account. Applying the rules for Real Accounts and Nominal Accounts, Rent Account is to be debited and Cash Account is to be credited.

Example 2 Commission received is an income. Cash comes in. Cash Account is to be debited and Commission Account is to be credited.

The students may note that when some prefix or suffix is added to a Nominal Account, it becomes a Personal Account, as shown below:

TABLE 3.1 Accounting Treatment

Nominal Account	*Personal Account*
1. Salary Account	Outstanding Salaries Account; Prepaid Salaries Account.
2. Rent Account	Outstanding Rent Account; Prepaid Rent Account.
3. Interest Account	Outstanding Interest Account; Prepaid Interest Account; Interest received in Advance Account.

The rules of double-entry are shown in the following chart:

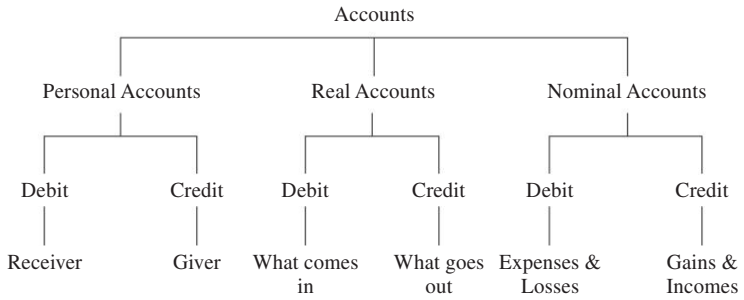


FIG. 3.1 Golden Rules of Double Entry

To make a correct record of the transactions, find out in the order shown below:

(i) What are the two aspects of the transaction?

(ii) What are the two accounts in which these aspects are to be recorded?

(iii) To which category these accounts belong-Personal, Real or Nominal?
(iv) What rules of debit and credit are applicable to the accounts involved?
(v) What account should be debited or credited?

Example From the following transactions, find out the nature of account and also state which account should be debited and which account should be credited:

(a) Wages paid; (b) Dividends received; (c) Buildings purchased for cash; (d) Furniture sold; (e) Outstanding rent; (f) Received cash from Balan; and (g) Proprietor introduced capital.

Solution:

TABLE 3.2 Different Accounting Treatments

Transaction	*Accounts involved*	*Nature of Accounts*	*Debit/credit*
(a) Wages paid	Wages A/c	Nominal	Debit
	Cash A/c	Real	Credit
(b) Dividend received	Cash A/c	Real	Debit
	Dividends A/c	Nominal	Credit
(c) Buildings Purchases	Buildings A/c	Real	Debit
	Cash A/c	Real	Credit
(d) Furniture sold	Cash A/c	Real	Debit
	Furniture A/c	Real	Credit
(e) Outstanding Rent	Rent A/c	Nominal	Debit
	Outstanding Rent A/c	Personal	Credit
(f) Received cash from Balan	Cash A/c	Real	Debit
	Balan A/c	Personal	Credit
(g) Capital introduced	Cash A/c	Real	Debit
	Capital A/c	Personal	Credit

Stages of Double-Entry System

The following are the three stages of a complete system of Double-Entry:

(a) First, all transactions should be recorded in the Journal or in the Subsidiary Books, as and when they take Place. These books are called Books of Original Entry. This process is known as 'entering.
(b) All entries in the Journal or Subsidiary Books, should be posted to the appropriate ledger accounts to find out the total effect of all such transactions in a particular account. This is known as 'Posting'. Accounts are closed at the end of a period to find out its balances and a list of such balances prepared, is known as Trial Balance.
(c) The last stage is to prepare a Profit and Loss Account to ascertain the trading result of the business and a Balance Sheet to show its financial position.

JOURNAL

The Journal records all business transactions in the order in which they occur. A Journal may, therefore, be defined as the book of original entry containing a chronological record of the transactions from which posting to the Ledger is made. The process of recording transaction in a Journal is termed as 'Journalising'. The proforma of a Journal is shown below:

Journal

Date	*Particulars*	*L.F.*	*Debit Rs.*	*Credit Rs.*
1	2	3	4	5
Year	Name of Account to be debited	-	-	-
Month	Name of Account to be credited	-	-	-

1. Date: The date on which the transaction takes place is entered here.
2. Particulars: The name of the account to be debited is written in the first line and the abbreviation 'Dr'. is written against it. In the second line, the account to be credited is written preceded by the word 'To'. An explanation of the entry known as 'narration' is also given in this column, giving a brief explanation of the narration.
3. L.F: LF stands for Ledger Folio which means the page number in the Ledger in which the entry is posted.
4. Debit: In this column the amount to be debited against the 'Dr'. Account is entered.
5. Credit: In this column, the amount to be credited against the 'Cr'. Account is entered.

If two or more transactions of a similar nature occur on the same day, and either the debit account or the credit account is common, such transactions can be conveniently entered in the Journal in the form of a combined journal entry instead of making a separate entry for each transactions. Such type of entry is a compound journal entry.

CLASSIFICATION OF GOODS ACCOUNT

The term goods include goods purchased by the business for resale. Goods purchased may be returned back to the supplier. Similarly, goods sold to customers, may be received back. Hence, instead of one Goods Account for recording all these transactions, separate accounts may be maintained, as shown below:

(i) Purchase Account

To record purchased of goods; the Account is debited since goods come in on purchases.

(ii) Sales Account

To record goods sold; the Account is credited since goods go out on sales.

(iii) Purchases Returns Account

To record return outwards; the Account is credited since goods go out on returns outwards.

(iv) Sales Returns Account

To record returns inwards; the account is debited since goods come in on returns inwards.

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Illustration 1 Journalise the following transactions in the books of Gery:

TABLE 3.3

2007 Jan.		
1 "	Started business with cash	4,500
1 "	Paid into bank	2,500
2 "	Goods purchased for cash	1,500
3 "	Purchase of furniture and payment by cheque	500
5 "	Sold goods for cash	600
8 "	Sold goods to Arvind	400
10 "	Goods purchased from Amrit	700
12 "	Goods returned to Amrit	100
15 "	Sold goods to Ram Swaroop for cash	250
18 "	Cash received from Arvind Rs. 396 and discount allowed to him Rs. 4	
21 "	Withdrew from bank for private use	100
21 "	Withdrew from bank for use in the business	500
25 "	Paid telephone rent for one year	40
28 "	Cash paid to Amrit in full settlement of his account	594
30 "	Paid for: Stationery	20
	Rent	100
	Salaries to staff	250

Solution

TABLE 3.4 Journal of Gery

Date	*Particulars*	*L.F.*	*Debit*	*Credit*
2007			*Rs.*	*Rs.*
Jan. 1	Cash Account Dr.		4,500	
	To Capital Account			4,500
	(Being cash brought in to start business)			
" 1	Bank Account Dr.		2,500	
	To Cash Account			2,500
	(Being cash paid into bank)			
" 2	Purchase Account Dr.		1,500	
	To Cash Account			2,500
	(Being goods purchased for cash)			
" 3	Furniture Account Dr.		500	
	To Bank Account			500
	(Being purchases of furniture and payment made by cheque)			

" 5	Cash Account	Dr.	600	
	To Sales Account			600
	(Being the goods sold for Cash)			
" 8	Arvind Account	Dr.	400	
	To Sales Account			400
	(Being the goods sold for credit)			
" 10	Purchases Account	Dr.	700	
	To Amrit			700
	(Being credit purchase)			
" 12	Amirt	Dr.	100	
	To Rerutrns Outwards Account			100
	(Being the goods returned)			
" 15	Cash Account	Dr.	250	
	To Sales Account			250
	(Being goods sold for cash)			
" 18	Cash Account	Dr.	396	
	Discount Account	Dr.	4	
	To Arvind			400
	(Being Rs. 396 received from Arvind an Rs. 4 discount allowed to him)			
" 21	Drawings Account	Dr.	100	
	Cash Account	Dr.	500	
	To Bank Account			600
	(Being cash withdrawn from bank for personal use and for use in the business)			
" 25	Telephone Rent Account	Dr.	40	
	To Discount Account			40
	(Being payment of telephone rent)			
" 28	Amrit	Dr.	600	
	To Cash Account			594
	To Discount Account			6
	(Being cash paid to Amrit and Discount allowed to him)			
" 30	Stationery Account	Dr.	20	
	Rent Account	Dr.	100	
	Salaries Account	Dr.	250	
	To Cash Account			370
	(Being cash paid for stationery, rent, and salaries)			

In a going concern, the balance of the previous year appearing in various accounts are brought forward at the beginning of the new accounting year by means of a journal entry known as opening entry. All the assets accounts are debited and liabilities accounts are credited. The difference between the assets and liabilities is to be credited to the Capital Account.

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Illustration 2 Journalise the following transactions in the books of a trader:

TABLE 3.5

2007	
April 1	Debit balances: Cash in hand Rs.8,000; Cash at Bank Rs.25,600; Stock of Goods Rs.20,000; Furniture Rs.4,000; and Buildings Rs.10,000.
April 1	Debtors: Vijay Rs.2,700; Anil Rs.1,500; Ashwani Rs.5,200; Mrs. B's Loan. Rs.100. Creditors: Anand Rs.5,400; Arya & Co. Rs.7,700; and Balwant Rani Rs.5,200; Mrs. B's Loan Rs.10,000.
April 1	Purchased goods worth Rs.5000 less 20% trade discount and 5% cash discount.
April 3	Rs.2646 received from Vijay and allowed him discount Rs.54.
April 5	Bought 100 shares in Bharat Ltd. @ Rs.15 per share, brokerage paid Rs.30.
April 8	Goods worth Rs.500 were damaged in transit; a claim was made on the railway authorities for the same.
April 10	Cash Rs.5,292 paid to Anand and discount allowed by him Rs.108.
April 13	Received cash from the railway in full settlement of claim for damages in transit.
April 15	Aravind is declared insolvent and a dividend of 50 paise in the rupee is received from him in full settlement.
April 18	Sold 40 shares in Bharat Ltd. @ Rs.18. per share, brokerage paid Rs.15.
April 20	Bought a horse for Rs.2,000 and a carriage for Rs.1,000 for delivering goods to customers.
April 22	Paid for: Charity Rs.101 Postage Rs.200 Stationery Rs.199
April 30	One month's interest on Mrs. B's Loan @ 12% p.a. become due but could not be paid.
April 30	The horse bought on April 20 died, its carcass was sold for Rs.50.
April 30	Received from traveling salesman Rs. 3,000 for goods sold by him, after deducting his traveling expenses Rs.150.
April 30	Paid for: Salaries Rs.3,500 Rent Rs.1,500
April 30	Sold goods worth Rs.10,000 less 10% trade discount.

Solution

TABLE 3.6 Journal Entries

Date	*Particulars*		*L.F.*	*Dr.*	*Cr.*
2007				*Rs.*	*Rs.*
April 1	Cash Account	Dr		8,000	
	Bank Account	Dr		25,600	
	Stock Account	Dr		20,000	
	Furniture Account	Dr		4,000	
	Buildings Account	Dr		10,000	
	Vijay	Dr		2,700	
	Anil	Dr		1,500	

	Ashwani	Dr		2,000	
	Aravind	Dr		1,800	
	Madhu	Dr		100	
	To Anand				5,400
	" Arya&Co				7,700
	" Balwant Rai				5,200
	" Mrs. B's Loan				10,000
	" Capital Account (Balancing figure)				47,400
	(Being the balances brought in from last year)				
" 1	Purchases Account	Dr.		5,000	
	To Cash Account				3,800
	To Discount Account				1,200
	(Being goods worth Rs.5,000 bought for cash less 20% trade discount and 5% cash discount. Trade discount is not shown in the books but cash discount is shown in the books)				
" 3	Cash Account	Dr.		2,646	
	Discount Account	Dr.		54	
	To Vijay				2,700
	(Being Cash received from Vijay and allowed him discount)				
" 5	Investment in Shares Account	Dr.		1,530	
	To Cash Account				1,530
	(Being the purchase of 100 shares in Bharat Ltd. him discount)				
" 8	Railway Claim Account	Dr.		500	
	To Purchases Account				500
	(Being claim sent to railway for goods damaged in transit)				
" 10	Anand	Dr.		5,400	
	To Cash Account				5,292
	To Discount Account				108
	(Being the amount paid to Anand in full settlement)				
" 13	Cash Account	Dr.		500	
	To Railway Claim Account				500
	(Being cash received in full settlement of claim for damages from railways)				
" 15	Cash Account	Dr.		900	
	Bad Debts Account	Dr.		900	
	To Arvind				1,800
	(Being half the dues received from Arvind and balance written off as bad debts)				

" 18	Cash Account Dr.		705	
	To Investment in Shares Account			705
	(Being 40 shares in Bharat Ltd. sold @ Rs.8 per share less brokerage Rs.15)			
" 20	Livestock Account Dr.		2,000	
	Carriage Account Dr.		1,000	
	To Cash Account			3,000
	(Being horse and carriage bought for delivering goods to customers)			
" 22	Charity Account Dr.		101	
	Postage Account Dr.		200	
	Stationery Account Dr.		199	
	To Cash Account			500
	(Being cash paid for charity, postage and stationery)			
" 30	Interest Account Dr.		100	
	To Mrs. B's Loan Account			100
	(Being interest payable on Mrs.B's loan of Rs.10,000 @12% p.a.for one month)			
" 30	Cash Account Dr.		50	
	Profit & Loss Account Dr.		1,950	
	To Livestock Account			2,000
	(Being horse carcass sold for cash and balance of cost of horse written off as loss)			
" 30	Cash Account Dr.		3,000	
	Travelling Expenses Account Dr.		150	
	To Sales Account			3,150
	(Being Rs.3,000 cash received for sale from traveling salesman after deducting his traveling expenses Rs. 150)			
" 30	Salaries account Dr.		3,500	
	Rent Account Dr.		1,500	
	To Cash Account			5,000
	(Being payment of salaries and rent)			
" 30	Cash Account Dr.		9,000	
	To Sales Account			9,000
	(Being sale of goods worth Rs. 10,000 less 10% trade discount)			

LEDGER

As learnt seen already, Journal records all business transactions separately in a chronological order of the transactions. The transactions pertaining to a particular person, asset or expense are recorded at different

places in the journal as they occur on different dates. Hence, journal fails to bring the similar transactions together and it is not useful for any reference. In order to have a consolidated view of the similar transactions, the transactions entered in the journal will have to be posted to the Ledger Accounts. Ledger is the book of Main entry and it contains various accounts such as Personal Accounts, Real Accounts and Nominal Accounts. A Ledger Account is nothing but a summary statement of all transactions relating to a person, asset, expense or income, which have taken place during a given period of time showing their net effect.

The rulings of each account in the ledger is as follows:

TABLE 3.7 Name of Account

Dr. *Cr.*

Date	*Particulars*	*J.F.*	*Amount* Rs.	*Date*	*Particulars*	*J.F.*	*Amount* Rs.
	To Name of Credit A/c				By Name of Debit A/c		

Each account in the Ledger is divided into two equal parts. The left hand side is the debit side and the right hand side is the credit side. Each of the two sides is further divided into four columns for recording the date of the transactions, the name of the account to be credited or debited, folio and the amount of the transactions. J.F. stands for folio (page number) in the journal or the subsidiary books from where the posting to the account is made.

Rules Regarding Posting

The following rules should be followed while posting transactions in the Ledger:

(i) Separate accounts should be opened in the Ledger for posting transactions relating to the separate persons, assets, expenses or losses as shown in the journal.

(ii) The Concerned account which has been debited in the Journal should also be debited in the Ledger. However, a reference should be made of the other account which has to be credited in the Journal. In other words, in the account to be debited, the name of the other account which is to be credited, is entered in the debit side for giving a meaning to this posting. The debit posting is prefixed by the word 'To".

(iii) Similarly, the concerned account which as been credited in the Journal should be credited in the Ledger, with a reference of the account that has been debited in the Journal. In other words, in the account to be credited, name of the other account which has been debited is entered in the credit side. The credit posting is prefixed by the word 'By'.

For example, for salaries paid Rs. 1,000 in January 31, 2006, salaries account in the ledger, should be debited and cash account should be credited.

TABLE 3.8 Salaries Account

Dr. *Cr.*

Date	*Particulars*	*J.F.*	*Amount* Rs.	*Date*	*Particulars*	*J.F.*	*Amount* Rs.
2006 Jan. 31	To Cash A/c		1,000				

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TABLE 3.9 Cash Account

Dr. *Cr.*

Date	*Particulars*	*J.F.*	*Amount* Rs.	*Date*	*Particulars*	*J.F.*	*Amount* Rs.
				2006 Jan. 31	By Salaries		1,000

Balancing of an Account: The various transactions entered in the Journal in the chronological order are posted to the concerned ledger accounts. At the end of a period (say month, a quarter or a year), the account will be closed in order to find out the position shown by it. This is done by totaling the debits and credits of the account separately and finding the difference. The difference is entered on the side which is smaller and this difference is the 'closing balance' shown by the account and this will be carried forward to the next year as the 'opening balance' in the account. This process is known as 'Balancing the Account'. If the debit side total is greater than the credit side, the difference is entered on the credit side to close the account for the period and the balance is known as 'debit' balance. If the credit side total is greater, the difference will become a 'credit' balance.

Illustration 3 Journalise the following transactions, post them in the ledger and balance the accounts an on 31st December, 2007.

Dec. 1 Rajini started business with a capital of Rs.50,000.
" 2 He purchased furniture for Rs.5,000
" 3 He bought goods on credit from Vinod for Rs.8,000
" 14 He sold goods to Suresh for Rs.5,000.
" 15 He received cash from Suresh Rs.3,000
" 18 He purchased goods for cash Rs.12,000
" 27 He sold goods for cash Rs.8,000
" 28 He paid Rent Rs.1,200
" 31 He paid Vinod Rs.3,000 on account.

TABLE 3.10 Journal Entries

Date	*Particulars*		*L.F.*	*Dr.*	*Cr.*
2007				*Rs.*	*Rs.*
Dec. 1	Cash Account	Dr		50,000	
	To Cash Account				50,000
	(Being capital introduced)				
Dec. 2	Furniture Account	Dr		5,000	
	To Cash Account				5,000
	(Furniture purchased for cash)				
Dec. 3	Purchases Account	Dr.		8,000	
	To Vinod Account				50,000
	(Being purchase of goods on credit)				
Dec. 14	Suresh Account	Dr.		5,000	
	To Sales				5,000
	(Being credit sales)				

Dec. 15	Cash Account To Suresh Account (Being cash received)	Dr.		3,000	 3,000
Dec. 18	Cash Account To Sales Account (Being cash purchases)	Dr.		12,000	 12,000
Dec. 27	Cash Account To Sales Account (Being cash sales)	Dr.		8,000	 8,000
Dec. 28	Rent Account To Cash (Being rent paid)	Dr.		1,200	 1,200
Dec. 31	Vinod Account To Cash (Being cash)	Dr.		3,000	 3,000

LEDGER

TABLE 3.11 Cash Account

Dr. *Cr.*

Date	*Particulars*	*J.F.*	*Amount* Rs.	*Date*	*Particulars*	*J.F.*	*Amount* Rs.
2007				2007			
Dec. 1	To Capital A/c		50,000	Dec. 2	By Furniture A/c		5,000
" 15	" Suresh A/c		3,000	" 18	" Purchase A/c		12,000
" 27	" Sales A/c		8,000	" 27	" Rent A/c		1,200
				" 31	" Vinod A/c		3,000
				" 31	" Balance c/d		39,800
			61,000				61,000
2008							
Jan. 1	To Balance b/d		39,800				

TABLE 3.12 Rajini's Capital Account

Dr. *Cr.*

			Rs.				*Rs.*
2007				2007			
Dec. 31	To Balance c/d		50,000	Dec. 1	By Cash A/c		50,000
			50,000				50,000
				2008			
				Jan. 1	By Balance b/d		50,000

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TABLE 3.13 Furniture Account

Dr. *Cr.*

			Rs.				*Rs.*
2007				2007			
Dec. 2	To Cash A/c		50,000	Dec. 31	By Balance c/d		50,000
2008							
			50,000				50,000
Jan. 1	To Balance b/d		50,000				

TABLE 3.14 Purchases Account

Dr. *Cr.*

			Rs.				*Rs.*
2007				2007			
Dec. 3	To Vinod A/c		8,000	Dec. 31	By Balance c/d		20,000
" 18	" Cash		12,000				
			20,000				20,000
2008							
Jan. 1	To Balance b/d		20,000				

TABLE 3.15 Sales Account

Dr. *Cr.*

			Rs.				*Rs.*
2007				2007			
Dec. 31	To Balance c/d		13,000	Dec. 14	By Suresh		5,000
				" 27	" Cash		8,000
			13,000				13,000
				2008			
				Jan. 1	By Balance b/d		13,000

TABLE 3.16 Vinod Account

Dr. *Cr.*

			Rs.				*Rs.*
2007				2007			
Dec. 31	To Cash		3,000	Dec. 3	By Purchases		8,000
" "	" Balance c/d		5,000				
			8,000				8,000
				2008			
				Jan.	By Balance b/d		5,000

TABLE 3.17 Suresh Account

Dr. *Cr.*

			Rs.				*Rs.*
2007				2007			
Dec. 14	To Sales		5,000	Dec. 15	By Cash A/c		3,000
				" 31	" Balance c/d		2,000
			5,000				5,000
2008							
Jan. 1	To Balance b/d		2,000				

TABLE 3.18 Rent Account

Dr. *Cr.*

			Rs.				*Rs.*
2007				2007			
Dec. 28	To Cash		1,200	Dec. 31	By Balance c/d		1,200
			1,200				1,200
2008							
Jan. 1	To Balance b/d		1,200				

TRIAL BALANCE

We have already seen the proforma of a trial balance. Now, we shall see the contents of a trial balance.

Contents of Trial Balance

The items of Trial Balance can be classified under four broad headings. The following are those four broad headings and against each heading, the side in which those headings are appearing in the Trial Balance, is mentioned:

	Major Headings	**Side in the Trial balance**
A	Expenses and losses	Debit side
B	Income and gain	Credit side
C	Assets	Debit side
D	Capital and liabilities	Credit side

Now, we shall see the trial balance in detail

[specimen]
TRIAL BALANCE OF M/s.....
for the year ended .....

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TABLE 3.19 Specimen Trial Balance

Particulars	*Debit balance*	*Credit balance*
A. Expenses & losses (all debit side)		
Purchases of materials	XXX	
Wages	XXX	
Rent	XXX	
Royalty	XXX	
Carriage inwards	XXX	
Carriage outwards	XXX	
Commission paid	XXX	
Discount given	XXX	
Salary	XXX	
Interest paid	XXX	
Postage, telegram	XXX	
Stationery	XXX	
Losses due to accidents	XXX	
Others expenses and losses	XXX	
B. Income and gain (all credit)		XXX
Sales		XXX
Rent received		XXX
Commission received		XXX
Discount, interest received		XXX
Other Receipts		
C. Assets (All debits)	XXX	
Land and building	XXX	
Machinery	XXX	
Furniture & fittings	XXX	
Vehicles	XXX	
Cash	XXX	
Debtors	XXX	
Stock of materials	XXX	
Bills receivable	XXX	
Other assets	XXX	
D. Capital and liabilities		
Capital		XXX
Loan from financial institutions		XXX
Loan from others		XXX
Creditors		XXX
Bills payable		XXX
Other liabilities		XXX
Total	**XXXX**	**XXXX**

Here, expenses means, money spent for running the day-to-day affairs of the organisation and items of regular nature for utilising a service.

Loss also is of regular in nature, but for no return of service.

Asset means those having realisable value. If a particular item is sold, and if it fetches some return, this is called realisable value.

Liability means whenever the organisation is liable to pay to the outsiders, it is called liability.

Capital is the amount contributed by the owner.

The balances standing in the various accounts in the ledger at the end of a period are listed down in the form of a statement, showing debit balances in one column and the credit balances in the other, known as a 'Trial Balance.' The 'Trial Balance' is nothing but a summary of the various transactions entered in the Books of Accounts and its preparation is based on the rule that 'for every debit there is a corresponding and equal credit'. Therefore, if the above rule is strictly followed, the total of the debit balances will be equal to the total of the credit balances. If this happens, we say that the trial balance has agreed and the books are arithmetically accurate. For example, with the balances in the ledger accounts prepared in Illustration 3, the Trial Balance can be prepared as follows:

TABLE 3.20 Trial Balance as on December 31, 2006

Particulars	*Debit*	*Credit*
	Rs.	Rs.
Cash Account	39,800	
Rajini's Capital A/c		50,000
Furniture A/c	5,000	
Purchases A/c	20,000	
Sales A/c		13,000
Vinod A/c		5,000
Suresh A/c	2,000	
Rent A/c		1,200
	68,000	68,000

Thus, the Trial Balance agrees and it means that the books of accounts are arithmetically accurate.

Objects of Preparing a Trial Balance

1. Trial Balance is a summary of all the transactions entered in the ledger accounts and reveals the net position at a glance.
2. Agreement of the Trial Balance is an indication of the arithmetical accuracy of the books of accounts. In other words, it means that the books have correctly followed the double-entry rule while recording transactions.
3. Trial Balance forms the basis for preparing the financial statements such as Profit and Loss Account and Balance Sheet.

SUBSIDIARY BOOKS

Every transactions will have to be first entered in the Journal and then posted to the Ledger. In a big business, recording of all transactions in one Journal and then posting them to Ledger will not only be

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inconvenient but also will involve a lot of clerical work. This can be avoided by subdividing the Journal into Subsidiary Books and maintaining a separate subsidiary book for each type of transaction. The original Journal is subdivided into eight different subsidiary books and each book is meant for recording a particular king of transaction as shown below:

1. Purchases Book - for recording credit purchases of goods only.
2. Sales Book - for recording credit sales of goods only.
3. Purchases Returns Book - for recording returns outwards.
4. Sales Return Book - for recording returns inwards
5. Cash Book - for recording receipts and payments
6. Bills Receivable Book - for recording Bills Receivable received
7. Bills Payable Book - for recording Bills Payable accepted.
8. Journal Proper - for recording any transactions which could not be recorded in any of the above seven subsidiary books.

Advantages

(i) Sub-division of the Journal into subsidiary books will make the recording work easy and quick.
(ii) It helps in the division of labour since different persons may write the different books.
(iii) Easy reference becomes possible since each subsidiary book provides information relating to a particular aspect of the business only.
(iv) There is a substantial reduction in the clerical work.

(1) Purchases Book The Purchases Book is meant for recording credit purchases of goods only. It is also known as Purchase or Bought Day Book. This book records only Purchase of goods which are meant for resale. Purchases of items other than goods on credit, will be entered in the Journal Proper only. Similarly, cash purchases of goods will be entered in the Cash Book only.

The Purchases Book has columns for date of Purchase, name of the party etc. Ledger folio, Invoice number and the amount of purchase. The posting to the personal accounts from the Purchases Book is done daily, whereas the total in the Purchases Book is posted to the debit of the Purchases Account in the Ledger only at the end of a period.

(2) Sales Book Sales Book or Sales or Sold Day Book is meant for recording credit Sales of goods only. Sales of articles other than goods on credit is recorded in the Journal Proper. Cash Sales are shown in the Cash Book. The format of this book similar to the Purchases Book. Posting to the Personal Accounts are made daily but the total of the Sales Book is credited to the Sales Account in the Ledger only at the end of a Period.

(3) Purchases Returns Book This book is meant for recording return of goods purchased on credit. The goods purchased for cash and returned, are not recorded in this book. If goods purchased for cash are returned they, are recorded in a memorandum book only. On receipt of cash for the returns, the entry in the memorandum book will be cancelled and an entry passed through the cash book. If goods returned are exchanged for other goods of the same value, the entry in the memorandum book will be cancelled and no other entry is required.

Debit Note: When the goods are returned to the supplier, a Debit Note is sent to him indicating that his account has been debited with the amount mentioned in the Debit Note.

(4) Sales Returns Book This book is meant for recording return of goods by the customers to whom the goods have been sold on credit.

Credit Note: When the goods are returned by the customers, a Credit Note is sent to them indicating that their their account has been credited with the amount mentioned in the Credit Note.

Postings from the Purchases Returns Book/Sales Returns Book to the Personal accounts will be done daily, whereas the total of these books will be posted to the concerned Account in the Ledger only at the end of a period.

Illustration 4 Enter the following transactions in the proper subsidiary books and post them in the Ledger.

2006 Jan.

1 Bought goods from Balamohandass Rs. 1,500.
2 Sold goods to Prince Rs. 2,500
3 Sanjay sold goods to us Rs. 1,000 at a trade discount of 10%.
14 Sold goods to Mahesh Rs. 1,200
18 Received goods returned by Prince Rs. 50
20 Returned goods to Sanjay worth Rs. 90
31 Goods returned by Mahesh Rs. 120.

Solution

TABLE 3.21 Purchases Book

Date	*Particulars*	*L.F*	*Inward Invoice No.*	*Amount Rs.*
2006 Jan. 1	Balamohandass	—		1,500
9	Sanjay			900
				2,400

TABLE 3.22 Sales Book

Date	*Particulars*	*L.F*	*Outward Invoice No.*	*Amount Rs.*
2006 Jan. 2	Prince	—		2,500
" 14	Mahesh	—		1,200
				3,700

TABLE 3.23 Purchase Returns Books

Date	*Particulars*	*L.F*	*Debit Note No.*	*Amount Rs.*
2006 Jan. 20	Sanjay			90
				90

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TABLE 3.24 Sales Returns Books

Date	*Particulars*	*L.F*	*Credit Note No.*	*Amount Rs.*
2006 Jan. 18	Prince	—		50
" 31	Mahesh	—		120
				170

LEDGER

TABLE 3.25 Balamohandass A/c

				2006 Jan. 1	By Purchases		1,500

TABLE 3.26 Sanjay A/c

2006 Jan. 20	To Purchases Returns		Rs. 90	2006 Jan. 9	By Purchases		Rs. 900

TABLE 3.27 Prince A/c

2006 Jan. 2	To Sales		Rs. 2,500	2006 Jan. 18	By Sales Returns		Rs. 50

TABLE 3.28 Mahesh A/c

2006 Jan. 14	To Sales		Rs. 1,200	2006 Jan. 31	By Sales Returns		Rs. 120

TABLE 3.29 Purchases A/c

1997 Jan. 31	To Sundries		Rs. 2,400				

TABLE 3.30 Sales A/c

				2006 Jan. 31	By Sundries		Rs. 3,700

TABLE 3.31 Purchase Return A/c

				2006 Jan. 31	By Sundries		Rs. 90

TABLE 3.32 Sales Returns A/c

2006 Jan. 31	To Sundries		Rs. 170				

Trade Discount Trade discount is an allowance off the selling price made by one trader to another, to promote sales. It is allowed by the manufacturer to the wholesaler or by the wholesaler to the retailer. It is always expressed as a percentage and calculated on the invoice value of the commodity. For example, if A Sells goods to B for Rs. 1,000 at a trade discount of 10%, the Purchases for B is only Rs.900 and sales for A is Rs.900. It means that the trade discount allowed or received, is not at all recorded in the books and it is only the net amount which is recorded on purchases or sales

Cash Discount Cash discount, on the other hand, is an allowance off the amount due by the debtor to the creditor and it is allowed for inducing payment in time. It is also expressed as a percentage and is calculated on the amount due. Cash discount appears in the books. Cash discount allowed is a loss and is debited to a Discount Allowed. Cash Discount received is a gain, and is credited to a Discount Received Account.

Cash Book Cash Book is meant for recording the receipts and payments of cash. The cash book is different from other Subsidiary Books in the sense that it has two sides, just like an account, for recording receipts on the one side (Debit side). Hence, no further posting from the cash book is required and it serves the purpose of both a book of original entry as well as a book of final entry. All the transactions entered in the Purchases Book, Sales Book, etc., will have to be necessarily posted to the Purchases Account, Sales Account, etc., in the ledger, but what is entered in the cash book need not be posted elsewhere.

The cash book can be any one of the following types:

(i) Simple Cash Book;
(ii) Two-column Cash Book;
(iii) Three-column cash Book; and
(iv) Petty Cash Book.

(i) ***Simple Cash Book***: It looks like an ordinary cash account.

(ii) ***Two-column Cash Book***: This types of cash book has two columns: 1. Cash column and 2. Discount column on either side of the cash book. Cash column is meant for recording cash receipts and payments while discount column is meant for recording discount allowed and discount received. If there are bank transactions, they can be entered in a separate Bank Account opened in the ledger and not in the cash book.

Cash received and discount allowed are entered on the debit side of the cash book, and the cash paid and discount received are entered on the credit side of the cash book. Currency, cheques, drafts, postal orders and money orders received are treated as receipt of cash only, and are entered on the debit side of the cash book in the cash column. However, if any party directly pays into our bank account, it is treated as if it were two transactions, viz.,

(i) receipt of cash from the party and
(ii) deposit of the same into bank. For the receipt of cash, cash book would be debited and the party's account in the ledger credited; for the deposit of the same into bank, Bank Account in the ledger is debited and Cash Book is credited. Thus, the transaction would appear on both sides of the cash book, making no change in the cash balance; the net effect will be increase in the Bank balance.

Similarly, any payment by cheque, it is also treated as if it were two transactions, viz., I. Withdrawal of cash from the bank, and 2. Payment of cash on account. For the withdrawal of cash, cash book would be debited and the Bank Account in the ledger credited; for payment of cash on account, the concerned

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account would be debited and the cash book would be credited. The net effect would be no change in the cash balance but a decrease in the bank balance. This procedure is followed to make sure that all cash transactions are passed through the cash book before they are posted in the ledger, but this results in unnecessary clerical work.

Illustration 5 Enter the following in a cash book with cash and discount columns only:

2006

Jan. 1 Manmohan started business with Rs. 10,000; paid into bank Rs.8,000
" 3 Bought office furniture by cheque Rs. 3,000
" 5 Sold goods for cash Rs. 1,000
" 8 Paid Anand Rs. 600 and was allowed a discount of Rs. 60
" 12 Received from Mania cheque for Rs. 690 and allowed him a discount of Rs.10; cheque was deposited into bank.
" 18 Withdrew from bank for office use Rs. 1,000
" 24 Received for cash sales by cheque Rs. 1,200
" 31 Drew for personal use cash Rs. 100 salaries paid Rs. 500.

Solution

TABLE 3.33 Cash Book of Manmohan (with Cash and Discount columns only)

Date	*Receipts No.*	*Receipt*	*L.F*	*Dis. allowed*	*Cash*	*Date*	*Payment*	*V. No*	*L.F*	*Dis. Rec.*	*Cash*
2006				Rs.	Rs.					Rs.	Rs.
Jan. 1	To Capital A/c	—	—	—	10,000	Jan. 1	By Bank	—	—	—	8,000
" 3	" Bank A/c	—	—	—	3,000	" 3	" Furniture	—	—	—	3,000
" 5	" Sales	—	—	—	1,000	" 5	" Anand	—	—	60	600
" 12	" Mani	—	—	10	690	" 12	" Bank	—	—	—	690
" 18	" Bank	—	—	—	1,000	" 18	" Drawings	—	—	—	100
" 24	" Sales	—	—	—	1,200	" 24	" Salaries	—	—	—	500
							" Balance c/d	—	—	—	4,000
				10	16,890					60	16,890
Feb. 1	To Balance b/d				4,000						

LEDGER

TABLE 3.34 Bank A/c

2006			Rs.	2006			Rs.
Jan. 1	To Cash		8,000	Jan. 3	By Cash		3,000
Jan. 12	" Cash		690	" 18	" Cash		1,000
				" 31	" Balance c/d		4,690
			8,690				8,690
			4,690				

(iii) ***Three-column Cash Book*:** This type of cash book contains the following three columns on each side: (1) Cash column for cash received or paid; (2) Discount column for discount allowed or received; and (3) Bank column for money deposited in and money withdrawn from the bank. This type of Cash Book avoids the opening of a separate Bank Account in the Ledger.

Rules for Recording the Cash Book

(i) Cash received is entered in the cash column of the receipts side; cash paid is entered in the cash column of payment side; discount allowed and discount received are entered in the appropriate column.

(ii) If a deposit is made into bank, it will be entered in the bank column on the receipts side and in the cash column on the credit side, since the cash column and bank column are in the cash book.

(iii) Similarly, if any amount is withdrawn from bank for office use, it is entered in the cash column on the receipts side and bank column on the payment side. This means that the cash balance increases and the bank balance decreases. Since, no further posting is required in this case also, it becomes a 'Contra' entry and the letter 'C' is marked against this entry on both sides of the cash book.

(iv) If a cheque is received and paid into bank immediately, it is shown in the bank column only on the receipts side. However, if a cheque received from a party is sent to bank at a later date, it becomes deposit of money into bank and, therefore, a 'contra' entry. It is shown on the bank column on receipt side and cash column on the payment side.

(v) A cheque received by the business may be endorsed in favour of a creditor of the business. In such a case, the cheque received will be taken as receipt of cash and the cheque endorsed will be taken as payment of cash.

(vi) If a cheque received from a party and sent to bank for collection is dishonoured, the party from whom the cheque was received should be debited while the bank account would be credited.

(vii) When a cheque received from a customer and endorsed in favour of a creditor is dishonoured, no entry would be made in the cash book since the entries required would be as follows:

(a) For receipt of cheque:

Cash A/c	Dr.	
To Customer		

(b) For endorsement to the creditor:

Creditor A/c	Dr.	
To Cash		

(c) For dishonour:

Customer A/c	Dr.	
To Creditor		

Thus, it is clear that no entry will be passed in the cash book for dishonour of a cheque received earlier and endorsed in favour of a creditor.

(viii) Cheques issued by the business in favour of third parties may be dishonoured by the bank. In such a case, the entries to be passed in the cash book will be:

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(a) On issue of a cheque in favour of a creditor:

Creditor A/c Dr.
To Bank

(b) On dishonour of the cheque:

Bank A/c
To Creditor Dr.

Illustration 6 Enter the transactions given in Illustration 5 in a three-column cash book.

TABLE 3.35 Cash Book (with Cash, Bank and Discount Columns)

Date	*Particulars*	*L.F*	*Dis. Alld.*	*Cash*	*Bank*	*Date*	*Particulars*	*L.F*	*Dis. Rec.*	*Cash*	*Bank*
2006			Rs.	Rs.	Rs.	2006			Rs.	Rs.	Rs.
Jan. 1	To Capital A/c			10,000		Jan. 1	By Bank	C		8,000	
	" Cash A/c	C			8,000		" Furniture				3,000
	" Sales			1,000			" Anand		60	600	
	" Mani		10		690		" Cash	C			1000
	" Bank	C		1,000			" Drawings			100	
	" Sales			1,200			" Salaries			500	
							" Balance c/d			4,000	4,690
			10	13,200	8,690				60	13,200	8,690
Feb. 1	To Balance b/d			4,000	4,690						

(iv) ***Petty Cash Book***: In the course of every business, there are many petty expenses to be incurred such as postage, stationery, carriage, cleaning, etc., involving very small amount of money. If these transactions are recorded in the main cash book, recording would become quite cumbersome, and time consuming. Hence, such petty expenses may be recorded in a separate cash book known as Petty Cash Book. A Petty Cashier may make such payment and maintain the petty cash book. He generally works under a Main Cashier and the petty cash is usually maintained on the basis of Interest system. Under this system, a fixed sum, say Rs.100, is advanced to the Petty Cashier at the beginning of the period by the Main Cashier. At the end of the month quarter, the petty cashier submits a statement of account of the expenses incurred by him during the month/quarter and gets a fresh advance, always by cheque, equivalent to the amount spent by him during the period. Thus, the Petty Cashier has a fixed balance at the beginning of every period and is not left with a high cash balance.

The best method of recording petty expenses is to enter them in an analytical petty cash book. The petty expenses are classified into different heads of expenses. Each head of expense will have a separate column in the petty cash book. Thus, the various petty expenses can be conveniently recorded under certain heads making the posting from petty cash book easy. The cheque issued for petty cash would be debited to Petty Cash Account in the Ledger and credited to the Bank Account. The total expenses incurred under each head is debited to the concerned Nominal Account and credited to the Petty Cash Account. Thus, the postings from petty cash book need not be done for individual transactions, but only with the periodical total of each head of expenditure at the end of period, as shown by the analytical columns.

Illustration 7 Write out an Analytical Petty Cash Book from the following:

On 1st January, 2008, gave an Interest cheque for Rs.75 to the petty cashier to begin with. During the month, the petty cashier made the following disbursements:

2008		Rs.
Jan 7	Bought Postage stamps	20
" 10	Paid for stationery	6
" 15	Paid for carriage	4
" 20	Paid taxi hire to Sales Manager	5
" 22	Sent a telegram to Delhi	1
" 23	Bought ink and paper	2
" 25	Paid for coolie	5
" 27	Tea to traveling agents	3
" 31	Cash purchases from stationery mart	9
	Balance the book at the end of the month.	

Solution

TABLE 3.36 Analytical Petty Cash Book

Amt Recd. *Rs.*	*Date*	*Particulars*	*Voucher No.*	*Total Amount Paid* *Rs.*	*Postage & Telegrams* *Rs.*	*Printing & Stationery* *Rs.*	*Carriage*	*Travelling Expenses* *Rs.*	*Sundry Sundry* *Rs.*
	2008								
75	Jan. 1	To Bank A/c (Cheque received)							
		By Postage stamps		20	20				
		By Stationery		6		6			
		By Carriage		4			4		
		By Taxi hire to sales Manager		5				5	
		By Telegram to Delhi		1	1				
		By Ink and Paper		2		2			
		By Coolie		5			5		
		By Tea to traveling agents		3					3
		By Stationery		9		9			
		By Balanced							
		To Balanced b/d		55	21	17	9	5	3
		To Balance A/c (cheque received)		20					
75				75					

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Section 5 of the Negotiable Instruments Act defines a Bill of Exchange as: A trader very often buys and sells goods on credit. In a such cases, the value of goods will be paid or received only at a future date. A written proof or document is prepared to acknowledge the amount payable or receivable. Such a document is called Bill of Exchange. For example, if Rajan sells goods on credit to Balan for Rs.1000, Rajan draws a bill of Exchange on Balan for the amount due directing Balan to pay the amount at a certain future date. Balan accepts the order by signing it with or without the word 'Accepted' instrument in writing containing an unconditional order, signed by the madder, directing a certain person to person to pay a certain sum of money only to, or to the order of, a certain person or to the bearer of the Instruments."

Essentials:

(1) A Bill is always presented in black and white.

(2) It is an unconditional order made by the creditor on the debtor to pay a certain sum of money. The person who draws the known as the 'Drawer' and the person on whom is made is known as the 'Drawee' becomes the 'Acceptor' when the bill is accepted by him. For the Drawer, the Bill is known as 'Bills Receivable' and for the acceptor 'Bills Payable.'

(3) The person to whom the amount is payable is called the 'payee' who may be either the drawer himself or a third person.

(4) The instrument may be drawn either payable to a particular person or his order or to the bearer.

(5) The Bills may be drawn either on demand or after the expiry of a certain period. In the former case, it is known as 'Demand' bill and in the latter case 'Time' bill, a period of 3 days known as 'days of grace' will have to be added to find out of the due date .

Bills Receivable/Bills Payable Books

The detail of the bills received and the bills accepted by the trader are first entered in the Bills Receivable Book/Bills Payable Book. From the Bills Receivable Book, each personal account from whom the bill is received will be credited and the Bills Receivable account debited with the monthly total.

Illustration 8 Enter the following transactions in the Receivable and Bills Payable Book and post in Ledger. 2007 March 4 – Received from George a bill duly accepted for Rs.1,675 payable 4 months for Rs.2,000 which he accepted payable at Indian Bank. March 11 – Gave my acceptance at 1 month for Rs.870 to Sundaram. March 14 – Sam Raj drew on me for Rs.350 and I accepted his draft for 2 months. March 16 – Ganesan gave me his acceptance at 1 month for Rs. 680. March 17 – Krishnan's acceptance (dated March 10) at 4 months for Rs.530 was endorsed to us by the drawer Parameswaran. March 20 – Discounted George's acceptance (dated March10) at 4 months for Rs.530 was endorsed to us by the drawer Parameswaran. March 20 – Manoharan accepted our bill at 3 months for Rs. acceptance at 1 months for Rs.350 and I accepted his draft for 2 months. March 16 – Ganesan gave me his acceptance at 1 month for Rs.680. March 17 – Krishnan's acceptance (dated March 10) at 4 acceptance with the Bank and received Rs.1,630. March 26 – Manoharan accepted our bill at 3 months for Rs.1,200. March 27 – The bill for Rs.480 at 2 months drawn on us by Nagaraj was accepted by us payable at the state Bank of Travancore. March 30 – Received from Vasan a bill for Rs.710 dated February 3 drawn by Ram and accepted by Raja payable 3 months after date.

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TABLE 3.37 Bills Receivable Book

Sl. No of Bill	*Date of Receipt*	*From Whom Received*	*LF*	*Drawer*	*Acceptor*	*Where Payable*	*Date of Bill*	*Term*	*Due Date*	*Amount Rs. Folio*	*Cash Book*	*Remarks*
	2007						2007		2007			
1	March 4	George		Self	George		March 4	4 months	July 7	1,675		Discounted
2	March 9	Mani		Self	Mani		March 9	2 months	May 12	2,000		Dishonour
3	March 16	Ganesan		Self	Ganesan	Indian	March 16	2 months	May 19	680		Honoured
4	March 17	Parameswaran		Parameswaran	Krishnan	Bank	March 10	1 months	July 13	530		
5	March 26	Self		Self	Manoharan		March 26	3 months	June 29	1,200		
6	March 30	Ram		Ram	Raja		Feb. 3	3 months	May 6	710		
										6,795		

Bills Payable Book

Sl. No of Bill	*Date of Acceptance*	*Drawer*	*LF*	*Payee*	*Where Payable*	*Date of Bill*	*Term*	*Due Date*	*Amount Rs.*	*Cash Book Folio*	*Remarks*
	2007					2007		1998			
1	March 6	Murthy		Murthy	State	March 6	3 month	June 9	800		Dishonoured
2	March 11	Sundaram		Sundaram	Bank	March 11	1 month	Apr. 14	870		
3	March 14	Sam Raj		Sam Raj	of	March 14	2 month	May 17	350		
4	March 27	Nagaraj		Nagaraj	Travancore	March 27	2 month	May 30	480		

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LEDGER

TABLE 3.38 Bills Receivable A/c

Date	*Particulars*	*J.F.*	*Amount* Rs.	*Date*	*Particulars*	*J.F.*	*Amount* Rs.
2007 March 31	To Sundreis		6,795				

TABLE 3.39 George's A/c

				2007 March	By B/R A/c		1,675

TABLE 3.40 Mani's A/c

				2007 March 9	By B/R A/c		2,000

TABLE 3.41 Ganesan's A/c

				2007 March 16	By B/R A/c		680

TABLE 3.42 Parameswaran's A/c

				2007 March 17	By B/R A/c		530

TABLE 3.43 Manoharan's A/c

				2007 March 26	By B/R A/c		1,200

TABLE 3.44 Vasan's A/c

				2007 March 30	By B/R A/c		710

TABLE 3.45 Bill Payable A/c

				2007 March 31	By Sundries		2,500

TABLE 3.46 Murthy's A/c

2007 March 6	To B/P		800				

TABLE 3.47 Sundaran's A/c

2007 March 11	To B/P		870				

TABLE 3.48 Sam Raj's A/c

2007 March 14	To B/P		350				

TABLE 3.49 Nagraj's A/c

2007 March 27	To B/P		480				

(7) Journal Proper: To minimise the clerical work involved in recording the business transactions, the journal is subdivided into eight different subsidiary books like, Purchases Book, Sales Book, etc. The eighth subsidiary book is known as Journal Proper. This subsidiary book is used for recording only those transactions which cannot be recorded in other subsidiary books.

In general, the Journal Proper is used for recording the following types of entries:

(a) Opening entries, i.e., entries required to bring forward the various balances from the previous year accounts.
(b) Closing entries, i.e., entries required to close the books of the current year.
(c) Transfer entries from one account to another.
(d) Adjusting entries, i.e., entries required to adjust the pending transactions at the end of the accounting period for the purposes of preparing the final accounts and Balance Sheet.
(e) Bills of Exchange entries.
(f) Rectification entries, i.e., entries required for rectifying the errors found in the books of accounts.
(g) Entries which cannot be made in any other subsidiary books.

The Journal Proper is exactly similar to the Journal already seen and entries are made in the same way as in the case of Journal. Thus, both aspects of the transactions are entered in the Journal Proper.

BANK RECONCILIATION STATEMENT

Whenever a businessman deposits money into bank or withdraws money from the bank for various purpose, he records the same in the Bank columns of his cash book. Correspondingly, the Bank records the same transactions in a Pass Book opened by the banker in the Customer's name. The Pass Book is nothing but a copy of the customer's account as it appears in the Bank Ledger. The Bank credits the Pass Book whenever money is deposited and debits the Pass Book whenever money is withdrawn. Thus, the Balance as shown by the businessman's Cash Book should agree with the balance shown by the Bank's Pass Book. Of course, if in the cash book, the bank account shows a debit balance, in the Pass book, it would be a credit balance and vice versa. However, the two balances rarely agree on account of various reasons.

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Causes of Difference: One or more of the following may be the causes for differences between balance as shown by the Pass Book and the balance as shown by the Cash Book:

(i) **Cheques issued but not presented for payment**: The customer may issue cheques against his account with the bank from time to time for making different payments. As soon as the cheque is issued, the customer debits the party's account in whose favour the cheque is issued and credits bank account. This immediately reduces the bank balance as per Cash Book. However, the Bank debits the customer's Pass Book when the same cheque is presented for payment and money is withdrawn. Thus, if you make a comparison between the Pass Book and the Cash Book before the cheque is presented for payment, Balance as per Cash Book will be less since entry for the withdrawal of cash appears in the Cash Book but not in the Pass Book.

For example, a firm issues a cheque for Rs.2,000 on December 27, 2005, and the creditor presented the cheque with the bank only on January 2 2006. If you compare the balance as per Cash Book with that of the Pass Book on December 31,2005, there would be a difference of Rs.2,000 than the Pass Book balance. To reconcile this difference, if you start from the Cash Book balance, Rs.2,000 should be added to it to find out the Pass Book Balance and vice-versa, when you start from the Pass Book balance.

(ii) **Cheques paid into but not collected and credited**: A firm may receive from time to time cheques from its customers drawn on different banks in different places, and these cheques would be sent to bank for collection. The firm debits the Bank Account with it as soon as the cheque is sent for collection. However, the bank gives credit to the firm only when the cheques are actually collected. Thus, on a particular date, certain cheques which were sent for collection by the firm might not have been collected by the bank and credited in the firm's account and hence, the balances shown by the two books would not agree; the balance shown by the Pass Book have to deduct the amount of the cheque sent in for collection; To reconcile the two balances, you have to arrive at the balance as per Pass Book and vice-versa.

(iii) **Bank charges, interest on overdraft etc., debited in the Pass book only**: The bank charges its customers for the various service it renders to its customers from time to time and charges interest on the overdraft, cash credit or advance made by it to its customers. The bank debits the customer's account, as soon as the service is rendered or interest has become due. However, the customer will know of such charges only when he receives a statement of account from the bank. Thus, on a particular date, the balance as shown by the bank Pass Book may be different from the balance shown by the Cash Book.

(iv) **Interest on current account, dividends etc., collected by the bank**: Interest on the customer's current account, and dividends, rents etc, collected by the bank will be credited by the bank in the Pass book, as soon as such incomes are collected or the interest has become due. Hence, the Pass book balance would increase. However, the customer comes to know of such credit in the Pass Book only when he receives the statement of account from the Bank. Thus, the balance shown by the bank Pass Book and the Cash Book may not be the same.

(v) **Insurance premium, subscription, rent etc., paid by the bank on behalf of customers**: When the bank makes Such payments as per the standing instructions from the customer, the Pass Book would be debited to that extent but there will be no corresponding entry in the Cash Book until the customer comes to know of such payments on his behalf by the bank. Hence, there would be a difference.

(vi) There may be errors in the records maintained by the customer or the banker or both. The two balances, therefore, may not tally.

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Bank Reconciliation Statement

The Bank Reconciliation Statement is a statement prepared by the customer of a bank to reconcile the balance as shown by his Cash Book with that of the Pass Book. The basic purpose of such a statement is to ascertain the causes of difference between the two balances and to find out whether any errors have crept either in the Cash Book or in the Pass Book so that the necessary correction can be made.

The Bank Reconciliation Statement is prepared, usually at the end of a period, i.e., a quarter, a half year or a year as the case may be depending upon the volume of bank transactions involved during a period. The following steps may be taken for preparing the statements:

(i) The Balance as shown by any book (i.e., cash book or the pass book) should be taken as the starting point.

(ii) The various causes for difference, if any, between the two balances will have to be found out by comparison of the two books.

(iii) If the cause has resulted in an increase in the balance shown by the other book, the amount of such increase should be added to the balance as per the former book which has been taken as the starting point.

(v) In case, the cause has resulted in decrease in the balance shown by the other book, the amount of such increase should be added to the balance as per the former book which has been taken as the starting point.

In this way, you can arrive at the balance as per the other book which, when compared with the actual balance shown by the other book, would reveal whether these are any errors or not. If the balance in the other book as arrived at, by the Reconciliation Statement agrees with the actual balance shown by the other book, it means there are only differences but no errors; if not, it means there are errors also which will have to be located and rectified.

Illustration 9 On March 31, 2007 the Cash Book of Parameswaran showed a Bank balance of Rs.4,850. While verifying with the pass book, the following facts were needed:

(i) Cheques sent in for collection before March 31, 2007, and not credited by the bank amounted in all to Rs.845.

(ii) Cheques issued before March 31, 2007, and not credited by the bank amounted in all to Rs.845.

(iii) The banker has charged a sum of Rs.100 towards incidental charges and credited interest of Rs.250.

(iv) The banker has given a wrong credit for Rs.250.

(v) Mr. Nair has given into bank directly a sum of Rs.300 on March 28, 2007, which has not been entered in the cash book.

(vi) A cheque for Rs.200 sent for collection and returned unpaid has not been entered in the cash book.

Prepare a Bank Reconciliation Statement.

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Solution

TABLE 3.50 Mr. Parameshwaran's Bank Reconciliation Statement as on March 31, 2007

		Rs.	Rs.
Bank balance as per Cash Book			4,850
Add:	Cheques issued but not presented for payment	885	
	Wrong credit given by the banker	250	
	Interest credited in the Pass Book only	250	
	Amount directly paid into bank not entered in the Cash Book	300	1,685
			6,535
Less:	Cheques sent to bank for collection but not yet credited in the Pass Book.	845	
	Bank charges debited in the Pass Book.	100	
	Cheques returned uncollected debited in the Pass Book but not entered in the Cash Book.	200	1,145
Bank balance as per Book.			5,390

Illustration 10 On June 30, 2007, my Pass Book Account No.1 showed a balance of Rs.8,500. I had drawn cheques for Rs.2,800 on June 25 out of which Rs.1000 only had been entered in the Pass Book before June 30. Rs.5,200 paid in by me on June 28 was wrongly credited to my No.2 A/c. Cash for a Bills Receivable for Rs.500 was collected by the bankers on June 27, but no corresponding entry was made in the Cash Book. A payment of Rs.600 from my No.2 A/c has been wrongly debited by the bankers to his account. The bankers have also recovered a fire insurance claim of Rs.1,200, their charges and commissions on the same being Rs.50, the entries for which were made only in the Pass Book. A wrong credit of Rs.250 relating to some other account appeared in the Pass Book. Prepare a Reconciliation Statement as on June 30, 2007, of Bank Account No.1.

TABLE 3.51 Bank Reconciliation of Account No. 1 as on June 30, 2007

		Rs.	Rs.
Bank balance as per Pass Book			8,500
Add:	Cash paid in but wrongly credited to No. 2 Account	5,200	
	Wrong debit by the banker No. 1 A/c	600	
	Charges and commissions debited in the Pass Book only	50	5,850
			14,350
Less:	Cheques issued but not presented for payment (Rs.2,800 – Rs.1,000)	1,800	
	Cash collected by the bank for Bills Receivable entered in Pass Book only	500	
	Fire insurance claim received by the banker credited in the Pass Book but not entered in the Cash Book	1,200	
	Wrong credit appearing in No. 1 Account	250	3,750
Bank balance as per cash Book			10.600

Illustration 11 From the following particulars, prepare a Bank Reconciliation Statement showing the Balance as per Cash Book on December 31, 2007.

(i) Out of cheques of Rs.9,200 paid on December 29, Rs.4,200 appear to have been credited in the Pass Book only on January 2, 2008.

(ii) I had issued a cheque in December 1998, amounting in all to Rs.15,000, of which I find that Rs.6,000 worth have been cashed in the same month,a cheque of Rs.5,000 has been cashed on January 3, 2008, and the rest have not been presented at all.

(iii) My bankers have given me a wrong credit in my Joint Account with wife for a cheque of Rs.1,200 paid into my personal account.

(iv) Rs.900 interest on overdraft and Rs.50 for bank charges debited in the Pass Book on December 31, have been entered in my Cash Book only on January 4, 2008.

(v) My Pass Book shows a credit of Rs.1,200 to my account being interest on my securities collected by my bankers.

(vi) The bank Pass Book showed an overdraft of Rs.19,200.

Solution

TABLE 3.52 Bank Reconciliation Statement as on December 31, 2007

		Rs.	Rs.
Overdrafts as per Pass Book			19,200
Less:	Cheques paid in but not collected in the Pass Book	4,200	
	Wrong credit in Joint Account instead of his account for cheque paid in	1,200	
	Interest on overdraft and bank charges debited in the Pass Book only	950	6,350
			12,850
Add:	Cheques issued but not presented for payment	9,000	
	Interest on securities collected by the bank and credited in the Pass Book but not entered in the Cash Book	1,200	10,200
Overdraft balance as per Cash Book			23,050

Illustration 12 Perfect (P) Ltd., has two accounts with Ever Bank Ltd. The accounts were known as 'Account I' 'Account II'. As at December 31, 2006, the balance as per A/c Books reflected the following:

Account I – Rs. 1,25,000 Regular Balance.

Account II – Rs. 1,11,250 Overdraft Balance.

The Accountant failed to tally the balance with the Pass Book, and the following information was available:

(a) The Bank has charged Interest on Account II Rs.11,375 and credited Interest on Account I Rs.1,250. These were not recorded by the Accountant.

(b) Rs.12,500 drawn on December 10, 2006, from Account I was recorded in the Books of Account II.

(c) Bank charges of Rs.150 and Rs.1,125 for Account I and Account II were not recorded in Books.

(d) A deposit of Rs.150 and Rs.17,500 in Account I was wrongly entered A/c II in the books.

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(e) Two cheques of Rs.12,500 and Rs.13,750 deposited in Account I, but entered in Account II in the books, were dishonoured. The entries for dishonoured cheques were entered in Account II.
(f) Cheques issued for Rs.1,50,000 and Rs.15,000 respectively from Account I and II were not presented until January 5, 2007.
(g) Cheques deposited for Rs.1,25,000 and Rs.1,17,000 in Account I & II respectively, were credited by Bank only on February 2, 2007.

You are required to prepare the Bank Reconciliation Statement for A/c II.

Solution

In the books of PERFECT PRIVATE LTD.

TABLE 3.53 Bank Reconciliation Statement (A/c II) as on Dec. 31, 2006

		Rs.	Rs.
Overdraft balance as per Cash Book			1,11,250
Add:	Interest charged by the Bank but not entered in the Cash Book	11,375	
	Bank charges debited in the Pass Book only	1,125	
	Wrong debit in the Cash Book A/c II for deposit made in No. 1 A/c	17,500	
	Cheques paid into bank but not credited in the Pass Book.	1,17,500	1,47,500
			2,58,750
Less:	Wrong credit in the Cash Book A/c II for amount withdrawn for A/c I	12.500	
	Cheques issued but not presented for payment	15,000	27,500
Overdraft balance as per Pass Book			2,31,250

Note: Item (e) is not a cause for the difference, since a wrong entry for deposit has been made in the cash but subsequently cancelled by another entry for the dishonour. Hence, no difference.

Ilustration 13 From the following particulars, find out adjusted bank balance as per Cash Book and prepare thereafter Bank Reconciliation Statement as on 31-12-2008 of a sole-proprietor:

	Rs.
Bank overdraft as per cash book	80,000
Cheque deposited per bank statement but not entered in cash book	3,000
Cheques recorded for collection but not sent to Bank	10,000
Credit side of Bank column cast short	1,000
Premium on Proprietor's LIP paid on standing advice	5,000
Bank Charges recorded twice in cash Book	100
Customer's cheque returned as per Bank statement only.	4,000
Cheques issued but dishonoured on technical grounds	3,000
Bills collected by Bank directly	20,000
Cheque for Rs.50,000 deposited but collection as per Bank Statement	49,980
Cheque received entered twice in cash book	5,000

Solution

Note: Here, the cash Book balance has to the adjusted and then the Reconciliation Statement should be prepared.

(a) Adjustment:

TABLE 3.54 Cash Book (Bank Columns only)

	Rs.		Rs.
To Cheque deposited not entered	3,000	By Balance b/d	80,000
" Bank charges – recorded twice	100	" Short casting	1,000
" Bills collected	20,000	" LIP Premium	5,000
" Balance c/d	74,920	" Cheque returned	4,000
		" Cheque dishonoured	3,000
		" Collection charges	20
		" Cheque entered twice	5,000
	98,020		98,020

TABLE 3.55 Bank Reconciliation Statement as on December 31, 2008

	Rs.
Adjusted overdraft balance as per Cash Book	74,920
Add: Cheques recorded for collection but not sent to bank	10,000
Overdraft balance as per Pass Book	84,920

Illstration 14 When Sweetex Ltd. Received its Bank Statement for the period ended 30th June, 2007, this did not agree with the balance shown in the Cash Book of Rs.2,972 in the Company's favour.

(1) An examination of Rs.492 paid on 29th June, 2007, has not been entered by the Bank until 1st July, 2007.

(2) Bank Charges amounting to Rs.17 has not been entered in the cash Book.

(3) A deposit of Rs.42 appeared on the Bank statement for an unpaid cheque, which has been returned marked is "out of date". The cheque had been retained by the customer of Sweetex Ltd., and paid into the Bank again on 3rd July, 2007.

(4) A standing order for payment of an annual subscription amounting to Rs.10 had not been entered in the Cash Book.

(5) On 25th June, the Managing Director had given the cashier a cheque for Rs.100 to pay into his personal account at the Bank. The cashier had paid into the company's account by mistake.

(6) On 27th June, two customers of Sweetex Ltd., had paid direct to the company's Bank account Rs.499 and Rs.157 respectively in payment for goods supplied. The advice was not received by the company until 1st July and were entered in the Cash Book under that date.

(7) On 30th March, 2007, the company had entered into a hire purchase agreement to pay by Banker's order a sum of Rs.26 on the 10th day of each month, commencing from April. No entries had been made in the Cash Book.

(8) A cheque for Rs.364, received from Mr. Bitter and paid into the Bank had been entered twice in the Cash Book.

(9) Cheques issued amounting to Rs.4,672 had not been presented to the Bank payment until after 30th June, 2007.

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(10) A customer of the Company, who received a cash discount of 2½ % on his account of Rs.200 paid the Company a cheque on 10th June. The Cashier, in error, entered the gross amount in the Bank Column of the Cash Book. After making the adjustments for the foregoing transactions, the Bank statements was reconciled with the balance in the Cash Book.

You are required:

(a) to show the necessary adjustments in the Cash Book of Sweetex Ltd., bringing down the correct balance on 30th June, 2007; and

(b) to prepare a Bank Reconciliation Statement as on that date.

Solution

TABLE 3.56 Cash Book (Bank Column Only)

Date	*Particulars*	*Rs.*	*Date*	*Particulars*	*Rs.*
30.6.07	To Balance b/d	2,972	30.6.07	By Balance Charges (2)	17
"	" Customers A/c (6) 499+157	656	"	" Annual Subscrition (4)	10
			"	" Hire Purchase Vendor (7)	
			"	" 3 months at Vendor (7)	78
			"	" Bitter's A/c (8)	364
			"	" Discount Allowed (10) 2½ % of 200	5
			"	" Balanced	3.154
		3,628			3.628

TABLE 3.57 Bank Reconciliation Statement as on 30.6.2007

		Rs.	Rs.
Bank Balance as per Cash Book (after adjustment)			3,154
Add:	M.D.'s Private cheque wrongly deposited in this A/c on 25	100	
	Cheque issued but not presented to Bank until after 30.6.2007	4,672	4,772
			7,926
Less:	A deposit paid on 29.6.2007 but not credited by Bank until 1.7.2007	492	
	A debit appeared on the Bank statement for an unpaid cheque Because of out of date.	42	534
Bank Balance per Bank Statement (Pass Book)			7,392

Note: (Item 3) cheque redated and paid into Bank on 3.7.2007 is not concerned to us solving the above problem.
(Item 4) It is assumed that the cashier made no entry in the Cash Book.
(Item 5) Entries for Rs.656 on 1.7.2007, are to be cancelled as these are now entered on 30.6.2007

Where Abstracts from the Cash Book and the Pass Book are given in such a case, there can be two possibilities:

(i) When the abstracts relate to the same period: In such a case, the causes for the difference would be only those items which are not found in both the books.

(ii) When the Pass Book relates to the succeeding period: In such cases, the causes for the difference would be those items which are found in both the Books. Having listed the causes for difference by a comparison of Cash Book with the Pass Book, the Reconciliation statement can be prepared as already explained.

Illustration 15 Below are extracts from the cash book (Bank columns only) and Bank Pass Book of S.Sarkar, prepare a Reconciliation Statement as on December 31, 2007:

TABLE 3.58 Cash Book

2007		Rs.	2007		Rs.
Dec. 1	To Balance b/d	5,400	Dec. 4	By Raghavan	300
" 4	" Daniel	350	" 6	" Petty Cash	50
" 8	" Chandran	175	" 10	" Kumar	450
" 11	" Interest on Securities	300	" 14	" Interest on Loan	25
" 17	" Smith	240	" 18	" Self	220
" 24	" Das & Co.	500	" 20	" Wages	310
" 31	" Sam	160	" 25	" Raja	90
			" 28	" Nathan	175
			" 31	" Salaries	230
			" 31	" James	650
			" 31	" Balance c/d	4,625
		7,125			7,125
20	08				
Jan 1	Balance b/d	4,625			

2007		Rs.	2007		Rs.
Dec. 5	To Raghavan	300	Dec. 1	By Balance	5,400
" 6	" Petty Cash	50	" 6	" Daniel	350
" 12	" Kumar	450	" 14	" Interest on Securities	300
" 15	" Interest on loan	25	" 31	" Sam	160
" 18	" Self	220			
" 20	" Wages	310			
" 30	" Nathan	175			
" 31	" Salaries	230			
" 31	" Balance b/d	4,450			
		6,210			6,210
			1999		
			Jan. 1	By Balance b/d	4,450

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TABLE 3.59 Reconciliation Statement as on December 31, 2007

		Rs.	Rs.
Bank balance as per Cash Book			4,625
Add: Cheques issued but not presented for payment:	Raja	90	
	James	650	740
			5,365
Less: Cheques paid into bank but not collect and Credited in the Pass Book	Chandran	175	
	Smith	240	
	Das & Co.	500	915
Bank Balances as per Pass Book			4,450

Illustration 16 From the following entries in the Bank column of the Cash Book of Mr. A and corresponding Bank Pass Book, prepare a Bank Reconciliation as on 31st March, 2007.

TABLE 3.60 Cash Book (Bank Column)

Dr. Cr.

Date	*Particulars*	*Amount Rs.*	*Date*	*Particulars*	*Cheque No.*	*Amount Rs.*
2007			2007			
Mar. 1	To Balance	3,400	Mar. 5	By Drawings	526	1,500
" 10	" M. Das – Cheque	500	" 8	" Salaries	527	2,200
" 13	" Dey – Cash	4,000	" 15	" Purchase	528	3,000
" 18	" C. Lal – Cheque on Delhi	1,200	" 20	" R. Bros	529	1,550
" 20	" A. Bomen – Cheque	2,200	" 29	" House Rent	530	800
" 29	" Bose – Cheque	5,700	" 30	" K. Bros	531	400
" 31	" A. Jeevan – Cheque	3,425	" 31	" N. Koomar	532	1,600
			" 31	" Balance		9,375
		20,425				20,425

TABLE 3.61 Bank Pass Book – A's Account

Dr. Cr.

Date	*Particulars*	*Cheque No.*	*Amount Rs.*	*Date*	*Particulars*	*Amount Rs.*
2007				2007		
Apr. 1	To Balance – Overdraft		350	Apr. 1	By Dividend	750
" 2	" C. Ramdas	530	800	" 3	" A. Bomen	2,200
" 4	" K. Bros	531	400	" 4	" J. Jeevan	400

" 8	" Self	534	2,200	" 7	" D. Bose	5,700
" 10	" Self	535	700	" 7	" A. Jeevan	3,425
" 12	" N. Koomar	532	1,600	" 11	" C. Lal – Cheque on Delhi cleared less charges	1,198
				" 15	" Interest on G.P Note	700
	" Balance c/d		8,323			
			14,373			14,373
					By Balance b/d	8,323

Solution

TABLE 3.62 Bank Reconciliation Statement as on 31.3.2007

		Rs.	Rs.
Bank balance as per Cash Book			9,375
Add:	Cheque issied but not presented before 31.3.2007 (Presented in April, 2007)		
	House rent cheque No. 530	800	
	K. Bros Cheque No. 531	400	
	N. Koomar Cheque No. 532	1,600	2,800
			12,175
Less:	Cheques entered in Cash Book and Deposited in Bank but credited in April 2007, i.e, not before 31.3.2007.		
	A. Lal	1,200	
	A. Bomen	2,200	
	D. Bose	5,700	
	A. Jeevan	3,425	12,525
Overdraft Balance as per Book			(–) 350

Illustration 17 Following are the entries recorded in the Bank Column of the Cash Book of Mr. X for the month ending on 31.3.2006;

TABLE 3.63 Cash Book (Bank Column)

Date	*Particulars*	*Rs.*	*Date*	*Particulars*	*Rs.*
15.3.2006	To Cash	36,000	1.3.97	By Balance b/d	40,000
20.3.2006	To Ray	24,000	4.3.97	By John	2,000
22.3.2006	To Kapoor	10,000	6.3.97	By Krishnan	400
31.3.2006	To Balance c/d	7,640	15.3.97	By Kailash	240
		77,640			77,640
				By Balance c/d	7,640

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On 31.3.2006 Mr. X received the Bank Statement. On perusal of the statement Mr. X ascertained the following information:

(i) Cheques deposited but not credited by the bank Rs.10,000.
(ii) Interest on securities collected by the bank but not recorded in cash book Rs.1,080.
(iii) Credit transfer not recoreded in the cash book Rs.200.
(iv) Dividend collected by the bank directly but not recorded in the cash book. Rs.1,000.
(v) Cheques issues but not presented for payment Rs.37,400.
(vi) Interest debited by the bank but not recorded in the cash book Rs.1,000.
(vii) Bank charges not recorded in the cash book Rs.340.

From the above information, you are asked to prepare a Bank reconciliation statement ascertain the balance as per Bank Statement.

Solution

TABLE 3.64 Bank Reconciliation statement as on 31st March, 2006

		Rs.	Rs.
Overdrafts as per Cash Book			7,640
Add:	Cheques deposited but not credited by the bank	10,000	
	Interest debited by the bank but recorded in the cash book.	1,000	
	Bank charges not recorded in the cash book	340	11,340
			18,980
Less:	Interest on securities collected by the bank but not recorded in cash book.	1,080	
	Credit transfer not recorded in the cash book	200	
	Dividend collected by the bank directly but not recorded in the cash book.	1,000	
	Cheques issued but not presented for payment	37,400	39,680
	Credit Balance as per Bank Statement		20,700

ERRORS AND RECTIFICATION

We have explained in the earlier pages that the transactions which are entered in the subsidiary books will be posted to Ledger Account and the Ledger Account would be closed at the end and a list of balances would be prepared known as the Trial Balance. The agreement of the Trial Balance is a proof as to the arithmetical accuracy of the books of accounts. Agreement of the Trial Balance is not a final and conclusive proof of accuracy of the books of accounts. It simply assures that for every debit there is a corresponding and equal credit. It means that in spite of an agreed Trial Balance, there may be errors in the books of accounts. If Trial Balance does not agree, it is a clear indication of the fact that there are certain errors in the books of accounts. Thus, errors may be committed while recording, classifying or summarising the transactions whether the Trial Balance agrees or does not agree.

Classification of Errors: Errors can be broadly into the following four types, depending upon its nature:

(i) Errors of Omission
(ii) Errors of Commission
(iii) Errors of Principles
(iv) Compensating Errors.

Errors of Omission

When a transaction is completely omitted to be recorded from the books of accounts, it is called an error of omission. For example, if a credit purchase from Ram for Rs.1,000 is omitted to be entered in the Purchases Books, it would be omitted in the Ledger also since what is found in the Subsidiary Book alone will find a place in the Ledger. Consequently, the transaction would not be found in the Trial Balance also. Such a complete omission of a transaction is known as an Error of Omission. Such errors cannot be located out very easily. They generally come to the notice of the businessman when statement of accounts are received from, or sent to creditors or debtors, as the case may be.

Such type of errors can be rectified by means of rectification journal entries made in Journal Proper, since making the correction in the concerned subsidiary book may not be possible at the time of locating the error. The rectification entry necessary for correction would be the normal journal entry that would have been made for the transaction that is so omitted. The correcting journal entry when posted to the concerned ledger accounts would correct the error.

Example 1 A credit purchase from Ram for Rs.1,000 was omitted to be entered in the Purchases Book.

The Rectification entry would be:

	Purchases Account	Dr.	1,000
	To Ram's Account		1,000
	(being the error of omission of credit purchases from Ram rectified)		

Example 2 A Bill Receivable for Rs. 2,000 received from Sunil has been omitted from the Bills Receivable entry.

The rectification entry would be

	Bills Receivable Account	Dr.	2,000
	To Sunil		2,000
	(Being the error of omission rectified)		

Since an error of omission affects both sides of the accounts, it can be rectified by means of a rectifying entry.

Errors of Commission

When a transaction is entered in the books of accounts but if it is entered partially or incorrectly, it becomes an error of commission. This type of error generally arises due to the negligence of the account and hence may be errors of inadvertence. It may be different types:

(a) ***Entering a wrong Amount in the Correct Subsidiary book:*** A transaction may be entered in the correct subsidiary book, but with a wrong amount. The same error will be carried forward to the Trial Balance through the ledger. The Trial Balance will agree since the error equally affects both aspects. . Such an error can be rectified only by means of a suitable rectification entry.

Example 1 Sales to Mohan for Rs.5,000 entered in the Sales Book as Per 5,500.

Here, the amount is entered in the Sales Book as Rs.5,500 instead of Rs.5,000. It will be posted to the debit of Mohan's Account and an excess credit of Rs.500 in Sales Account.

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The error can be rectify the entry:

Sales Account	Dr.	500	
To Mohan's Account			500
(being the posting of the wrong amount corrected)			

Example 2 Sales to Mohan for Rs.5,500 entered in the Sales Book as Rs.5,000.

Here, Mohan's Account when posted, will show a short debit and Sales Account short credit. Hence the rectification entry would be:

Mohan's Account	Dr.	500	
To Sales Account			500

(b) ***Recording a Correct Amount to Wrong Subsidiary Book:*** A transaction may be entered in a wrong subsidiary book. For example, a credit purchase from Ram may be passed through the Sales Book, instead of through the Purchases Book. In such a case, strictly speaking, there are two errors: (i) omitting a transaction from the appropriate book, and (ii) Passing through another subsidiary book. Hence, both the errors will have to be rectified and it requires two rectification entries.

Example: A credit purchase of Rs.1,000 from Ram entered through the Sales Book.

The transaction, if correctly entered, would have been posted to the debit of Purchases Account and to the credit of Ram's Account in the ledger. Since it has been entered in the Sales Book, it would have been actually posted to the debit of Ram's Account and credit of Sales A/c. Thus, there are two errors. The rectification entries would be:

(i) To cancel the wrong entry already made:

Sales Account	Dr.	1,000	
To Ram'sAccount			1,000
(Wrong entry cancelled)			

(ii) To rectify the omission in the accounts:

Purchases Account	Dr.	1,000	
(Omission rectified)			

Instead of making two such entries, it may be combined and passed in the form of one single entry:

Sales Account	Dr.	1,000	
Purchases A/c	Dr.	1,000	
To Ram's A/c			2,000

(c) ***Posting a wrong amount to the correct side of the account:*** Sometimes a wrong amount may be posted to the correct side of an account. For example, purchases from Ram on credit Rs.1,000 through correctly entered in the Purchases Book may be posted to the credit of Ram's account as Rs.1,100. It means that there is an excess credit of Rs.100 in account. This is an arithmetical error and affects only one aspect and hence, makes the Trial Balance disagree.Whenever an error and affects only one aspect of the transaction, it cannot be rectified by means of a journal entry. Instead, a suitable amount will have to be posted to the appropriate side of the account to correct the mistake. In this case, an amount of Rs.100 should be posted to the debit of Ram's account to cancel the excess credit in it. No journal entry is required.

TABLE 3.65 Ram's Account

	Rs.		Rs.
To Adjustment	100	By Purchases	100

(d) ***Posting a correct amount to the wrong side of the account***: To rectify such errors, double the amount should be posted in the side.

Example: Rent paid Rs.100 posted to the side of the Rent Account. Rs.200 should posted to the debit side of the rent account. It is an arithmetical error and does not require a journal entry for rectification. It can be rectified as given below:

TABLE 3.66 Rent Account

	Rs.		Rs.
To Adjustment	200	By Cash	100

The net effect will be a debit of Rs.100 in Rent Account.

(e) ***Making double posting***: Sometimes an entry may be posted twice in the account. This can be rectified by posting the amount equal to the amount of transaction in the opposite side of the account. No journal entry is required.

(f) ***Posting to the wrong account of the same class***: For receiving from A an amount of Rs.100, A & Sons Account may be credited. To rectify such an error, the following entry would be made:

A & Sons Account	Dr.	100	
To A's Account			100
(Being the wrong credit given to A & sons corrected and the correct credit given to A).			

(g) Errors arising in totaling, carrying forward, balancing etc., are also called Errors of Commission.

Errors of Principle

Errors of Principle are committed because of the ignorance of the principles of accounting. It may be committed in different ways.

(a) Errors due to inability to make a distinction between revenue and capital items, i.e., a capital expenditure is taken as a revenue expenditure or vice versa. Similarly, a capital receipt may be taken as a revenue receipt.

Example 1 Sale of old furniture for Rs.500 credited to Sales Account. It is a capital receipt but is treated as a revenue receipt. The error does not affect the agreement of the Trial Balance because some account is debited and some other account is credited for an equal amount and thus the double-entry rule is satisfied. It is an error of principle and it can be rectified by means of a entry as follows:

Sales Account	Dr.	500	
To Furniture Account			500

Example 2 Repairs to Building Rs.1,000 debited to Building Account. It is an expenditure of a revenue nature, but is treated as capital expenditure. The correcting would be:

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Repairs to Building Account	Dr.	1,000	
To Building Account			1,000

(b) Errors due to inability to make a difference between business expenses and personal expenses.

Example Proprietor's Life Insurance premium Rs.225 paid debited to Insurance Account. It is a personal expense and ought to have been debited to Drawings Account of the proprietor, but is wrongly debited to Insurance Account treating it as a business expenditure. The correcting entry would be:

Drawings Account	Dr.	225	
To Insurance Account			225

(c) Errors due to inability to make a difference between productive expenses and unproductive expenses.

For example, wages paid for production may be Salaries A/c or Salaries paid to office employees may be debited to wages Account.

Compensating Errors

Compensating errors are those which compensate each other. It means that the effect of one error is offset by that of another error, ultimately, resulting in the agreement of the trial balance. For example, if rent paid Rs.100 is debited in the rent amount as Rs.150 and commission received Rs.200 is credited in the commission accounts as Rs.150 and commission received Rs. 200 is credited of Rs.50, in commission accounts as Rs.250, the excess debit in rent account account is compensated by an excess credit of Rs.50 in commission account. Hence, the presence of this type of errors will not be revealed by the trial to be identified and rectified one by one till the errors are corrected.

Errors can also be classified into two types from the point of view of locating them:

(a) Errors which do not affect the agreement of the trial balance.
As stated earlier, all errors of omission, all errors of principal, all compensating errors and some of the errors of omission will not affect agreement of the Trial Balance. Locating such errors is, therefore, a difficult process. Such errors can always be rectified by means of journal entries.

(b) Errors which affect the agreement of the trial balance: Many of the errors of commission such as posting, creates mistakes in totaling of the Trial Balance and hence result in the disagreement of the trial balance.

Illustration 18 Rectify the following errors:

(i) Rs.150 relating to purchase of office stationery has been wrongly credited to the personal account of the owner.
(ii) Goods bought from Jones on credit for Rs.225 were not passed through the subsidiary book.
(iii) The total of the Discount column on the debit side of the cash book has been cast short by Rs.30.
(iv) A Bill Receivable for Rs.500 received from Jamal was passed through the Bills Payable book.
(v) An invoice received from Chand for Rs.819 was entered in the original book as Rs.890.
(vi) Cash received from C.Mathew was debited to G.Mathew Rs.100.
(vii) Rs.6,000 owed by a customer had been omitted from the schedule of debtors.
(viii) While carrying forward, the total from one page of the Purchases Book to the next, the amount of Rs.2,134 was written as Rs.2,314.
(ix) General expenses paid Rs.19 was posted of the account as Rs.90.

Solution

TABLE 3.67

				Rs.	Rs.
(i)	Printing & Stationery Account	Dr		150	
	To Drawings Account				150
	(Being the wrong debit to the personal account of the owner for purchase of office stationery rectified)				
(ii)	Purchases Account	Dr		525	
	To Jones Account				525
	(Being the omission credit purchases rectified)				

(iii) This is an arithmetical error, since the total of the discount column on the debit side of the Cash Book has been cast short by Rs.30. the discount allowed in the account in the ledger to which this total is posted, would show a short debit by Rs.30. Hence, a further debit Rs.30 should be given to the discount allowed account and the total of the discount column in the cash book also should be corrected. No journal entry is necessary.

(iv)	Bills Receivable Account	Dr		500	
	Bills Payable Account	Dr		500	
	To Jamal Account				1,000
	(Being the Bills Receivable passed through Bills Payable book rectified)				
(v)	Chand Account	Dr		71	
	To Purchases Account				71
	(Being the excess debit and credit in the concerned account cancelled)				
(vi)	Plant and Machinery Account	Dr		5,200	
	To Purchases Account				5,200
	(Being the wrong debit to Purchases Account for gas engine purchased rectified)				

(vii) This is also an arithmetical error. Instead of crediting C.Mathew for cash received, it has been wrongly debited to G. Mathew's A/c. This wrong debit should be cancelled by a credit for an equal amount and C.Mathew also should be credited with Rs.100.This requires two separate postings as shown below and no journal entry is required.

TABLE 3.68 G. Mathew

To Cash	100	By Adjustment	100

TABLE 3.69 C. Mathew

		By Adjustment	100

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(viii) This is an arithmetical error. The omission is in the Sundry debtors list and not in the books of accounts. Hence, the error appears in the Trial Balance only. It can be corrected by debiting Rs.6,000 to the Sundry Debtors Account. No journal entry is required.

(ix) This is also an arithmetical error. When the total of the Purchases Book is overcast, the Purchases Account in the Ledger also would show an excess debit to that extent, i.e., Rs.180. Hence, the Purchases Account in the ledger should be credited with Rs.180. and the error in the Purchases Book also should be corrected. No journal entry is required.

(x) It is also an arithmetical error. Instead of debiting the General Expenses account with 19 it was credited to that account as Rs.90. So, the General Expenses account should be debited with the total amount. i.e., Rs.19 + 90 = Rs.109. So, the wrong credit of Rs.90 would be cancelled and the account would show the correct debit of Rs.19. No journal entry is required.

Location of Errors: If the balance does not agree, it is an indication of the errors and the accountant has to locate the errors before proceeding further. The following steps may be taken:

(i) The difference of the two sides of the Trial Balance should be divided by two. Find out whether there is an amount equal to that figure on either side of the Trial Balance. It is possible that the amount may have been placed in the wrong side of the Trial Balance resulting in the difference.

(ii) If the mistake could not be found out by the step, divide the difference by 9. If the difference is completely divisible, it can be error of transposition of figures. For example, it can be concluded that in such cases where the difference is divisible by there can be a probability of this type of error.

(iii) If the difference is a round figure, there is a possibility of wrong casting or carrying forward of the subsidiary books.

(iv) Since, cash and bank accounts are not maintained usually in the ledger, check whether the cash and bank balances have been taken in the Trial Balance or not.

(v) The sundry debtors and sundry creditors list may be checked to find out errors, if any.

(vi) Totals of the subsidiary books and posting from there, may also be checked.

(vii) If still the error is not traceable, check every transaction and its entry in the subsidiary book and posting to the accounts and its balance. Maintaining the ledgers under the self-balancing system would help in the easy location of the errors.

Suspense Account

If the account fails to locate the difference in the errors in spite of the above steps and the preparation of the final accounts cannot be further delayed, the difference in the Trial Balance may be temporarily transferred to an account known as 'Suspense Account' and carried forward to the next year. On locating the errors in the errors in the beginning or in the course of next year, rectifying, entries would be passed and when all the errors have been completely rectified, the Suspense Account would show no balance. However, it is to be remembered that if the Trial Balance does not agree, it means that there are arithmetical errors and the difference in the Trial Balance which is transferred to the Suspense Account is due only to arithmetical errors. There may be other errors also like errors of omission, errors of principle, compensating errors etc. which do not affect the agreement of the Trial Balance. Hence, arithmetic errors, when located, would be rectified through the Suspense Account, and for other errors Suspense Account will not be involved. Morever, if errors are located after the preparation of the Suspense Account, all those errors can be rectified only by means of suitable journal entries.

Illustration 19 A book-keeper while balancing his books found that he was out excess credit by 9,180. He placed the difference in a suspense account which he carried forward to the next year. Subsequently, the following errors were located:

(a) Goods bought from Mohideen amounting to Rs. 550 had been posted to the credit of his account as Rs. 5,500.

(b) A dishonoured cheque for Rs.1,200 returned by the firm's bank had been credited to the Bank Account.

(c) An item of Rs.1,010 entered in the Sales Returns Book had been posted to the debit of the customer.

(d) Sundry items of Furniture sold for Rs. 2,500 had been entered in the Sales Day Book.

(e) Rs.6,000 owned by a customer had been entered in his account but not entered in the Discount Column of the Cash Book.

Solution

TABLE 3.70 Journal

				Rs.	Rs.
	(a) Mohideen's Account	Dr.		4,950	
	To Suspense Account				4,950
	(Being the excess credit to Mohideen rectified)				
	(b) Sundry Debtors Account	Dr.		1,200	
	To General Expenses Account				1,200
	(Being the wrong debit to General Expenses for cheque dishonored rectified)				
	(c) Suspense Account	Dr.		2,020	
	To Sundry Debtors Account				2,020
	(Being the rectification made)				
	(d) Sales Account	Dr.		2,500	
	To Furniture Account				2,500
	(Wrong credit to sale of old furniture rectified)				
	(e) Sundry Debtors Account	Dr.		6,000	
	To Suspense Account				6,000
	(Being the omission of sundry debtors rectified)				
	(f) Discount Account	Dr.		250	
	To Suspense A/c				250
	(Omission of to discussion account corrected)				

	Rs.		Rs.
To Difference in Books	9.180	By Mohideen's A/c	4,950
" Sundry Debtors	2,020	" Sundry Debtors	6,000
		" Discount A/c	250
	11,200		11,200

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Illustration 20 You are presented with Trial Balance of Mr. Saxena as on June 30, 2007, showing the credit in excess by Rs.415 which has been carried to Suspense Account. On a close scrutiny the following errors are revealed.:

(a) A cheque of Rs.3,456 received from Shankar, after allowing him a discount of Rs.46, was endorsed to Sharma in full settlement for Rs.3,500. The cheque was finally dishonoured, but no entries were passed in the books.

(b) Goods of the value of Rs.230 returned by Swaminath were entered in the Purchases Day Book and Posted therefrom to Surekha as Rs.320.

(c) Bad Debts aggregating Rs.505 were written off during the year in the Ledger, but were not recorded in the General Ledger.

(d) Bill for Rs.750 received from Surekha on June 28, 2007, has been entered in the Purchases Day Book as Rs.650.

(e) Goods worth Rs.1,234 purchased from Saraf on June 28, 2007, has been entered in the Purchases Day Book and credited to him but were not delivered till July 5, 2007, stock taken by the purchaser on June 30,2007. The title of the goods was, however, passed on June 28,2007.

(f) Rs. 79 paid for freight on Machinery was debited to Freight Account as Rs.97.

You are required to pass the necessary Journal Entries for correcting the above.

Solution

TABLE 3.71 Journal

2007				Rs.	Rs.
June, 30	(a) Shankar Account	Dr.		3,456	
	Discount Received Account	Dr.		44	
	To Sharma's Account				3,500
	(Being the omission rectified)				
	(b) Swaika's Account	Dr.		320	
	Sales Returns Account	Dr.		230	
	To Swaminath's Account				230
	To Purchase Account				230
	(Being the multiple error rectified)				90
	(c) Bad Debts Account	Dr.		505	
	To Suspense Account				505
	(Omission of Debits in the General Ledger corrected)				
	(d) Repairs to Machinery Account	Dr.		750	
	To Purchases Account				650
	To Sureka's Account				100
	(Being the repairs wrongly passed through purchases book with wrong amount rectified)				
	(e) No entry, Closing stock is to be suitably adjusted.				

	(f) Machinery Account	Dr.		79	
	Suspense Account	Dr.		18	
	To Freight Account				97
	(Being the capital expenditure wrongly treated as revenue expenditure, recording a wrong amount corrected)				

Suspense Account

	Rs.		Rs.
To Difference in Books	415	By Sundries	90
" Freight Account	18	" Bad debts	505
" Balance	62		
	595		595

Note: As the Suspense Account does not get closed even after rectifying the given errors, it is an indication of the presence of few more errors.

Illustration 21 The Trial Balance of Anbu prepared as on December 31, 2007, did not tally. As he wanted to close his books and prepare the final accounts, he placed the difference to a newly opened Suspense Account which was carried forward to the next year. In the next year, the following error were discovered:

(a) Rs. 80 owed by a debtor was omitted to be included in the schedule of debtors.
(b) A sum of Rs.270 paid for repairs to Furniture and Fixtures was found debited to furniture and Fixtures account as Rs.720.
(c) The Purchases Returns Book for the month of May was cast Rs.50 short.
(d) A Bill Receivable, received from Pallavan for Rs.1, 200, was found entered in the Bills Payable Day Book as Rs.2,100.
(e) A sum of Rs.300 received from the estate of an insolvent debtor was found credited to his account which was already written–off last year as bad debt.
(f) Old machinery sold on credit Rs.700, was passed through the sales book.
(g) A payment of Rs.500 to a creditor, in full settlement of Rs.540, was found credited to his account.

Pass Journal entries to rectify the above errors and prepare the Suspense Account showing also how you would find out the difference in the Trial Balance.

Solution

Note: In this problem, the difference in the books is not given. But, if the effect of each error on the Trial Balance is analysed carefully, the difference in the books can be arrived at:

TABLE 3.72 Journal Entries for Rectification

(a) The error has resulted in a short debit of Rs.80			Rs.	Rs.
Which otherwise means excess credit, Short debit is taken as excess credit for easy preparation in the Trial Balance.				
Sundry Debtors A/c	Dr.		80	
To Suspense A/c				80
(Omission of a debtor from Debtors list rectified)				

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(b) This error has resulted in an excess debited Rs.450.				
Repairs to Furniture A/c	Dr.		270	
Suspense A/c	Dr.		450	
To Furniture and Fixtures A/c				720
(Being the repairs to Furniture Rs.270 wrongly debited to Furniture A/c as Rs.720 rectified)				
(c) This has resulted in short credit which otherwise means excess debit.				
Suspense A/c	Dr.		50	
To Purchases Returns A/c				50
(Being the short credit in the Purchase Returns Account rectified)				
(d) No effect on the trial balance since some account is debited and some other account is credited with the same amount				
Bills Receivable A/c	Dr.		1,200	
Bills Payable A/c	Dr.		2,100	
To Pallavan's A/c				3,300
(Being the Bills Receivable passed through Bills Payable book rectified)				
(e) No effect on the trial balance.				
Sundry Debtor's A/c	Dr.		300	
To Bad Debts Recovered wrongly credited to Party's A/c credited)				300
(f) No effect on the trial balance.				
Sales A/c	Dr.		700	
To Plant and Machinery A/c				700
(Being the sale of old plant passed through sales book rectified).				
(g) There are two errors. The payment to the creditor in full settlement has not been debited to his account, so there is a short debit of Rs.540. Further, there is a wrong credit of Rs.500. So, totally there is an excess credit of Rs. 1,040.				
Sundry Creditors A/c	Dr.		1,040	
To Suspense A/c				1,040
(Being the posting to the wrong side rectified)				

TABLE 3.73 Trial Balance as on December 31, 2007

	Debit Rs.	*Credit Rs.*
Error (a) Excess Credit		80
" (b) Excess Debit	450	
" (c) Excess Debit	50	
" (d) No effect	-	-
" (e) No effect	-	-
" (f) No effect	-	-
" (g) Excess Credit		1,040
Different in books	620	
	1,120	1,120

TABLE 3.74 Suspense A/c

	Rs.		Rs.
To Difference in Books	620	By Sundry Debtors A/c	80
" Furniture A/c	450	" Sundry Creditors A/c	1,040
" Purchases Returns	50		
	1,120		1,120

Effect of Errors on Profit

Errors committed in a year may affect the profit of that year. This happens when the errors related to balances of a nominal account such as Purchases Account Sales Account, Expenses Account, Income Account etc., are taken into consideration for ascertaining the profit. For example, if Repairs to Building Rs.1,000 is debited to Building Account, it affects the profit and the profit would be overstand by Rs.1,000. If the error affects only the personal accounts or the real accounts, it will have no effect on the profit.

Illustration 22 If the errors given in the previous illustration are analysed, the following will be the effect on profit.

Solution

TABLE 3.75 Effect of errors on profit of 2007

		Increase Rs. (+)	*Decrease Rs. (–)*
Error	(a) No effect	-	-
	(b) Increase in net profit since repairs to Building not debited.	270	-
	(c) Decrease in profit because net purchases is overstated	-	50
	(d) Does not affect	-	-
	(e) Decrease in profit because bad debts recovered not credited.	-	300
	(f) Increase in profit because of wrong credit to Sales Account.	700	-
	(g) Does not affect since only personal account is involved.	-	-
	Net increase in profit.		620
		970	970

Thus, on the whole, the net profit of the year 2007 would have increased by Rs.620. If these errors are rectified, the profit of the year 2007 would decrease by 620.

Illustration 23 The following errors were committed by the account of Geetha Dye Chemicals:

(a) Cash Rs.350 paid to Triman Chemicals posted as Rs.530.

(b) Purchase of stationery worth Rs.150 remained unposted from the Cash Book.

(c) Rs.260 paid for purchase of new office furniture was charged to Office Expenses A/c.

(d) Credit Sales to Trivedi & Co.,of Rs.300 was posted through the sales day book as Rs.240.

How would you rectify these errors assuming that:

(i) They were detected before preparing trial balance

(ii) They were detected after preparing trial balance, but before preparing final accounts (the difference being taken to suspense account).

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(iii) They were deducted after preparing final accounts. (Narration to journal required).

Solution

(i) Assuming that the errors were detected before preparing trial balance:

TABLE 3.76 Journal

(a) Triman Chemicals is to credited by Rs.180 (i.e. 530-350).				
(b) Stationery account is to debited by Rs.150.				
(c) Office furniture A/c	Dr.		260	
To Office Exp. A/c				260
(d) Trivedi & Co. A/c is to be debited by Rs.600 (i.e., Rs.300 for canceling the wrong credit and another Rs.300 for correct debit)				
(e) (1) Sales A/c	Dr.		240	
To Mantri & Co.				240
(2) Purchases A/c	Dr.		420	
To Mantri & Co.				420

(ii) Assuming that the errors were deducted after preparing Trial Balance, but before preparing final A/cs. (the difference being taken to Suspense A/c).

TABLE 3.77 Journal

(a) Suspense A/c	Dr.		180	
To Triman Chemicals A/c				180
(b) Stationery A/c	Dr.		150	
To Suspense A/c				150
(c) Office Furniture A/c	Dr.		260	
To Office Expenses A/c				260
(d) Trivedi & Co. A/c	Dr.		600	
To Suspense A/c				600
(e) Sales A/c	Dr.		240	
Purchases A/c			420	
To Mantri & Co.				660

(iii) Assuming that the errors were detected after preparing final accounts: (Refer Page 49)

TABLE 3.78 Journal

(a) Suspense A/c	Dr.		180	
To Triman Chemicals A/c				180
(b) P&L Adjustment A/c	Dr.		150	
To suspense A/c				150
(c) Office Furniture A/c	Dr.		260	
To P&L Adjustment A/c				260

(d) Trivedei & Co. A/c	Dr.		600	
To Suspense A/c				600
(d) P&L Adjustment A/c (420 + 240)	Dr.		660	
To Mantri & Co.				660

TABLE 3.79 Suspense A/c

Dr. Cr.

	Rs.		Rs.
To Balance b/d (balancing figure)	570	By P & L Adjustment A/c	150
To Triman Chemicals	180	By Trivedi & Co.	600
	750		750

Effect of recognition on Profit	Increase (+) Decrease (–) Rs.
(a)	Nil
(b) (assuming as consumed fully)	(–) 150
(c)	(+) 260
(d)	Nil
(e)	(–) 660
Total	(–) 550

The net profit already arrived at, will be reduced by Rs.550. This amount is to be debited to P&L Adjustment A/c as an adjustment of previous year's transctions. Then, the balance of profit will be carried to Capital A/c.

Illustration 24 From the books of a trader for the year 2006, you find the following errors. Pass rectification entries and prepare a statement to their effect on profit.:

(a) An amount of Rs.200 being rent paid in advance in the previous year, had not been brought forward on the rent account.

(b) Goods Rs.125, returned to Satish Bros. were recorded in the returns inwards book as Rs.152, and from there it was posted to the credit of Satish Bros. Account.

(c) Paid his acceptance to Lila Ram for Rs.7,600, was posted to the debit of Sita as Rs.6,700.

(d) Goods purchased from Gupta for Rs.3,250 entered in the Sales Day Book as Per Rs.3,520.

Solution

TABLE 3.80 Effect of the errors on the profit 2006

	Increase (+) Rs.	*Decrease (–) Rs.*
(a) Rent is understated and hence profit would be overstated	200	-
(b) There are two errors, Omission of Purchases Returns Rs.125 resulting in reducing the profit, Wrong entry in the sales returns Rs.152 further resulting in reduction of profit.	-	277

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(c) No effect	-	-
(d) There are two errors: Omission of Purchases Rs.3,250 resulting in increase in profit. Wrong credit to sales of Net Rs.3,520 resulting in further increase in profit Net increase in profit.	6,770	-
	-	6,693
	6,970	6,970

TABLE 3.81 Entries required for rectification in 2007

(a) Rent A/c	Dr.		200	
To Prepaid Rent A/c				200
(Being the prepaid rent for previous year carried forward)				
(b) Satish Bros.	Dr.		277	
To Purchases Returns				125
To Sales Returns				152
(Being the purchases returns passed through sales returns book rectified)				
(c) Bills Payable A/c	Dr.		7,600	
To Sitaram				6,700
To Suspense				900
(Being paid wrongly debited to Sitaram rectified)				
(d) Sales A/c	Dr.		3,520	
Purchases A/c	Dr.		3,250	
To Gupta				6,770
(Being the purchases passed through sales book corrected).				

TABLE 3.82 Effect of the rectification on the profits of 2007

	Increase Rs.	*Decrease Rs.*
(a) Rent for 2007 debited	-	200
(b) Purchases returns credited; Sales returns credited	277	
(c) No effect	-	-
(d) Debit in Purchases and Debit in Sales	-	6,770
Decrease in profit	6,693	-
	6,970	6,970

Thus, it becomes clear that errors committed in one year and corrected in the subsequent year, according to the method explained already, affects not only the profit of the year in which it is committed, but also the profit of the subsequent year in which it is corrected. Hence, it becomes necessary to find out a way to rectify the errors of the previous year without affecting the profit of the current year.

Rectification of errors without affecting the profit of the subsequent year: In order to rectify the errors committed in the previous year without affecting the profit of the current year, a Profit and Loss

Adjustment Account is opened and this account is debited or credited while passing rectifying entries in place of the nominal accounts which relate to the Trading, Profit and Loss Account. Thus, the rectification will not affect the profit of the current year. For example, if Discount allowed in the previous year was not debited to the Discount Account in Ledger, it can rectified as follows:

Profit & Loss Adjustment A/c Dr.
To Suspense A/c

However, if an error is to be corrected in a personal account or real account, the entry will be made as already explained. The balance appearing in the Profit and Loss Adjustment Account will be closed and transferred to the Capital Account.

Illustration 25 Taking the Illustration 24 as the basis, pass the necessary rectifying entries (without narratives) without affecting profit of the year 2006.

Solution

TABLE 3.83 Rectification Entries

			Rs.	Rs.
	(a) Profit and Loss Adjustment A/c	Dr.	200	
	To Prepaid that A/c			200
	(b) Satish Bros A/c	Dr.	277	
	To Profit and Loss Adjustment A/c			277
	(c) Bills Payable A/c	Dr.	7,600	
	To Sitaram A/c			6,700
	To Suspense A/c			900
	(d) Profit and Loss Adjustment A/c	Dr.	6,770	
	To Gupta A/c			6,770

Illustration 26 A company prepared its financial statement for the year ended 31st March, 2004, after transferring the different in Trial Balance to a Suspense Account which was carried to the Balance Sheet.

In the next year, following errors were discovered relating to the year 2003-2004.

(a) Wages included Rs.8,000 towards installation of a new plant on 1st April 1993. The company charges depreciation on plant and machinery @15% p.a.

(b) A cheque of Rs. 10,800 was paid to a creditor who allowed 10% cash discount but the payment was wrongly posted to purchase account Rs.1,080 only without any entry.

(c) Sundry Debtors include Rs.1, 500 which proved irrecoverable, but, was not written off. A Reserve for Bad Debt was created only on closing debtors.

(d) A Bills receivable amount of Rs.6,000 was discounted for Rs. 5,800, but the proceeds was posted to sales account as Rs.580 and no other entry was made in this respect. Give the appropriate Journal entries to rectify the above errors.

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Solution

TABLE 3.84 Journal Entries

				Rs.	Rs.
	(a) Plant and Machinery Account (8000-15%)	Dr.		6,800	
	To Profit and Loss Adjustment A/c				6,800
	(Wages paid for installation of a new machine wrongly debited to wages account now rectified and adjustments for depreciation made).				
	(b) Sundry Creditors A/c	Dr.		12,000	
	To Profit and Loss Adjustments A/c				2,280
	To Suspense A/c				9,270
	(Payment to a Creditor wrongly debited to purchase account)				
	(c) Profit and Loss adjustments A/c	Dr.		1,425	
	Reserve for bad debts A/c	Dr.		75	
	To Sundry Debtors A/c				1,500
	(Rs.1,500 not written off as bad debts and consequently excess reserve created now adjusted).				
	(d) Profit and Loss Adjustment A/c	Dr.		780	
	Suspense A/c	Dr.		5,220	
	To Bills Receivable A/c				6,000
	(A B/R discounted wrongly posted to sales A/c)				

*Note

(i) In absence of any information, Reserve for Bad debts has been calculated @ 5% on Debtors.

(ii) Keeping in view the Accounting Standard on Prior Period Adjustment, any amount under the head P& L Adjustment account which may be considered as material, should be shown under the head "Prior Period Adjustment" in the P&L A/c of the company.

Illustration 27 The errors mentioned below were discovered in the books of Shri Ramnarayanan after the Profit and Loss Account in the Balance Sheet. Shri Ramnarayanan provided depreciation on Machinery at 10% p.a. and in Furniture at 5% p.a. A Reserve for Bad Debt was provided at 2% on outstanding debtors. No profit for the year was transferred to Capital Account.

(a) A cheque received for Rs.8,000 from a customer was not posted to ledger. The corresponding Sales Invoice was for Rs. 12,000 which had been wrongly passed through the Sales Day Book as Rs.2,000.

(b) A machinery purchased for Rs.20,000 on 1st April, 2006, was wrongly debited to furniture Account.

(c) Sales include Rs.25,000 for goods sold for cash on behalf of Shri Chandrakant. Shri Ramnarayanan was entitled to a commission of 10% on sales plus expenses, for which no adjustment was made. His trade expenses included Rs.1,500 as selling expenses in connection with the above sale.

(d) Some old Furniture (book value on April 1, 2006, Rs.6,000) was disposed of for Rs.3,000 on September 30, 2006, but the proceeds has been wrongly credited to Sales Account.

(e) A credit sale for Rs.5000 had been passed twice through the Sales Day Book.

Give entries to rectify the above.

Solution

TABLE 3.85 Rectification Entries

				Rs.	Rs.
	(a) Suspense A/c	Dr		8,000	
	To Sundry Debtors A/c				8,000
	(Omission of credit to the customer for cheque received rectified)				
	Customer's A/c	Dr		10,000	
	To Profit and Loss Adjustment A/c				10,000
	(Being the wrong amount passed through Sales Book retified)				
	(b) Machinery's A/c	Dr		19,000	
	To Furniture A/c				19,000
	(Being the written down value of Furniture transferred to Machinery A/c)				
	Profit and Loss Adjustment A/c	Dr		1,000	
	To Machinery A/c				1,000
	(Being the additional depreciation provided)				
	(c) Profit and Loss Adjustment A/c	Dr		25,000	
	To Chandrakant				25,000
	(Being the amount due to Chandrakant for the sales made on his behalf)				
	Chandrakant A/c	Dr		4,000	
	To Profit & Loss Adjustment A/c				4,000
	(Being the commission and expenses due on the above sales)				
	(d) Profit and Loss Adjustment A/c	Dr		6,000	
	To Furniture A/c				6,000
	(Being the Furniture disposed of)				
	(e) Profit and Loss Adjustment A/c	Dr		5,000	
	To Sundry Debtors A/c				5,000
	(Being excess cancelled)				
	(f) Reserve for Bad Debts A/c	Dr		480	
	To Profit and Loss Adjustment A/c				480
	(Being reserve @ 2% on Rs.24,000 cancelled)				

TABLE 3.86 Profit and Loss Adjustment A/c

	Rs.		Rs.
To Machinery	1,000	By Sundry Customer	10,000
" Chandrakant	25,000	" Chandrakant	4,000
" Furniture	6,000	" Reserve for Bad Debts	480
" Sundry Debtors A/c	5,000	" Capital A/c	22,520
	37,000		37,000

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Summary

The mechanics of accounting may be summarised as follows. A business transaction takes place. A transaction is recorded in a document providing all the necessary details of transaction. The transaction recorded in the document or voucher is then analysed in order to decide on the accounts that need to be credited or debited. The transaction is then recorded in either one of the special journals like the Cash Book, the Sales Day Book and the Purchase Day book in the Journal Proper. From the book of original entry or the journal, the relative accounts are posted to the debit and credit sides of the relative accounts in the ledger. Every business normally enters into transactions with a number of persons or firms such as the customer or the suppliers in the course of its activities. There are three types of accounts, namely, Personal Account, Real or Property Account and Nominal Account opened in the books of Account, to keep a complete record of the financial transactions of the business.

Every transaction of the business has two aspects, and if a transaction is to be recorded in the books, both the aspects should be recorded. The two aspects are 'Receiving' aspect otherwise known as 'Debit' aspect and 'Giving' aspect otherwise known as 'Credit' aspect. For example, if goods are sold for cash, the two aspects involved are: Receiving benefit in the form of Cash-Debit aspect, and Giving benefit in the form of Goods-Credit aspect.

The value of cash received is exactly equal to the value of goods given. In other words, the debit is always followed by a credit and the value of debit is equal to the credit. Thus, the basic rule for Double–Entry is that 'for every debit there is a corresponding and equal credit'. All transactions should be recorded in the Journal or in the Subsidiary Books as and when they take place. The payments made by cheque are also treated as if it were two transactions, viz., Withdrawal of Cash from the bank, and Payment of cash on account. For the withdrawal of cash, Cash Book would be debited and the Bank Account in the Ledger credited; for payment of cash on account, the concerned account would be debited and the cash book would be credited. The net effect would be no change in the cash balance, but a decrease in the bank balance. This procedure is followed to make sure that all cash transactions are passed through the cash book before they are posted in the ledger.

KEY CONCEPTS

- Journal
- Compound Journal Entry
- Nominal Accounts
- Opening Journal Entry
- Journalising
- Personal Accounts
- Real Account
- Ledger
- Posting
- Trial Balance
- Voucher System
- Cash Journal
- Contra Entry
- Bills Journal
- General Journal
- Goods Journal
- Interest
- Petty Cash Book
- Special Journal
- Accommodation Bill
- Bills of exchange
- Cheque
- Demand Bill
- Promissory Note
- Time Bill
- Trade Bill

Review Questions

OBJECTIVE QUESTIONS

I. Select the most appropriate Answer:

1. The amount brought in by the proprietor in the business should be credited to
   (a) Cash account (b) Capital account (c) Drawing account
2. The amount of salary paid to Suresh should be debited to
   (a) The account of Suresh (b) Salaries account (c) Cash account
3. The written off goods by a customer should be debited to
   (a) Customer's account (b) Sales returns account (c) Goods account

4. Sales made to Mahesh for cash should be debited to
   (a) Cash account (b) Mahesh (c) Sales account
5. The rent paid to the land lord be credited to
   (a) land lord's account (b) Rent account (c) Cash account
6. The cash discount allowed to a debtor should be credited to
   (a) Discount account (b) Customer's account (c) Sales account
7. In case of a debt becoming bad, the amount should be credited to
   (a) Debtor's account (b) Bad debts account (c) Sales account

   [Ans. 1-b; 2-b; 3-b; 4-a; 5-c; 6-b; 7-a]

II. State whether each of the following statements is True or False

1. The posting is done in the journal.
2. Ledger is a set of accounts.
3. Transactions are recorded first of all in the ledger.
4. Journal records transactions in a chronological order.
5. Ledger records transactions in an analytical order.
6. While posting transactions in the ledger, if the account is debited in the journal, it will be credited in the ledger.
7. The word 'TO' is used with the accounts which appear on the debit side of the ledger account.
8. Trial balance helps in knowing the arithmetical accuracy of the accounting entries.

   [Ans. 1-False, 2-True, 3-False, 4-True, 5-True, 6-False, 7-True, 8-True]

III. State under what heading [Personal, Real or Nominal] would you classify each of the following accounts.

1. Salary prepaid account.
2. Salary outstanding account
3. Rent account
4. Bank account
5. Insurance unexpired
6. Proprietor's account
7. Bad debts account
8. Furniture account
9. Goodwill account
10. Patent's account

    [Ans. 1-Personal, 2-Personal, 3-Nominal, 4-Personal, 5-Personal, 6-Personal, 7-Nominal, 8-Real, 9-Real, 10-Real]

DESCRIPTIVE QUESTIONS

1. 'Accounting is the language of business. 'Comment and describe the nature of information which such records furnish to various categories of persons.
2. What do you understand by accounting concepts? What are they?
3. Explain: (1) Going Concern Concept
   (2) Cost Concept
   (3) Rupee Value Concept
4. What do you understand by Conventions? What are they?
5. Explain: (1) Convention of Conservatism.
   (2) Convention of full disclosure.

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6. What do you understand by Double Entry System? Explain its principles in detail.
7. What do you mean by Journal? Why is it called the book of original entry?
8. Define Ledger. Why is it known as the principal book of accounts?
9. What do you understand by 'Subsidiary books? Explain the objects of preparing such books.
10. Define Cash Book. Is it a subsidiary book or a principal book of account? Give reasons.
11. What do you mean by Three-column Cash Book? Explain Contra Entry.
12. Explain the 'Interest system of Petty Cash.'
13. Explain Journal Proper. What entries are recorded in it?
14. What do you mean by a Trial Balance? Discuss the main objects and methods of preparing a Trial Balance.
15. Define a Bank Reconciliation Statement.
16. Explain the reasons on account of which the balance as shown by the Pass book does not agree with the balance as shown by the Bank Column of the Cash Book
17. Explain the errors which are disclosed and not disclosed by the Trial Balance.
18. In case of disagreement of the Trial Balance, in what order you would follow the procedure to locate the errors?
19. What do you mean by the Suspense Account? Why is it opened?
20. How would you rectify the errors of the last year, so that current year's profit may not be affected?

PROBLEMS

I. Subsidiary Books

1. Enter the following transactions in a cash book with cash and discount columns:

2007

March 1 Balance of cash in hand Rs.5,000.
" 2 Received from Ram Rs.600 and allowed him a discount of Rs.15
" 4 Purchased goods for cash Rs.1,800.
" 7 Paid Kumar Rs. 200 and was allowed a discount of Rs.20.
" 9 Purchased stationery Rs.40.
" 11 Received from Cash Sales Rs.1,300.
" 14 Paid for advertisement Rs. 175.
" 20 Sam who owed Rs.535 settled his account by paying Rs.500.
" 25 Received fron Johnson Rs.400 and allowed him a discount of Rs.10.
" 27 Paid Govind Rs. 700 and was allowed a discount of Rs.17.
" 31 Paid Salaries Rs.120.

2. Record the following transactions in a cash and bank columns and post them in the concerned ledger accounts and prepare a trial balance.

2007

August 1 Cash balance Rs.10,000.
" 2 Paid into bank Rs.10,000.
" 3 Purchased goods and paid by cheque Rs.2,000.
" 4 Paid for advertising Rs.100.
" 5 Purchased furniture and paid by cheque Rs.200.
" 6 Received for cash sales Rs.1.000.
" 7 Received a cheque for Rs.1400 from M and allowed him a discount of Rs.15.
" 8 Gave Chandar a cheque for Rs. 1,700 and was allowed a discount of Rs.20.
" 10 R directly paid into bank in our account Rs.900.

" 14 Paid into bank Rs.2,000.
" 17 Withdrew for office use Rs.100.
" 27 Received from K by money order Rs.95.
" 29 Withdrew by cheque for personal use Rs.75.

[Ans. Cash Balance Rs.2,495; Bank Balance Rs.6,825]

3. Make out a cash book with discount, cash and bank columns:

2007
June 1 Cash in hand Rs.2,800; cash at bank Rs.8,100.
" 3 Received from Joseph Rs.1,500 and allowed him a discount of Rs.20.
" 7 Paid into bank Rs.4,000.
" 8 Received for cash sales Rs. 100 and cheque Rs.190.
" 10 Paid George by cheque Rs.570 in settlement of his account for Rs.600.
" 11 Cash purchases by cheque Rs.700.
" 15 Drew for office use Rs.350.
" 17 Advertisement expenses Rs.50.
" 20 Sam paid direct into our account in the bank Rs.620.
" 22 Withdrew cash for personal use Rs.170.
" 26 Paid rent by cheque Rs. 200.
" 27 Received from Raja a cheque for Rs.490 and allowed him a discount of Rs.10.
" 29 Received commission by cheque Rs.220.
" 30 Cash in excess of Rs.400. was paid into bank.

[Ans. Cash Balance Rs.400; bank Balance Rs.11.930]

4. Enter the following transactions in a cash book with suitable columns.

2006
Jan. 1 Cash in hand Rs.5,374 and at bank Rs.15,490.
" 3 Cash Sales Rs.6,400.
" 5 Paid Rs.7,000 into bank.
" 6 Received a cheque for Rs.700 from S.
" 7 Paid into bank S's cheque Rs.700.
" 10 Paid to A by cheque Rs. 980 and discount allowed by him Rs.20.
" 12 Cash purchases Rs.2,500.
" 14 Withdrew from bank for office use Rs.5,000.
" 15 Received a cheque for Rs. 950 from Lucky & Co., allowed them a discount of Rs.50.
" 18 Cash sales Rs.7,500.
" 19 Paid into bank Lucky & Co., cheque and cash Rs.4,000.
" 21 Cash paid for stationery Rs.120.
" 23 Paid Commision to Rakesh by cheque Rs.500.
" 25 Received a cheque for Rs.1,600 from Mohan and paid the same into
" 26 Lucky & Co.,cheque dishonoured.
" 27 Drew a cheque for Rs.800 for personal use.
" 31 Paid salaries by cheque Rs.1,500 and by cash Rs.500. Bank charges Rs. 20. Insurance premium Rs.500. as shown in the pass book.

[*Ans.* Cash Balance Rs. 10,154; Bank Balance Rs.19,490].

5. Write out an analytical cash book from the following:

2007
March 1 Gave an imprest cheque for Rs.100 to the petty cashier to begin with During the month, petty cashier made the following disbursements:

" 7 Bought postage stamps Rs.6.75.
" 10 Paid for stationery Rs.6.75.
" 15 Paid for carriage Rs.7.50.
" 20 Paid for Taxi hire to sales manager 15.50.
" 23 Bought ink and paper Rs.2.25.
" 25 Paid for Coolie Rs.25.
" 27 Tea to traveling agent Rs.3.50.
" 31 Cash Purchases from stationery mart Rs.9.25.

Balance the book at the end of the month.

[*Ans.* Cash Balance Rs.8.75]

6. Prepare an analytical cash book:

2007
Jan. 1 Received for cash payment Rs.500.]
" 2 Paid for postage Rs.40.
" 5 paid for stationery Rs.6.75.
" 8 Paid for advertisement Rs.50.
" 12 Paid for wages Rs.20.
" 16 paid for carriage Rs.15.
" 20 paid for conveyance Rs.22.
" 25 Paid for traveling expenses Rs.80.
" 27 Paid for postage Rs.12.
" 28 Wages to office cleaner Rs.10.
" 30 Paid for telegram Rs.20.
sent registered notice to Landlord Rs.4.75.

[*Ans.* Cash Balance Rs.201.25]

7. A petty book is kept on interest system, the amount of interest being Rs.50 and has six analysis columns for postage, stationery, traveling expenses, repairs, office expenses and ledger accounts.

Enter the following:		Rs. P.
Sept. 1	Petty cash in hand	9.72
" 1	Received cash to make up the interest	40.28
" 7	Bought stamp	4.75
" 8	Paid railway fare	7.25
	Paid bus fare	1.05
" 12	Paid to Chandran	17.50
" 18	Paid jutka charges	2.10
	Paid railway fare	3.25
" 25	Paid for repairs to type-writer.	2.90
	Paid for stationery	1.75
" 30	Paid office expenses	4.00

[*Ans.* Cash Balance Rs.5.45]

8. Enter the following transactions in Bills Receivable and Bills Payable Books:

2007 April 8 Received from Thomas a three months bill for 1,000 duly accepted by him; April 10 – Drew on Francis at four months for Rs.800; April 11 – Accepted a bill for two months for Rs. 1,200 drawn on us by Robinson payable at Central Bank; April 15 – Thompon drew on us a bill for Rs.550. at one month which was accepted by us; April 17 – John endorsed to us the acceptance of Swamy dated February 19 at 3 months for Rs.840; April 20 – Discounted Thomas' Acceptance receiving Rs.982; April 23 – Accepted Edward's draft for Rs.900 at three months; April 25 – A bill for Rs.250 at 6 months drawn by us accepted

by Anand; April 28 – The bill for Rs. 725 at 2 months drawn on us by Krishnan was accepted payable at Indian Bank; April 30 – Received from Joseph a bill at 3 months for Rs.450 dated March 8 drawn by Vel & Co., and accepted by James.

Note: Francis dishonoured the bill on the date Our acceptance due on May 18 was also dishonoured. Swamy met his bill on the due date.

9. Record the following transactions in the subsidiary books:

2007

March 4 Accepted R's bill drawn at 60 days sight Rs.200 (payable at IOB, Madras)

" 8 Accepted A's bill dated 2.3.2007 at 3 months after date for Rs.300 payable to Moorthy and Co.

" 14 Sent to Balan our acceptance at 60 days for Rs.100 in favour of Vinayakam. The bill was drawn on 3.3.1998.

" 20 Received a bill at 3 months for Rs.500 drawn on us on 10th March by Kittu in favour of Pattu and accepted (Payable at Canara Bank, Trichy).

" 25 Gave Subbu our promissory note payable after 3 months for Rs.200 (payable at Syndicate Bank, Coimbatore).

" 28 C drew on us a 30 days bill for Rs.300, the bill was accepted and returned payable at Indian Bank, Bombay.

II. Reconcillation Statements

10. The Pass Book of John and Co., Showed a credit balance of Rs.7,400. On comparison with cash book, the following omissions were found out:
    (a) Cheques received from customers for Rs.450 and for Rs.220 were not credited by the banker.
    (b) A cheque for Rs.100 received from A though debited by him in the bank column of the cash book was not paid into bank.
    (c) The pass book showed a credit of Rs. 75 being interest on investment collected.
    (d) There was a debit of Rs.120 in the pass book in respect of cheques dishonoured.

    Find the cash book balance by bank reconciliation statement.

11. On 31st March, 2007, bank pass book showed a balance of Rs.5,600 to your credit. Before that date you have issued cheques amounting to Rs.1,400 paid by you into the bank on 29th March, a cheque for Rs.800 was not yet credited in the pass book. The pass book shows a debit of Rs.220 on account of a cheque paid in by you on 26th March, being dishonoured. An amount of Rs.100 directly paid into your bank account by a customer appears only in the pass book. Prepare a reconciliation statement.

CASE 1 ANUPAMA SECURITIES LTD.

During the first week of July 2005, Anupama Securities Ltd. From the company 's cash book, she has prepared the following profit and loss account for the year ended June 30, 2006:

Revenues		
Broking Commission Earned		Rs 24,630
Expenses		
Salaries Expense	Rs 6,400	
Electricity Expense	720	
Telephone Expense	910	
Rent Expense	4,400	
Total Expense		12,430
Net Profit		12,200

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Anupama believes that business has done well in the first of its operation and plans to pay off Rs 3,000. Later, she comes across the following information which was not available to her earlier.

(a) Rent of Rs 400 for June has not been paid.
(b) Salaries of Rs 340 for the last week of June are yet to be paid.
(c) Interest payable on a bank loan of Rs 20,000 taken on March 1 at 15 percent per annum has not been considered.
(d) Office supplies costing Rs 1,430 were purchased on May 1, 2005. The inventory of office supplies on June 30, 2006 was Rs 680.
(e) Depreciation of Rs 3,600 on computer has been overlooked.
(f) The company provided services for Rs 910 for which the customers were yet to be billed.
(g) Income tax is at 50 percent of profit before tax payable for the year.

Required

1. Prepare a revised profit and loss account for the year.
2. Comment on the company's performance and advise the company on its proposed way to pay the dividend.

CASE 2 RAMRAJ SOFTWARE LTD.

After working for over a decade in a leading software company, RAMRAJ and his wife Sheela decided to set up their own software firm, Software ltd. on June 1. Each of them deposited Rs.20,000 in a bank account in the name of the company in exchange for 2,000 shares of Rs.10 each. They followed the practice of depositing in the bank all amounts received from customers and making all payments by cheques.

On June 2, Amit Lal, an old friend of RAMRAJ joined the company as office manager on a monthly salary of Rs.3,500 regardless of the number of days he attended office. Although Lal had no knowledge of accounting, he was methodical in filing letters, invoices and other papters. He put all the purchase invoices in a file. Also, he noted down details of cheques received and issued, in a diary. The following information is available from the file and diary kept by Lal.

On June 1, the RAMRAJ borrowed Rs.12,000 from the bank. The same day, they ordered a computer costing Rs.25,000. An advance of Rs.10,000 was paid with the order and the balance amount was to be paid in three equal instalments on the fifth of every month beginning July. The computer was received on June 6. On June 2, they hired an office room on a monthly rental of Rs.1,300 payable on the first day of the month. The rent for June was paid in full immediately. Two programming assistants were appointed on June 3. Each of them was to be paid Rs.140 per day for the actual number of days worked.

In June, the company billed customers for Rs.26,400 for programming services. Cheques totaling Rs.17,600 were received from customers on account. In addition, a cheque for Rs.1,600 was given by a customer as payment for services to be provided in July. During the month, the company ordered supplies on credit for Rs.4,100. Of these, supplies costing Rs.2,170 were received on June 8, and the remaining items were delivered on July 3. One box of floppy disks costing Rs.490 differed slightly from the purchase specification; all other items were as ordered and were paid for on June 16. On June 27, the supplier informed all that he was willing to give a discount of Rs.40 on the floppy disks to make up for the deviation. The proposal was accepted and the amount was paid on July 4. On June 29, the bank loan was repaid with interest of Rs.120. On June 30, an electricity bill for Rs.380 was received, but this could be paid only on July 1.

During the month, the company had twenty-one working days. While one of the assistants reported for work on all working days, the other worked for only seventeen days. The salaries of the assistants and manager were paid on June 30. The June-end inventory of supplies was figured out to be Rs.1,600.

Required

1. Prepare the trial balance of Software Ltd. on June 30.
2. Mr. RAMRAJ proposes to declare and pay a dividend of Rs.5 per share because they have cash in excess of Rs.30,000. Comment on the proposal.

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Preparation of Financial Statements—Profit and Loss Account and Balance Sheet

CHAPTER 4

"Financial statements reflect a combination of recorded facts, accounting conventions and personal judgements, and the judgements and conventions applied affect them naturally."

—American Institute of Accountants

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Trading Account*
- *Profit and Loss Account*
- *Balance Sheet*
- *Trial Balance*
- *Final Accounts*

INTRODUCTION

To provide information about the Final Accounts which includes Trading Account, Profit and Loss Account, Balance Sheet and Adjustments.

After completion of this chapter, one will be able to prepare Trading Account, Profit and Loss Account and Balance sheet. In the previous chapter, we discussed up to book-keeping i.e., Trial Balance. Now, we shall discuss the Final Accounts. As the title says, it is the final stage of accounting. The previous stages, either Journal or Ledger or Trial Balance, do not convey anything about profit or loss and financial position. So, to know the profit or loss made during a particular period, and financial position on a particular point of time, the final account is prepared.

Final account has three parts, namely, Trading Account, Profit and Loss Account and Balance Sheet.

Out of the three aforementioned statements, the first two are connected with profit or loss and the last one is connected with the financial position. One important point to be noted at this juncture is that for

all these statements Trial Balance is the base, and also like previous cases, the information will move in a chain form. The following chart will make it clear:

Trading account	Profit and loss account
Trial Balance	Balance sheet

TRADING ACCOUNT

Trading Account is a statement prepared to highlight the trading result made during a particular period. What is trading result?

Trading result, in technical term and usage, is called gross profit. Gross profit is profit which is arising from sale and purchase activity. Gross profit is not the final profit and it is not considering all expenses of the business incurred during a particular period. This considers only a specific nature of expenses. Thus, it considers the expenses which is direct in nature and occurs before the point of sales alone. Now, two questions arise:

(i) What are direct expenses, and

(ii) What is that before the point of sales?

Expenses Direct in Nature

Expenses which can be identified with each unit of output is called direct expenses. Thus, expenses directly connected with each unit of output, or unit of product sold are called direct expenses.

To make it more clear, we shall have the following example:

A pen seller buys a pen for Rs. 5. If he buys one pen, then cost is 5 × 1 = Rs. 5

If he buys ten pens, then cost is 5 × 10 = Rs.50

If he buys hundred pens, then cost is 5 × 100 = Rs.500

In all the above cases, the buying cost of each unit is constant, and cost, increased proportionately along with increase in quantity. So, we are able to say the cost of each unit. It is called direct cost.

(iii) In Business 'exchange' is the basis of all. To get a product or service, paying money otherwise called expenses, is a must. This expense occurs for every purpose and occurs in every stage. Thus, right from buying the goods, transporting the goods, selling the goods etc., it occurs.

But, for our purpose, we shall not consider all expenses in Trading Account. We are considering the expenses occurring upto the point of sale alone. Thus, expenses, of such nature as purchase cost, transporting cost, conversion cost are occurring before the point of sales. Only such a kind of expense is considered. We shall read this in detail later mean while let us go back to GROSS PROFIT.

Gross profit considers expenses which fulfill the above two conditions such as direct expenses and expenses which occur before the point of sales.

Now, let us see the gross in detail and also see how it is calculated. Gross profit is the difference between sales and cost of goods sold.

Thus, Gross Profit = Sales – Cost of goods sold.

Sales is nothing but the multiplication of selling price and number of units sold.

Sales = Selling price × number of units sold.

Cost of goods sold includes the expenses that are direct in nature and also those that occurs before the point of sales only. Thus, cost of goods is calculated as follows.

Cost of goods sold = opening stock of materials + Purchase cost of raw materials + wages + fuel and power + carriage inwards + royalty, etc., – closing stock of materials.

The aforementioned information, are presented in a tabular form and we are finding the Gross Profit. While preparing the Gross Profit, the following points are to be noted down:

Title is mentioned as below:

(i) Trading account of M/s. X & Co. for the year ended 31-3-2008.

(ii) This has two sides, viz. debit side and credit side.

(iii) Each side has one particulars column, one inner column for amount, where inside calculations and adjustments are shown and one outer column for mentioning final figure.

(iv) Items in the debit side starts with To and items in the credit side starts with By. Let us see a proforma of the Trading account:

TABLE 4.1 Trading account of M/s X & Co for the year ended 31-03-2008

Dr Cr

Particulars	*Amount* Rs. P.	*Amount* Rs. P.	*Particulars*	*Amount* Rs. P.	*Amount* Rs. P.
To Opening stock		XXX	By Sales	XXX	
To Purchases	XXX		(Less) Sales return	XXX	
(Less) Purchase return	XXX	XXX	By Closing stock		XXX
Direct expenses			By Gross loss transferred to		
To wages		XXX	profit and loss account		XXX
To Carriage inwards		XXX			
To Fuel & power		XXX			
To Royalty		XXX			
To Manufacturing expenses		XXX			
To import and customs		XXX			
To works managers salary		XXX			
To Gross profit transferred to profit and loss account		XXX		XXX	XXX

Note: At any point of time, either gross profit or gross loss will only occur and not both. Another important point to be noted is, after writing the total figures, two underlines are to be made. This indicates that particular statement is over. This is the rule for all statements.

The finding of this trading account is, as mentioned above, either gross profit or gross loss. If you go back to the statement, you will find all the expenses are mentioned on the debit side and revenue items are mentioned on the the credit side. If the credit side, thus revenue side, is more and debit side, the expenditure side, is less, this is called credit balance, otherwise it is called gross profit and vice versa.

As we have discussed earlier, the gross profit/gross loss will be transferred to the next stage, profit and loss account. Since gross profit is showing credit balance, this will be transferred to credit side of the profit and loss account and vice versa.

PROFIT AND LOSS ACCOUNT

Profit and Loss account is a statement which is prepared to know the net profit or net loss made during a particular period.

Net period/Net loss = Gross profit/gross loss + All other income – all other expenses

This net profit/Net loss is the final profit.

In our previous statement, we calculated gross profit or gross loss, which was not the final profit, but represents trading results. Now, we are finding the net profit or net loss, which takes into consideration all the remaining income and expenses, which was not considered in the previous statement. Thus, the previous statement took into consideration items direct in nature and took place before the point of sales. But now we shall see, the remaining, i.e., items indirect in nature and items which occurs after the point of sales.

For example, while finding the gross profit, we deducted purchase, wages, etc., but lot more are still undeducted like rent, salary, electrical expenses, carriage outwards etc. In profit and loss account, these left over items will be considered.

While preparing profit and loss account, the following points are to be considered:

(i) Title: Profit and loss account of M/s. X & Co for the year ended 31-3-2008.
(ii) Sides: This also has two sides, and columns like trading account.
(iii) To and By: Here in the debit side we are starting with to and on the credit side we are starting with By.
(iv) Net profit/net loss: Either net profit, in the debit side, or net loss in the credit side, will arise and not both at a time.

Proforma of the profit and loss account is given below.

TABLE 4.2 Profit and Loss account of M/s X & Co for the year ended 31-03-2008

Dr Cr

Particulars	*Amount Rs. P.*	*Amount Rs. P.*	*Particulars*	*Amount Rs. P.*	*Amount Rs. P.*
To gross-loss transferred from trading account		XXX	By gross profit transferred from trading account		XXX
Office expenses			By Interest received		XXX
To Salary to office		XXX	By Dividend received		XXX
To Rent		XXX	By Discount received		XXX
To Electricity		XXX	By Commission received		XXX
To Postage and telegrams		XXX	By Rent from tenants		XXX
To Printing and stationery		XXX	By Miscellaneous revenue		XXX
To Telephone charges		XXX	By Net loss transferred to capital account		XXX
To Legal charges		XXX			
To Insurance premium		XXX			
To Audit fees		XXX			

Selling and distribution expenses					
To Advertisement		XXX			
To Salary to salesman		XXX			
To godown rent		XXX			
To Carriage outwards		XXX			
To Travelling charges		XXX			
Financial expenses		XXX			
Discount given		XXX			
Interest paid		XXX			
To Net profit transferred to capital account		XXX			
Total		XXXX	Total		XXXX

Here also, all the expenses are shown in the debit side, i.e., left hand side and all revenues and incomes are shown in the credit side. If the debit side is less and credit side is more, this is credit balance, otherwise a net profit and vice versa.

These two statements reveal success or failure during a particular period but, does not say much about the financial strength of an organisation. To know the financial strength, we shall prepare the Balance Sheet.

BALANCE SHEET

A balance sheet is a statement prepared to know the financial position, i.e., financial strengths and weaknesses of an organisation on a particular date. Financial strength and weakness is revealed by assets and liabilities. The difference between assets and liabilities is called capital, i.e, the strength otherwise called net worth.

Here, assets mean, all tangible and intangible items which have a realisable value and liabilities mean all dues and loans.

While preparing the balance sheet, the following points are to be taken into account:

(i) Title: Balance Sheet of M/s X & Co as on 31-3-2008. This is a balance sheet, as mentioned earlier, prepared to show the financial position on a particular date. So 'As on' is used.

(ii) This also has two sides, representing liabilities on the left side and assets on the right side.

(iii) Each side has one details column, one inner amount column, and one outer amount column.

(iv) At the end, when total is made, both the sides should show same figures. That is, the balance should tally. If it does not tally, it is understood that the balance sheet is not a correct one.

The proforma of a balance sheet is given below.

TABLE 4.3 Balance Sheet of M/s X & Co as on 31-3-2008

Liabilities	*Amount Rs. P.*	*Amount Rs. P.*	*Assets*	*Amount Rs. P.*	*Amount Rs. P.*
Fixed Liabilities			Fixed assets		
Capital	XXX		Land		XXX
(Add) Net profit	XXX		Building	XXX	

(Add) Additional capital	XXX		(Less) Depreciation	XXX	XXX
(Less) Net loss	XXX		Machinery	XXX	
Drawings	XXX	XXX	(Less) Depreciation	XXX	XXX
Long term liabilities					
Term loan from bank and financial institutions		XXX	Vehicles	XXX	
Loan from others		XXX	(Less) Depreciation		XXX
Current Liabilities					
Sundry creditors for purchase		XXX	Furniture and fittings	XXX	
Bills payable		XXX	(Less) Depreciation		XXX
Outstanding expenses		XXX			
Bank Overdraft		XXX	Intangible assets		
			Goodwill		XXX
			Patents		XXX
			Copyright		XXX
			Fictitious assets		
			Advertisement		XXX
			Miscellaneous expenses		XXX
			Accounted loss		XXX
			Current assets		
			Cash on hand		XXX
			Cash on bank		XXX
			Sundry debtors		XXX
			Bills receivables		XXX
			Closing stock of materials		XXX
			Prepaid expenses		XXX
Total		XXX			XXX

Before we proceed further, let us see the individual items mentioned in the Trading Account, Profit and Loss Account and Balance Sheet.

(1) Trading Account: Prepared to know the gross profit

(2) Gross Profit = Sales – Cost of goods sold

(3) Sales = Net sales i.e. Sales – sales return

(4) Cost of goods sold = Opening stock + purchases + wages + carriage inwards + Fuel and power, etc., – Closing stock.

(5) Opening and closing stock includes raw material, work in progress and stock of finished goods.

In practice, at any point of time, both in the case of trading and manufacturing organisation, some stock of the above three will be there. Stock which is available at the beginning of the period is called opening stock and stock which is available at the end of the period is called closing sock. Closing stock at the end of one period, becomes the opening stock of next period.

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(6) Purchases means net purchases, i.e. purchase less purchase returns, made during a period. Purchase includes only the basic raw materials which will be later converted into finished product, in the case of manufacturing organisation. In the case of trading organisation, it includes any item purchased for resale.

(7) Wages is the compensation paid to the workers who are involved in production process. It does not include any other form of wages, and also does not include salary paid to the office staff and sales force.

(8) Carriage inwards is the transportation charges paid to bring the raw material into plant or showroom.

(9) Fuel and power includes any form of energy like coal, diesel which are used for running the machinery. It does not include electrical charges paid for the office premises etc.

(10) Salary to works manager and foreman are directly involved in production and supervising the production, who is also included in the Trading Account.

(11) Royalty means compensation/rent paid to the owners of a property or design or pattern for using the same.

(12) Profit and Loss account is prepared to know the net profit/net loss during a particular period.

(13) Net profit/net loss is gross profit/gross loss plus other income minus all other expenses.

(14) Salary reflects salary paid to the office staff, sales force and others who are not connected with manufacturing operations and also paid on a periodical basis, normally every month.

(15) Rent is the amount paid to the landlord, for using a premise and paid on a monthly basis.

(16) Electricity is pertaining to electrical charge, consumed in the office premises, showroom and places other than production centre.

(17) Carriage outwards – All transportation charges paid to take goods out from manufacturing centre to godown or to show room, and transportation charges paid to deliver the goods to customer's place will fall under this category.

(18) Other expenses paid to get services – Amount paid to receive services like postal, printing, stationery etc., will be placed under this category.

(19) Interest and dividend received – Any return received from investment, made outside the business are considered under this category. Here, investment means investment on government bonds, debenture of other companies, share of other companies, etc.

(20) Balance Sheet – Statement which reveals the financial position of an organisation is called Balance Sheet. Financial position means strength and weakness, i.e. assets and liabilities.

(21) Fixed liabilities is also known as permanent liabilities. Capital, and anything due to the owner will come under this category. Under business entity concept, owner and business are considered to be different, and so anything contributed by the owner is assumed as liability for the business.

(22) Long-term liabilities and short-term liabilities – This classification is made based on time. Normally, any liability which has a life or duration of more than 5 years, falls under long-term and anything between one and five years falls is coming under short-term liability. Term loans from bank, financial institution are coming under these two.

(23) Current liabilities – Liability which has a life of less than one year is called current liability. Sundry creditors, bills payable, bank overdraft, outstanding liabilities are considered to be current liability.

(24) Sundry creditors – Anything due from the organisation side for the credit purchases done is together called sundry creditors.

(25) Bills payable – Sometimes suppliers of the goods, from whom the goods are purchased on credit, will demand a promisory note from the organisation. This is called bills payable. This is other form of sundry creditors.

(26) Fixed asset – Any assert which is obtained with a view to keep it in the business for a long period, and use it in the business for further development and operation and normally involves huge money, is called fixed assets. Land, building, machinery, etc. are few examples.

(27) Depreciation is the reduction in value of asset due to usage, time, obsolescence etc.

(28) Intangible assets – Assets which cannot be seen or touched, but can be felt in the business is called intangible assets. (e.g) goodwill, patents, copyright, etc.

(29) Fictitious assets – These are not real assets. This includes the deferred revenue expenditure. Here, the expenditure and payment would have taken place at one point of time, but the benefits will come for more than one accounting period. So, these are treated as assets, even though it is not so.

(30) Current asset – The assets which has a life of less than one year or an asset which will be converted into money value within a period of one year or less is called current asset.

(31) Sundry debtors – Anything due from the customers for the supply of goods on credit, is together called sundry debtors.

(32) Bills receivable – A promisory note obtained from the customers for the supply of goods on credit basis is called promisory note. This is the other form of sundry debtors.

At the beginning of this chapter we learnt that the Trial Balance was the base for trading account, profit and loss account and balance sheet i.e. final accounts.

PREPARATION OF THE TRIAL BALANCE

Whenever some transactions take place physically, it is entered immediately into the day book. Then it goes to Journal Book, Ledger and Trial Balance. This is like a pipe line which has only two ends and no opening in between. Thus, once some thing is entered in the day book, automatically it will come to Trial Balance and goes to Final Account.

Components of Final Accounts:

DAY BOOK
JOURNAL BOOK
LEDGER
TRIAL BALANCE
TRADING ACCOUNT
PROFIT AND LOSS ACCOUNT
BALANCE SHEET

Now, let us look at the concept called Accounting Period Concept. Under this concept, two important points are to be observed while preparing books of accounts.

They are:

(A) Each and every transaction of the particular accounting period should be considered, while preparing the final accounts i.e., none should be missed out, and

(B) No transaction of previous period or future period should be included in the Final Accounts of the particular Accounting period.

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By keeping the above concept in mind, let us proceed further and let us take a situation mentioned below:

(A) Accounting period: 1-4-2000 to 31-3-2001

(B) Rent of Rs.1000 of every month is paid on 5th of next month. So, rent for the month of February 2001 was paid on 5th March 2001, and rent for March 2001 was paid on 5th April 2001.

(C) Here 5th April, 2001, falls on the next accounting period.

(D) Only if something was paid or received between the period 1-4-2000 to 31-3-2001, it would find a place in the day book of the above Accounting Period. But here, even though service was received during March 01, the payment was done on 5th April 2001, which is the next accounting period. Hence, this will not find a place in day book of the above accounting period.

(E) Once it is not entered in the day book of the accounting period 1-4-2000 to 31-3-2001, naturally it cannot find a place in the Trial Balance and subsequently in the Final Account of that particular accounting period.

(F) But our accounting period concept says otherwise, i.e. none of the transaction of accounting year should be missed out.

At this stage, i.e. after preparing Trial Balance, if any such transaction is found, it is not possible to go back to the Day Book, Journal, Ledger etc. and alter them and prepare a new Trial Balance. It is highly a laborious and cumbersome job.

So, something must be done at the final account stage, and also the principles of double entry book-keeping. i.e. every debit is having corresponding credit and vice versa, also should be observed. If it is not observed, the balance sheet will not tally.

So, left out items and items belonging to other accounting period are adjusted by passing direct entries in the final account. As we have discussed in the previous paragraph, every transaction is given the debit and credit effect. This effect is given in two stages. Thus,

(i) one fold will go to Trading Account and the other will go to Balance sheet, or

(ii) one fold will go to the Profit and Loss Account and the other will go to Balance Sheet and, very rarely

(iii) one will go to Trading Account and the other will go to the Profit and Loss account.

This can be described as follows.

Type 1	
Adjustment entry	
Fold No. 1	Fold No. 2
Trading account	Balance sheet
Type 2	
Adjustment entry	
Fold No. 1	Fold No. 2
Profit and loss account	Balance sheet
Type 3 (Very rare)	
Adjustment entry	
Fold No. 1	Fold No. 2
Trading account	Profit and loss account

Here in most of the cases, the second fold goes to balance sheet.

How is it done?

This can be done by asking two questions:

(1) What is the nature of the transaction?

(2) What is the status of the transaction?

(a) Nature: Whether the particular transaction is income or expenditure is seen.

(b) Status: Whether the particular transaction is asset or liability is seen. These are explained in the following illustrations.

Illustration 1 From the following trial balance extracted from the books of JNS, prepare trading ad profit and loss account for the year ended 31st December 2007 and a balance sheet as on then date:

TABLE 4.4

Particulars	*Debit balance*	*Credit balance*
Drawing	1,700	
Plant and machinery	12,000	
Horse and carts	2,600	
Debtors	3,600	
Purchase	2,000	
Capital		20,000
Creditors		2,600
Sales		4,200
Bill payable		2,350
Wages	800	
Cash at bank	2,600	
Salaries	800	
Repairs	190	
Opening stock	1,600	
Rent	450	
Manufacturing expenses	150	
Bad debts	500	
Carriage inwards	160	
Total	29,150	29,150

The following adjustments are to be made:

(a) Closing stock Rs.1,600

(b) Depreciate plant and machinery 10% and horse and carts 15%

(c) Allow interest on capital 5% p.a

(d) Rs. 150 is due for wages

(e) Paid rent Rs.50 in advance

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Solution Before we start solving the problems, the following points are to be noted:

(1) Check whether the totals of both the sides, i.e., Debit balance and credit balance are tallying or not, in the Trial Balance. If this is tallying, proceed to next step. If it is not tallying, the side which is showing less should be made on par with the other side by creating a Suspense Account in the same side to the extent of difference. Here, in the problem both the sides are showing same figure Rs.29, 150; hence, we can proceed to next stage.

(2) Adjustment: Items mentioned in the adjustment columns are having their parent item in the Trial Balance, except few. Whenever the parent items are found in the Trial Balance, make a X mark against the parent items in Trial Balance, just to remind us that there is an adjustment entry. If the parent items are not there in the Trial Balance, care needs to be taken while solving the problem. Here, excepting closing stock, all other items are having their parent item in the Balance. So make a mark X against all parent items.

(3) If you have a look at the Trial Balance now, you will find the Trial Balance is arranged in the following manner.

TABLE 4.5

	Debit balance	*Credit balance*
All expenses	XXX	
All assets	XXX	
All income		XXX
All liabilities and capital		XXX
Total	XXXX	XXXX

Let us rearrange the Trial Balances as below, as per the above table.

TABLE 4.6 Trial balance of JNS as 31-12-2007

	Debit balance	*Credit balance*
Expenses		
Purchases	2,000	
Wages	800	
Salaries	800	
Repairs	190	
Opening stock (1)	1,600	
Rent	450	
Manufacturing expenses	150	
Bad debts	500	
Carriage inwards	160	
Drawing (1)	1,700	
Assets		
Plant and machinery	12,000	
Horse and carts	2,600	

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Debtors	3,600	
Cash at bank	2,600	
Income		
Sales		4,200
Liabilities and capital		
Capital		20,000
Creditors		2,600
Bills payable		2,350
Total	29,150	29,150

Note 1: These two are not actually expenditures. But, for the purpose of classification, it is shown like this.

Now, let us prepare the Trading and Profit and Loss Account for the year ended 31-12-2007 and Balance Sheet as on that date.

TABLE 4.7 Trading and Profit and Loss account of JNS for the year ended 31-12-2007

Dr. Cr.

Liabilities	*Amount Rs. P.*	*Amount Rs. P.*	*Assets*	*Amount Rs. P.*	*Amount Rs. P.*
To Opening stock		1,600	By Sales		4,200
To Purchase		2,000	By Closing stock (2)		1,600
To Wages (1)	800				
(add) outstanding wages	150				
To Manufacturing expenses		150			
To Carriage inwards		160			
To Gross profit transferred to profit & loss a/c		940			
	5,800				5,800
To Salaries		800	By Gross profit transferred from profit & loss a/c		940
To Repairs		190			
To Rent	450		By Net loss transferred to capital account		3,540
(Less) Rent paid in advance (5)	50	400			
To Bad debts (3)		500			
To Depreciation (4) Plant and machinery	1,200				
Horse and carts	390	1,590			
To Interest on capital (6)		1,000			
Total		4,480	Total		4,480

TABLE 4.8 Balance sheet of JNS as on 31-12-2007.

Liabilities	*Amount Rs. P.*	*Amount Rs. P.*	*Assets*	*Amount Rs. P.*	*Amount Rs. P.*
Capital	20,000		Plant and machinery	12,000	
(Add) Interest on (6) capital	1,000		(Less) Depreciation (4)	1,200	10,800
	21,000				
(Less) Net loss	3,540		Horse and carts	2,600	
	17,460		(Less) depreciation (4)	390	2,210
Less Drawing (7)	1,760	15,760	Debtors		3,600
Creditors		2,600	Cash at bank		2,600
Bills payable	2,350		Closing stock (2)		1,600
Outstanding wages (1)		150	Prepaid rent (5)		50
		20,860			20,860

Explanations:

(1) Outstanding wages: There is an outstanding wage of Rs. 150 on 31-12-2007. i.e, this is to be paid or unpaid as on that date. To decide where it will go, we shall test through:
   (a) Nature: By nature, wage is an expenditure, paid to obtain a service. As per rule, all the expenses should be debited, and the 'Wage' parent item should appear in the Trading Account. So, in the first fold, it is debited in the Trading Account along with Wages.
   (b) Status: The status is unpaid on 31-12-2007. That means it is a liability, and will go to liability side of the Balance Sheet. Since all liabilities are credited, the treatment of credit side also is given.

(2) Closing stock is the stock available on the last date of the accounting period.
   (a) Nature: By nature, closing stock is adjusted to in the cost of goods sold. Hence, it goes to the credit side of the trading account.
   (b) Status: On 31-12-2007, it has the same realisable value. So, it can be called as an asset and thereby, it is going to the asset side of the Balance Sheet and simultaneously getting the debit treatment.

(3) Bad debt was once a portion of the sundry debtors and now declared as 'bad' or irrecoverable. This is a loss, so debited in the profit and loss account.

(4) Depreciation is also a loss. This is loss in value of assets. We shall see the depreciation in detail in a forthcoming chapter.
   (a) Nature: By nature, it is a loss, so debited in the profit and loss account.
   (b) Status: It leads to the reduction in value of assets. So, it is reduced against the respective asset in the asset side and thereby getting credit treatment.
      - Here, the value of plant and machinery is Rs.12,000
        Depreciation is 10%
        So, the value of depreciation is 10/100 × 12,000 = 1,200
      - Value of horse and carts : Rs. 2,600. Depreciation 15%
        Value of depreciation : 15/100 × 2600 = Rs. 390/-

(5) Rent prepaid is also known as rent paid in advance. Thus, rent for the next accounting period is paid now itself.

(a) Nature: By nature, rent is an expenditure and rent of this year is overstated by Rs. 50. Hence, this is deducted from rent account in the profit and loss account.

(b) Status: As a status it is prepaid, i.e. paid in advance, hence, it is assumed as an asset and goes to the asset side of the balance sheet.

(6) Interest on capital: Interest charged by the owner for the use of his capital is called interest on capital. This is paid by the business or organisation to the owner.

(a) Nature: Since it is paid by the business, it is an expenditure to the business. So, it is debited in the debit side of profit and loss account.

(b) Status: It is assumed to be unpaid on the closing date. So, it is liability and added with capital. It is calculated on the closing figure of the last year.

(7) Drawings is the amount withdrawn by the owner from business. It is otherwise reduction in capital, so it is deducted from capital.

Illustration 2 The following are balance extracted from the Books of Sri Vinayagam as on 31st March 2004:

TABLE 4.9

Sri Vinayagam's capitals	12,500	Rent and taxes	5,000
Sri Vinayagam's drawings	6,200	Returns outwards	5,000
Furniture and fittings	1,750	Returns inwards	10,000
Typewritter	1,200	Carriage outwards	8,000
Purchases	1,80,000	Salaries	11,000
Sales	2,35,000	Advertisements	1,200
Lorry on hire purchase	12,000	Postage and telegrams	150
Interest paid	250	Bad debts	500
Cycle	200	Reserve for doubtful debts	400
Opening stock	21,500	Commission received	9,000
Sundry debtors	12,000	Discount allowed	5,000
Sundry creditors	10,000	Cash in hand	450
Travelling expenses	900	Overdraft with bankers	6,500
Insurance	500		
General expenses	600		

The following are the adjustments to be made

(a) Stock as on 31st March 2004-Rs.17,500

(b) Provide for the following:

Outstanding interest Rs.250; salaries Rs.1000; rent Rs.500; and audit fee Rs.500.

(c) Prepaid expenses: Insurance Rs.125, advertisement Rs.200

(d) Maintain reserve for doubtful debts at 5% on sundry debtors.

(e) Provide depreciation:

Furniture and fitting – 10%

Cycle – 15%

Typewriter – 15%

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Prepare trading and profit and loss account for the year ended 31st March, 2004 and a Balance Sheet as on that date.

Solution: As we saw in the previous problem, here also we shall see the total of Trial Balance. But, unlike the previous problem, here all the items are given together and no separation of debit and credit balances are made. So first, we shall rearrange the Trial Balance:

TABLE 4.10 Trial balance of Vinayagam as an 31-12-2004

	Particulars	*Debit balance*	*Credit Balance*
Expenses	Purchases	1,80,000	
	Interest paid	250	
	Opening stock	21,500	
	Travelling expenses	900	
	Insurance	500	
	General expenses	600	
	Rent and taxes	5,000	
	Return inwards	10,000	
	Carriage outwards	8,000	
	Salaries	11,000	
	Advertisement	1,200	
	Postage and telegram	150	
	Bad debts	500	
	Discount allowed	5,000	
Assets	Furniture and fittings	1,750	
	Typewriter	1,200	
	Lorry on hire purchase	12,000	
	Cycle	200	
	Sundry debtors	12,000	
	Cash in hand	450	
	Drawings	6,200	
Income and revenue	Sales		2,35,000
	Return outwards		5,000
	Reserve for doubtful debts		400
	Commission received		9,000
Liabilities	Capital		12,500
	Sundry creditors		10,000
	Overdraft with bankers		6,500
		2,78,400	2,78,400

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TABLE 4.11 Trading and Profit and Loss account of Vinayagam for the year ended 31-3-2004

Dr Cr

	Amount Rs. P.	*Amount Rs. P.*		*Amount Rs. P.*	*Amount Rs. P.*
To Opening stock		21,500	By Sales	2,35,00	
To Purchase	1,80,000		(Less) Return inwards (2)	10,000	2,25,000
(Less) Return outwards (1)	5,000	1,75,000	By closing stock		17,500
To Gross profit transferred to profit & loss a/c		46,000			
	2,42,500				2,42,500
To Audit fee outstanding		500	By Gross profit transferred from trading a/c		46,000
To interest	250		By Commission received		9000
(Add) outstanding	250	500			
To Traveling expenses		900			
To Insurance	500				
(Less) prepaid	125	375			
To General expenses		600			
To Rent and taxes	5,000				
(add) Outstanding rent	500	5,500			
To carriage outwards		8,000			
To Salaries	11,000				
(add) Outstanding salaries	1,000	12,000			
To advertisement	1,200				
(Less) prepaid	200	1,000			
To Postage and telegram		150			
To Bad debts		500			
To Discount allowed		5,000			
To new reserve for doubtful debtors (3)	600				
(Less) Old reserve	400	200			
To Depreciation					
Furniture	175				
Typewriter	180				
Cycle	30	385			
Net profit		19,390			
		55,000			55,000

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TABLE 4.12 Balance sheet of M/s Vinayagam as on 31-03-2004

Liabilities	*Amount* Rs. P.	*Amount* Rs. P.	*Assets*	*Amount* Rs. P.	*Amount* Rs. P.
Capital	12,500		Furniture	1,750	
(Add) Net profit	19,390		(Less) Depreciation	175	1,575
(Less) drawing	6,200		Cycle	200	
		25,690	(Less) Depreciation	30	170
Sundry Creditors		10,000			
Overdrafts		6,500	Typewriter	1,200	
Interest outstanding		250	(Less) Depreciation	180	
Rent outstanding		500			1020
Salaries outstanding		1,000	Lorry on hire purchase		12,000
Audit fee outstanding		500	Sundry debtors	12,000	
			(Less) New provision for doubtful debtors (3)	600	11,400
			Cash on Hand		450
			Closing stock		17,500
			Insurance prepaid		125
			Advertisement prepaid		200
		44,440			44,440

Explanation:

(1) Return outwards: This is nothing but purchase return. Thus goods purchased, due to some reasons, were sent back to the suppliers.

(2) Return inwards: Goods supplied to customers have come back. This is sales return.

(3) Reserve for doubtful debts or provision for doubtful debts: This is a provision created to meet, the bad debts. It is created out of sundry debtors.

SUMMARY

Preparation of financial statements is the final stage of Accounting. Final Account has three parts, namely, Trading Account, Profit and Loss Account and Balance Sheet. The first two statements are connected with profit or loss and the last one is connected with financial position. For all these statements, Trial Balance is the base and also the information will move in a chain form. Trading Account is a statement which highlights trading result made during a particular period. Gross Profit is profit which is arising from sale and purchase activity. Gross profit is not the final profit and it is not considering all expenses of the business incurred during a particular period. This considers only a specific nature of expenses, which is direct in nature and occurs before the point of sales alone. Expenses which can be identified with each unit of output is called direct expenses. Thus, expenses directly connected with each unit of output or unit of product sold, are called direct expenses. Gross profit shows credit balance, and this will be transferred to credit side of the profit and loss account and vice versa. A Balance Sheet is a statement prepared to know the financial position, i.e., financial strengths and weaknesses of an organisation on a particular date. Financial strength and weakness is revealed by assets and liabilities. The difference between assets and liabilities is called capital, i.e, the strength otherwise called net worth.

KEY CONCEPTS

- Assets
- Adjustment Entry
- Balance Sheet
- Current Assets
- Current Liabilities
- Fixed Assets
- Fictitious Assets
- Fixed Liabilities
- Liabilities
- Liquid Assets
- Manufacturing Account
- Profit and Loss Account
- Trading Account
- Compensation Errors
- Errors of Omission
- Errors of Commission
- Errors of Principle
- Suspense Account

REVIEW QUESTIONS

OBJECTIVE QUESTIONS

I. Select the appropriate answer.

(1) Sales are equal to
  (a) Cost of goods sold + Profit
  (b) Cost of goods sold - Gross Profit
  (c) Gross Profit – Cost of goods sold

(2) Interest on drawings is
  (a) Expenditure for the business
  (b) Expense for the business
  (c) Gain for the business

(3) Goods given as samples should be credited to
  (a) Advertisement account
  (b) Sales account
  (c) Purchase account

(4) Outstanding salaries are shown as
  (a) An expense
  (b) A liability
  (c) An asset

(5) Income tax paid by the sole proprietor on his business income should be
  (a) Debited to the trading account
  (b) Debited to the profit and loss account
  (c) Deducted from the capital account in the Balance Sheet

[Ans. 1-a; 2-c; 3-c; 4-b; 5-c]

II. State whether the statements are True or False

1. The term 'Accrued Income' and 'Outstanding Income' have synonymous meanings.
2. Premium paid on the life policy of the proprietor, is debited to profit and loss account.
3. The Current Liabilities are used to denote those liabilities which are payable after a year.
4. The term 'Current Assets' and 'Liquid Assets' have synonymous meanings.
5. All intangible assets are fictitious assets.
6. Creating reserve for discount on creditors is not strictly according to the principles of conservatism.
7. Stock at the end, if appears in the Trial Balance, is taken only to the balance sheet.
8. Goods taken out by the proprietor from the business for his personal use are credited to sales account.

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9. Salary paid in advance is not an expense because it neither reduces assets nor increases liabilities.
[Ans. 1-False; 2-False; 3-False; 4-False; 5-False; 6-True; 7-True; 8-False; 9-True]

DESCRIPTIVE QUESTIONS

1. How is Trial Balance prepared?
2. What are Final Accounts? What purpose do they serve?
3. Differentiate between
   (a) Outstanding expenses and prepaid expenses
   (b) Outstanding income and accrued income
   (c) Interest on capital
   (d) Interest on drawings
4. Distinguish between Trial Balance and Balance Sheet.
5. Write short notes on:
   (a) Closing entries
   (b) Trading account
   (c) Work sheet

PROBLEMS

Problem No. 1 From the following trial balance of M/s. Ram Prasad and Sons on 31st December 2006, prepare Trading and Profit and Loss Account for the year ended 31st December 2006, and Balance Sheet as on that date.

TABLE 4.13

Debit balance	*Amount*	*Credit balance*	*Amount*
Machinery	4,000	Capital	9,000
Cash at bank	1,000	Sales	16,000
Cash in hand	500	Sundry creditors	4,500
Wages	1,000	Interest received	300
Purchases	8,000		
Stock on 1st Jan 89	6,000		
Sundry debtors	4,400		
Bill receivable	2,900		
Rent	450		
Commission	250		
General expenses	800		
Salaries	500		
	29,800		29,800

Adjustments:
(a) Provide for interest on capital 5% p.a
(b) Depreciate Machinery at 10% p.a
(c) Wages outstanding amount to Rs.100
(d) Rent prepaid Rs.100
(e) Stock on 31st December 2006 – Rs.8,000

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Problem No. 2 The following are the balance of Ravi & Co as on 30th June 2006.

TABLE 4.14

Particular	*Debit balance*	*Credit balance*
Return inwards and outwards	680	500
Wages	8,480	
Fuel and power	4,730	
Carriage on sales	2,040	
Carriage on purchases	3,200	
Opening stock	5,760	
Building	32,000	
Freehold land	10,000	
Cash on hand	540	
Cash at bank	2,630	
Purchase and sales	40,675	98,780
Machinery	20,000	
Patents	7,500	
Salaries	15,000	
General expenses	3,000	
Insurance	600	
Drawings	5,245	
Sundry debtors	14,500	
Capital		62,000
Sundry creditors		6,300
Rent		9,000

Taking into account the following adjustments, prepare the Trading Account, Profit and Loss Account and Balance Sheet as on 30th June, 2006.

Closing stock Rs.6,800; depreciation on machinery, 10% insurance prepaid Rs.170; Bad debts Rs.725, Rent receivables Rs.1,000.

Problem No. 3 Prepare trading and profit and loss account for the year ended 31-3-2004, and Balance Sheet as on that date from the following.

TABLE 4.15

Bills payable	1,200
Purchases	1,90,000
Sales	2,50,000
Wages	10,000
Sales returns	10,000
Carriage inwards	5,000

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Salaries	5,500
Rent	2,200
Furniture	1,000
Sundry debtors	15,000
Sundry creditors	10,000
Advertisements	750
Entertainment expenses	600
Discount allowed	1,200
Postage and telegrams	600
Insurance	600
Miscellaneous expenses	1,200
Bad debts	1,000
Typewriter	800
Lorry	6,000
Lorry maintenance	3,600
Cash in hand	350
Cash in bank	900
Mr. Ismail's capital account	15,000
Drawing account	6,000
Stock on 1-4-2003	12,500
Bill receivable	1,500

Adjustments:

(a) Stock on 31-3-2004 is Rs.7,500

(b) Provide the following outstandings.

i) Wages Rs.1,000 ii) Rent Rs.200 iii) Salaries Rs.7,500 iv) Lorry maintenance Rs.500

(c) Create a reserve for doubtful debts at 5% on sundry debtors.

Problem No. 4 On December 31, 2006 the Trial Balance of Hardware Company Limited showed the following accounts and balances:

TABLE 4.16

		Rs.
Cash		56,000
Account receivable		1,70,000
Inventory (commencement)		3,05,000
Machinery and equipment	1,50,000	
Less: Depreciation on above	90,000	60,000
Furniture and fixtures (cost)		50,000
Accumulated allowance for depreciation on above		15,000
Purchases (materials)	3,20,000	

Office salaries	3,000	
Account payable	1,20,000	
Share capital		2,00,000
Reserve		1,06,000
Sales		6,00,000
Wages (manufacturing)	40,000	
Miscellaneous expenses	37,000	
(including Rent- Rs.6,000 and Insurance- Rs. 4,000)		

The accountant wished to adjust the following expenses, which he felt were applicable to the month of December.

(1) Insurance expenses – Rs. 200
(2) Rent – Rs. 1,000
(3) Depreciation to be charged – 10% of cost of assets
(4) Wages owed but not paid – Rs. 4,000
(5) Annual inventory on 31st December(cost) – Rs. 2,25,000
(6) Outstanding for salaries – Rs. 600

Prepare in good form, an income statement for the year and a balance sheet as on December 31 (Balance sheet need not be in the prescribed from).

Problem No. 5 The Trial Balance of M/s Gladstone & Co Limited as on 31st December, 2006, was as follows:

TABLE 4.17

	Debit		*Credit*
Cash	Rs. 2,88,000	Accumulated depreciation on building	Rs. 81,000
Temporary investments	1,77,000		
Book debts	9,16,000	Accounts Payable	1,88,000
Inventory of merchandise-1st January	8,90,000	Mortgage loan	4,50,000
Prepaid insurance	19,000	(Mortgage of land & buildings)	
Other prepaid expenses	13,400	Equity share capital	15,00,000
Land	1,60,000	(Share of Rs. 10 each)	
Building	4,58,000	Authorised Rs. 25,00,000	
Sales return	1,20,000	General reserve	5,31,200
Purchases	34,45,000	Sales	41,20,000
Advertising	12,000	Interest (income)	4,800
Salaries and wages	1,64,000		
Miscellaneous selling expenses	58,000		
Property taxes	33,000		
Insurance premiums	5,250		
Miscellaneous general expenses	84,350		
Interest paid	32,000		
Total	68,75,000	Total	68,75,000

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Adjustment to be made:

(1)	Accrued interest payable on loan	Rs. 4,000
(2)	Wages outstanding	2,400
(3)	Depreciation to be Charged on building	12,400
(4)	Inventory on 31st December, 2006	8,64,400
(5)	Merchandise received on 31st December 2006 but not recorded in accounts and not included in accounts	Rs. 9,750
(6)	Cash discounts available to customers	8,900

Prepare the Profit and Loss Account and Balance Sheet in accordance with the Companies Act, 1956.

Problem No. 6 The following is a pre-closing Trial Balance of the Madras Traders limited as at 31st March, 2006:

TABLE 4.18

	Debit		*Credit*
Goodwill	Rs. 50,000	Capital	Rs 1,25,000
Leasehold building	67,450	Sales	1,78,940
Loose tool	7,000	Income from services	19,630
Workmen's wages	25,860	Purchases returns	940
Rent, rates, wages	8,700	Loan (secured buildings)	20,000
Purchases	96,420	Account payable	25,220
Stock inventory		Bank overdraft	4,530
(1st April 2005)	38,610	Provision for doubtful debts	3,000
Sales return	400	Retained earnings	14,000
Carriage on Purchases	2,240		
Insurance on Purchases	1,180		
Salaries	11,470		
Motor lorry	27,000		
Furniture	3,200		
Interest charges	1,000		
Accounts receivable	39,910		
Power	1,070		
Advertising	9,750		
Total	3,91,260	Total	3,91,260

Closing stock on March 31, 2006 is Rs. 40,000. Prepare an Income statement and Position statement from the above Trial Balance.

Problem No. 7 A business prepares accounts annually to 31st October and stock-taking takes place in the following week end. In one year, 31st October fell on Wednesday, stock-taking commenced on 3rd November and the value of stock then actually on the premises, was found to be Rs. 15,919. You are asked to ascertain the following additional facts:

(1) Goods outwards are entered in the sales day book as on the day of dispatch.
(2) Goods inwards are entered in the bought day book as on the date of invoice.
(3) Sales during the period 1st to 3rd November as shown by the sales day book and the cash sales book amounted to Rs.196.

(4) Purchases during the same period as shown by the bought day book amounted to Rs.151 but, of these, goods to the value of Rs.54 were not received until after 3rd November.

(5) Goods invoiced during October and not received until November, totaled Rs. 160. Of these, goods to the value of Rs.131 were actually received during the period 1st to 3rd November and Rs. 29 after 3rd November.

(6) The average ratio of the gross profit to turnover is 28%

(7) In October, goods were sent to a customer on sale or return basis. The sales price was Rs.2,000. The goods were still returnable by the customer on 31st October.

You are instructed to ascertain the value of the stock as at 31st October for inclusion in the year's accounts on the assumption that the purchases accounts are not to be adjusted.

Problem No. 8 The following items are found in the Trial Balance of John on 31st December, 2008:

Debtors	16,000
Bad Debts	300
Bad and Doubtful Debts Provision 1.1.2008	700

You are to provide for the bad and doubtful debts @ 5% Give the necessary journal entries and prepare the Bad Debts Account, Bad and Doubtful Debts Provision account, Profit and Loss Account, Sundry Debtors Account in the Ledger and Balance Sheet appearing after the final adjustments.

Problem No. 9 A firm had the following Balance on 1st January, 2007:

(a) Provision for Bad and doubtful Debts	2,500
(b) Provision for Discount on Debtors	1,200
(c) Provision for Discount on Creditors	1,000

During the year, Bad Debts amounted to Rs 2,000, Discounts allowed were Rs 100 and Discounts received were Rs 200. During 2007, Bad Debts amounting to Rs 1,000 were written off while Discounts allowed and received were Rs 2,000 and Rs. 500 respectively.

Total Debtors on December 31, 2007 were Rs 48,000 before writing off bad Debts, but after allowing Discounts. On December 31, 1998, the amount was Rs 19,000 after writing off the Bad Debts, but before allowing Discount. Total Creditors on these two dates were Rs 20,000 and Rs 25,000 respectively.

It is the firm's policy to maintain a provision of 5% against Bad & Doubtful Debts and 2% for Discount on Debtors and a provision of 3% for Discount on Creditors.

Show the accounts relating to Provision on Debtors, and Provision on Creditors, for the year 2007 and 2008.

[**Ans.** Balance on 31.12.1999; Bad Debts Provision Rs 850, Provision for Discount on Debtors Rs 323, and Provision for Discount on Creditors Rs. 750]

Problem No. 10 Apear Ltd. Makes provision for doubtful debts at the end of each year against specific debtors. On 30 the June, 2007 the following debtor's balance were considered doubtful and provided for:

Ram	1,5000
Jalil	400
Nagpal	250
Sharma	500

Following are the particulars for the year ended 30th June, 2007;

(a) Bad Debts written off:

Raman	1,200
Sharma	350
Gupta	300
Ramesh	200
Atmaram	150

Following are the particulars for the year ended 30th June, 2007;

(b) Amounts realised against debts written off in earlier year;

Hossain	350
Kriparam	175
Dayaram	225

(c) Debts considered doubtful (after taking into account all realizations during the year at the end of the year.

Abraham	180
Ganesh	230
Gangasaran	375
Ramchandra	470

You are required to draw up:

(i) Bad Debts Account.

(ii) Provision for Doubtful Debts Account and to show the relevant amount in the Profit & Loss Account for the year ended 30th June, 2007.

Loss Account for the year ended 30th June, 2007.

[Ans. Amount charged from P & L A/c for Bad Debts Provision Rs 805, Bad Debts recovered Rs 750 Credited to P & L A/c]

CASE 1: NIWAS VIDEOS LTD

Srinivasan established Niwas Videos Ltd. on May 2, 2003. The company is engaged in providing video coverage of weddings and public functions. After one year of operation, Srinivasan believes the business has performed very well during its first year. However, he finds that he is unable to pay the company's creditors in time, and most of the cheques issued by the company are returned by the bank with the remarks "Refer to the Drawer," the banker's euphemism for " No funds." He is seriously examining whether to continue the business.

Srinivasan has not kept proper accounting records, but has kept a correct record of the company's cash payments. He has prepared for your review, the following statement of receipts and payments:

NIWAS VIDEOS LTD: Cash Receipts and Disbursements

(For the Year Ended April 30, 20 × 4)

Receipts	
Owener's Investment (share capital)	20,000
Received from customers for Videography Services	22,920
Total Receipts	Rs 42,920
Payments	
Rent	3,500
Salaries	9,240
Supplies	2,300
Video Camera Purchased	25,000
Insurance	2,400
Electricity	910
Telephone	450
Total Payments	43,800
Bank Overdraft	(880)

Your examination of the records of Niwas Videos Ltd. reveals the following additional information:

(a) Receipts from customers include an amount of Rs. 1,300 paid by a customer on April 26, to cover a wedding due to take place on May 7. Although the business does most of its work for cash, customers owe Rs. 970 for services provided on credit.

(b) The office building is taken on lease for fourteen months from May 1, 2003. The lease contract requires rent payment of Rs. 250 per month and payment of two months' rent in advance, to be adjusted at the end of the contract. All required payments were made as per the contract.

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(c) Salaries of Rs. 380 for April are unpaid.
(d) Supplies costing Rs. 1,540 are on hand and invoices for Rs. 950 has not been paid.
(e) On May 3, 2003, a video camera was purchased for Rs 30,000 and a part payment of Rs 25,000 was made immediately. The camera is expected to be useful for ten years, at the end of which it will become worthless.
(f) Insurance premium of Rs. 2,400 was paid on June 1, 20 × 3 for a two year policy.
(g) Electricity expense of Rs. 95 is unpaid.

Required

1. Prepare a Profit and Loss Account and a Balance Sheet for the company.
2. Advise Srinivasan whether to continue the business.

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CHAPTER 5

Revenue Recognition

"Revenues are inflows or other enhancements of assets of an enterprise or settlements of its liabilities (or a combination of both) during a period from delivering or producing goods, rendering services, or other activities that constitute the enterprise's ongoing major or central operations."

—Financial Accounting Standards Board, U.S.A.

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *Methods of Revenue Recognition*
- *Recognition at the Time of Sale*
- *Recognition at the Time when the Sales Price is Collected*
- *Recognition at the Time when the Product is Completed*
- *Recognition Proportionately over Performance of Contracts*
- *Percentage of Completion Method*
- *Completed Contract Method*
- *Revenue Recognition*
- *Accounting for Construction Contract*

INTRODUCTION

To prepare a meaningful income statement for an Accounting Period, the most critical requirement is the proper determination of the revenue for the period. If the revenue is overstated, obviously, the Income Statement will show a larger profit than the true profit for the period. Before we proceed to consider the problems of revenue recognition, and measurement, it might be useful for us to consider what should be appropriately regarded as Revenue for an Accounting Period.

Since the term "revenue" has not been defined by the IASC, we have to refer to the definition of revenue as given by the Financial Accounting Standards Board of USA. It is as follows:

"Revenues are inflows or other enhancements of assets of an enterprise or settlements of its liabilities (or a combination of both) during a period from delivering or producing goods, rendering services, or other activities that constitute the enterprise's ongoing major or central operations".

The problems that arise in relation to the recognition of revenue, could be broadly categorised in terms of this situation:

(a) the supplier might agree to sell at a point of time and deliver the goods sold at a different point of time
(b) the supplier might bill the buyer at a time different from the time of delivery of goods sold; and
(c) the buyer might pay for the goods sold at a point of time later than the date of billing.

Other problems in this area related to the receipt of the sales value prior to the delivery of merchandise or billing or where the amount payable in respect of goods or services unpaid is subsequently adjusted, either by mutual agreement, or by the ruling of an external agency (e.g., by a court of law, an arbitrator appointed by the buyer and the supplier). The problem is that when these events overlap Accounting Periods, or occur at the beginning or at the end of the Accounting Period, they may not be properly matched in the income statement for the Accounting Period. As a result, the income statement for the period either overstates or understates the revenue in respect of that period's business transactions. Four distinct alternatives exist as to when revenue could be recognised:

(1) recognition at the time of sale;
(2) recognition at the time when the sales value is collected;
(3) recognition at the time when the product is completed; and
(4) recognition proportionately over the period of performance of the contract.

If the problem were to be examined purely from the legal point of view, it could be said that a sale is completed only when the title is transferred from the supplier to the buyer. Accounting, in general, reflects this position. However, the law of transfer of property is so complicated that if accounting was to be wholly based on the legal position, it would be impossible to account for the day-to-day transactions in a business-like manner because of the many legal problems involved.

THE ACCOUNTING PRINCIPLES

The Generally Accepted Accounting Principles applicable to the four possible methods of recognition, are set out below:

(1) Recognition at the Time of Sale

Unrealised profit should not be credited to the income account of the corporation either directly or indirectly, through the medium of charged against such unrealised profit amounts which would ordinarily fail to be charged against income account. Profit is deemed to be realised when a sale in the ordinary course of business is effected, unless the circumstances are such that the collection of the sale price is not reasonably assured. An exception to the general rule may be made in respect of inventories in industries (such as packing-house industry), in which owing to the impossibility of determining costs, it is a trade custom to take inventories at net selling prices which may exceed cost.

It should be noted that the foregoing statement regarding "the impossibility of the determining costs" is not valid except in reference to the determination of the separate costs of joint products…

The act of invoicing, together with actual delivery or consignment to a common carrier, provides the most popular and suitable occasion. Sales for future production and consignment sales, should not be reported as income. In the case of businesses selling services, such as public utilities, the act or process of furnishing services together with invoicing, usually provides the occasion for recognition of revenue. If billings are made bi-monthly it is acceptable to record revenues currently by use of an "unbilled" receivables account.

After the sale is made, however, it is a rare business today, which will always realise in cash the full amount of the price agreed upon. A part of the invoice price is often cancelled by agreement because of merchandise returned or proven defective, errors in billing, shortages, etc. The custom of offering discounts for earlier payment, may also reduce the total cash received. And finally, the customer's account balance may prove uncollectible in spite of earlier expectations.

Merchandise returns and allowances for deficiencies are generally immaterial, and they are, therefore, often reported in the income statement of the period when the credit to the customer has been granted, even though the sale was made in an earlier period. When the allowances or returns are expected to be material, however, the amount is estimated and reported in the same period as the related sale or adjustments are made at the beginning and end of fiscal years. Losses from uncollectible accounts are usually materials, and it is therefore customary to estimate and record the probable loss in the same period the sale is recorded. When the losses are estimated accurately, the accounts receivable will be stated at net realisable value. The condition of open accounts and the history of losses must, of course, be periodically reviewed in order to determine that the rates used in estimating the losses are reasonable in relation to current credit and economic conditions. There are two methods of recording cash discounts. In the first method, the cash discount is recorded as an income deduction only, when the customer takes the discount by remitting earlier. In the second method, the sale is recorded and the customer's account charged for an amount excluding the discount; if his remittance is made after the discount period is over, the discount lost by the customer is recorded as a gain in that period is over, the discount period is over the discount lost by the customer is recorded as a gain in that period. Revenue is generally stated after deducting returns, allowances, discounts, freight and other similar items. Bad debts are usually shown as an expense rather than as a direct reduction of sales.

(2) Recognition at the Time when the Sales Price is Collected

Many businesses use the cash basis of recognising revenue as a convenience when the sales price is collected at the time the goods are delivered, or the services performed. Other businesses, however, use the cash basis even when the goods have been delivered or the service performed in a prior period. A common reason is a possibility of cancellation. Conditional sales, export sales and sales on approval are examples.

Installment sales and profit on those sales; e.g., long-term real estate sales, are only rarely reported, as the sales price is collected. Even though the collection risk and expenses are usually greater than on other sales, the inclusion of appropriate allowances in the financial statements is a better practice than reporting revenue in a later period.

We have, up to this point, discussed revenue recognition in sales of goods and services to customers, when relatively unvarying and easily defined rules may be incorporated into the accounting system. In other types of operations, however, individual sales may vary from one another, and the judgement of management and the accountant must substitute for hard and fast procedures.

(3) Recognition at the Time when the Product is Completed

Only in exceptional cases, inventories may be stated above cost. For example, precious metals having a fixed monetary value with no substantial cost of marketing, may be stated at such monetary value; any other exceptions must be justifiable by inability to determine appropriate approximate costs, immediate marketability at quoted market price and the characteristic of unit interchangeability. Where goods are stated above cost, this fact should be fully disclosed.

Discussion: It is generally recognised that income accrues only at the time of sale, and that gains may not be anticipated by reflecting assets at their current sale prices. For certain articles, however, exceptions

are permissible. Inventories of gold and silver, when there is an effective government-controlled market at a fixed monetary value, are ordinarily reflected at selling prices. A similar treatment is not uncommon for inventories representing agricultural, mineral, and other products, units of which are interchangeable and have an immediate marketability at quoted prices, and for which appropriate costs may be difficult to obtain. Where such inventories are stated at sales prices, they should, of course, be reduced by expenditures to be incurred in disposal, and the use of such basis should be fully disclosed in the financial statements.

(4) Recognition Proportionately over Performance of Contracts

In contracting operations the uncertainties of the market are removed by fixing the sale price before production begins. The contract price is realised not through selling activity, but through proper performance under the contract.

In general, the type of contract considered hereunder, is for construction of a specific project. While such contracts are generally carried on at the job site, the bulletin would also be applicable in appropriate cases to the manufacturing or building of special items on a contractors basis in a contractor's own plant. The problem in accounting for construction-type contracts arise particularly in connection with long-term contracts, as compared with those requiring relatively short periods for completion.

Considerations other than those acceptable as a basis for the recognition of income, frequently enter into the determination of the timing, and amount of interim billings on construction-type contracts. For this reason, income to be recognised on such contracts at the various stages of performance ordinarily should not be measured by interim billings.

METHODS

Two accounting methods commonly followed by contractors are the percentage of completion method and the completed- contract method.

Percentage-of-Completion Method

The percentage of completion method recognises income as work during the progress of a contract. The committee recommends that the recognised income will be that percentage of estimated total income, either:

(a) that incurred costs-to-date bear-to-estimated total costs after giving effect to estimates of costs-to-complete based upon most recent information, or

(b) that may be indicated by such other measure of progress towards completion as may be appropriate having due regard to work performed.

Costs, as used here, might exclude, especially during the early stages of a contract, all or a portion of the cost of such items as materials and sub-contracts, if it appears that such an exclusion would result in a more meaningful periodic allocation of income.

Under this method, current assets may include costs and recognised income not yet billed, with respect to certain contracts; and liabilities, in most cases current liabilities, may include billing in excess of costs and recognised income with respect to other contract.

When the current estimate of total contract costs indicates a loss, in most circumstances, provision should be made for the loss on the entire contract. If there is a close relationship between profitable and non-profitable contracts, such as in the case of contracts which are parts of the same project, the group may be treated as a unit in determining the necessity for a provision for loss.

The principal advantages of the percentage-of-completion method are periodic recognition of income currently, rather than irregularly, as contracts are completed, and the reflection of the status of the uncompleted contracts provided through the current estimates of costs to complete or of progress towards completion.

The principal disadvantage of the percentage-of-completion method is that it is necessarily dependent upon estimates of ultimate costs and consequently, of currently accruing income which are subject to the uncertainties frequently inherent in long-term contracts.

Completed-Contract Method

The completed-contract method recognises income only when the contract is completed, or substantially so. Accordingly, costs of contracts in process and current billings are accumulated, but there are no interim charges or credits to income other than provisions for losses. A contract may be regarded as substantially completed, if remaining costs are not significant in amount.

When the completed-contract method is used, it may be appropriate to allocate general and administrative expenses to contract costs, rather than to periodic income. This may result in a better matching of costs and revenues, than would result from treating such expenses as paid costs, particularly in years when no contracts were completed. It is not so important, however, when the contract is engaged in numerous projects and in such circumstances, it may be preferable to charge those expenses as incurred to periodic income. In any case, there should be no excessive deferring of overhead costs, such costs that might occur if total overheads were assigned to abnormally few or abnormally small contracts in process. Although the completed-contract method does not permit the recording of any income prior to completion, provision should be made for expected losses in accordance with the well-established practice of making provision for foreseeable losses. If there is a close relationship between profitable and non-profitable contracts, such as in the case of contracts which are parts of the same project, the group may be treated as a unit in determining the necessity for a provision for losses.

When the completed contract-method is used, an excess of accumulated costs over related billings, should be shown in the Balance Sheet as current assets, and an excess of accumulated billings over related costs, should be shown among the liabilities, in most cases as a current liability.

If costs exceed billings on some contract, and billings exceed costs on others, the contracts should ordinarily be segregated, so that the figures on the asset side include only those contracts on which costs exceed billings, and those on the liability side include only those on which billing exceeds costs. It is suggested that the asset item be described as "costs of uncompleted contracts, in excess of related billing" rather than as "inventory" or "work in process", and that the item on the liability side be described as, "billings on uncompleted contracts in excess of related costs."

The principal advantage of the completed-contract method is that it is based on results as finally determined, rather than on estimates for unperformed work, which may involve unforeseen costs and possible losses.

The principal disadvantage of the completed-contract method is that, it does not reflect current performance when the period of any contract extended into more than one accounting period and under such circumstance, it may result in irregular recognition of income.

Revenue Recognition

In the initial years, this Accounting Standard will be recommendatory in character. During this period, this standard is recommended for use by companies listed on a recognised stock exchanged and other large commercial industrial and business enterprises in the public and private sectors.

The following is the text of the Accounting Standard (AS-9) issued by the Institute of Chartered Accountants of India on "Revenue Recognition".

INTRODUCTION

1. This statement deals with the basis for recognition of revenue in the statement of profit and loss of an enterprise. The Statement is concerned with the recognition of revenue arising in the course of the ordinary activities of the enterprise from:
   - the sale of goods
   - the rendering of services, and
   - the use by others of enterprise resources yielding interest, royalties and dividends.
2. This Statement does not deal with the following aspects of revenue recognition to which special considerations apply:
   (i) Revenue arising from construction contracts,
   (ii) Revenue arising from hire-purchase, lease agreements
   (iii) Revenue arising from government grants and other similar subsidies
   (iv) Revenue of insurance companies arising from insurance contracts.
3. Examples of items not included within the definition of "revenue" for the purpose of this Statement are:
   (i) Realised gains resulting from the disposal of, and unrealised gains resulting from the holding of non-current assets e.g., appreciation in the value of fixed assets;
   (ii) Unrealised holding gains resulting from the change in value of current assets, and the natural increases in herds and agricultural and forest products;
   (iii) Realised or unrealised gains resulting from changes in foreign exchange rates, and adjustments arising on the translation of foreign currency financial statements;
   (iv) Realised gains resulting from the discharge of an obligation at less than its carrying amount;
   (v) Unrealised gains resulting from the restatement of the carrying amount of an obligation.

DEFINITIONS

4. The following terms are used in this Statement with the meaning specified.
   4.1 *Revenue is the gross inflow of cash, receivable or other consideration arising in the course of the ordinary activities of an enterprise from the sale of goods, from the rendering of services, and from the use by others of enterprises resources yielding interest, royalties and dividends. Revenue is measured by the charges made to customers or clients for goods supplied, and services rendered to them, and by the charges and rewards arising from the use of resources by them. In an agency relationship, the revenue is the amount of commission and not the gross inflow of cash, receivables or other consideration.*
   4.2 Completed service contract method *is a method of accounting, which recognises revenue in the statement of profit and loss, only when the rendering of services under a contract is completed or substantially completed.*
   4.3 Proportionate completion method *is a method of accounting, which recognizes revenue in the statement of profit and loss proportionately, with the degree of completion of services under a contract.*

Explanation

5. Revenue recognition is mainly concerned with the timing of recognition of revenue in the statement of profit and loss of an enterprise. The amount of revenue arising on a transaction is usually determined by agreement between the parties involved in the transaction. When uncertainties exist regarding the determination of the amount or its associated costs, these uncertainties may influence the timing of revenue recognition.
6. Sale of goods
   6.1 A key criterion for determining when to recognise revenue from a transaction involving the sale of goods, is that, the seller has transferred the property in the goods to the buyer for a consideration. The transfer of property in goods, in most cases, results in or coincides with the transfer of significant risks and rewards of ownership to the buyer. However, there may be situations where transfer of property in goods, does not coincide with the transfer of significant risks and rewards of ownership. Revenue in such situations is recognised at the time of transfer of significant risks and rewards of ownership to the buyer. Such cases may arise where delivery has been delayed through the fault of either the buyer or the seller, and the goods are at the risk of the party at fault, as regards any loss which might not have occurred. Further, sometimes the parties may agree that the risk will pass at a time different from the time when ownership passes.
   6.2 At certain stages in specific industries, such as when agricultural crops have been harvested or mineral ores have been extracted, performance may be substantially complete, prior to the execution of the transaction generating revenue. In such cases, when sale is assured under a forward contract, or a government guarantee, or where the market exists, there is a negligible risk of failure to sell, the goods involved are often valued at net realisable value. Such amounts though not revenue as defined in this Statement, are sometimes recognised in the statement of profit and loss and appropriately described.
7. Rendering of Services
   7.1 Revenue from service transactions is usually recognised as the service is performed, either by the proportionate completion method, or by the completed service contract method.
      (i) Proportionate completion method – Performance consists of the execution of more than one act. Revenue is recognised proportionately by reference to the performance of each act. The revenue recognised under this method would be determined on the basis of contract value, associated costs, number of acts or other suitable basis. For particular purposes, when services are provided by determinate number of acts over a specific period of time, revenue is recognised on a straight line basis over the specific period unless there is evidence that some other method represents the pattern of performance better.
      (ii) Completed service contract method – Performance consists of the execution of a single act. Alternatively, services are performed in more than a single act, and the services yet to be performed are so significant in relation to the transaction taken as a whole, that performance cannot be deemed to have been completed, until the execution of those acts. The completed service contract method is relevant to these patterns of performance, and accordingly, revenue is recognised when the sole or final act takes place and the service becomes chargeable

8. The Use by Others of Enterprise Resources Yielding Interest, Royalties and Dividends

8.1 The use by others of such enterprise resources gives rise to:

(i) interest – charges for the use of cash resources or amounts due to the enterprise;

(ii) royalties – charges for the use of such assets as know-how, patents, trade marks and copyrights.

(iii) dividends – rewards from the holding of investments in shares.

8.2 Interest accrues, in most circumstances, on the time basis determined by the amount outstanding and the rate applicable. Usually, discount or premium on debt securities held is treated as though it were accruing over the period to maturity.

8.3 Royalties accrue in accordance with the terms of the relevant agreement and are usually recognised on that basis unless, having regard to the substance of the transactions, it is more appropriate to recognise revenue on some other systematic and rational basis.

8.4 Dividends from investments in shares are not recognised in the statement of profit and loss until a right to receive payment is established.

8.5 When interest royalties and dividends from foreign countries require exchange permission, and uncertainty in remittance is anticipated, revenue recognition may need to be postponed.

9. Effect of Uncertainties on Revenue Recognition

9.1 Recognition of revenue requires that revenue is measurable and that, at the time of sale or the rendering of the service, it would not be unreasonable to expect ultimate collection.

9.2 Where the ability to assess the ultimate collection with reasonable certainty is lacking at the time of raising any claim, e.g., for escalation of price, export incentives, interest etc. revenue recognition is postponed to the extent of uncertainty involved. In such cases, it may be appropriate to recognise revenue only when it is reasonably certain that the ultimate collection will be made. Where there is no uncertainty as to ultimate collection, revenue is recognised at the time of sale or rendering of service, even though payments are made by installments.

9.3 When the uncertainty relating to collectability arises subsequent to the time of sale or the rendering of the service, it is more appropriate to make a separate provision to reflect the uncertainty rather than to adjust the amount of revenue originally recorded.

9.4 An essential criterion for the recognition of revenue is that, the consideration receivable for the sale of goods, the rendering of services or from the use by others of enterprise resources, is reasonably determinable. When such consideration is not determinable within reasonable limits, the recognition of revenue is postponed.

9.5 When recognition of revenue is postponed due to the effect of uncertainties, it is considered as revenue of the period in which it is properly recognised.

10. Revenue from sales or service transaction should be recognised when the requirements as to performance set out in paragraphs 11 and 12 are satisfied, provided that at the time of performance, it is not unreasonable to expect ultimate collection. If, at the time of raising of any claim it is unreasonable to expect collection, revenue recognition should be postponed.

11. In a transaction involving the sale of goods, performance should be regarded as being achieved when the following conditions have been fulfilled:

(i) the seller of goods has transferred to the buyer the property in the goods for a price or all significant risks and rewards of ownership have been transferred to the buyer and the seller

retains no effective control of the goods transferred to a degree usually associated with ownership; and

(ii) no significant uncertainty exists regarding the amount of the consideration that will be derived from the sale of the goods.

12. In a transaction involving the rendering of services, performance should be measured either under the Completed Service Contract Method, or under the Proportionate Completion Method whichever relates the revenue to the work accomplished. Such performance should be regarded as being achieved when no significant uncertainty exists regarding the amount of the consideration that will be derived from rendering the service.

13. Revenue arising from the use by other of enterprise resources yielding interest royalties and dividends, should only be recognised when no significant uncertainty as to measurability or collect ability exists. These revenues are recognised on the following basis:

(i) Interest on a time proportion basis taking into account the amount outstanding and the rate applicable;

(ii) Royalties: on an accrual basis in accordance with the terms of the relevant agreement;

(iii) Dividends from Investments in shares: when the owner's right to receive payment is established

Disclosure

14. In addition to the disclosures required by Accounting Standard-1 on Disclosure of Accounting Policies (AS-1), an enterprise should also disclose the circumstances in which revenue recognition has been postponed pending the resolution of significant uncertainties.

Accounting for Construction Contracts (AS-7)

In the initial years, this Accounting Standard will be recommendatory in character. During this period, this standard is recommended for use by companies listed on a recognised stock exchange and other large commercial industrial and business enterprises in the public and private sectors.

The following is the text of the Accounting Standard 7 (AS-7), issued by the Institute of Chartered Accountants of India on "Accounting for Construction Contracts". The Standard deals with accounting for construction contracts in the financial statements of contractors.

INTRODUCTION

1. This Statement deals with accounting for construction contracts in the financial statements of enterprises undertaking such contracts (hereafter referred to as 'contractors'). The Statement also applies to enterprises undertaking construction activities of the type dealt with, in this Statement, not as contractors but on their own account as a venture of a commercial nature where the enterprise has entered into agreement for sale.

2. The feature which characterised a construction contract dealt with in this Statement, is the fact that the date at which the contract is secured and the date when the contract activity is completed, fall into different Accounting Periods. The specific duration of the contract performance is not used as a distinguishing feature of a construction contract. Accounting for such contracts is essentially a process of measuring the results of relatively long-term events and allocating those results to relatively short-term Accounting Periods.

3. For the purposes of this Statement, a construction contract is a contract for the construction of an asset, or of a combination of assets, which together constitute a single project. Examples of activity covered by such contracts include the construction of bridges, dams, ships, buildings and complex pieces of equipment.

4. Contracts for the provision of services come within the scope of this Statement, to the extent that they are directly related to a contract for the construction of an asset. Examples of such service contracts are contracts for the services of project managers and architects, and for technical engineering services related to the construction of an asset.

Explanation

5. The principal problem relating to accounting for construction contracts is the allocation of revenue and related costs to Accounting Periods over the duration of the contracts.

6. Types of Construction Contracts:

Construction contracts are formulated in a variety of ways, but generally fall into two basic types:

(i) **Fixed Price Contracts**—the contractor agrees to a fixed contract price or rate in some cases subject to cost escalation clauses;

(ii) **Cost Plus Contracts**—the contractor is reimbursed for allowable or otherwise defined costs, and is also allowed a percentage of these costs, or a fixed fee.

Both types of contracts are within the scope of this Statement.

7. Accounting Treatment of Construction Contract Costs and Revenues

7.1 Two methods of accounting for contracts commonly followed by contractors are the percentage of Completion Method and the Completed Contract Method

7.2 Under the percentage of Completion Method, revenue is recognised as the contract activity progresses based on the stage of completion reached. The costs incurred in reaching the stage of completion are matched with this revenue. Reporting of results are directly attributed to the proportion of work completed. Although (as per the principle of 'prudence') revenue is recognised only when realised, under this method, the revenue is recognised as the activity progresses, even though in certain circumstances, it may be realised.

7.3 Under the completed contract method, revenue is recognised only when the contract is completed or substantially completed, that is, when only minor work is expected other than warranty obligation. Costs and progress payments received, are accumulated during the course of the contract, but revenue is not recognised until the contract activity is substantially completed.

7.4 Under both methods, provision is made for losses for the stage of completion reached on the contract. In addition, provision is usually made for losses on the reminder of the contract.

7.5 It may be necessary for accounting purposes to combine contracts made with a single customer or to combine contracts made with several customers if the contracts are negotiated as a package or if the contracts are for a single project. Conversely, if a contract covers a number of projects, and if the costs and revenues of such individuals projects can be identified within the terms of the contract, each such project may be overall treated as equivalent to a separate contract.

8. Costs to be Accumulated for Construction Contracts

8.1 Costs attributable to a contract are identified with reference to the period that commences with the securing of the contract and closes when the contract is completed.

8.2 Costs not specifically attributable to any contract incurred by the contractor before a contract is secured, are usually treated as expenses of the period in which they are incurred. However, if costs attributable to securing the contract can be separately identified, and either the contract has been secured or there is a clear indication that the contract will be obtained, the costs are sometimes treated as applicable to the contract and are deferred. As a practical measure, costs directly identifiable with a contract are sometimes deferred until it is clear whether the contract has been secured or not.

8.3 Cost attributable to a contract, includes expected warranty costs. Warranty costs are provided for, when such costs can be reasonably estimated.

8.4 Costs incurred by a contractor can be divided into

(i) Costs that relate directly to a specific contract;

(ii) Costs that can be attributed to the contract activity in general and can be allocated to specific contracts.

(iii) Costs that relate to the activities of the contractor in general, or that relate to contract activity, but cannot be related to specific contracts.

8.5 Examples of costs that relate directly to a specific contract include:

(i) site labour cost, include supervision

(ii) materials used for project construction

(iii) depreciation of plant and equipment required for a contract

(iv) cost of moving plant and equipment to and from a site.

8.6 Examples of costs that can be attributed to the contract activity in general, and be allocated to specific contracts, include

(i) insurance

(ii) design and technical assistance

(iii) construction overheads

8.7 Examples of costs that related to the activities of the contractor in general, or that related to contract activity, but cannot be related to specific contracts include:

(i) general administration and selling costs;

(ii) finance costs

(iii) research and development costs

(iv) depreciation of plant and equipment that cannot be allocated to a particular contract.

8.8 Costs referred to in paragraph 8.7 are usually excluded from the accumulated contract costs because they do not relate to reaching the present stage of completion of a specific contract. However, in some circumstances general administrative expenses development costs and financial costs are specifically attributable to a particular contract and are sometimes included as part of accumulated contract costs.

Basis for Recognising Revenue on Construction Contracts:

9. Percentage of completion method

9.1 Under the percentage of completion method the amount of revenue recognised is determined by reference to the stage of completion of the contract activity at the end of each Accounting Period. The advantage of this method of accounting for contract revenue is that it reflects revenue in the Accounting Period during which activity is undertaken to earn such revenue.

9.2 The stage of completion used to determine revenue to be recognised in the financial statement is measured in an appropriate manner. For this purpose, special weightage should not be given to a single factor, instead, all relevant factors should be taken into consideration; for example, the proportion that costs incurred-to-date bear to the estimated total cost of the contract, by surveys which measure work performed and completion of a physical proportion of the contract work.

9.3 Progress payment and advances received from customers may not necessarily reflect the stage of completion and therefore, cannot usually be treated as equivalent to revenue earned.

9.4 If the percentage of completion method is applied by calculating the proportion that costs-to-date bear to the latest estimated total costs of the contract, adjustments are made to include only those costs that reflect work performed. Examples of items which may need adjustment include:

(i) the cost of materials that have been purchased for the contract, but have not been installed or used during contract performance; and

(ii) payments to sub-contractors to the extent that they do not reflect the amount of work performed under the sub-contract.

9.5 The application of the percentage of completion method is subject to a risk of error in making estimates. For this reason, profit is not recognised in the financial statements unless the outcome of the contract can be reliably estimated. If the outcome cannot be reliably estimated, the percentage of completion method is not used.

9.6 While recognizing the profit under this method, an appropriate allowance for future unforeseeable factors which may affect the ultimate quantum of profit, and is generally made on either a specific or a percentage basis.

9.7 In the case of fixed price contracts, the condition which will usually provide this degree of reliability are:

(i) total contract revenue to be received can be reliably estimated.

(ii) both the costs to complete the contract and the stage of contract performance completed at the reporting date can be reasonably estimated, and

(iii) the costs attributable to the contract can be clearly identified so that actual experience can be compared with prior estimates.

9.8 Normally, the profit is not recognised in fixed price contracts, unless the work on a contract has progressed to a reasonable extent. Ordinarily, this test is not considered as having been satisfied unless 20 to 25% of the work is completed.

9.9 In the case of cost plus contracts, the conditions which usually provide this degree of reliability are:

(i) cost attributable to the contract can be clearly identified; and

(ii) costs other than those that are specifically reimbursable under the contract, can be reliably estimated.

10. Completed Contract Method

10.1 The principal advantage of the completed contract method is that, it is based on results as determined when the contract is completed, or substantially completed, rather than on estimates which may require subsequent adjustment as a result of unforeseen costs and possible losses. The risk of recognising profits that may not have been earned, is therefore, minimised.

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10.2 The principal disadvantage of the completed contract method is that the periodic reported income does not reflect the level of activity on contracts during the period. For example, when a few large contracts are completed in one Accounting Period, but no contracts have been completed in the previous period or are to be completed in the subsequent period the level of reported income can be erratic, although the level of activity on contracts may have been relatively constant throughout. Even when numerous contracts are regularly completed in each Accounting Period, and reported income may appear to reflect the level of activity on contracts, there is a continuous lag between the time when work is performed and the related revenue is recognised.

11. Selection of method

11.1 The selection of a method of accounting for a construction contract depends on considerations discussed earlier. The contractor may use both methods simultaneously for different contracts depending upon circumstances.

11.2 When a contractor uses a particular method of accounting for a contract, then in respect of all other contracts that meet similar criteria, the same method is used.

11.3 The method of accounting used by the contractor and the criteria, adopted in selecting the method/s represent an accounting policy.*

12. Change in accounting policy

When there is a change in the Accounting Policy used for construction contracts, there is disclosure of the effect of the change and its amount. If the contractor changes from the percentage of completion method to the Completed Contract Method, it is sometimes not possible to quantify the full effect of the change in the current Accounting Period. In such cases, there is disclosure of at least the amount of attributable profits reported in prior years in respect of contracts in progress at the beginning of the accounting period.**

13. Provision for Foreseeable Losses

13.1 When current estimates of total contract costs and revenues indicate a loss, provision is made for the entire loss on the contract irrespective of the amount of work done, and the method of accounting followed. In some circumstances, the foreseeable losses may exceed the costs of work done to date. Provision is nevertheless made for the entire loss on the contract.

13.2 When the contract is of such magnitude that it can be expected to absorb a considerable part of the capacity of the enterprise for a substantial period, indirect costs to be incurred during the period of the completion of the contract are sometimes considered to be directly attributable to the contract, and include in the calculation of the provision for loss on the contract.

13.3 If the provision for loss is required, the amount of such provision is usually determined irrespective of:

(i) whether or not the work has commenced on the contract; and

(ii) the stage of completion of contract activity; and

(iii) the amount of profits expected to arise on other unrelated contracts.

13.4 The determination of a future loss on a contract, may be subject to a high degree of uncertainty. In some of these cases, it is possible to provide for the future loss, and in other cases, only the existence of a contingent loss is disclosed.

14. Claims and Variations Arising Under Construction Contracts

14.1 Amounts due in respect of claims made by the contractor and of variations in contract work approved by the customer, are recognised as revenue in the financial statements only in circumstances where, and only to the extent that the contractor has evidence of the final acceptability of the amount of the claim or variation.

14.2 Claim or penalties payable by the contractor arising out of delays in completion, or from other causes are provided for in full, in the financial statements as costs attributable to the contract. Claim in the nature of contingency, are treated as indicated in Accounting Standard 4 on "Contingencies and Events Occurring After the Balance Sheet Date".

15. Progress Payments, Advances and Retentions

15.1 Progress payments and advances received from customers in respect of construction contracts, in relation to the work performed thereon, are disclosed in financial statements either as a liability or shown as a deduction from the amount of contract work-in-progress.

15.2 In case progress payments and advances received from customers in respect of construction contracts are not in relation to work performed thereon, these are shown as a liability.

15.3 Amounts retained by customers until the satisfaction of conditions specified in the contract for release of such amounts are either recognition in financial statements as receivables or alternatively indicated by way of a note.

Accounting Standard

(The Accounting Standard comprises paragraphs 16-21 of this Statement. The Standard should be read in the context of paragraphs 1-15 of this Statement, and of the Preface to the Statements of Accounting Standards.)

16. In accounting for construction contracts in financial statements, either the percentage of completion method or the completed contract method may be used. When a contractor uses a particular method of accounting for a contract, then the same method should be adopted for all other contracts which meet similar criteria.

17. The percentage of completion method can be used if the outcome of the contract can be reliably estimated.

17.1 In the case of fixed price contracts, this degree of reliability would be provided if the following conditions are satisfied:

(i) Total contract revenues to be received can be reliably estimated.

(ii) both the costs to complete the contract and the stage of contract performance completed at the reporting date can be reasonably estimated; and

(iii) the costs attributable to the contact can be clearly identified, so that actual experience can be compared with prior estimates.

17.2 Profit in the case of fixed price contracts, normally should not be recognised unless the work on a contract has progressed to a reasonable extent.

17.3 In the case of cost plus contracts, this degree of reliability will be provided only if both the following conditions are satisfied:

(i) costs attributable to the contract can be clearly identified; and

(ii) costs other than those that are specifically reimbursable under the contract can be reliably estimated.

17.4 While recognising the profit under percentage of Completion Method, an appropriate allowance for future unforeseeable factors should be made on either a specific or a percentage basis.

18. The costs included in the amount at which construction contract work is stated, should comprise those costs that relate directly to a specific contract and those that are attributable to the contract activity in general and can be allocated to specific contracts.

19. A foreseeable loss on the entire contract should be provided for, in the financial statements irrespective of the amount of work done and the method of accounting followed.

Disclosure

20. There should be disclosure in the financial statements of:

(i) The amount of construction work-in-progress;

(ii) progress payments received and advances and retentions on account of contracts included in construction work-in-progress; and

(iii) the amount receivable in respect of income accrued under cost plus contracts not included in construction work-in-progress.

If both the Percentage of Completion Method, and the Completed Contract Method are simultaneously used by the contractor, the amount of contract work described in (i) above should be analysed to disclose separately the amounts attributable to contracts accounted for under each method.

21. Disclosure of changes in an accounting policy used for construction contracts should be made in the financial statements giving the effect of the changes and its amount. However, if a contractor changes from the Percentage of Completion Method to the Completed Contract Method for contracts in progress at the beginning of the year, it may not be possible to quantify the effect of the change. In such cases, disclosure should be made of the amount of attributable profits reported in prior years, in respect of contracts in progress at the beginning of the accounting period.

Summary

Revenue Recognition is to be performed in the situations such as: recognition at the time of sale; recognition at the time when the sales value is collected; recognition at the time when the product is completed; recognition proportionately over the period of performance of the contract. A sale is completed only when the title is transferred from the supplier to the buyer. Two Revenue Recognition Accounting Methods commonly followed by contractors are the Percentage of Completion Method and the Completed Contract Method. If costs exceed billings on some contract, and billings exceed costs on others, the contracts should ordinarily be segregated so that the figures on the asset side include only those contracts on which costs exceed billings, and those on the liability side include only those on which billing exceeds costs. It is suggested that the asset item be described as "costs of uncompleted contracts in excess of related billing" rather than as "inventory" or "work in process", and that the item on the liability side be described as, "billings on uncompleted contracts in excess of related costs. In the initial years, this Accounting Standard will be recommendatory in character. During this period, this standard is recommended for use by companies listed on a recognised stock exchange and other large commercial industrial and business enterprises in the public and private sectors.

KEY CONCEPTS

- Revenue
- Revenue Inflow
- Accounting period

- Central operations
- Time of Sale
- Percentage of completion
- Completed Contract
- Construction Contract
- Foresee-able losses
- Claims and variations
- Progress Payment

Review Questions

1. Define the term 'Revenue' as given by the Financial Accounting Standards Board of USA.
2. State the problems that arise in relation to recognition of revenue.
3. Briefly explain the generally accepted accounting principles applicable to methods of recognition.
4. Write a brief note on **'Revenue Recognition'** as stated in accounting standard AS-9.
5. Write short notes on
   (i) Percentage of Completion Method
   (ii) Completed Contract Method
6. Explain in detail Accounting for construction contract.

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CHAPTER

6

Inventory Pricing and Valuation

"It is important to obtain a strict control of purchase in order to ensure that there is complete harmony as to prospective supplies between stores department and buying office and the contract department who handle the orders received."

—H.J. Lunt & A.H. Rpley

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Need for Inventories*
- *Functions of Inventories*
- *Nature of Inventories*
- *Importance of Inventory Control*
- *Concept of Inventory Control*
- *Objective of Inventory Control*
- *Economic Lot Size*
- *Conditions Essential for Inventory Control*
- *Costs for Inventory Decisions*
- *Relevant Costs for Decisions*
- *Ordering Level*
- *Safety Stock*
- *Methods of Inventory Control*
- *Method of Control through Turnover*
- *Valuation of Inventories*
- *Methods of Voluation*

INTRODUCTION

Business enterprises carry stocks or inventories for their regular business or trading operations. The stock or inventory held, may be of three types:

(i) Stock of materials held to be used in production
(ii) Work in process
(iii) Stock of finished goods.

Valuation of stock is an important factor in any organisation, since it influences the profit/loss to be revealed through income statements.

In most business situations, goods kept in inventory are purchased in various lots at different prices and at various times. It is necessary to develop a method of pricing which is based on inventories constitute about 60% of current assets of public limited companies in India. Inventories represent investment of a firm's funds. The objective of the inventory management should be the maximisation of the value of a firm. The firms should therefore consider cost, return and risk factors in establishing inventory policy.

INVENTORY CONTROL AND VALUATION

Need for Inventories

Production and delivery of goods are never done at the same time and hence inventories are needed to safeguard them from price changes. Though there are big achievements like computers automation, scientific management, manufacturing and merchandising processes, still there is a need of inventories to serve public at proper time and place. Production operation must have inventories of work in process, direct materials and finished goods. It is not feasible to carry out all productions based on customer's orders, as it needs delivery time and raw materials at hand which are to be kept in stock. Such a situation cannot be obtained in complex business conditions.

Functions of Inventories

The main functions of inventories are to serve as a stock:

(i) to absorb planning errors and unknown future fluctuations in supply and demand.
(ii) to facilitate smooth production and marketing operations.

Inventories also assist to isolate or lessen the interdependence of each part of the organisation, so that it may work more effectively as it becomes clear when many parts or sub-assemblies are purchased or manufactured, stored and used according to the needs.

Nature of Inventories

There are three kinds of inventories in a manufacturing concern:

(i) Raw materials (ii) Work-in-process and (iii) Finished goods.

Raw materials inventory is the value of materials in the godown at a particular time. Work-in-process includes materials, labour and factory expenses spent on the production by the assembly department wherein the goods are likely to be in various stages of completion. The inventory value of each unit of goods includes the material, labour and factory expenses applied to the unit through the last operation performed on it.

Finished goods inventory include finished goods in the warehouse at inventory date.

Importance of Inventory Control

In many cases, inventory investment shows one of the largest asset items of business concerns particularly those engaged in manufacturing wholesale trade and retail trade. It is a fact that there are sufficient

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variances in the importance of inventories in the asset structure of manufacturing and mercantile concerns. Again, the cost of materials used in production often surpasses the total cost of labour and factory overheads. As the ability to keep materials cost at a minimum in each unit of finished goods is a significant factor in profitable operations of a business, the importance of inventory control through proper planning, purchasing, handling and accounting cannot be over-emphasised. This is, at times, also referred to as 'inventory management'.

Hence, for most of the manufacturing and mercantile corporate concerns, and for many others as well, the formulation and execution of sound inventory management polices becomes a managerial responsibility of the highest order. Mostly, it is said that more concerns fail on account of inept and inefficient inventory management than for any other reason. This is due to the fact that the control of inventories has been one of the most neglected problems of management.

The managerial objective must be the avoidance of 'over-investment' and 'under-investment' in inventories-a proposition that appears to show that there must be some 'right amount of inventory investment' for maximising profits. Still, it is easy to point out the harmful effect of over-investment and under-investment in real conditions. This, therefore, is the intractable problem involved in 'inventory management'.

Concept of Inventory Control

The word 'Inventory Control is meant to include two functions which are quite different but related to each other and they both need the maintenance of sufficient records of inventories, receipt and issues corresponding to these two functions. Inventory Control is interpreted as Accounting Control and Operating Control. Accounting Control of inventories is concerned with –

(a) The safeguarding of the undertaking property in the form of raw materials, work – in-process and semi- finished as well as finished products.
(b) The proper recording of the receipt and consumption of materials and the flow of goods through the plant into finished stock and eventually to customers.

Operating control of inventories is concerned with maintaining inventories at the optimum level, keeping in view the operational needs and the financial resources of the business.

The line of demarcation between the two is important from the Controllers' point of view as there is a clear cut difference in the degree of his responsibility with respect to the two functions. While Accounting Control of inventories is generally known to be an important part of Controller's property control function, operating control of inventories is the main responsibility restricted only to the record-keeping and data-reporting to make such management possible. Again, the Controller has to visualise the basic management problem involved in discharging this responsibility with the consequence that these two aspects of inventory control cannot be placed in water tight compartments without any connecting links between them.

In view of the fact that these two aspects are closely related, it is not surprising to find many Controllers assuming at least a part of the responsibility for operating control of inventories. Such an attitude on the part of the Controller in respect of inventory management is perfectly within the bounds of propriety, if delegation to that effect has been made to Controller, but if it is not specifically provided for in one way or the other, it may lead to overlapping responsibility with adverse effects.

Objectives of Inventory Control

There are two level of Inventory Control-Unit Control and Value Control. Purchasing and production executives are mainly interested in Unit Control with the result that they think, requisition and order in terms of unit instead of money values. It is, of course, true that the number of units multiplied by the price per unit can give the money value, but the control emphasis is on units.

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On the other hand, those responsible for financial planning are chiefly concerned with Financial Control of inventories as their over-riding concern is that the resources invested in inventory must be efficiently and effectively utilised.

In this way, basically, the Operating Control of inventories must meet two opposing needs – the maintenance of an inventory of adequate size and diversity for efficient operations and maintenance of inventory which is not financially detrimental. A fundamental objective of a good system of operating control of inventories is to be able to place an order at the right time from the right sources to acquire the right quantity at right price and right quality.

This fundamental objective may be amplified into the following objectives which have to be kept in view during developing and maintaining a system of Inventory Control:

(i) Service to customers

Sufficient stock of finished goods must be kept to match reasonable expectations of customers for prompt execution of their orders.

(ii) Effective use of capital

Capital available to business must be put to effective use for the financing of the cycle of purchase, manufacture, sale and collection.

(iii) Reduction of risk of loss

As far as possible, the possibility of the risk of loss through obsolescence or shrinkage in value of the market between the time of purchase or manufacture on one hand, and the time of sale on the other, has to be minimised.

(iv) Promotion of manufacturing efficiency

Safeguards have to be given in order that manufacturing efficiency may not be unfavorably affected owing to the non-availability of stocks of raw material and semi-finished products in required quantity for processing and scheduling of processing, in lots not large enough for economic production.

(v) Economy in purchasing

Every attempt has to be made to effect economy in purchasing through quantity buying and taking advantage of favorable rawmaterial markets.

(vi) Avoidance of out-of-stock danger

Steps have to be taken to rule out the possibility, even distant and far fetched, of business short of the stock of finished goods, so that the implementation of the customers' orders may not be starved.

While these objectives have been so stated as to be applicable to a manufacturing business, they can be applicable to merchandising business with a slight amendment. As a matter of fact, a number of objectives given above, apply equally to merchandising in the same way as to manufacturing.

It is often asserted that inventory control means keeping inventories as low as possible but this is a very limited conception of its functions. Situations do arise where pursuit of some objectives leads to conflict with others. In this way, where there is a probability of shortages or possibility of an increase in price, it may be desirable to expand inventories beyond immediate operating requirements as it would conform to the objectives of keeping sufficient stocks of raw materials available and obtaining economies in purchases, though it would be contrary to the objectives if reduction of market risks. Such cases bring into sharp focus, the need for the balancing of various objectives in a system of inventory control and this process of balancing requires some basic policy decisions.

The policy decisions necessary to the development of an integrated inventory control system are as follows:

(i) Policy of Service to Customers

This is concerned with the determination of the period within which customer orders are to be executed.

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(ii) Availability of Capital and Storage Space

This is significant in giving an idea of the constraints of resources and space from the view point of building inventory.

(iii) Nature of Purchase Policy

It is very important from the view point of inventory whether business would be effecting purchases to meet processing schedules only, or it can take advantage of speculative purchases through forward buying. The fundamental point to be decided in this connection is the fixation of the number of weeks requirement for which inventory is to be maintained.

(iv) Type of Purchasing Policy

This indicates the preference to be given to purchasing in larger bulks than is strictly necessary to meet manufacturing and dispatch schedules.

The decisions on these points are not mutually exclusive but are intimately linked with one another and all the points are to be considered in the light of conditions under which business is operating, as also the practical alternatives open to it. In the majority of businesses, constraints of competition set a certain minimum standard of service to customers while considerations of production impose a limit to the minimum size of purchase orders and processing lots. The line between non-speculative and speculative purchasing is always very thin If either style is a factor in business or volume fluctuations accurate sales forecast becomes difficult. Again the company's overall financial policy determines to a very large extent, the availability of capital for investment in inventories, and as the former has to provide for flexibility to meet changing conditions, the latter has also to be kept flexible. Thus, it is clear that these basic policy decisions are to be more in the nature of guiding principles, than as cast-iron rules. It is, therefore, natural for the operation executives to be allowed considerable freedom of judgement in applying the policies and they should be permitted as well as encouraged to doubt the validity of the policies on the emergence of unforeseen situations.

The level of inventories is determined by reliability of sources of supply degree of integration of the firm, perishability of the item, and other factors that depend upon the nature of the product. Within these limits, however, the inventory commitments can be reduced. Analytical work in recent years has shown that the optimum size of investment in inventory can be controlled by determining the Economical Ordering Quantity [E.O.Q.] which is also known as Economic Lot Size.

Economic Lot Size

A strategic factor in inventory policy is computing the optimum size of either a normal purchase order for raw materials, or a shop order for a production run. This optimum size is called Standard Order Quantity Economic Ordering Quantity or Economic Lot Size or by various other names. The size of the inventory will result in minimum total annual costs of the item in question.

The widely used formula approach to the ordering quantity lot size problem may be expressed in a variety of ways, one of which is

$$L = \sqrt{2Q\ P/S}$$

Where L = Economic Lot size.

Q = Annual Quantity used in units.

P = Cost of placing an order.

S = Annual cost of storing one unit in stock for one year.

Example

Here L = Standard order size; $L/2$ average inventory in units.
Q = Annual quantity used in units (1,000 sets)
S = Annual cost of storing one unit in stock for one year (Re. 1 per unit)
P = Cost of placing an order

TABLE 6.1

Symbols	*Annualised Cost of variance Standard orders (250 working days)*								
L	10	20	30	40	50	60	80	100	1000
	5	10	15	20	25	30	40	50	500
	20	10	5	10	8	5	5	5	1
	15	5	10	20	25	30	40	45	250
	200	100	50	25	20	40	30	20	15
Total annual Expenses	8,000	500	250	200	200	210	220	230	800

Stock is zero when each order arrives. Hence, average inventory relevant to the problem will be one half of the order quantity so that if 500 units are purchased, the inventory on arrival will contain 500 units and it will gradually diminish till none are on hand with the result that average inventory would be 250 units. On this basis, storage cost will be calculated.

Manufacturing firms generally have three kinds of inventories – raw materials work-in-process and finished goods.

The levels of raw material inventories are influenced by the levels of anticipated production and seasonal nature of productions, the reliability of sources of supply, and efficiency of scheduling purchases and productive operations.

Work-in-process inventory is greatly influenced by the length of production period, that is, the time-lag between feeding raw materials in production process and completing the finished products. Thus, inventories are large in the machinery manufacturing industry because of the lengthy work-in-process period while they are low in oil and gas production as hardly any raw materials are used and the goods in process are small in relation to sales. Inventory turnover can be increased by reducing the production period. One means of getting to this end, is the perfection of engineering techniques to speed up the manufacturing process. Another means of reducing work-in-process is to buy items to manufacture them.

The level of finished goods inventory is a matter of co-ordination of production and sales. A change in credit terms may help in bringing about such co-ordination, by allowing credit to marginal risks, as potential profit outweigh the additional collection risks. Again, finished goods inventory are powerfully affected by considerations of durability vis-à-vis perishability or style factor in the end product. Thus, large inventories are found in hardware and precious metals industries as durability is great and style factor is small, while in banking, inventories are very low owing to the perishability of the final product.

Conditions Essential to Inventory Control

There are some conditions essential to the successful budgeting and control of inventories. These are:

(i) Classification and Identification of Inventories

The usual inventory of a manufacturing concern includes raw materials, stores, work-in-process and finished goods. They may have a number of subdivisions. Seeing that the goods may be at various places, another classification can be done by branch Warehouse. Again, there are often extraneous transactions,

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such as returnable containers, goods on loan, goods or consignment or materials on transit. These different classifications have to be kept separate, and transactions properly recorded, for the sake of proper accountability and budgetary control.

In this respect, mention may be made of ABC method. The method is based on the fact proved by experience that only a few items often account for a substantial portion of the total cost and inventory value. Hence, special effort has to be made to establish an effective control of high value items. The procedure for separating materials for selective control consists of the following steps:

(a) Determine future use over the review of forecast period-month, quarter or year:
(b) Determine the price per unit of each item.
(c) Multiply the projected price per unit by the projected unit requirement to determine the total cost of that item during the period.
(d) Arrange the items in terms of total cost, listing first the item having the highest total cost.
(e) Compute for each items its percentage of the total for:
  (i) Units-number of units of each item divided by total units of all items.
  (ii) Total cost - total cost of each item divided by total cost of all materials.

TABLE 6.2

Items	*Units*	*% of total*	*Unit cost*	*Total cost*	*% of total*
1	400	4	Rs. 10	40000	40
2	200	2	15	30000	30
3	800	8	2	16000	16
4	600	6	3	18000	18
5	500	5	4	20000	20
6	1000	10	2	20000	20
7	700	7	1	7000	7
8	500	5	1	5000	5
Total	4,700	47		156000	156

(iii) Standardisation and Simplification of Inventories

Another important consideration in the establishment of an inventory control system is the standardisation of materials and produces and the simplification of the same. Simplification only means the elimination of excess types and sizes so that the elimination of those items which do not sell readily, can contribute greatly to reducing the inventory to be carried. Standardisation has reference to the fixation of standards. As applied to inventories, standardisation envisages restriction of a line to definite types, sizes and characteristics which are considered to be standard. This results in the reduction of the number of items, establishment of inter-changeability of manufactured parts and products and laying down standards of quality in materials. All these facilitate the problem of control.

(iv) Adequate Storage and Handling Facilities

As no procedure, irrespective of the fact of being well planned, can succeed in a disorganised or ill-equipped warehouse or storage area, storage and handling facilities become another important factor in Inventory Control. However, the system should not enter into micro details which incurs unnecessary handling and storage costs, as well as to impede the production by too much of cramping rules and regulations.

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(v) Adequate Records and Reports

Knowledge of relevant facts is essential for a system of Inventory Control. Availability of facts is ensured by the maintenance of adequate inventory records and reports. Inventory records must contain information to meet the needs of purchasing, production, sales and financial staff. Typical information required about any class of inventory, and in respect of which records must be pertinent enough, relates to quantity on hand, location, quantities of an order, quantities in transit, unit cost, amount set apart for particular customer or production order, past experience regarding purchases, production or sales, minimum and maximum quantities, standard ordering quantity and recorder point. In designing these records, care must be taken to see that the clerical cost of maintaining these records must be kept at minimum; on the other hand, care should be taken to allow considerations of economy to get precedence over the need for maintaining proper records. This bound to prove detrimental to the system of inventory control.

(vi) Satisfactory Personnel

Only establishment of procedures and the maintenance of records is not enough for a system of inventory control as the latter is accomplished through the action of the people for which there is no substitute. Records may mechanically point to certain weak sports of the system, but they can never be in a position to take any corrective action. thay can only be made the basis of such actions which can come through human interest and initiative alone. These qualities should not only be found in top levels of management, but also among those who are entrusted with the task of operating the system of Inventory Control. It would be perfectly true to say that improperly trained and unqualified personnel, as well as improper organisation is at the root of the lack of effective Inventory Control in many business undertakings.

In short, inventory control is accomplished through functional organisation, assignment or responsibility and documentary evidence obtained at various stages of operations from the approval of sales and production budgets to the completion of products ready for sale and dispatch.

COSTS FOR INVENTORY DECISIONS

Associated Costs

The most simple approach to computing optimum investment in inventory is to select the inventory level that lessens total long run costs. Inventories entail two types of associated costs–those of carrying and those of not carrying enough. The optimum solution minimises the total of these two types of costs that are cost of carrying:

(i) Risk of obsolescence.
(ii) Interest on investment
(iii) Handling and transfer.
(iv) Cost of space.
(v) Personal property taxes.
(vi) Insurance
(vii) Clerical costs.

PLUS

Cost of not carrying enough:

(i) Foregone quantity discount
(ii) Distribution of production with added costs of expediting, overtime, set-ups, hiring and training.

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(iii) Contribution margins on lost sales.
(iv) Extra Costs of uneconomic production sums
(v) Loss of customer goodwill
(vi) Extra purchasing and transportation costs.

The conflicting behaviour of these two classes of costs must be noted. In this way, if management decides to carry huge inventories, many costs of carrying would go up but a number of costs of not carrying would come down.

So far as these costs are concerned, the management accountant must give cognizance to the fact that the relevant costs influenced by the level of inventory are usually not incorporated in Accounting Records. To give an example, ordinary Accounting Records will not contain opportunity costs like interest on investment, foregone quantity discounts, contribution margins on lost sales. Even if the accountant recognizes that such costs are relevant to inventory policy, some of these costs are extremely difficult to isolate and measure.

Relevant Costs for Inventory Decisions

The quantum of many relevant costs will differ depending on the length of time under consideration and the specific alternative uses of resources. In this way, if storage space is owned and cannot be used for other profitable purposes, differential space costs are zero but, if the space can be put to other productive purposes, or if there is rental cost geared to the space occupied, a pertinent cost of space usage for inventory purposes must be recognised.

As money is invested in inventories, there is an interest cost of carrying stock. However, it is difficult to measure this cost. Practically, this rate may be used on current borrowing rates, the long-term average cost or capital of some other appropriate rate selected by management. The proper rate would depend upon opportunities available to management-it may be small or large, depending upon particular circumstances.

Other costs that may or may not be relevant in policy decisions include overtime premiums on rush orders that would be unnecessary if bigger inventories are carried, idle time caused by material shortages, emergency expediting, extra transportation costs, extra physical count-taking obsolescence risks and extra moving and handling costs.

Inventory costs that are common to all alternatives are irrelevant and may be ignored for any policy-making decisions. Costs that are often irrelevant owing to their not being affected by inventory decisions, include salaries of stores clerks, storekeepers and material handlers as also depreciation on buildings and equipment and rent.

An important feature of Inventory Control is that production and inventory decisions are seldom affected by minor variations in cost factors. Again, care should be taken to see the lack of precise data should not be used as a pretext to justify its haphazard use.

Ordering Level

Along with the computation of economic lot size, another important problem of inventory control relates to the timing of an order for replenishment of inventory. The problem is concerned with reaching at the quantity level that automatically gives a new order. This quantity level is known as ‘ordering level’

This quantitative level of stock in respect of an item of store or raw material, is determined on a consideration of lead time which means the time-lag between placing an order and receiving the delivery, and the demands of the processes of production on the goods during the period of lead time. The ordering

level should not be pitched too high which may bring in its train obvious dangers of locking of capital as also of deterioration in quality of goods and obsolescence. For example, if a business used ten units of inventory every day and if the lead time is ten working days, the new order will have to be placed when the inventory level reaches 100 units that would only suffice to meet the demands of production during the lead time.

The ordering level is generally fixed by taking into account the following factors.

(i) The time intervening between the data of the order for goods and the arrival of supplies.

(ii) The average quantity consumed within a stipulated time period.

(iii) The margin of safety.

The ordering level revised from time to time on consideration of the exigencies relating to supply of and demand for goods.

Some authorities are of the opinion that ordering level is equivalent to 'minimum stock level' at which order should be placed and, on this basis, they describe it as 'reordering level' but others make a distinction between ordering level and minimum stock level inasmuch as the latter is lower, as no allowance is made for margin of safety in its determination.

Safety Stock In relation with the ordering level, a very important consideration is that of 'safety stock'. As businesses are always endowed with accurate forecasting capacity demand, pattern may not be known with certainty so that demand may fluctuate from day to day and for weeks and months. In this way, the business would be in a pathetic situation having run out of stock owing to sudden spurts in usage of materials beyond the one during lead time, delays in processing orders or delays in deliveries. In this way, almost all businesses have to make a provision for minimum inventory intended to act as a cushion against reasonable expected maximum usage. The order point is commonly computed as safety stock plus the average usage during the lead time.

However, this handy but special formula does not apply where the receipt of the standard order fails to augment stocks to the order point quantity. Such a situation may arise when the lead time is three months and the standard order is a one-month supply, with the results that this is bound to result in overlapping of orders. In such position, as Magee points out, the order point will be: Average usage during the lead time plus safety stock minus orders placed but not received.

METHODS OF INVENTORY CONTROL

In any orderly procedure of inventory control, the timing and size of purchases and production orders are determined by one or both of the two methods given below:

(i) Maximum and Minimum stock limits and standard order quantities.

(ii) The conversion of sales estimates into production and purchases requirements.

The job of developing inventory control in any particular business can be classified into the following four steps:

(i) Determining which of these two methods, or what combination of them, is best adopted for controlling various sections of inventories.

(ii) Working out procedures which will give the required result with the minimum of clerical detail and paper work.

(iii) Educating the personnel, who are to operate the controls, to the intelligent use of these mechanisms and to the exercise of judgement where the same is required.

(iv) Planning internal credit steps to ensure compliance.

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Method of Minimum and Maximum Limits

Generally, the use of maximum and minimum limits is practicable where the rate of sale or use of products is fairly stable and not subject to wide fluctuations, or sporadic movements and where the order time is fairly short.

To establish maximum and minimum inventory points, the following factors have to be considered:

(i) The Rate of Usage or Shipment

This can be got from an analysis of past experience, although current production and sale plans must be considered. The rate of usage must recognise not only the average rate, but also the range of usage, i.e. the highest and lowest rate of consumption.

(ii) The Time Required for Either Purchase or Manufacture

This should be the time from the placing of the order until delivery, including a reasonable safety factor for delays. Past experience and knowledge of current conditions are important in making this determination.

(iii) The Economical Quantities to Order

Availability of discount at various levels of purchases, or setting up time in machine shop and similar other considerations can be factors in determining the economical amount to purchase or manufacture.

(iv) Availability of Storage Facilities

It is possible that expense incurred in storage and handling required in the maintenance of inventory can make this factor an important consideration.

(v) Availability of Working Capital

The quantum in which funds are available for investment in inventory has a significant bearing on the determination of maximum and minimum inventory limits.

(vi) Cost of Maintenance of Inventory

Expenses involved in carrying the inventory, like rent, taxes, insurance, interest on investment, are also important factors.

(vii) Possibility of Deterioration or Obsolescence of Materials Stored

Such a possibility would clearly weigh against fixing the inventory limits too high.

(viii) Effect on Labour Turnover

It may be seen desirable to fluctuate inventories to stabilise employment or to retain basic personnel.

(ix) General Market Conditions or Extent of Speculation

Unsettled market conditions or speculative conditions are bound to affect the scale in favour of either low or high inventory levels depending upon the nature and implications of such conditions.

After the minimums and maximums have been set, the inventory should be reviewed periodically by an inventory manager to detect any need for changes. The second level responsibility lies with the controller who periodically ascertains that the limits are reasonable and are kept under observation. The upper and lower limits of inventory would need revision as business conditions would change.

Method of Sale Estimates

In working out a manufacturing inventory programme from sale estimates, the factors that help in determining minimum and maximum limits should be kept in view and, even though no definite limits are fixed for individual inventory items, some over all 'normal' or objective inventory must be established in order to plan operations intelligently.

As, far as the preparation and use of sales estimates are concerned, following considerations are important:

(i) Preparation of Estimates

These are mostly prepared by the sales department though it may not always be the case.

(ii) Revision of Estimate

Generally, sales estimates are revised in response to the need for planning manufacturing activity intelligently. A monthly revision is sufficient, and in some businesses even quarterly or six monthly revisions suffice. However, in rare cases, regular weekly revisions may be needed.

(iii) Form of the Preparation of Estimates

This includes working these estimates back into production and purchases requirements. Though mainly concerned with a detailed procedure, it is of basic importance in any programme of control.

(iv) Review and Revision of Estimates

In case the planning of operations is based on sale estimates, which are integrated with financial budget, the revision of these estimates is made at the time of the revision of financial budget the but there are many instances, where sale estimates are not tied to the financial budget, and therefore, estimates can be reviewed and revised quite independently of the financial budget.

Method of Control Through Turnover

Another method by which some companies control inventories is through turnover rate. Standard turnover rates may be determined for entire inventory or for different sections thereof, and the executives responsible for inventory control have to keep an eye on these rates for controlling inventories. When the control of money value of inventories is a major consideration, and the search for ways and means to improve its effectiveness leads to the placing of definite limit on the funds available for investment in inventories in terms of fixed money amounts, another variant of sales estimates method emerges and is called 'control by money limits' or 'turn-over rates'. Turnover is got by dividing the usage factor by average inventory. In this way, turnover of various inventories would be determined as thus:

Finished goods-Cost of sales/Average inventory of finished goods.

Work-in-process-Cost of goods completed/Average inventory of work-in-process.

Raw Materials-Materials placed into process/Average inventory of raw materials.

Commonly, rate is expressed in number of turnovers per year although average length in time per turnover is often used. A turnover rate of four times a year can also be expressed as a three-month turnover.

Such standard can be utilised as a guide, but their usefulness should not be overstated-a slow turnover can be an indication of over-investment in inventory while a very high turnover can be obtained by maintaining an unduly small inventory with resultant lost sales or higher costs of purchasing owing to incomplete stocks. It must always be emphasised that the objective of business is profit and not turn

overs only. Consequently, turnover can also be secured through increased sales or improved usage that brings profits as well, and not only by reducing inventories.

Though turnover rates have a definite place in judging efficiency, improvement in turnover should not be followed as an end in itself. They should never be treated as an automatic control arbitrarily imposed, rather intelligent appraisal of the situation is always necessary.

Inventory Control and Impact of Modern Equipment

A potential for tremendous improvement in inventory control is offered by the use of computers and operations analysis, as to operate a system of control with refinement. An inventory consisting of hundreds or thousands of items is bound to be extremely cumbersome. A detailed system of Inventory Control is much facilitated by punched cards or electronic data processing with stores cards or electronic records coded in such a way that reports can be got quickly on more strategic items than on less strategic items. A more refined system may be installed to compare available balances with established minimum balances, thereby highlighting items needing attention in the current reports. Theoretically, an electronic system can compose the purchase order automatically when the minimum level is reached.

VALUATION OF INVENTORIES

The right variation of inventory is of great importance. As inventory is large in proportion to other items in financial statements, a wrong statement about inventory will result in a wrong statement of the costs of goods sold, gross margin on sales and net income as well as proprietor's equity during and at the end of the period in which the error occurs. Again, as the inventory at the end of one Accounting Period is the inventory at the beginning of the next period, it brings about a misstatement of cost of goods sold, gross margin on sales and net income of the next period.

Generally, the accountant expresses value in terms of cost. It is a principle that has the sanctity of a long-standing tradition. There are other concepts of value but the accountant's valuation is historical, or prior cost, which is objective being subject to measurement. It is this objectivity that accounts for the predominance of historical cost as the basis of valuation. The economists, on the other side, relate value to current and anticipated prices which, in the absence of available basis of measurement, are subjective. The distinction between these two concepts is specifically important during periods of rapidly rising prices with their concomitant effect on financial statement valuations. Many people question the usefulness of cost as the basis of valuation when prices are unstable. Nevertheless, the cost concept is thoroughly established in Accounting.

Perpetual, Periodic and Physical Inventories

Under a perpetual inventory system, the book figure for the period is a balancing figure on the accounts, that may be verified periodically by actually counting the items. This counting is referred to as 'taking a physical inventory'.

Under a periodic inventory procedure, where a perpetual inventory is not maintained, physical inventory is taken periodically and the cost of materials used, is perhaps more accurately narrated as the cost of materials that are assumed to have been used.

From the view of management control, a perpetual inventory system, together with a materials requisition system, is a technique for control. When a perpetual inventory system is used, discrepancies between the figure and the actual physical current inventory might be due to either classical errors or theft of materials so that an examination and rechecking of requisitions and positions to the perpetual inventory

records can reveal discrepancies due to posting errors. Still, under periodic inventory arrangement, no such check can be exercised.

Methods of Valuation of Materials Used

In view of changing prices, the cost per unit of purchased materials may fluctuate through time and the inventory may contain identical items acquired at different costs. When a firm uses only small quantities of materials in production, it becomes easy to tag the materials with the actual identifiable invoice cost.

According to the specific identification costing method, the cost tags are removed from the materials soon as they are sent to production. This cost figure, which was determined originally by an examination of specific invoices, is used for cost accounting purposes, but, for the purposes of income determination, this method may be objectionable owing to the ease with which arbitrary cost and income manipulation may be accomplished through the choice of the particular units of identical materials used, specific identification cost may be appropriate, where special materials are carried for made – to – order production in a job shop.

In cases where large quantities of materials are involved in production, it is impractical to identify unit purchase cost with each individual item of material. In such cases, some pattern must be involved for costing material requisitions, charging work-in-process control and subsidiary accounts and crediting the perpetual inventory for materials.

Some of the commonly used methods of costing materials issued are:

(i) First-in, First-out (FIFO)
(ii) Last-in, first-out (LIFO)
(iii) Moving average cost.
(iv) End-of months average cost (EOM)
(v) Standard cost
(vi) Base stock method.

It has to be emphasised that the pattern of cost flow does not necessarily coincide with the actual flow pattern of materials themselves. In this way, the case of FIFO does not necessarily mean that the oldest materials are used first, but it means that the oldest costs are first used for accounting purposes, regardless of the physical flow of materials.

First-In, First-Out (FIFO) Method. The first-in, first-out method of materials pricing is used most successfully for handling items of some bulk with a relatively high unit costs, as it is easy to identify units belonging to a particular lot.

Under this method, the assumption is that materials are issued from the oldest supply in stock and that the units issued are priced at the oldest cost price listed on stock-ledger, the materials on hand at all times being the most recent purchases.

When a requisition for a certain type of material is presented to a storekeeper, he uses the cost price of the first lot of material received still on hand and, if the quantity desired is greater than the units remaining in the first lot, he uses the cost price of the second lot, then of the third and fourth, until sufficient material is obtained to complete the requisition. Though the actual handling of materials in bins and on shelves in accordance with the FIFO method is imaginary in most concerns, this method of handling should be followed in case of materials that are subject to deterioration and obsolescence.

Last-In First-Out (LIFO) Method It is known as the 'replacement cost' method. It receives its support from the theory that goods sold are those that are of a recent purchase and that the goods are issued from the stock in accordance with last-in, first-out principle.

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In this way, cost of latest materials purchased will be the costs assigned to the first materials issued, until they are exhausted, then the price of the preceding lot is used and so on.

Materials are issued at costs approximating current market price, but inventories tend to be valued at the oldest lots on hand giving a price which is out-of-date with current invoice prices.

The main purpose of the LIFO method is to apply current costs to current sales. The protagonists of this method are of the view that many enterprises maintain at all times a minimum inventory quantity, comparable to an investment fund or a fixed asset and if this inventory quantity remains unchanged, it is asserted that it should be valued at the cost of the quantity originally purchased. A better matching of cost of goods sold and sales is obtained if cost of goods sold represents current cost prices on the understanding that sales and production result from current purchases.

The application of last-in first–out method tends to level and equalise profits and losses during successive periods of rising and falling prices. It decreases profits during periods of rising prices and increases them during the period of falling prices. This method is generally opted for because it acts as a 'tax shield' by reducing the impact of income tax in a period of rising prices.

The LIFO-method results in Balance Sheet figures that are out-of-date when compared with current costs, but may be considered to result in an up-to-date profit and loss account. Supporters of the method are of the view that management receives a more accurate presentation of profits and losses when there is a correlation between current costs and sales and the trend of costs as selling price is more apparent.

Moving Average Cost Method In this method, total cost of all materials of a particular class divided by the number of units on hand gives the average price of the units at which they are to be charged to production. When materials are received, the incoming cost is added to the total in the balance column, the units are added to existing quantity and the new total cost is divided by the new quantity to arrive at the new average price. Materials are then issued at the newly computed average cost until a new purchase is made. Though a new average price may be computed when materials are returned to vendors and when excess issues are returned to stores, it is adequate for all practical purposes to increase or decrease the total quantity and cost allowing the unit price to remain unchanged. Of course, when a new purchase is made and an average is computed, the discrepancy created by the returns will be absorbed. As average costs are available at any time, the method is easily adopted to a perpetual inventory system.

End-of-the-month Average cost or Weighted Average Cost Issuing materials at an average cost assumes that each lot taken from stores is composed of uniform quantities drawn from each shipment in stock on the date of issue. Often, it is not feasible to mark material items piece by piece with invoice prices and thereby to identify the used stock with its acquisition costs. It may be reasoned that material units enter a given job or process more accidentally so far as the specific units and specific costs are concerned, and that an average cost of all units in stock at the time of issue is a satisfactory measure of material cost, where raw materials tend to be made up of numerous small items low in unit costs, and specially if prices are subject to frequent changes, average costing is practicable and commonly used.

Under this method, the materials issued during the month are generally costed at the weighted average unit cost (total cost or units divided by number of units) as at the end of the previous month. Since the weighted average unit costs at the end of the previous month are available during the current period for costing requisitions, this method can be used with either a perpetual or periodic inventory system.

Standard Cost Method FIFO, LIFO and Average Cost Methods of valuing materials issued are often cumbersome to work within the subsidiary records for materials under a perpetual inventory system. Again, the average cost methods involve a certain amount of arithmetic calculation, while the layers of

inventory which may develop under FIFO and LIFO may become awkward to work with. For this, as well as other reasons, Standard Cost Method may be used in Accounting for individual items in materials inventory.

This method charges material units into the factory at a predetermined, budgeted or estimated price reflecting a normal or an expected future price. Receipts and issues of materials are recorded in quantities only on materials, thus the record-keeping is simiplified. There is also a basis for comparing existing costs from day-to-day costs which should exist under normal conditions.

Base Stock Method In this method, a certain constant quantity or base stock of materials is assumed to be necessary to keep the concern going. The base is valued at the cost prevailing when the firm was started or when the method was adopted. Any additional layers of materials in the inventory at close, beyond the units in the base, may be costed on the basis of FIFO, moving average method.

Comparison of the Methods of Costing Materials

Sufficient comparison of the various methods of costing materials is difficult and involved. Still, generalizations can be made relative to the use of LIFO, FIFO and average costs. In periods of soaring prices, FIFO costing will result in lowest materials costs being charged to production, LIFO will result in highest materials costs being charged to production and average costing will give a figure in between these two, while at falling prices, a reverse situation will develop with FIFO showing the highest cost of materials consumed, LIFO showing the lowest cost of materials used and average costs showing a result between these two methods.

The meaning of these most widely utilised costing methods on cost of materials are used and inventory values can be shown by the details of opening inventories, receipts and issues of materials.

As a matter of fact, the various methods of assigning the cost of materials represent industry's intense and earnest effort to measure costs. It is no doubt true that there is no single method best applicable to all situations, but whatever the method of costing, it should be followed consistently from period to period. The important point is to emphasise the basic principle, viz. charging cost of materials to finished production. As the different methods of pricing material issues represent different views of the cost concept, the best method is the one that most clearly shows the periodic net income. However, no materials costing method will reflect consumed materials cost with full accuracy at all times and in all situations.

An appropriate method of costing materials must satisfy the following conditions:

(i) Relate current costs to current sales.

(ii) Reflect the procurement, manufacturing, and sale policies of a particular company.

(iii) Carry forward to the new fiscal period, a residual value showing useful cost previously incurred which will be consumed in earning revenue.

FIFO vs. LIFO. Inventory valuation and related problems of measuring cost of goods sold have been the subject of lively controversy in the literature of Accounting for quite some time in the past. Till 1930, the controversy was regarding the use of either historical cost or a modification of historical cost-cost or market whichever is lower–as the basis for inventory valuation, and since then the debate has centred on what may well prove to be the most important question in Accounting theory – whether current or replacement cost should be substituted for actual or historical cost in the measurement on income. The controversy is reflected in discussion concerning the superiority or otherwise of first-in, first-out and last in, first-out methods from the view point of inventory valuation.

While the supporters of FIFO assert that the method leads to the recognition of 'market gain' by reducing the cost of goods sold below the current cost of goods sold, protagonists of FIFO point out

that FIFO leads to the emergence of 'false profit,' a detect which is overcome by LIFO with its built-in tendency to restrict the available to shareholders without impairing the scope and intensity of the operations of a growing concern so that there is an understanding of assets and shareholders' equity during period of rising prices.

Opponents of LIFO, while recognising that it is not a good managerial policy to regard funds needed to maintain level of operations as representing disposable income under the FIFO method, attack LIFO on the ground that it confuses two distinct processes-determination of income and utilisation of income. Income may be realised and valid even though such earnings are to be invested subsequently in inventories or other assets; It is also pointed out that the LIFO method falls short of achieving the underlying objective inasmuch as revenue rather than the total cost of replacing all items sold or issued to production. Again, LIFO confuses, rather than clarifies the positions over long periods of price level adjustments with the result that, as time goes on and price levels change, the inventory figure under LIFO gets far removed from any indication of either current values or even the actual cost of inventory on hand. In this way, the use of LIFO weakens the statement of the financial position as it results in a misstatement of inventory and a misstatement of shareholder's equity.

Besides the criticism of LIFO, it cannot be said that FIFO is superior to LIFO. Though FIFO gives a reasonable position statement, it fails to give a cost-of-goods-sold figure showing a realistic cost of sales where there has been a change in the price level. As costs matched against the period's revenues are costs rather than current costs, the result is an income figure that includes the market gain or loss included in the operating income that is objectionable on a strict principle.

In this way, no sweeping generalisation can be made regarding the superiority of LIFO over FIFO or vice versa.

assumptions about the identity of the goods sold in relation to the identity of the goods purchased. The methods listed out below are used for identification of cost of goods held in inventory primarily with a view to match the cost of goods sold against the revenue derived during an accounting period.

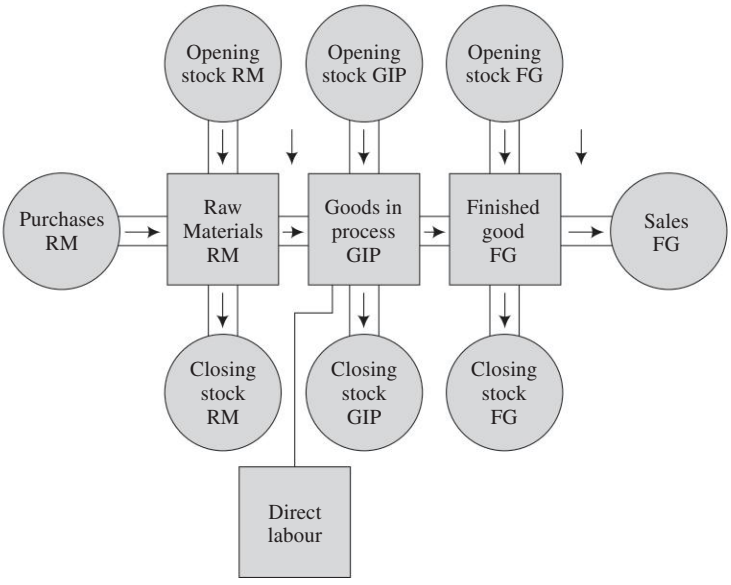


FIG 6.1 Inventory Pricing

First-in-first Out Method (FIFO)

According to this method, it is assumed that the goods sold currently are those which represent the earliest purchases amongst the goods held in stock. FIFO method follows the principle, that goods received first are issued first for sale. After the first lot or batch is exhausted, the next lot is taken up for supply.

Example: The following is a summary of the receipts and issue of stock in a firm during January.

Jan

1 Opening balance 500 units @ Rs.20/unit
3 Received from supplier 200 units @ Rs.22/unit
6 Issued 300 units
7 Issued 250 units
14 Received from supplier 200 units @ 21/unit
18 Received from supplier 160 units @ 23/unit
22 Issued 300 units

Ascertain the value of stock on 22nd Jan if FIFO method is followed for issues.

TABLE 6.3

Date	*Receipts*			*Issue*			*Balance*		
	Qy	*Rate/unit*	*Value*	*Qy*	*Rate/unit*	*Value*	*Qy*	*Rate/unit*	*Value*
Jan 1	-	-	-	-			500	20	10,000
Jan 3	200	22	4400	-	-	-	500	2	
Jan 6	-	-	-	300	20	6000	200	20	4000
Jan 7		21	4200	50	22		150	22	3300
Jan 14	200	21	4200	-	-	-			
Jan 18	160	23	3680						
Jan 22	-	-		150	22		50	21	
			150	21	6450	160	23	4730	

Value of stock on 22nd Jan = 210 units @ Rs.4730
= 50 unit @ Rs.21/unit
= 160 unit @ Rs.23/unit

Advantages of FIFO method

(i) Pricing is based on actual cost
(ii) It is in compliance with the store keeping principle (i.e.) the earliest items are issued first to avoid deterioration.
(ii) Closing stock, valued at cost of the latest arrivals, reflects current market price.

Limitation

During periods of rising prices, costs are underestimated and profit overstated.

Last-in-first Out Method (LIFO)

Under this method, the stocks supplied are valued on the assumption that the stocks received last are issued first. As such, the cost of the stocks issued at a point of time reflects the market price prevailing at that time. Closing stock does not reflect the prevailing market price, and hence, when the prices are falling, the closing stock values under this method will be greater than the market price. But, at the same time, during periods of rising prices, the value of closing stock will be less than the market value.

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Illustration

From the following particulars ascertain the value of closing stock if LIFO method is adopted.

1-1-06 Opening stock – 500 units @ Rs.
4-1-06 Purchased 500 units @ Rs.2.50/unit
5-1-06 Issued 600 units
8-1-06 Issued 100 units
12-1-06 Purchased 200 units @ Rs.3/unit
14-1-06 Purchased 100 units @ Rs.2.75/unit
30-1-06 Issued 300 units

TABLE 6.4

Date	*Receipts*			*Issue*			*Balance*		
	Qy	*Rate/unit*	*Value*	*Qy*	*Rate/unit*	*Value*	*Qy*	*Rate/unit*	*Value*
1-1-06	-	-	-	-			500	2	1,000
4-1-06	200	22	4400	-	-	-	500	2	
5-1-06	500	2.50	1250	500	2.50	1250	400	2	800
8-1-06				100	2.00	200	300	2	600
12-1-06				100	2.00	200	300	2	
14-1-06	200	3	600				200	2	1200
30-1-06	100	2.75	275	100	2.75	275	100	2	1475
				200	3.00	600	300	2	600

Value of stock = 300 units @ Rs.600

Simple Average Price Method

Under simple average price method, stocks are issued at an average price. For example, 100 units are received at Rs.2 per unit on a day and another 200 units are received at Rs.3 per unit on some other day. Suppose, 150 units are to be supplied. For the supply of 100 units, the average price is to be calculated (2 + 3 = 5); 5/2 = Rs.2.5). In the above case, the average price is Rs.2.50 per unit. Whenever stocks are purchased, a new average price is to be calculated for ascertaining the issue price.

Average cost minimises the effect of unusually high and unusually low stock prices, thereby making possible more stable cost estimates for future work.

Illustration

The following transactions took place in respect of a stock item.
Ascertain the value of stock on 20-6-06 under simple average price method.

TABLE 6.5

Date	*Receipts*	*Rate/Units*	*Issues*
02-6-06	200 units	Rs. 2.00	
10-6-06	300 units	2.40	
15-6-06			250 units
18-6-06	250 units	2.60	
20-6-06			200 units

Solution

TABLE 6.6

Date	*Receipts*			*Issue*			*Balance*		
	Qy	*Rate/unit*	*Value*	*Qy*	*Rate/unit*	*Value*	*Qy*	*Rate/unit*	*Value*
2-6-06							200		400
10-6-06	200	2	400	-	-	-	500	2	1120
15-6-06	300	2.40	720	250	2.20	550 (2+2.40)/2	250		570
18-6-06			100	2.00		500 (2+2.4+2.6)/3	300		1220
20-6-06	250	2.60	650	200	2.50		300		720

Value of stock on 20-6-06 = 300 units @ Rs.720

Weighted Average Price Method

Under simple average price method, only the purchase prices at different dates are taken into account for calculating average price, to be used as issue price. But, in the case of weighted average price method, the purchase price as well as the quantity of stock purchased is considered to ascertain the average price. For example,

1-1-06 Purchased 200 units @ Rs.4 per unit

3-1-06 purchased 100 units @ Rs.5 per unit

The weighted average price is calculated as given below.

200 units × Rs.4 = Rs.800

100 units × Rs.5 = Rs.500

300 units = Rs.1,300

1 unit = Rs.1,300/300 = Rs.4.33

Weighted averaged price = Rs.4.33

Weighted average price averages out of the effect of price fluctuations. Instead of price alone, it takes into account both price as well as quantity of purchases.

Standard Price Method

Standard price is defined as a predetermined price fixed on the basis of all factors affecting price. Under this method, issues are priced on the basis of a standard price fixed for a specific period. Thus, the standard price is fixed for a future period on the basis of factors like quantity of materials to be purchased, in future their current prices and future price trends etc. This method can very well be adopted where the standard costing system is in practice.

The following data are taken from the books of Big Sales Company:

TABLE 6.7

	Unit	*Unit cost*	*Total cost*
Inventory – March 1	1,600	Rs.10	Rs.16,000
Purchase – March 5	800	11	8,800
Purchase – March 20	500	13	6,500
Purchase – March 31	1,400	12	16,800

During the month, the following number of units were sold:
March 3 – 900; March 10 – 800; March 23 – 700.
What were the March cost of goods sold and the March 31 inventory figures?

a. Assuming cost to be determined on FIFO basis
b. Assuming cost to be determined on an average basis
c. Assuming application of the cost or market rule in connection with (a) above.

Following are the transactions of a trading company relating to purchases and sales:

TABLE 6.8

2004	*Units purchased*	*Units sold*
1st Quarter	1,00,000 @ Re.1	40,000 @ Rs.1.20
2nd Quarter	1,00,000 @ Rs.1.02	60,000 @ Rs.1.22
3rd Quarter	50,000 @ Rs.1.04	60,000 @ Rs.1.24
4th Quarter	50,000 @ Rs.1.06	75,000 @ Rs.1.26
1975		
1st Quarter	90,000 @ Rs.1.08	60,000 @ Rs.1.28
2nd Quarter	80,000 @ Rs.1.06	70,000 @ Rs.1.27
3rd Quarter	70,000 @ Rs.1.08	1,00,000 @ Rs.1.29
4th Quarter	60,000 @ Rs.1.10	1,00,000 @ Rs.1.30
1976		
1st Quarter	75,000 @ Rs.1.12	Data not available

All purchases were made on the first day of the quarter. Sales were evenly distributed within each quarter and price changes, both up and down, occurred gradually within each quarter – e.g the average replacement cost during the first quarter of 2004 was Rs.101. The company had no inventories on 1st January 2004. Expenses other than cost of goods were : 2004 – Rs.51,000; and 2005 – Rs.65,400.

a. Compute net income for each year using the FIFO method of inventory costing.
b. Compute net income for each year on LIFO basis.
c. How much inventory profit (holding gain) was included in income each year if FIFO method was used.

Balance Sheet included the following accounts among current liabilities:

Provision for replacement of LIFO inventories Rs.6,50,000. This account did not appear in the previous year's Balance Sheet. The balance in the inventory account at the close of each of the two years was as follows : Most recent year – Rs.1,17,35,000; and previous year – Rs.1,27,85,000.

a. What is the meaning of the provision account and what effect does it have on reported income for the year?
b. The balance in the account went back to zero at the end of the year. How did it happen?
c. Do you think that the company's method was a desirable accounting practice?

SUMMARY

Production and delivery of goods are never done at the same time and hence, inventories are needed to safeguard them from price changes. Though there are big achievements like computers automation and scientific management, manufacturing and merchandising processes, the need of inventories still exist to serve public at proper time and place. Production operation must have inventories of work–in–process, direct materials and finished goods. All productions connot be done on customer's orders as it needs delivery time and raw materials at hand which are to be kept in stock. Such a situation cannot be obtained in complex business conditions. In many cases, inventory investment shows one of the largest asset items of business concerns, particularly those engaged in manufacturing wholesale trade and retail trade. Of course, it is true that there are sufficient variances in the importance of inventories in the asset structure of manufacturing and mercantile concerns. Again, the cost of materials used in production often surpasses the total cost of labour and factory overheads. As the ability to keep materials cost at a minimum in each unit of finished goods is a significant factor in profitable operations of a business, the importance of inventory control through proper planning, purchasing, handling and accounting cannot be over-emphasised. This is at times also referred to as 'inventory management'. Hence, it is that most of the manufacturing and mercantile corporate concerns–and for many others as well-the formulation and execution of sound inventory management polices must be a managerial responsibility of the highest order. An efficient inventory management is very essential in a business concern. The management must introduced an efficient system for a good control of inventory.

KEY CONCEPTS

- Historical Cost of Inventories
- Inventory
- Net Realisable Value
- Periodic Inventory System
- Perpetual Inventory System
- Economic Lot Size
- Ordering Level
- Safety Stock
- Relevant Costs

REVIEW QUESTIONS

OBJECTIVE QUESTIONS

1. The main difference between the Weighted Average and FIFO cost flow assumptions under a process costing system is that
   a. The weighted average method mixes the beginning WIP with current units started, while the FIFO method mixes the ending WIP with current units started.
   b. The weighted average method mixes the beginning WIP with current units started, while the FIFO method keeps these units and costs in distinct and separate layers.
   c. The FIFO method mixes the beginning WIP with current units started, while the weighted average method keeps these costs in distinct and separate layers.
   d. The FIFO method mixes the beginning WIP with current units started, while the weighted average method mixes the ending WIP with current units started.
   e. Assumptions under FIFO and weighted Average Method rarely differ with each other.
2. The average method of valuation of inventory in process costing is suitable, if
   a. Prices are increasing
   b. Prices of inventory fluctuate from period-to-period

c. Abnormal loss is incurred at the beginning of the process
d. Material is continually introduced
e. Material is introduced at the beginning of the process

3. A product which arises incidentally during the production of the main product is known as
   a. Joint product
   b. Abnormal product
   c. By-product
   d. Defective product
   e. Negligible product.
4. Joint costs are most frequently allocated based on relative
   a. Profitability
   b. Sales value
   c. Direct labour hour
   d. Direct machine hour
   e. Prime costs.
5. Which of the following is **not** a method of allocation of joint costs?
   a. Relative sales value.
   b. Relative weight or volume measure.
   c. Relative profitability.
   d. Average unit cost.
   e. Weighted average cost.
6. Which of the following costs in joint product costing and analysis is relevant to decide the point at which a product should be sold to maximise profits?
   a. Separable cost after the split-off point
   b. Joint costs to the split-off point.
   c. Sales salaries for the period when the units were produced.
   d. Purchase costs of the materials required for the joint products.
   e. The stores manager's salary.
7. The principle disadvantage of using the physical quantity method of allocating joint costs is that
   a. Costs assigned to inventories may have no relationship to value
   b. Physical quantities may be different to measure
   c. Additional processing costs affect the allocation base
   d. Joint costs, by definition, should not be separated on a unit basis
   e. Physical quantities do not take quality into consideration
8. Under which method of apportionment of joint costs, the cost per unit of each product is the same
   a. Relative sales value method
   b. Average cost method
   c. Physical units method
   d. Reverse cost method
   e. Survey method.
9. If a product is the result of a common process, which of the following costs are relevant for future decision-making
   a. Joint costs before allocation.
   b. Joints costs allocated to the products.
   c. Joint and separable costs in total.
   d. Separable costs only.
   e. Costs are not relevant for future decision-making

10. Net Realisable Value (NRV) is defined as;
    a. Sales value at the split-off point
    b. Sales price under distressed conditions
    c. Sales price under boom conditions
    d. Sales price minus cost of completion
    e. Sales price minus joint costs..
11. A confectionery company uses the weight of joint products as the allocation basis. This type of cost allocation is the
    a. Relative sales value method
    b. Net realisable value method
    c. Physical units method
    d. Joint cost allocation method
    e. Survey method.

DESCRIPTIVE QUESTIONS

1. What is the need of inventories?
2. What are the functions of inventories?
3. What is the nature of inventories?
4. What is the importance of inventory control?
5. What are the concepts of inventory control?
6. What are the objectives of inventory control?
7. What do you understand by valuation of inventories?
8. What are perpetual, periodic and physical inventories?
9. What are the methods of valuation of materials used?
10. What do you know about first-in, first-out (FIFO) method?
11. What are the specialities of last-in, first – out (LIFO) method?
12. What do you know about Average Cost Method?
13. What do you know about 'end-of-the-month Average Cost' or 'Weighted Average Cost'?
14. What is Standard Cost method?
15. What do you know about Base Stock method?
16. Bring out the comparison of the various methods of costing materials.
17. Compare FIFO and LIFO.
18. What is the nature of inventory control problem?
19. What are the conditions essential to inventory control?
20. What do you understand by costs for inventory decisions?
21. What are relevant costs for inventory decisions?
22. What are the two aspects of inventory decision model?
23. What is standard order quantity? Why is it also called economical ordering quantity or economic lot size?
24. What is ordering level?
25. What do you understand by ordering level?
26. What is lead time?
27. What do you know about order point?
28. What is recording level?
29. What is safety stock?
30. What are the different methods of inventory control?
31. What is the method of minimum and maximum limits?

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32. What do you understand from the method of sales estimates?
33. What do you know about the method of control through turnover?
34. How would you determine the 'turnover'?
35. What is inventory control and impact of modern equipment?
36. Write short notes on:
37. Turnover rates
38. Control by money limits

PROBLEMS

1. A company accountant made an error in calculating the inventory as on December 31 and recorded the value at Rs. 78,000 whereas it should have been Rs.87,000.
   (a) What effects will this error have on the statement of profit and loss and the balance sheet as on 31st December of that year?
   [Ans. Revenue will be understated; current assets in Balance Sheet will also be understated]
   (b) What effect will this have on the statement of profit and loss and balance sheet prepared on December 31, of the following year?
   [Ans. Revenue will be overstated]
2. The following data are taken from the books of Big Scale Company:

	Unit	Unit cost Rs	Total cost Rs
Inventory - March 1	1,600	10	16,000
Purchases - March 5	800	11	8,800
Purchases - March 20	500	13	6,500
Purchases - March 31	1,400	12	16,800

During the month the following number of units were sold:
March 3 – 900; March 10 – 800; March 23 – 700.
What were the March cost of goods sold and the March 31 inventory figures?
(a) Assuming cost to be determined on FIFO basic
(b) Assuming cost to be determined on an average basic
(c) Assuming application of the cost or market rule in connection with (a) above.

3. Following are the transactions of a trading company relating to purchases and sales:

2004	Unit purchased	Unit sold
1st Quarter	1,00,000@ Re.1	40,000@ Rs.1.20
2st Quarter	1,00,000@ Rs.1.02	60,000@ Rs.1.22
3st Quarter	50,000@ Rs.1.04	75,000@ Rs.1.24
4st Quarter	50,000@ Rs.1.06	75,000@ Rs.1.26
2005		
1st Quarter	90,000@ Rs.1.08	60,000@ Rs.1.28
2st Quarter	80,000@ Rs.1.06	70,000@ Rs.1.27
3st Quarter	70,000@ Rs.1.08	1,00,000@ Re.1.29
4st Quarter	60,000@ Rs.1.10	1,00,000@ Re.1.30
2006		
1st Quarter	75,000@ Re.1.12	(Data not available)

All purchases were made on the 1st day of the quarter. Sales were evenly distributed within each quarter and price changes both up and down occurred gradually within each quarter- e.g., the average replacement cost during the first quarter of 2004 was Rs. 1.01. The company had no inventories on 1st January 2004. Expenses other than cost of goods sold were: 2004 – Rs.51,000; and 2005 – Rs.65,400

(a) Compute net income for each year using the FIFO method of inventory costing
(b) Compute net income for each year on LIFO basis.
(c) How much inventory profit (holding gain) was including in income each year if FIFO method was used.

4. Balance Sheet included the following accounts among current liabilities:
Provision for replacement of LIFO inventories Rs. 6,50,000. This account did not appear in the previous year Balance Sheet. The balance in the inventory account at the close of each of the two years was as follows: Most recent year – Rs. 1,17,35,000; and previous year – Rs. 1,27,85,000.
(a) What is the meaning of the provision account and what effect does it have on reported income for the year?
(b) The balance in the account went back to zero at the end of the year. How did it happen?
(c) Do you agree that the company's method was a desirable accounting practice?

CASE-1

The following date are taken from the books of Big Sales Company:

	Unit	Unit cost	Total cost
Inventory – March 1	1,600	Rs.10	Rs.16,000
Purchase – March 5	800	11	8,800
Purchase – March 20	500	13	6,500
Purchase – March 31	1,400	12	16,800

During the month, the following number of units were sold:
March 3-900; March 10-800; March 23-700.

What were the March cost of goods sold and the March 31 inventory figures?
(a) Assuming cost to be determined on FIFO basis
(b) Assuming cost to be determined on an average basis.
(c) Assuming application of the cost or market rule in connection with (a) above.

CASE-2

Following are the transactions of a Rajesh trading company relating to purchases and sales.

2004	Units purchased	Units sold
1st Quarter	1,00,000 @ Rs.1	40,000 @ Rs.1.20
2nd Quarter	1,00,000 @ Rs.1.02	60,000 @ Rs.1.22
3rd quarter	50,000 @ Rs.1.04	75,000 @ Rs.1.24
4th Quarter	50,000 @ Rs.1.06	75,000 @ Rs.1.26
2005		
1st Quarter	90,000 @ Rs. 1.08	60,000 @ Rs.1.28
2nd Quarter	80,000 @ Rs.1.06	70,000 @ Rs.1.27
3rd quarter	70,000 @ Rs.1,08	1,00,000 @ Rs.1.29
4th Quarter	60,000 @ Rs. 1.10	1,00,000 @ Rs.1.30
2006		
1st Quarter	75,000 @ Rs.1.12	(Date not available)

All purchases were made on the first day of the quarter. Sales were evenly distributed within each quarter and price changes both up and down occurred gradually within each quarter – e.g., the average replacement cost during the first quarter of 2004 was Rs.1.01. The company had no inventories on 1st January 2004. Expenses other than cost of goods sold were: 2004—Rs.51,000; and 2005—Rs 65,400.

(a) Compute net income for each year using the FIFO method of inventory costing.
(b) Compute net income for each year on LIFO basis.
(c) How much inventory profit (holding gain) was included in income each year if FIFO method was used.

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CHAPTER 7

Depreciation Policy

"Depreciation is the measure of the exhaustion of the effective life of an asset from any cause during a given period."

Prof. R.N. Carter

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Characteristics of Depreciable Assets*
- *Concept of Depreciation*
- *Causes of Depreciation*
- *Methods of Depreciation*
- *Objectives of Providing Depreciation*
- *Factors to be Considered for Ascertaining Amount of Depreciation*
- *Accounting Standard on Depreciation*
- *Managerial Significance of Depreciation Accounting*

INTRODUCTION

Depreciation is a new concept in accounting. Previously, the principal types of long-life business assets other than land, were buildings, mostly watch houses, and wooden sailing vessels. The former were typically regarded as permanent, a view warranted by the nature of their construction, and the latter were often charged off against the first voyage, a practice stemming from risks involved in their use. While the desirability of depreciating machinery was recognised at an early stage, the natural reaction appears to have been to write-off in any given period, whatever amount seemed appropriate to management, the primary determinant being the current level of earnings before depreciation.

This approach, typified by the principle "what the traffic will bear" persisted well into the present century so that the systematic amortisation procedures which are now regarded as normal, have been the generally accepted practice for not more than fifty years in any case. The objection to the earlier approach arose mainly from the fact that unsystematic procedures provided too great a temptation, as well as opportunity, for manipulation of reported profits by operating management to the possible disadvantage of absentee owners.

Characteristics of Depreciable Assets

There are certain pertinent economic characteristics of plant, machinery and equipment which are the most important of fixed and depreciable assets.

(i) Although plant assets are not consumed in the same sense as are inventories, they are subject to physical deterioration that may have the effect of reducing productive capacity per unit of time.

(ii) Depending upon the nature of the asset item, the effects of wear and tear can be offset to a greater or lesser degree with the effect that periodic service capacity may be held reasonably constant over a substantial portion of the asset's life, but it is likely that, even in this case, the quantum as well as the cost of maintenance necessary to get such a result will increase with the asset's age.

(iii) The useful lives of fixed assets are limited by obsolescence as well as physical deterioration, the impact of the former being either evolutionary like wear and tear or revolutionary like physical damage manifested by a decline in the market value of the service rendered by the asset.

Rationale of Operation

The determination of the cost of depreciation of fixed assets is important in view of the fact that the cost of using these long-lived assets have to be reckoned in measuring periodic income according to the principle of 'matching cost to revenue', as well as in appraising the results of managerial action. In spite of the fact that some persons ridicule the efforts of accountants to allocate the cost of fixed asset to expense over the duration of its useful life, it is, generally agreed that depreciation accounting should attempt to allocate cost of an asset to expense with the object of burdening the revenues of a period with a reasonable portion of the expense of using the asset during that period. There is a determinable time schedule for depreciation in a large number of cases and in fact, this time schedule is in a way determined at the time of purchase when the amount to be paid for the projected cash flows each time the period is estimated.

A prediction of cash inflows expected to be generated by the investment is needed for the establishment of the producer to be used for computing depreciation. Still, it does not have to be an absolutely current forecast of the future but has to be only a reasonable estimate, preferably the estimate that may be the basis of the decision to invest. It is very essential that the prediction of net cash proceeds has been built into the widely accepted capital budgeting procedures.

Concept of Depreciation

Depreciation is a permanent continuing and a gradual shrinkage in the book value of a fixed asset. This clear fact about depreciation has in a way been underlined by J.H. Burton accordingly, "Depreciation is the shrinkage in the value of an asset at a given date as compared with its value at a previous date".

The Chartered Accountants of England and Wales Institute have described it as:

"Depreciation represents that part of the cost of a fixed asset to its owner which is not recoverable when the asset is finally put out of use by him. Provision against this loss of capital as an integral cost of conducting the business during the effective commercial life of the asset and is not dependent upon the amount of profit earned."

There are many senses in which the word is more or less widely used in accounting and business literature and some of these are listed below:-

(i) Depreciation as Fall in Price

The word depreciation means either a fall in price or a fall in value under certain situations, the word is used in the sense of a fall in price. In this way, when a person buys an asset, it depreciates by a stated

amount as soon as it is subjected to use. Still, in significant, so that taking possession of such as asset converts it from a new to a second hand commodity and generally the price of a second hand commodity is less than that of a new commodity of the same type. It must, still, be emphasised that a fall in price is not necessarily accompanied by any decrease in usefulness inas much as an asset, like a motor car carefully driven for several hundred miles, may be a more useful asset than a new one but this is not normally thought a virtue for the purpose of determining its price and the word 'depreciation' appears to be used in this context to indicate a fall in price.

(ii) Depreciation as Physical Deterioration

It is generally regarded as a physical or economic phenomenon. There is an almost universal agreement that a physical asset does, in the process of use, wear out, at least to the extent of making it's continued use uneconomical. The economic phenomenon that may be correlative with the physical phenomenon, but may sometimes be independent thereof, is that with continued use of physical asset, the services rendered by it, tend to get exhausted.

(iii) Depreciation as Fall in Value

The very often expressed interpretation of depreciation is as a diminution in the value of an asset. From the historical point of view, it was applied to the physical deterioration which seems to have been variably expressed as wear and tear, up to sometime in the nineteenth century and is often expressed so even now. During 1850, the thoughts of wear and tear or physical deterioration and diminution in value came under the word 'depreciation'. As some dictionaries point out, "it is a decline in the value of an asset due to such causes as wear and tear, action of elements, obsolescence and inadequacy", though in contemporary accounting, it is presented differently. Depreciation is held as a valuation concept.

(iv) Depreciation as Cost Allocation

The concept of depreciation as cost allocation is too familiar as it has been upheld and stressed with few qualifications, by the accredited bodies of accountants in mostly all the countries in the world. This view presents depreciation as a plant cost in the absorbed or expired stage while the depreciation change is a portion, in terms of monetary units, of the package of plant facilities used in business operation, depreciation is plant capacity consumed.

Causes of Depreciation

The chief causes of depreciation in the value of fixed assets may be thought under the following four broad headings.

(a) Physical wear and and tear resulting from use: It reduces an asset's future technical capacity to serve, as well as its future earning power, with the result that it brings about a reduction in its value.

(b) Physical deterioration resulting from exposure to the elements: As compared to deterioration that occurs as a result of use, a majority of assets deteriorate with sheer passage of time, being continually exposed to the elemental forces of nature, like winds and weather, so that the extent of deterioration is a function of time weather, so that the extent of deterioration is a function of time.

(c) Expiration of few legal rights: This is related to leases, patents and licences and is again a function of time to be treated as such.

(d) Diminution in value because of change in demand: In few cases, there is slackening or even stoppages of demand for services given by an asset. It may be because of various causes like technical changes within the industry, technical progress in other industries, changes in tastes and habits of the consumer, changes in the supply and locations of natural resources.

Characteristics of Depreciation

(i) It is mainly a fall in the value of an asset. Depreciation conjures up the facts of an asset. However, every fall in value cannot be called depreciation unless it has some cogent characteristics.

(ii) Depreciation represents a fall in book value

Depreciation always, refers to the value of the asset in the books of accounts that may neither be equal to the market value of the asset nor to its cost price except that this value cannot actually be realised. It exists in the books of account without any reference to the actual fact of the situation.

(iii) Depreciation conveys special fall in value

In value of that, every fall in value cannot be said, 'depreciation', it is quite necessary that the shrinkage in the value of the asset must be permanent, continuing and grateful. In this way, it is a slow, graduated and unobtrusive process rather than sudden event.

(iv) Depreciation has reference to fixed assets

It is clear that a permanent, continuing and gradual shrinkage in the book value of the asset, as seen in the case of depreciation, can take place only in the case of fixed asset, and it would be contradiction in terms to speak of such a reduction as description in the case of floating assets, as book value in such a case does not have an existence independent of either cost or market value. This means that only a fixed asset can undergo depreciation and not a floating asset.

METHODS OF DEPRECIATION

(i) Traditional Method

(a) Fixed Instalment or Straight Line Method

This is the most preliminary and accepted method of providing depreciation. In this method, a fixed amount is provided as depreciation every year during the life time of the asset so that the value of asset is reduced to zero, or its break–up value, as the case may be, at the end of its useful life, the amount obtained by dividing the difference between the cost and the break-up value of the asset with the estimated useful life thereof.

The predominance of the fixed instalment method is probably attributable to the simplicity of its concept, clarity of presentation in the Balance Sheet and case of its application rather than any reasoned preference for either the time basis or for the uniform charge. Another strong point in the favour of the method is that, though rough and steady, it reduces the book value of asset to zero, if necessary.

Defects. It tends to inequalise the charge to Profit and Loss Account in respect of depreciation and repairs put together. While the amount of depreciation remains constant over a period of years, the expenses of repairs go on increasing as the asset gets older and older. As a result, there is a continuous increase in the total expenses of depreciation and repairs as the years roll by.

Again, the method does not take into account interest on the capital investment in the asset. To a certain extent, the method creates complications in respect of depreciation or additions to assets, that have different life-span, and require separate calculations.

The method is generally used in the case of assets of small value as well as those which do not require large scale repairs and renewals as furniture, patterns, or short lease.

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(b) Diminishing Balance Method or Reducing Balance Method

This is also known as accelerated depreciation method. It includes the charging of depreciation in a year at a certain percentage of the debit balance of the asset account in the beginning of the year, with the result that as the debit balance on the asset accounting goes on diminishing every year, the amount of depreciation provided on the asset also goes on decreasing every year, and hence, the method is so named.

The advantage of this method is that it tends to equalise the burden on profit and loss account in respect of depreciation and repairs. As the asset gets older in age, the amount of depreciation goes on decreasing while the expenses of repairs go on increasing so that the total charge to the debit of Profit and Loss account over the years more or less remain the same. The method also acts as some kind of a tax-shield as it makes it possible to reduce the impact of tax on profit during the earlier years of the life of the asset by charging a larger amount of depreciation. The method is more in accord with realities as it is an actual fact that the asset undergoes heavier depreciation during earlier years.

Defects. It fails to reduce the value of asset to zero and some balance, howsoever insignificant, would always be left on the asset account at the end of its useful life. Like the Fixed Instalment Method, it also ignores interest on capital investment in the asset.

The method suits to plant and machinery in which additions and extensions take place quite frequently and the problem of repairs is also very important. However, the method does not suit the case of a lease, the book value of which has to be reduced to zero at the end of lease period.

(c) Production Method

The method involves a uniform change per unit of output. It involves a uniform change per unit of output. It is mostly used in extractive industries as the usefulness of mine head installations is closely related to the size of the ore deposit. Depletion, the specific term for the amortisation of natural resources costs, is normally computed in this manner.

In cases where physical deterioration or exhaustion is the probable limiting factor for economic usefulness, the life forecast depends upon an estimate of the asset's total service capacity. Still, if obsolescence is the limiting factor, a life estimate can be made without projecting service capacity and estimating the latter, requires extra forecast of the demand for asset's services over the expected life-span. Hence, this further complication has inhibited adoption of the production method in those industries where obsolescence is an important consideration.

Subsequent Developments

(a) Annuity Method

At the beginning of every year, it envisages the provision of depreciation at a flat rate on the capital invested in the asset, together with interest at a stipulated rate on the capital so invested, so as to reduce the asset to its residual value at the end of its useful life.

In this way, the asset account is debited with interest which is ultimately credited to Profit and Loss account, and is credited with the amount of depreciation that remains fixed year after year. In view of the fact that an independent calculation of the amount of depreciation under this method is an intricate exercise; depreciation annuity tables are used for the purpose.

The method is based on a comprehensive interpretation of the term 'cost of the asset' which is its purchase price and the interest on the capital invested in the asset that would have been earned on the amount invested therein.

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Unlike the traditional method of providing depreciation, annuity method takes into account interest on capital invested. Since this method is exact and precise from the point of view of calculations, it is considered to be the most scientific one.

Still, it is characterised by certain limitations which stand in the way of its popularity.

Defects

(i) The method is very complicated as it needs a number of calculations.

(ii) In case the asset needs frequent additions and extensions, the calculations have to be revised quite often, and this further complicates its application and operation.

(iii) Like the fixed installment method, it has the tendency to equalise the charge to Profit and Loss account in respect of depreciation and repairs put together as the amount of the life of the asset.

The method is very well applicable to assets which require considerable investment, do not call for frequent additions, and do not need replacement, e.g. ling leases. It is absolutely unsuitable for plant and machinery that need frequent additions and replacements.

(b) Depreciation Fund Method

The method needs the depreciation on the asset to be provided through a depreciation or sinking fund brought in by accumulating the amount of depreciation at a flat rate charged to the Profit and Loss account of depreciation annually allocated to the fund outside securities bearing interest at a stipulated rate, which is also credited to the fund and invested in securities. The process continues year after year, till the time for the replacement of the asset when the securities are sold and amount realised for purchasing the new asset. This fund is called as cumulative depreciation sinking fund.

The method has two very important characteristics:

(i) The asset is shown in the Balance Sheet at its original value although its life, while the depreciation thereon accumulated separately on the depreciation fund, is placed on the liabilities side of the Balance Sheet.

(ii) The method can be superimposed over other methods of depreciation, so that actual depreciation on the asset may be provided by the fixed instalment or reducing balance or annuity method and the same may be accumulated separately on the Fund Account showing the provision for replacement of the asset.

The most important strong point of this method of depreciation is that apart from providing depreciation on the asset, it makes provision for the replacement of the asset at the end of its working life, while such a feature is conspicuous by its absence in other methods.

Disadvantages The main disadvantage of the Depreciation Fund Method is that, as depreciation amount remains fixed throughout the life of the asset, it has a tendency to place unequal burden on profit and loss account over different years of assets in respect of depreciation and repairs put together with the result that profit and loss account is let off lightly in earlier years and is heavily burdened in the later years.

The method is most suited for plant and machinery and many wasting assets that require replacement.

Insurance Policy Method

A serious drawback of Depreciation Fund Method of providing depreciation is the possibility of loss on the realisation of securities in which the fund is invested with the result that the whole programme of the replacement of the asset at the end of its useful life would be adversely affected and to that extent, the method fails in making full provision for replacement.

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In order to remove such a possibility, a slight deviation is made from the conventional Depreciation Fund Method by investing the amount provided yearly as depreciation on the asset, and credited to the fund in paying premium on an insurance policy to mature at the time of the replacement of the asset. This allows funds to be available, for the purchase of the new asset. The other aspects of the mechanics of Depreciation Fund Method, by and large, remain the same.

The method has the benefit, same as the Depreciation Fund Method, with the extra advantage of ensuring the availability of a specified amount of the replacement of the asset and also partakes of its weaknesses.

All fixed assets except land, have only a limited useful economic life. Fixed assets are acquired by a business not for resale but for using them in the business for a considerably longer period. Since fixed assets will benefit the business in the form of generating revenue over a number of future Accounting of fixed assets, it is recorded in the accounting books at its acquisition cost. Suppose a machinery is purchased for Rs.1,00,000 on 1 Jan 1991–Its useful life is expected to be 10 years. On 1 Jun 1991, the machinery purchased would be recorded at its cost price, (i.e.) Rs.1,00,000. The entire amount spent for acquiring the fixed asset cannot be considered as our expense for the accounting period 1991. Because the business will get benefits from the machinery for a period of 10 years. The acquisition cost should, therefore, be written-off as an expense during its useful life. For example, in the above case, a portion of the total cost acquisition, say, at the rate of Rs.10,00,000 every year should be charged against profit as an expense in each of the accounting periods in which the asset is used. The accounting process of allocating the cost of fixed asset over a number of years during the useful life of that asset is called as Depreciation. "Depreciation is the process of allocating the cost of a fixed asset over its estimated useful life in a rational and systematic manner".

Objectives of providing depreciation:

(i) To ascertain the correct amount of profit: During an accounting period, to ascertain the amount of profit, among other expenses, cost of the fixed asset used up in the period must also be debited to the P & L account.

(ii) To present a true and fair view of the state of affairs of the business.
The assets get depreciated in their value over a period of time, on account of various factors like wear and tear, obsolescence and efflux of time etc. Depreciation is to be provided to show the proper book values of the assets in the Balance Sheet.

(iii) If depreciation is charged, and profit available for distribution is reduced, it is quite likely that the whole of the profits may not be withdrawn during the life of the asset. In such a case, the business may have sufficient funds for replacing an asset after its useful life.

Factors to be Considered for Ascertaining the Amount of Depreciation

To ascertain the amount of depreciation, the following factors are to be considered.

(i) Cost of the Asset

Cost of the asset is the most important component to ascertain the amount of depreciation. So far, we have learnt that depreciation is the process of allocating the cost of a fixed asset over its estimated economic life. What is the cost of an asset? Cost of an asset means costs incurred in acquiring the asset and all other incidental costs involved in bringing the asset into working condition. For example, in the case of machinery purchase, price of the machinery plus erection charges will be considered as its cost. If a building is purchased, the purchase price of the building, broker's fee, registration fee etc. are to be included to ascertain the cost of the building.

(ii) The Residual or Scrap Value of the Asset

The value of an asset at the end of its useful life is called as scrap value or residual value. This amount will be received only at the end of the useful life of the asset. The purpose of estimating the scrap value of an asset is to find out the net cost of the asset which is to be allocated over a number of years.

For eg., cost of the asset Rs.50,000/- scrap value Rs.5,000. for the purpose of calculating the amount of depreciation only Rs.45,000 (50,000 – 5,000) is to be considered.

(iii) Useful Life of the Asset

Useful life of the asset is another important factor to ascertain the amount of depreciation. The basic idea of ascertaining the useful life of an asset is to allocate the net cost of the asset over its useful life by means of depreciation.

Methods of Depreciation

(i) Straight Line Method or Equal Instalment Method

This is the most popular method. It is very simple to understand. Under this method, only a fixed amount is provided as depreciation every year.

Depreciation = (Cost of the asset – Scrap value)/Useful life of the asset

e.g., Cost Rs.1,00,000.

Scrap Value Rs.20,000

Life of the asset = 10 years

Depreciation = (1,00,000 – 20,000)/10 years

= Rs.8,000

Every year depreciation would be Rs.8,000 for a period of 10 years. If an asset renders uniform service throughout its useful life, this method is highly suitable.

This method is very simple to follow. Moreover, it can reduce the book value of the asset to zero.

(ii) Diminishing Balance Method or Written Down Value Method

Under this method, the rate of depreciation is fixed and it is applied on the book value of the asset in the beginning of every year.

For example,

Cost of the asset		Rs. 1,00,000
Scrap value		Rs. 20,000
Rate of depreciation 10%		
Depreciation for year 1 will be	=	(1,00,000 – 20,000) = 80,000
		10% on 80,000
		Rs. 8,000

Second year beginning = Value of the asset = Rs. 80,000 – 8,000 = 72,000

depreciation for year 2 will be = 10% Rs.72,000/-

= Rs. 7,200

Third year beginning = Value of the asset = Rs.72,000 – 7,200

= 64,800

Depreciation for year 3 = 10% on Rs. 64,800 Rs. 6480.

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Unlike in the previous method, here the amount of depreciation is gradually declining year after year.

Under this method, as asset is depreciated more in the earlier year of use than later years. The rate of depreciation to be applied under this method can be ascertained by the following formula.

$$r = 1 - n\sqrt{S/C}$$

Where

n = the expected useful life in years
s = the residual value
c = the acquisition cost
r = rate of depreciation to be applied.

(iii) Sinking Fund Method or Depreciation Fund Method

Under normal circumstances, depreciation is debited to P & L account along with other items of expenses, and the profit arrived at, may be utilising in the different ways. If it is so, ready cash may not be available at the time of replacement of an asset. Under the sinking fund method, depreciation amount provided is kept aside and invested in readily marketable securities. When the life of the asset is over, the securities can be sold and the money can be used for replacement. An investment in securities can be sold and the money can be used for replacement. An investment in securities will earn some interest. Therefore, it is necessary ascertain the amount of yearly depreciation (which is to be invested in securities) by considering the rate of interest. The amount to be invested every year depends on the rate of interest. Sinking fund table shows how much is to be invested every year together with the interest earned so that at the end of the period one gets Rs.1.

Sinking fund table

Predict deposit

which will amount Rs. 1 $i/(1+i)^n - 1$

TABLE 7.1

Period in years	*10%*	*11%*	*12%*	*13%*	*14%*
1	1.000	1.000	1.000	1.000	1.000
2	0.476	0.474	0.471	0.469	0.467
3	0.302	0.299	0.296	0.294	0.290
4	0.215	0.212	0.209	0.206	0.203
5	0.163	0.160	0.157	0.154	0.151
6	0.129	0.126	0.123	0.120	0.117
7	0.105	0.102	0.099	0.096	0.93
8	0.087	0.084	0.081	0.078	0.075
9	0.0741	0.0741	0.067	0.064	0.062
10	0.063	0.059	0.057	0.054	0.051

For example, an asset is purchased for Rs.1,00,000. Its life is 10 years. It is expected that investment will earn interest at 12% per annum.

The sinking fund table shows that an investment of Rs.0.057 per year at 12% will become Re.1 at the end of 10 years. To get Rs.1,00,000 every year investment should be 1,00,000 × 0.057 = Rs.5700.

The entry in the first year will be

(i)	Depreciation A/c Dr	5700	
	To depreciation fund A/c		5700
(ii)	Depreciation fund investment A/c Dr	5700	
	To bank		5700

subsequent years, the entries will be

(i) Bank A/c Dr
To invest on investments
(for the amount received as interest)

(ii) Interest on investment A/c Dr
To depreciation fund A/c
(for transferring the interest to depreciation fund A/c)

(ii) Depreciation A/c Dr
To depreciation fund A/c
(for the yearly depreciation)

(iv) Depreciation fund investment A/c
To bank
(for investments made – Annual depreciation amount plus interest received for the investments already made).

Last year, when the investments were sold, the profit or loss on sale of investments needs to be transferred to the Depreciation Fund A/c from the Depreciation Fund Investment A/c.

Sum-of-the year's digits method

Cost of the asset Rs.10,000
Life 5 Years
Sum of the years = 1 + 2 + 3 + 4 + 5 (1,2,3,4 and 5^{th} year) = 15
First year depreciation = (5/15) × 10,000
Second Year depreciation = (4/15) × 10,000
Third Year depreciation = (3/15) × 10,000
Fourth Year depreciation = (2/15) × 10,000
Fifth Year depreciation = (1/15) × 10,000

From the above example, it is clear that under this method the depreciation rate each year is a fraction, of which the denominator is the sum of the years (1+2+3+4+5 = 15) and the numerator for the first year is the last digit in the series (5), for the second year, the numerator is the next to the last digit (4) and so on.

Annuity Method

The annuity method takes into consideration the amount of interest lost on the acquisition of an asset. For example, the prevailing rate of interest is 10%. Instead of purchasing an asset for Rs.10,000, if the amount is invested, we would have earned interest at 10% on Rs.10,000 every year. The interest foregone because of the acquisition of an asset, is considered under annuity method.

Annuity table

Periodic payment need to write off Rs.1 and interest $\frac{i}{[1 - 1/(1 + i)^n]}$

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TABLE 7.2

Period	*3%*	*4%*	*5%*	*6%*
1	1.0300	1.0400	1.0500	1.0600
2	0.5226	0.5302	0.5378	0.5454
3	0.3535	0.3603	0.3672	0.37411
4	0.2690	0.2755	0.2820	0.2885
5	0.2184	0.2246	0.2309	0.2374

for example, cost of an asset Rs.10,000.

Rate of interest – 4% life – 5 years.

The annuity table shows, to write-off Re. 1 together with interest at 4% every year Rs. 2246 is to be provided. In our example to write off Rs.10,000 together with interest at 4%, (10,000 × 0.2246) = Rs. 2246, is to be provided as depreciation every year under annuity method.

Accounting Standard on Depreciation

The International Accounting Standard Committee has issued an International Standard Depreciation Accounting.

"The depreciable amount of a depreciable asset should be allocated on systematic basis to each accounting period during the useful life of the asset".

The depreciation method selected should be applied consistently from period to period unless altered circumstances justify a change. In any Accounting Period in which the method is changed, the effect should be quantified and disclosed and the reason for the change should be stated.

"The useful life of a depreciable asset should be estimated after considering the following factors.

(a) Expected physical wear and tear

(b) Obsolescence and

(c) Legal or other limits on the use of the asset".

"The useful lives of major depreciable assets or classes of depreciable assets should be reviewed periodically and depreciation rates adjusted for the current and future periods if expectations are significantly different from the previous estimates. The effect of the change should be disclosed in the Accounting Period in which the change takes place".

The following should be disclosed for each major class of depreciable asset:

(a) the depreciation method used

(b) the useful lives and the depreciation rates used

(c) the total depreciation allocated for the period and

(d) the gross amount of depreciable assets and the related accumulated depreciation".

MODERN DEPRECIATION

(I) Rate of Return Method: Modern literature on depreciation accounting suggests that the proper depreciation charge is determined at the time the decision to invest in the asset is made when the cash proceeds of the future period are discounted back to the present, and compared to the cost of the asset. In a way, the cost of the asset consists of the cost of purchasing expected proceeds of different periods, so that the depreciation charge of the period will be related to the précised net cash proceeds that formed the basis of the decision to invest in the asset.

As all methods of making investment decisions relate the flow of proceeds earned by the investment to the cost of investment and the concern making the investment estimates, future proceeds of each period that are discounted according to their timing in order to make the investment decision, the firm also knows the amount it is paying for the proceeds of each period.

Depreciation accounting from the financial point of view – Depreciation accounting is concerned with the allocation of the cost of an asset over its useful life and charge the revenues of a period with the expenses of earning those revenues.

Terminology Bulletin of the American Institute of Certified Public Accountants has given the following definition of depreciation accounting:

"Depreciation accounting is a system of accounting which aims to distribute the cash or other basic value of tangible capital assets less salvage if may over the estimated useful life of the unit which may be a group of assets in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year is the portion of the total charge under such a system that is allocated to the year. Though the allocation may properly take into account occurrences during the year, it is not intended to be a measurement of the effect of all such occurrences."

In this way, the valuation concept has been authoritatively and unequivocally rejected.

Developing Depreciation Policy

(i) The desirability of a systematic pre-established amortisation plan for the good and sufficient reason of protecting the investor against reliance of subjective and possibly biased data has been strongly underlined by practical experience. Hence, as soon as it becomes apparent that the depreciation schedule set up at the time of acquisition of an asset is obviously realistic, the plan should be immediately recast. The maximum rates allowable under tax legislation should not be treated as the most important factor in developing data for use by either management of investors.

(ii) It seems reasonable that the recovery of the initial costs of plant assets must have precedence over the payment of dividend or taxes. If provision for depreciation is inadequate from this point of view, such payments may actually become distributions. Depreciation would certainly result in losses at the time of retirement of the asset. The losses would be deductible for tax purposes in the period of retirement. This does not, however, imply that depreciation charges on existing asset should be directly related to the expected future costs of replacing that asset.

(iii) In view of the fact that substantial variations can be expected in both the output and operating characteristics of different type of plant assets manifested to a certain extent in the application of different depreciation methods, a variety of systems must be used if periodic depreciation charges are to serve as meaningful indices of the expiration of productive capacity.

Accountants Approach – Historical Cost

As concerned to the Accountant a fixed asset is a prepaid cost to be charged to operations and recovered in cost over the serviceable life of the asset. The Depreciation Policy allocates this cost to successive periods of time or units of production by some systematic procedure calculated to complete the process by the time the asset is needed. In ordinary course, accountant's concept of depreciation is designed to recover simply the number of monetary units originally committed to the asset, regardless of differences in purchasing power. The approach has been upheld by authoritative opinion on accounting problems

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represented by the Institute of Certified Public Accountants in US. And the Institute of Chartered Accountants in England.

Impact of Inflation

The accountant's approach is satisfactory enough in periods of relative price stability but can be seriously and sometimes even ruinously inadequate during and after periods of inflation such as the one being witnessed since the outbreak of World War-II characterised by an abnormal increase in the price-level resulting in a shrinkage of the purchasing power of the monetary units all over the world.

The general nature of difficulty with the historical cost system of depreciation is that the purchase of assets at a particular date is normally recorded on the basis of the actual money cost on that data in monetary units of known purchasing power, so that in the case of an inflationary rise in prices, subsequent transactions relating to those assets will be recorded in terms of depreciation monetary units.

Depreciation charge expressed in many different kinds of monetary units – some depreciated a little, some much, some not at all, is bound to give results whose significance is at the best doubtful and often may even be misleading. This is the basic problem of price level changes with reference to depreciation.

Economist's Concept-Replacement Cost

According to the economist's approach, the ideal object of depreciation policy is to recover each year a sufficient number of current monetary units to equal that year's capital consumption in terms of original monetary units. Failure to recognise this problem had led to wholesale dissipation of real capital under conditions of extreme inflation repeatedly.

This approach is rooted in a perspective view of business, which, as seen by economists, has to continue over quite a long period of time requiring the replacement of fixed assets as to the end of their useful life. It represents a radical redefinition of net income of a period, one which identifies as earnings subject to income-tax and dividend distribution, only that portion of the revenue stream not needed for maintenance of the current production activity of the business.

It may be stressed that the replacement cost is not the estimated cost of replacing an asset at the end of its estimated service life, perhaps many years in future, because an attempt to guess the amount that would have to be spent to replace the capacity to render service represented by an existing asset would simply be a fruitless exercise. The most significant fact to management, and to all others financially interested, is the current level of plant cost needed to carry on production. This is the cost that is reflected in new construction and equipment purchases and the most influentially in market process and most meaningful guide to decision. As is usually pointed out by economists, it is not what some unit of plant did cost, but what it would cost currently to get the unit that is significant.

No business concern can be regarded as operation successfully in a particular year, unless the current flow of revenue from customers is sufficient to cover the current cost of labour and other services, current cost of materials and plant capacity consumed, taxes and other charges, so as to leave a capital attracting level of net earnings for the proprietors. Though many business enterprises do not get a condition of successful operation in this sense every year, and many may fail to reach this standard for several successive years, there is little room for argument with respect to these general conditions necessary to justify the conclusion that the business is being conducted successfully.

Arguments Against Historical Cost

As the historical cost basis of depreciation needs that an amount showing the original outlay, less the recovery on retirement, is to be apportioned over the financial periods covered by the life-span of the asset, the whole exercise resolves itself into one of the cost allocation. The idea of allocation of cost has a wider application than the one of a periodic charge of fixed asset cost and units of activity other than that of a period may be considered. Nevertheless, the rational criteria for allocation may be arbitrary in the sense that each allocation represents a selection, determined in accordance with human judgement, out of several possible criteria. Arbitrariness enters every process of cost-allocation, and this cannot be regarded as objectively verifiable occurrence and hence, the matching of cost to revenue gets distorted.

In view of the fact that almost all the opinionators of historical cost are unanimous on the point that the salvage value of the asset should be taken into account while ascertaining the role of depreciation charge, the problem of estimating the residual return from an asset or disposal at some future data arises. In this connection, it may be pointed out that there is only one objectively known fact available, the original outlay on the asset – so that the estimated life span of the asset as well as the residual return thereon, are the two imponderables. As neither the accountants nor even the engineers are gifted with prophetic powers, any estimate about these imponderables would be a pure guess and would introduce an element of weakness in calculations regarding cost allocation concept of depreciation.

The allowance for depreciation on the basis of original cost ignores the real economic cost, leads to dangerous erosion of productivity, and imposes a substantially higher rate of income taxation on those enterprises which have substantial investment in fixed assets. The great disparity between cost of replacement and original cost of long-life assets causes postponement of replacement of over age facilities. This lag is a degenerative economic force, which, by lessening demand for capital goods and by delaying improvements, brings a decline in the rate of increase in productivity. In case economic depreciation is continued to be ignored in income taxation and accounting, the much needed modernisation of productive facilities would be in jeopardy.

The adherence to historical cost basis of depreciation has led to a piquant situation in reporting profits– the cost of materials and labour is reflected in inflated monetary units while the cost of productive facilities in which capital was invested at a lower price level is reflected in terms of monetary units whose purchasing power was much greater. There is no doubt that in considering depreciation in connection with product costs, prices and business policies, management must take into consideration the possibility that plant and machinery will have to be replaced at costs much greater than those of the facilities now in use.

The overstatement of net income implied under historical cost depreciation is in itself an important contributing factor to an inflationary solution because it stimulates demand for wage increases, provides access for labour's share of the greater productivity arising from technological improvement.

Arguments Against Replacement Cost

It is agreed that to depart from 'actual costs' as the basis for matching expenditures to revenues in computing income is to tamper with the factual nature and, hence, truth of accounting information. The matching of costs and revenues is basis to the present day economy, based on competition and affects every transaction in which profit or loss is determined.

It is pointed out that in a world of fact technological changes when a new asset is purchased in place of the old, it is only partially a case of replacement inasmuch as the new asset might be, and is, gener-

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ally, of a different as well as much improved kind with the consequence that the principle of charging to revenue the estimated cost of replacing assets loses much of its force.

Closing akin to this, is the objection regarding the difficulty of estimating the replacement cost of a fixed asset in the context of so many changes in technology and improvements in machinery, that makes them far more efficient than the predecessors were, in some cases, the additional feature of being cheaper. Apart from such exceptional cases, there are instances where the replacement costs have even gone down despite an increase in the general level of prices. Under such circumstances, the income statement containing charges of depreciation to provide for replacement would be of very little and doubtful value.

Another weakness of the 'replacement cost' accounting has been made out to be concerned with the possible distortion of the Balance Sheet which may result from charging against income, the cost of replacing asset used up in earning it. Such a situation would particularly emerge when a period of inflation is followed by one of severe deflation, when the cost of replacing assets bought at the height of inflation would soon found to be below the original cost of these assets so that depreciation based on replacement cost would fail to write-off the original asset before the end of its effective life, the Balance Sheet accumulating debit balances for assets that have long since ceased to exist.

Once it is conceded, the costs are due to be adjusted to give effect to the deterioration of the purchasing power of the monetary unit in one type of transaction i.e. depreciation, consistency and logic require that it should also be done in the case of others. In this way, if the concept of business income is to be changed in such a way as to adjust depreciation costs to inflated price levels, it would be completely at variance with the concept relating to other transactions affecting business income. To illustrate, a business would have to step up the charge for insurance on a five year policy on which the premium was paid in advance. This would have the effect of throwing the entire traditional accounting into utter confusion.

It is further asserted that the need for management to take financial decisions does not necessarily require any departure from currently established accounting procedures. Managements are free to make any analysis of the effects of changes in the price level that they consider useful for their own guidance. There are, of course, many other uses to which financial statements have to be put and the adjustment of depreciation alone will not help those who look to the financial statements for guidance. Again, departure in respect of depreciation from the widely understood concept of cost would simply lead to false conclusions as to the extent of the adjustments for inflation in the statement as a whole.

An entire crop of objections against replacement cost concept of depreciation, and the fundamentals of 'replacement cost' accounting, are related to the book-keeping difficulties involved. For instance, the manner of recording the double entry aspect of the debit given to profit and loss. Account in respect of depreciation based on replacement cost after the original cost of the asset has been written off.

Method of Adjustment

Under depreciation provision made on the basis of replacement cost, the adequacy of each year's capital recovery has to be appraised by reference to its purchasing power of the monetary unit at the time. This calls for a procedure for adjusting current depreciation charges. The method generally adopted has been one of 'continuous adjustment', requiring a comparison of the purchasing power of the monetary unit each year with its purchasing power at the time the assets were required, and then adjusting the year's depreciation charge, computed as usual on the original cost, for the changes in the purchasing power of the monetary unit.

When the components of the property account are acquired in different years, the process of continuous adjustment becomes more difficult necessitating the computation of a weighted average acquisition price index that may be shown as given below:

TABLE 7.3 Computation of Weighed Average Index

Year	*Amount Acquired Rs.*	*Price Index For the year*	*Amount Price index Rs.*
1	2,000,00	40	80,00,000
2	1,00,000	50	50,00,000
3	8,00,000	60	4,80,00,000
4	5,00,000	70	3,50,00,000
5	4,00,000	65	2,60,00,000
	20,00,000		12,20,00,000

$$\text{Weighted average index} = \frac{\text{Rs.}12,20,000}{\text{Rs.}\,20,00,000}$$

$$= 61$$

This computation should be strictly repeated every time an asset is retired from, or added to, a composite account.

Correct Perspective

The abnormal increase in prices during the aftermath of the Second World War, gave rise to a great controversy over the resultant insufficiency of depreciation charges. The accounting profession, also, through its representative bodies, took the line of least resistance and gave its powerful support to the concept of depreciation based on historical cost but went only to the extent of suggesting annotations to accounting statements, the foot-note solution, so that management might append its estimate of the insufficiency of the original cost depreciation, the notations have no effect on accounting results.

Besides, whatever have been written about for and against the historical and replacement cost basis of depreciation, the fact remains that a proper accounting for depreciation is of outstanding importance to management in the computation of net income and a variety of its other tasks. The overstatement of profits inherent in the system of original cost depreciation not only gives the impression to the general public, including employees that the concern is making more profit than it has really done, it is likely to lead to dividend payments that would not occur if the true facts were recognised. Again, current replacement cost is important in planning property utilisation, in making departmental comparisons, in pricing policies, in determining insurable value, in setting up maintenance standards, in decisions regarding timing of retirement, and so on. As a matter of fact, in any period of rapid technological change and sharply moving prices, it is imperative that the data of replacement cost be made continuously available as a basis for management decisions.

The case for depreciation from the economic point of view has been so convincing that even inward-looking authorities, like taxation authorities in certain European countries, have accorded special treatment to replacement cost depreciation. In this way, other countries have authorised the writing-up of depreciable assets to their approximate their current value, and the subsequent tax-free recovery of depreciation on written-up value. In almost all countries, there are schemes of depreciation allowances designed to mitigate the rigours of changing price levels on provision for depreciation on fixed assets. The committee on Accounting procedure of the American Institute of Certified Public Accountants, has conceded the idea underlying economic depreciation "should inflation proceed so far that original rupee costs lose their practical significance, it might become necessary to restate all assets in terms of the depreciated currency as has been done in some countries".

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However, the recognition of economic depreciation would certainly represent a revolutionary break from the traditional basis of accounting. Nevertheless, if a principle is inherently right, only technical difficulties of giving effect to it by means of a particular technique , i.e., the technique of double entry, would not make it less right.

Managerial Significance of Depreciation Accounting

The importance of depreciation accounting from the management point of view, is complicated by the fact that depreciation measures the expense of using a fixed asset which would depreciate physically, irrespective of its use.

The significance of depreciation accounting can be discussed with reference to certain management decisions, techniques and areas of interest.

Internal Investment Decisions

Besides the tax considerations, the provision of depreciation in accounting reports does not affect investment decision implied by the replacement of an asset as the cost of an asset being replaced is a sunk cost that would be incurred irrespective of the fact whether the asset is used or retired. However, the decision can be influenced by decrease in salvage or resale value. Of course, depreciation is taken into consideration indirectly by comparing the cost proceeds generated by the asset with the cost thereof. Though not specifically computed, it is automatically considered as the cost of the asset being purchased in a part of computation.

Measuring Performance

As the performance of management is generally measured by either income, or return on investment, both of which depend on the method of depreciation accounting, the manner of the provision of depreciation would affect the measure of performance. Unfortunately, the usual accounting treatment of depreciation will almost invariably distort both the indices of performance. Though the straight line depreciation will give reasonably good measure of income in case the revenues and maintenance requirements are constant throughout the life of the asset; it would distort the return or investment, which would increase. With the decrease in the book value of the asset due to depreciation, it would not yield a good measure of income, along with giving faulty measures of return on investment, where revenues are not constant, or if the maintenance charge increases in later years.

Funds Generation

The relationship of depreciation and fund is generally misunderstood. It is being thought that depreciation is a source of funds. Still, it is none of the functions of deprecation accounting to provide funds for replacement which must come from the revenues of the business, and the charge for depreciation neither increases nor decreases the amount available to purchase new equipment. Even the making of charges to income and setting up of reserves for depreciation, give no assurance regarding the availability of funds for replacement unless they are in some way earmarked for the purpose; conversely, funds set aside for replacement would be available for that purpose whether charges have been made to depreciation or not.

Of course, in calculating funds from operations, it is the usual practice to add to the income that amount of depreciation that had been subtracted in arriving at the net income. This is only reasonable as depreciation expense is one which does not utilise funds in the period in which it is recognised with the result that an expense not utilising funds, has been subtracted from the revenues of the period and therefore, must be added back to compute funds generated by the operations. This would certainly be

at variance with the treatment of expenses that use funds and have therefore, to be subtracted from the revenues for arriving at funds from operations.

Make or Buy Decisions

The type of decisions required to be usually taken by the management of business relate either to the manufacture of a piece of equipment or for buying the same. Generally, in a make or buy decision, a relevant cost would be a cost that could be avoided if the part was not made, and it would not be relevant if cost would be incurred irrespective of the decision taken.

The depreciation of the factory building cannot be avoided by the elimination of one phase of production, and in this way, would not be relevant in making the decision. Nevertheless, the position would get complicated where factory building devoted to the production of the part would be used to make an alternative product so that, though the depreciation of factory building would not be relevant, the opportunity cost of foregoing production of the product, would be very much relevant.

On the other hand, the depreciation of machinery engaged in the manufacture of the part would not be relevant, if there are no other uses for the machinery, but the opportunity cost of not producing the other product would have to be computed in case there are other uses for the machinery. One possible use of machinery would be its sale and, if machinery could be sold, it is an opportunity being foregone by producing the part with the result that the sale price of the machinery as well as the expected decrease in its value, would be relevant for decision-making purposes. The important point is that, in no case, the book depreciation is of any significance in any make or buy decision or any other decision of a similar nature.

Pricing Decisions

As to the general principle of economic theory, a firm is expected to produce at a point where its marginal cost equals marginal revenue and to charge a price equal to the average revenue, that will sell the proper quantum of output.

In this way, theoretically, the problem of output and price is settled without reference to any fixed costs. Though it can be asserted that fixed costs affect total costs and hence affect the price, this is not the case inasmuch fixed costs are common to all levels of output, and thus do not affect the pricing decision. The largest income is also at the level of output where marginal cost equals marginal revenue because at that output, the difference between total revenues and total costs would be the greatest. In this context, depreciation is not taken into account in reaching at decisions regarding price fixation as it is generally considered a fixed cost.

Still, as all costs as well as a reasonable profit must be earned in an industry in the long run so as to keep the factors of production engaged in that line of business, all fixed costs including means that a businessman must consider fixed costs in the fixation of selling price of his products. In spite of the fact that he may set the price as dictated by competition, he is bound to recover not only the fixed costs, but also make a profit if he is skilful in market manipulations through timely pricing decisions.

Summary

The determination of the cost of depreciation of fixed assets is important in view of the fact that the cost of using these long-lived assets has to be reckoned in measuring periodic income according to the principle of 'matching cost to revenue' as well as in appraising the results of managerial action. In spite of the fact that some persons ridicule the efforts of accountants to allocate the cost of fixed asset to expense over the duration of its useful life, it is, generally agreed that depreciation accounting should attempt to allocate cost of an asset to expense with the

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object of burdening the revenues of a period with a reasonable portion of the expense of using the asset during that period. There is a determinable time schedule for depreciation in a large number of cases and in fact, this time schedule is in a way determined at the time of purchase when the amount to be paid for the projected cash flows of each time period is estimated.

A prediction of cash inflows expected to be generated by the investment is needed for the establishment of the producer to be used for computing depreciation. Still, it does not have to be an absolutely current forecast of the future but has to be only a reasonable estimate, preferably the estimate that may be the basis of the decision to invest. This has become so essential that the prediction of net cash proceeds has been built into the widely accepted capital budgeting procedures. Depreciation is a permanent continuing and gradual shrinkage in the book value of a fixed asset.

KEY CONCEPTS

- Amortisation
- Depletion
- Dilapidation
- Depreciation
- Depreciation Accounting
- Diminishing Balance
- Historical Cost
- Replacement Cost
- Accounting Standard
- Scrap Value

REVIEW QUESTIONS

OBJECTIVE TYPE QUESTIONS

1. Depreciation charged on plant and machinery is
   a. Discretionary cost
   b. Committed cost
   c. Conversion cost
   d. Future cost
   e. Programmed cost
2. Depreciation is the process of
   a. Apportionment of the cost of the asset over its useful life
   b. Valuation of assets
   c. Maintenance of asset in a state of efficiency
3. Machine/hour rate method of charging depreciation is useful when
   a. Output can be effectively measured
   b. Use of the asset can be measured in terms of time
   c. Utility of the asset can be directly related to its productive use
4. Profit or loss on depreciation fund investment is transferred to
   a. Profit or Loss Account
   b. Asset account
   c. Depreciation fund account
5. The profit on depreciation policy is transferred to
   a. Depreciation reserve account
   b. Profit and Loss Account
   c. Asset account
6. In case of Annuity method, the amount of depreciation is
   a. Increasing every year
   b. Fixed for all the years
   c. Decreasing every year

7. For providing depreciation on leasehold property, the appropriate method of depreciation is
   a. Replacement method
   b. Revaluation method
   c. Fixed installment method
8. Depletion method of depreciation is used in
   a. cattle, loose tools etc.
   b. mines, quarries etc
   c. Machinery, building etc.
9. The interest lost on the acquisition of an asset is taken into account in calculating depreciation in
   a. Depletion method
   b. Annuity method
   c. Diminishing balance method
10. In this method, depreciation is charged by allocating depreciable cost in proportion of the annual output to the probable life-time output
    a. Working Hours method
    b. Production Units method
    c. Revaluation method

[Ans. 1-a; 2-a; 3-b; 4-c; 5-a; 6-b; 7-c; 8-b; 9-b; 10-b]

DESCRIPTIVE QUESTIONS

1. What do you know about depreciation policy and price level changes?
2. What are historical and replacement costs?
3. What are an Accountant's approaches to historical cost?
4. What are the impacts of inflation.
5. What are economist's concept for replacement cost?
6. What are the arguments against historical cost?
7. What are the arguments against replacement cost?
8. What do you know about method of adjustment?
9. What is the correct perspective about these polices?
10. What are the managerial significance of depreciations accounting?
11. What are the internal investment decisions and measuring performance?
12. Write notes on:
    (a) Funds generation.
    (b) Make or buy decisions.
    (c) Pricing decisions.
13. What are the characteristics of depreciable assets?
14. What is the Rationale of depreciation?
15. What is the concept of depreciation?
16. What are the causes of depreciation?
17. What are the characteristics of depreciation?
18. What are the methods of depreciation?
19. What do you understand by traditional method of depreciation? What are its various kinds?
20. What were the subsequent developments to traditional method of depreciation?
21. What do you understand by annuity method of depreciation?
22. What is the modern edition of depreciation method?
23. What do you understand by depreciation accounting? What are its objectives? What steps you will take for developing depreciation policy?

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PROBLEMS

1. B manufacturing company purchased an automatic machine for Rs.2,19,500. It has an estimated salvage value of Rs.19,500 and an estimated working life of 4 years. The estimated yearly output is as follows: (1) 15,000 units; (2) 12,500 units; (3) 7,500 units; and (4) 5,000 units.

   Compute the depreciation charge for each of the 4 years by –

   (a) the straight line method; (b) the output method ; (c) the sum of the year's digit method.

   [Ans. (a) Rs.50,000 each year; (b) Rs.75,000; Rs.62,500; Rs.37,500; Rs.25,000 (c) Rs.80,000; Rs.60,000; Rs.40,000; Rs.20,000.]
2. A firm writes off 95% of the cost of machinery acquired over a period of 10 years by the straight line method leaving 5% as estimated scrap value. Full depreciation is written off even if machinery is in use only for a part of the year.

   On 31st December 2004, the original cost of machinery in use was as follows: Purchased in 1994 or earlier- Rs. 1,20,000; Purchased in 1996 - Rs. 40,000; Purchased in 2000 - Rs. 30,000 .

   On 31st June 2005, a machine which had cost Rs. 10,000 in 1993 was disposed of for Rs. 900 and on 30th November 2005, a machine acquired in 1960 at a cost of Rs. 15,000 was sold for Rs.5,000. On the same date, new machinery was acquired for Rs. 45,000. Prepare the machinery account for 2005 the account being closed on 31st December each year.
3. A company has been using an annual depreciation rate of 20% of original cost for a certain type of machinery. After several years of experience, a study of actual machine mortality rates indicates that the rate should have been based on a life of six years and scrap value of 16% of original cost. The original cost of the equipment now on hand was Rs. 2,00,000 and its average age is two years. Straight line depreciation by individual item method has been used.
   (a) Compute the amount by which depreciation to- date is overstated or understated.
   (b) Show the journal entry that would be necessary to adjust the book value of the equipment to its correct value.
4. The chief accountant of Miller & Co., Ltd., proposes that in view of rising prices of machinery, depreciation charges should be based on replacement cost. He suggested the following entries;

Depreciation account	Dr.	X	
To Provision for depreciation			Y
To reserve for Replacement			Z

   Where X is the depreciation charge based on replacement cost and Y is the regular depreciation charge based on original cost.
   (a) What is the effect of the proposed method on reported profit during and after a period of rising machinery prices?
   (b) Where would the Reserve for Replacement appear on the company's statement? How would you interpret it?
5. A company acquired a group of machines for Rs.20,00,000 on 1st January 2001. It decided to charge depreciation by the income tax method, i.e., 10% on the written down value for each year. The company's profits before depreciation from 2001 to 2004 were as follows:
   2001: Rs.8,00,000; 2002: Rs.9,50,000; 2003: Rs.12,00,000; 2004: Rs.14,00,000. Show the means of tabulation of the profits after charging depreciation by both the method.
6. In January 2003, Ambika Mills Ltd. placed in service a new paper machine at a cost Rs.50,00,000. Its estimated useful life was 20 years. In December 2007, certain improvements were made in this machine at a cost of Rs.6,00,000. Twelve years later in September 2007, the machine was thoroughly overhauled and rebuilt at a cost of Rs. 12,00,000. It was estimated that the overhaul would extend the machine's useful life by 5 years, i.e., until the end of 2012. Depreciation charges for 2007 were unaffected by the overhaul.

   You are required to: (i) show the journal entry required to record the improvements made in December 2007; (ii) Compute depreciation for 2007 on straight line method; (iii) show the journal entry required

to record the overhauling of the machine in September 2008; and (iv) compute depreciation for 2008 on straight line basis.

7. A firm writes off 95% of the cost of machinery acquired over a period of 10 years by the straight line method leaving 5% as estimated scrap value. Full depreciation is written off even if a machinery is in use only for a part of the year.

   On 31st December 2006, the original cost of machinery in use was as follows: Purchased in 1996 or earlier – Rs.1,20,000; Purchased in 1998 – Rs.40,000; Purchased in 2002 – Rs.30,000.

On 30th June 2007, a machine which had cost Rs.10,000 in 1995 was disposed of for Rs.900 and on 30th November 2007, a machine acquired in 2002 at a cost of Rs.15,000 was sold for Rs.5,000. On the same date, new machinery was acquired for Rs.45,000. Prepare the machinery account for 2007, the accounts being closed on 31st December each year.

1. Explain the need and significance of depreciation? What factors should be considered for determining amount of depreciation?
2. Distinguish between "straight line method" and "diminishing balance method" of providing depreciation. Which one of the above two methods would you recommend to provide depreciation on Plant and Machinery?
3. Explain the circumstances under which different methods of depreciation can be employed.
4. Write short notes on:
   (a) Group Depreciation Method:
   (b) Double Declining Balance Method; and
   (c) Accounting Standard 6 (Revised): Depreciation Accounting.
   (d) Depreciation Fund.
5. What is Depreciation? Discuss the merits and demerits of Sinking Fund Method of depreciation.
6. Depreciation on the basis of replacement lost.

PRACTICAL PROBLEMS

Straight Line Method

1. On 1st January 1998, a merchant purchased some furniture costing Rs. 55,000. It is estimated that its working life is 10 years at the end of which it will fetch Rs. 5,000. Additions are made on 1st January, 1999 and 1st July, 2001 to the value of Rs. 9,500 and Rs. 8,400 (residual values Rs. 500 and Rs. 400 respectively). Show the Furniture Account for the first four years, if depreciation is written off according to the straight line method.

   [Ans. Balance of Furniture Account on 1st Jan., 2002 Rs. 49,800]

2. A company provides depreciation under the straight line method at the rate of 10% p.a. The balance standing in the Plant and Machinery Account on 31st Dec., 1995, after writing off depreciation for the year, was Rs. 19,55,150 (total cost price of the plant was Rs. 3,58,000). During January, 1996 new plant was purchased at cost of Rs. 29,500 and one machine which during January, 1997, there were additions costing Rs. 18,000 and a machine which had cost Rs. 7,000 in 1992 was sold for Rs. 3,500.

   Write up Plant and Machinery Account for 1996 and 1997.

   [Ans. Balance as on Dec.31,1996 Rs.1,85,900, Dec. 31,1997,Rs1,60,550]

   [Hint. Profit of Rs 400 on machinery sold as scrap will be taken Direct to P.&L.Account]

3. The following balances appear in the books of Mahajan Brother.

	Rs
Jan.1, 2008 Machinery Account	40,000
Jan.1, 2008 Provision for Depreciation	18,000

   On 1st January 2008, they decided to sell machinery for Rs. 4,350. This machine was purchased for Rs.8,000 in January, 1986.

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You are required to prepare Machinery Account and Provision for Depreciation Account on 31st Dec., 2008, assuming the firm has been charging depreciation at 10% p.a. on straight line method.

[Ans. Balance: Machinery Account Rs.32,000; Provision for Depreciation Account Rs.18,000]

Diminishing Balance Method

4. A plant is purchased for Rs.20,000. It is depreciated at 5% per annum reducing balance for five years when it becomes obsolete due to new method of production and is scrapped. The scrap produces Rs.5385. Show the plant account in the ledger.

   [Ans. Loss on sale Re.10,091; Depreciation 1st year Rs.1,000; 2nd year Rs.950; 3rd year Rs.902; 4th year Rs.857; 5th year Rs.815]

5. On 1st January 2007, Bhola Nath Dutt & Sons purchased a machine costing Rs.1,00,000. Its working life is 10 years. It has been decided to depreciate it at the rate of 12 ½ % on the Diminishing Balance Method. Show the machinery Account for first three years.

6. If an asset was purchased for Rs.50,000 on 1st January, 1998, what would be its book value three years after if it was depreciated according to the following methods: (i) Straight Line Method, and (ii) Written Down Value Method. The rate of depreciation is 10% per annum. Show your answer by a tabular ledger account.

   [Ans. Straight Line Method Rs.35,000; Written Down Value Method Rs.36,450]

Depreciation Fund Method

7. A company purchased a four years' lease on January 1, 2005 for Rs.20,150. It is decided to provide for the replacement at the end of four years by setting up a Depreciation Fund. It is expected that investments will fetch interest at 4 per cent. Sinking Fund tables show that to provide the requisite sum at 4 percent at the end of four years, an investment of Rs.4,745.02 is required. Investments are made to the nearest rupee.

   On December 31, 2008, the investments are sold for Rs.14,830. On 1st January, 2009, the same lease is renewed for a further period of 4 years by payment of Rs.22,000.

   [Ans. Amount credited to the Profit and Loss Account at the end of December, 2008 Rs.17.56]

Insurance Policy Method

8. Chilies Ltd. acquired a long-term lease of property on payment of Rs.60,000. A Leasehold Redemption Policy was taken out on which an annual premium of Rs.1,440 was payable. The surrender value of the policy on 31st March, 2007 was Rs.12,896 to which amount the policy account stood adjusted. Next premium was paid on 20th December, 2007, and the surrender value on 31st March, 2008.

   (i) Show the Redemption Fund Account and the policy account for the year ended 31st March, 2008.

   (ii) Assuming that on maturity, a sum of Rs.60,100 was received and the balance in Policy Account then stood at Rs.59,920 give the ledger accounts showing the entries necessary to close the accounts concerned.

   [Ans. (i) Balance at the end of 1998 Fund A/c Rs.14,444 each, (ii) Transfer to P & L A/c profit on maturity Rs 100]

Depletion Method

9. Burdwan Collieries Ltd. acquired the lease right for 20 years of a mine on January 1, 2001, on a lump payment of Rs.5,00,000 to the landlord. It was estimated by the expert that the coal deposit of the mine was Rs.20,00,000 tonnes, 75 percent, of which could be raised within the time period. The company decided to write off the Lease Account under straight line method of depreciation. The Lease Account was shown accordingly for the first five years. On 31st October, 2006, the Board of Directors decided to depreciate the Lease on "Depletion" method with retrospective effect from January 1, 2001. The annual raising were:

2001	20,000 tonnes
2002	30,000 tonnes
2003	1,00,000 tonnes
2004	2,00,000 tonnes
2005	2,00,000 tonnes
2006	2,00,000 tonnes

You are required to show the Lease A/c from 1st January, 2001 to 31st December, 2006 showing clearly your calculations.

[Ans. Arrears of depreciation in 1994 Rs.58,333; Balance in the Lease Account at the end of 2006 Rs.2,50,000]

Group Depreciation Method

10. The valuation of a group of assets (plant and machinery), on 1st January, 2006 was Rs.32,000 and the estimated life was 8 years. The following purchases and sales took place upto 31st December, 2008:

Purchases: March 31, 2006 Cost Rs.15,000, estimated life 10 years.
Sept 30, 2007 Cost Rs.12,000, estimated life 6 years.
April 31, 2008 Cost Rs.20,000 estimated life 8 years.

Sales: Out of initial group of assets, a machine (whose valuation on 1st January, 2006 was Rs 5,000) sold for Rs 4,700 on 30th June, 2008.

Assuming the break-up value of each asset to be 10 percent of the initial valuation or original cost, prepare the asset account for the 1st three years.

[Ans. Balance on 31st December, 1996, Rs 57,424]

Change and Disposal

11. A company purchased a second-hand machine on January 1, 2006 for Rs 37,000 and immediately spent Rs.2000 on its repairs and Rs1000 on its erection. On July 1, 2007, it purchased another machine for Rs 25,000. On July, 2008, the second machine was also sold off for Rs 2,000.

Depreciation was provided on machinery at 10% on the original cost annually on December 31. In 2007, however, the company changed the method of providing depreciation and adopted the written down value method, the rate of depreciation being 15% per annum. Give the Machinery Account for four years commencing from the acquisition of machine. Amount to be calculated to nearest ten rupees.

[Ans. Balance in the Machinery Account on 31.12.2008 Rs.19,650; Loss on sale of machine in 2007 Rs 300; in 1997 Rs 5,270]

12. A second-hand machinery was purchased on 1st January, 2005 for Rs 6,000 and Rs 4,000 were spent on its repairs and erection immediately. On 1st July, 2006, another machinery was purchased for Rs 26,000 and on 1st July, 2007, the first machinery having become obsolete was auctioned for Rs 30,000. On the same date, another machine was purchased for Rs 25,000. On 1st July, 2008, the second machinery was also sold off and it fetched Rs.23,000.

Depreciation was provided on machinery at the rate of 10% on the original cost annually on 31st December. In 2007, the method of providing depreciation was changed to the written down (diminishing value) method, the rate of depreciation being 15%.

You are required to prepare machinery account for all the calendar years mentioned above.

[Ans. No Profit or Loss on machinery sold in 2007; Profit on sale Machinery in 1998 Rs. 3,580; Balance in the Machinery account Rs 19,656]

13. A firm purchased on 1st January, 2004 certain Machinery for Rs 58,200 and spent Rs 1,800 on its erection. On 1st July 2004, additional machinery costing Rs. 20,000 was purchased. On 1st July, 2006, the machinery purchased on 1st January, 2004 having become obsolete was auctioned for Rs. 28,600 and on the same date fresh machinery was purchased at a cost of Rs 40,000.

Depreciation was provided for annually on 31st December at the rate of 10 percent on written down value. In 1997, however the firm changed this method of providing depreciation and adopted the method of providing 5 percent per annum depreciation on the original cost of the machinery.

Give the Machinery Account as it would stand at the end of each year from 2004 to 2007.

[Ans. Balance on Jan. 1,1998 Rs. 53,500]

14. Messrs Mill and Wright commenced business on 1st January, 1990, when they purchased plant and equipment for Rs 7,00,000. They adopted a policy of (i) charging depreciation at 15% per annum on diminishing balance basis and (ii) charging full year's depreciation on additions. Over the years, their purchases of plant have been:

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Date	Amount Rs
1.8.2001	1,50,000
30.9.2004	2,00,000

On 1.1.2004, it was decided to change the method and rate of depreciation to 10% on straight line basis with retrospective effect from 1.1.2000, the adjustment being made in the accounts for the year ending 31st December, 2004.

Calculate the difference in depreciation to be adjusted in the Plant and Equipment Account on 1.1.2004 and show the ledger account for the year 2004.

[Ans. Balance on Jan. 1, 2005 Rs 6,20,000].

15. The following items are found in the Trial Balance of John 31st December, 2008.

Debtors	16,000
Bad debts	300
Bad and Doubtful Debts Provision 1.1.2008	700

You are to provide for the bad and doubtful debts @5% . Give the necessary journal entries and prepare the Bad Debts Account, Bad and Doubtful Debts Provision Account, Profit and Loss Account, Sundry Debtors Account in the ledger and a Balance Sheet appearing after the final adjustments.

16. A firm had the following Balances on 1st January, 2008:

	Rs
(a) Provision for Bad and Doubtful Debts	2,500
(b) Provision for Discount on Debtors	1,200
(c) Provision for Discount on Creditors	1,000

During the year, Bad Debts amounted to Rs 2,000, Discounts allowed were Rs.100 and Discounts received were Rs 200. During 2008, Bad Debts amounting to Rs. 1000 were written off while Discounts allowed and received were Rs 2,000 and Rs.500 respectively.

Total Debtors on December 31, 2007 were Rs 48,000 before writing off Bad

Debts, but after allowing Discounts. On December 31, 2007, the amount was Rs.19,000 after writing off the Bad Debts, but before allowing Discounts. Total Creditors on these two dates were Rs.20,000 and Rs.25,000 respectively.

It is the firm's policy to maintain a provision of 5% against Bad & Doubtful Debts and 2% for Discount on Debtors, and a provision of 3% for Discount on Creditors.

Show the accounts relating to Provision on Debtors and Provision on Creditors for the year 2007 and 2008.

[Ans. Balances on 31.12.2008; Bad Debts Provision Rs.850, Provision for Discount on Debtors Rs.323, and Provision for Discount on Creditors Rs.750].

17. Apear Ltd. makes provision for doubtful debts at the end of each year against specific debtors. On 30th June, 2008, the following debtors balances were considered doubtful and provided for

Raman	1,500
Jalil	400
Nagpal	250
Sharma	500

Following are the particulars for the year ended 30th June, 2008.

(a) Bad Debts written off:

Raman	1,200
Sharma	350
Gupta	300
Ramesh	200

Atmaram	150

(b) Amounts realised against debts written off in earlier year:

Hossain	350
Kriparam	175
Dayaram	225

(c) Debts considered doubtful (after taking into account all realizations during the year) at the end of the year:

Abraham	180
Ganesh	230
Gangasaram	375
Ramachandra	470

You are required to draw up:

(i) Bad Debts Account.

(ii) Provision for Doubtful Debts Account and to show the releveant amount in the Profit & Loss Account for the year ended 30th June 2008.

[Ans. Amount charged from P & L a/c for Bad Debts Provision Rs. 805, Bad Debts recovered Rs.750 Credited to P &Loss a/c].

18. The accountant of M/s Kasturi Agencies extracted the following Trial Balance as on March 31, 2007:

Particulars	*Dr. Amount Rs.*	*Cr. Amount Rs.*
Capital		1,00,000
Drawings		18,000
Buildings	15,000	
Furniture and Fittings	7,500	
Motor Van	25,000	
Loan from Har @ 12% Interest	15,000	
Interest paid on above	450	
Sales		1,00,000
Purchases	75,000	
Stock as at 1.4.96	25,000	
Stock as at 31.4.97		32,000
Establishment Expenses	15,000	
Freight Inward	2,000	
Freight Outward		1,000
Commission received		7,500
Sundry Debtors	28,000	
Bank Balance	20,500	
Sundry Creditors		10,000
	2,28,550	2,68,500

The Accountant located the following errors but is unable to proceed any further:

(a) A totaling error in bank column of payment side of Cash Book whereby the column was under–totaled by Rs.500.

(b) Interest on loan paid for the quarter ending December 31, 1996. Rs.450 was omitted to be posted in the ledger. There was no further payment of interest.

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You are required to set right the Trial Balance and prepare the Trading and Profit and Loss Account for the year ended March 31, 2007, and the Balance Sheet as at the date after carrying out the following:

(i) Depreciation is to be provided on the assets as follows:

Buildings	21/2% p.a
Furniture and Fittings	10% p.a
Motor Van	25% p.a

(ii) Balance of Interest due on the loan is also to be provided for.

[Ans. Correct Trial Balance Total Rs.2,32,500; Gross Profit Rs.30,000. Net Profit Rs12,775; Balance Sheet Total: Rs.1,20,225]

19. From the following balance of Shri Goyal, prepare Trading and Profit & Loss Account for the year ending 31st December 2008, and Balance Sheet as on that date after taking into consideration the adjustments given at the end of the trial balance.

TRIAL BALANCE
As on 31st December, 2008

Particulars	*Dr. Amount Rs.*	*Cr. Amount Rs.*
Sales	-	3,70,000
Purchases (adjusted)	3,49,600	
Wages	10,450	
Capital Account		34,250
National Insurance	150	
Carriage Inwards	200	
Carriage Outwards	250	
Lighting	300	
Rates and Insurance(including premium of Rs.150 p.a up to 30th June,1997)	200	
Stock at 31.12.1996	30,625	
Cash in Hand and at Bank	875	
Plant and Machinery		300
Discount allowed	50	
Debtors and Creditors	3000	10,000
Furniture	4000	
Dividends received		150
	4,14,700	4,14,700

Adjustment:

(i) National Insurance also includes employees contribution of Rs.75. Wages are shown "Net" after deducting national insurance contribution borne by the employees.

(ii) Owing to the nature of employment, some employees are housed in the building of the business. The rental value of such portion is assessed at Rs.250 per annum. The benefit to the employee treated as wages and the rental as income for Shri Goyal.

(iii) Depreciate Plant & Machinery at 15% per annum and Furniture at 10% p.a.

(iv) Goods worth Rs.2,000 given by Shri Goyal to his son at cost.

(v) The Manager is entitled to a commission of 20% of the Net Profits after charging his commission. (Calculations may be made nearest to the multiple of rupee).

[Ans. Gross Profit Rs.11,350; Net Profit Rs.7,229, Balance Sheet Total Rs.50,925].

20. The following Trial Balance is extracted from the book of a merchant on 31st December.

Particulars	*Amount Rs.*	*Amount Rs.*
Furniture and Fittings	640	
Motor Vehicles	6,250	
Buildings	7,500	
Bad Debts		12,500
Provision for Bad Debts	125	
Sundry Debtors and Creditors		200
Stock on January 1, 1998	3800	2500
Purchase and Sales	3460	
Bank Overdraft	5475	15,450
Sales and Purchase Returns	200	
Advertising	450	
Interest (on Bank Overdraft)	118	
Commission		375
Cash	650	
Taxes and Insurance	1,250	
General Expenses	782	
Salaries	3,300	
	34,000	34,000

The following adjustments are to be made:

(a) Stock in hand on 31st December 1997 was Rs.3,250.

(b) Depreciate buildings at the rate of 5%. Furniture and Fittings @10% and Motor Vehicles @ 20%.

(c) Rs.85 is due for interest on bank overdraft.

(d) Salaries Rs.300 and Taxes Rs.120 are outstanding.

(e) Insurance amounting to Rs.100 is prepaid.

(f) Write off a further sum of Rs.100 as bad debts and provision for bad debts to be made equal to 10 per cent on sundry debtors.

[Ans. Gross Profit Rs.9,690; Net Profit Rs 1,551; Balance Sheet Total Rs.20,031.]

21. From the following balances taken from the ledger of Shri Krishnan on 31 st March, 2008, prepare the Trading and profit and Loss Account for the year ended 31st March, 1999 and the Balance Sheet as at 31st March, 2009 of Shri Krishnan.

Particulars	*Amount Rs.*	Particulars	Amount *Rs.*
Sundry Creditors	19,000	Bad Debts	100
Building	15,000	Loan form Ram	2,500
Income Tax	1,025	Sundry Debtors	9,500
Loose Tools	1,000	Investments	6,500
Cash at Bank	16,200	Bad Debts Reserve	1,600
Sundry Expenses	1,990	Rent and Rates Furniture	850
Bank Interest (Cr.)	75	Furniture	3,000
Purchases	1,57,000	Stock (1.4.1988)	27,350
Wages	10,000	Capital	47,390

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Adjustments to be taken into account.

(a) Write off further Rs.300 as bad out of Sundry Debtors and Create a Reserve for Bad Debts at 20% on Debtors.
(b) Dividends accrued and due on Investments is Rs.135. Rates paid in advance Rs.100 and wages owing Rs.450.
(c) On 31.3.1999 stock was valued at Rs.15,000 and Loose Tools were valued at Rs.800.
(d) Write off 5% for depreciation on Buildings and 40% on Motor Van.
(e) Provide for interest at 12% per annum due on loan taken on 1.6.2007.
(f) Provide for interest at 12% per annum due on loan taken on 1.6.2007.
(g) Income tax paid has to be treated as Drawings.

[Ans. Gross Profit Rs.4,080; Net Loss Rs.5,385; Balance Sheet Total Rs.71,180].

22. The following Trial Balance was extracted from the books of Mr. A as on 30th September, 2008:

Particulars	*Dr. Amount Rs.*	*Cr. Amount. Rs.*
Capital Account.		1,00,000
Plant & Machinery	78,000	
Furniture	2,000	
Sales		1,27,000
Purchases	60,000	
Returns	1,000	
Opening Stock	30,000	
Discount	425	
Sundry Debtors	45,000	
Sundry Creditors		25,000
Salaries	7,550	
Manufacturing wages	10,000	
Carriage Outward	1,200	
Provision for Bad debts		525
Rent, Rates and Taxes	10,000	
Advertisement	2,000	
Cash	6,900	
	2,54,075	2,54,075

Prepare Trading and Profit and Loss Account for the year ended 30th September, 2008 and a Balance Sheet as on that date after taking into account the following adjustments:

1. Closing Stock was valued at Rs.34,220.
2. Provision for Bad Debts is to be kept at Rs.500.
3. Allow interest on Capital at 10% per annum.
4. Furniture was sold and the same was disposed off for Rs.760 in exchage of new furniture costing Rs.1,680. The net invoice of Rs.920 was passed through purchase Register (No depreciation needs to be charged on old and new furniture.)
5. Depreciate Plant and Machinery be 10% per annum.
6. The proprietor Mr. A has taken goods worth Rs.5,000 for personal use, and distributed goods worth Rs.1,000 as samples.

[Ans. Gross Profit Rs.67,890; Net Profit Rs.27,500; Balance Sheet Total Rs.1,57,500]

CASE

The following Schedule of balances as on 31.3.2008 extracted from the books of Shri Gavaskar, who carries on business under the name and style of Messrs Gavaskar Viswanath & Co., at Bombay.

Particulars	*Dr. Amount Rs.*	*Cr. Amount. Rs.*
Cash in Hand	1,400	
Cash at Bank	2,600	
Sundry Debtors	86,000	
Stock as on 1.4.1997	62,000	
Furnitures and Fixtures	21,400	
Office Equipment	16,000	
Buildings	60,000	
Sundry Creditors	20,000	
Loan from Viswanath		43,000
Reserve for Bad Debts		30,000
Purchases		3,000
Purchase Returns	1,40,000	
Sales		2,600
Sales Returns		2,30,000
Salaries	11,000	
Rent for Godown	11,000	
Interest on loan from Viswanath	5,500	
Rates and taxes	2,700	
Discount allowed to Debots	2,100	
Discount received from Creditors	2,400	
Frieght on Purchases		1600
Carriage Outwards	1,200	
Drawings	2,000	
Printing and Stationary	12,000	
Electric Charges	1,800	
Insurance Premium	2,200	
General Office Expenses	5,500	
Bad Debts	3,000	
Bank Charges	2,000	
Motor Car Expenses	1,600	
Capital Account	3,600	
	4,72,200	4,72,200

Prepare Trading and Profit and Loss Account for the year ended 31st March, 2008 and the Balance Sheet as at that date after making provision for the following:

1. (a) Buildings used for business by 5%.
   (b) Furniture and Fixtures by 10%: One steel table purchased during the year for Rs.1400 was sold for same price but the sale proceeds were wrongly credited to sales account.

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(c) Office Equipment by 15%: Purchases of a typewriter during the year for Rs.4,000 has been wrongly debited to purchases.
(d) Motor car by 20%.

2. Value of stock at the close of the year was Rs.44,000.
3. One month rent for godown is outstanding.
4. One month salary is outstanding.
5. Interest on Loan from Viswanath is payable at 12% p.a. This loan was taken on 1.5.2007.
6. Reserve for Bad debts is to be maintained at 5% of Sundry Debtors.
7. Insurance premium includes Rs.4,000 paid towards proprietor's life insurance policy and the balance of the insurance charges cover the period from 1.4.1997 to 30.6.2008.
8. Half of the buildings are used for residential purposes of Shri Gavaskar.]

[Ans. Gross Profit Rs.71,800, Net Profit Rs.18,400, Balance Sheet Total Rs.2,38,000]

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CHAPTER

8

Human Resource Accounting

"Human resources accounting is an attempt to identify and report investments made in resources of the organization that are not presently accounted for under conventional accounting practice."

R.L. Hoodruff

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Early Developments in HRA*
- *HR Accounting Objectives*
- *The Concept of Original Cost*
- *Measurement of Replacement*
- *Human Resources Value Accounting*
- *Flameouts Stochastic Rewards Valuation Model*
- *Chakraborty's Model*

INTRODUCTION

Effectiveness is best measured by comparing inputs with the desired output. This gives a direct and positive measure of effectiveness as well as providing comparative information to show how effectiveness has altered over a period of time. A common base for measuring inputs and outputs is required. Measurement is the process of representing the properties or qualities of objects in numerical terms. In our control systems, measurement has a dual function. It provides information that can be used for evaluating performance, and to make correction in goal-directed behaviour. This is the informational function of measurement. The accounting system, with its measures of financial and managerial performance, is a part of overall measurement system that contributes to the informational function. The informational function also draws on non-financial measures of performance such as product quality and organisational climate. It may be noted that the very act of measuring something has an effect on people's behaviour because people tend to pay more attention to the aspects of jobs or performance that are measured.

In Human Resource Planning, unlike other functions, there is still the problem of measuring itself; how can personnel inputs be measured using some common standard inevitably functional? This presents serious difficulty for the personnel function itself, if it has to measure that output in financial terms. One attempt to apply financial denominators to human resources is the human asset or Human Resource Accounting which endeavours to measure both the cost and the value of people to organisations.

Early Developments in HRA

In India, several companies in the 1970s began to reflect the value of their human resources in their annual reports – not forming part of the audited financial statements; BHEL, Engineers India Ltd., Cement Corporation of India, and ACC to name a few. Significantly, ONGC has drawn up for its human resources a 20–year plan frame ending in the year 2005 AD. It reflects the value of its human resources in the social balance sheet appended as supplemental information to the annual report.

The subject of offering measures of the values of people to the organisation through Human Resource Accounting has tempted human resource professionals and academics alike. Flamhotz and Lace (1981) have defined this approach in the following way:

"Human Resource Accounting may be defined as the measurement and reporting of the cost and value of people as organisational resources. It involves accounting for investment in people and their replacement costs, as well as accounting for the economic values of people to an organisation".

They go on to describe the value of an employee to the firm as 'the present value of the difference between wage and marginal revenue product. An employee's value drives from the ability of the firm to pay less than the marginal revenue product.

According to the American Association of Accountants (AAA), Human Resource Accounting is "a process of identifying and measuring data about human resources and communicating this data and information to interested". This definition considers Human Resource Accounting to be an extension of basic functions of accounting, namely, identification, measurement and communication of data related to human resources.

In an earlier definition, Flamhotz refers to Human Resource Accounting as accounting for people as an organisational resource. According to him, it involves measuring the costs incurred by business firms and other organisations to recruit, select, hire, train and develop human resources. It also involves measuring economic value of people to organisations. Eric Flamhotz's definition makes it clear that the term human resource recognises people who form organisational resource.

We have learnt that Human Resource Accounting is a tool designed to assist in the effective and efficient use of management of human resources. Let us now consider the managerial role of Human Resource

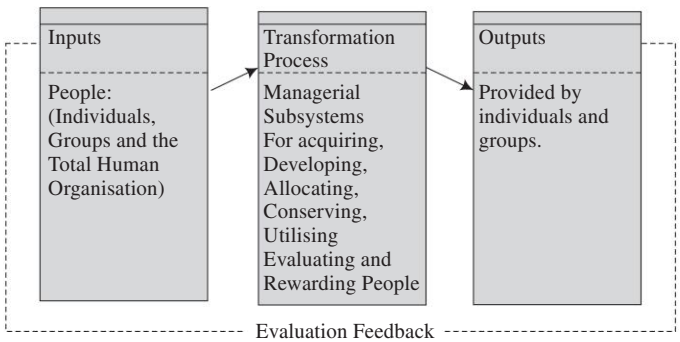


FIG. 8.1 Raw Human Inputs Transformed into Valuable Human Output

Accounting in more details. The model shown in figure 1 indicates that Human Resource Management is a system designed to convert human resource inputs into output in terms of human services.

The inputs are people, i.e. individuals, groups and the total human organisation. The transformation process refers to the managerial sub-systems for acquiring, developing, allocating, conserving, utilising, evaluating and rewarding people. The outputs are the services provided by individuals and groups. In other words, the model transforms raw human resources into valuable human services.

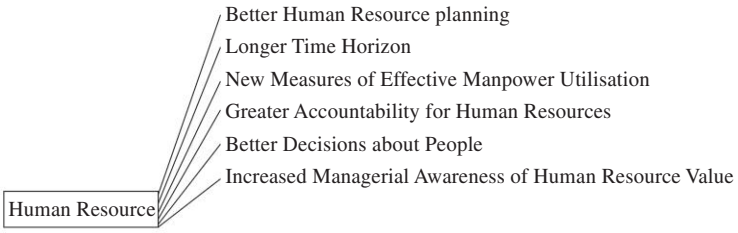


FIG. 8.2 Objectives of Human Resource Accounting

Figure II presents a model which contemplates the aims and objectives of Human Resource Accounting.

Accounting Objectives

In conclusion, we can say that Human Resource Accounting aims at

(1) increased managerial awareness of the values of human resources
(2) better decisions about people, based on improved information systems
(3) greater accountability on the part of management for its human resources
(4) developing new measures of effective manpower utilisation
(5) enabling a longer-time horizon for planning and budgeting, and
(6) better human resource planning.

Let us consider an example:

One sales organisation operating through its several regional offices, numerous branches and employing a sizeable field work force, during the review of its operations is confronted with the following reported problems concerning the planning and effective utilization of its man power :

TABLE 8.1

Nature of the problem	*Basis of report*
1. High turnover among its field operatives (Sales man)	General impression (no data available)
2. Rising administrative cost the personnel costs accounting for a very high component.	Based on opinion
3. Lack of attention on the part of managers towards developing their people	Viewed as apparent only one or two branches. mono-polized in offering promotable man power causing a heart burning amongst the remaining branches

A close look at these problems through an external consultant brings out three basic lacunae in the organisation system:

(a) absence of a measure of planning of manpower beyond a short-term (one year)
(b) obvious lack of information about the firm's manpower, and

(c) absence of a position of senior executive in the corporate office for overseeing and coordinating various human resource activities and effective utilisation of the company's manpower.

The criticality of (b) can be easily understood because, without reliable system of information, effective planning and control is just not possible.

The primary purpose of Human Resource Accounting is to help management plan and control the use of human resources effectively, and efficiently. In that process, it must require a great deal of information that can serve the management, the investors and other outside agencies. Basically, the information it involves measuring the costs incurred by business firms and other organisations to recruit, select, hire, train and develop human assets, besides measuring the economic value of people to the organisation.

In the aforementioned example, the organisation identified the following kinds of information and their use:

Information needs in Human Resource Accounting

TABLE 8.2

Kinds of information	*Purpose of information*
Information for Human Resource Planning	To facilitate manpower planning To gather data on actual costs of recruitment and selection, training etc Collection of figures over the past period provide reasonable basis for projecting future expenses.
1. Information for control of personnel costs	To provide reasonable means of evaluating the performance of management in controlling costs, The information helps develop a system of standard costs for personnel recruitment, selection and training. That would help further in analysing costs.
2. Information for control of turnover costs	To increase management's awareness of the costs of turnover and to devise steps to control it.
3. Information for evaluation of management effectiveness	To increase the accountability of management in providing measurement that were effective in developing and utilising people over a longer period of time.
4. Information for the Board Stock holders	To keep the top management abreast of changes in the organisation's investment in people and human resource value. To help the top management in deciding on information on the firm's investment in human resources to investors even though the data remains unaudited.

The above illustration provides a synoptic view of the elements of information required to consider various problems related to the effective and efficient utilisation of human resources in the organisation. It also illuminates the point that the need for Human Resource Accounting information arises from the specific needs felt in an organisation.

Before we consider cost measurements through Human Resource Accounting, let us take a look at some of the terms used in accounting concept of cost.

Some definitions

(1) Cost: A sacrifice incurred to obtain some anticipated benefit or service. Conceptually, all costs have expenses and asset components.

(2) Original cost: The sacrifice that was actually incurred to acquire or obtain a resource. Original cost is also termed historical cost.
(3) Replacement Cost: The sacrifice that must be incurred to replace a resource presently owned or employed.
(4) Outlay Cost: The actual cash expenditure that must be incurred to acquire or replace a resource.
(5) Direct Costs: Costs which can be directly traced to an activity, product or resource.
(6) Indirect Costs: Costs that cannot be traced directly to a specific activity, product or activity process, but which are incurred for general use in more than one activity etc.
(7) Actual Costs: Costs actually incurred to attain some specified end.
(8) Standard Costs: Costs that ought to be incurred to attain some specified end under certain predefined conditions.
(9) Opportunity Costs: The income or revenue foregone or sacrificed in order to acquire or replace a resource.

The several accounting concepts of costs just defined have significant applications in Human Resource Accounting. The concept of human resource cost has its roots in the general concept of cost. Human resource costs are costs incurred to acquire or replace people. Like other costs, they have expense and asset components. Similarly, other descriptions of costs viz, outlay and opportunity costs, direct and indirect costs, actual and standard costs, all fit into the costs framework of Human Resource Accounting.

There are two ways to measure costs through Human Resource Accounting: 1) the original or historical cost of human resources, and 2) the replacement costs of human resources.

THE CONCEPT OF ORIGINAL COST

The original cost of human resources may be defined as the sacrifice that was actually incurred to acquire and develop or replace people. It includes costs of recruitment, selection, hiring, placement, orientation and on-the-job training.

It has elements of direct costs as well as indirect costs. For example, a trainee's salary is a direct cost, while the time spent by the supervisor during training contributes to the indirect cost. For managerial uses of the cost data, it is advisable to include the opportunity costs incurred in the original costs of human resources. However, since the reliability of the opportunity costs can always be questioned, it should not form a part of reporting to investors and external users.

Measurement of Original Cost of Human Resources

The definition of original cost of human resources refers to the sacrifice that would have to be incurred to acquire and develop people. This means that any attempt for measurement of original human resource costs essentially requires measurement of acquisition costs and training costs. These costs will include both direct costs and indirect costs of acquiring and developing human resources. Figure III presents a model for the measurement of original human resource costs:

Replacement Cost of Human Resources

The replacement cost of Human Resources may be defined as the sacrifice that would have to be incurred today to replace human resources presently employed. It includes the costs attributable to the turnover of a present employee as well as the cost of acquiring and developing the replacement. From individuals, the scope can be extended to include the groups of individuals and the human organisation as a whole.

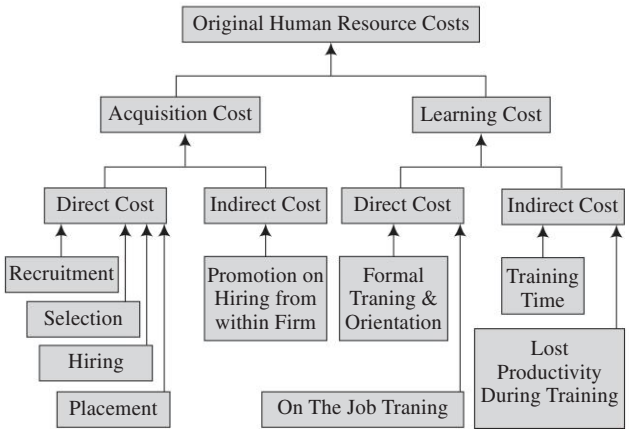


FIG. 8.3 Measurement for Original Human Resource Costs - A Model

Replacement refers to acquiring a substitute capable of rendering an equivalent set of services for a single specified position, meaning thereby that the context is the positional replacement.

There is another notion of replacement cost : Personal replacement cost. It refers to the sacrifice that would have to be incurred today to replace a person presently employed with a substitute capable of rendering an equivalent services in all the positions the former might occupy. Here, the context is the person, and the replacement cost is the cost of replacing a set of services provided by one person with an equivalent set of services to be provided by another.

Measurement of Replacement

The concept of replacement cost of human resources is defined as the sacrifice that would have to be incurred today to replace human resources presently employed. The context of replacement cost measurement can be positional as well as personal.

There are three basic components of positional replacement cost:

Acquisition costs,

Learning costs, and

Separation costs.

While the first two components have been reflected in the earlier model, the separation costs refer to the costs incurred as a result of a position holder leaving an organisation. It may have both direct and indirect components and may include such costs as

(i) cost of a vacant position while search for replacement is on,

(ii) opportunity cost because of loss of services, and

(iii) cost of lost productivity prior to the separation of an individual from the organisation if such tendencies were apparent.

Personal Replacement Cost

The concept of personal replacement cost refers to the sacrifice that would have to be incurred today to replace with a substitute capable of providing a set of services equivalent to the individual being replaced. The notion refers to the cost of replacing a person with a functionally equivalent substitute rather than the cost of replacing him with the best available substitute. The notion of personal replacement cost is quite similar to the concept of economic value.

We have noted earlier that different organisations require different degrees of Human Resource Accounting capability. Flamholtz's systems I to V are not all embracing for standards to match a specific organisation's Human Resource Accounting needs. Instead, in each case, an appropriate system will have to be tailor made to a firm's particular needs.

5 Phases

The five phases in the design and implementation of Human Resource Accounting system are :Identifying human resource accounting objectives

1. HR Accounting Objectives
2. Developing Human Resource Accounting measurements
3. Developing a database for the system
4. Pilot testing the system for validity, and
5. Implementing the system.

1. HR Accounting Objectives

The objectives of the Human Resource Accounting system should basically stem from the management's requirements from human resource information. These requirements must be defined explicitly. As a part of the detailed study and analysis of the organisation's human resource management process, each organisational unit responsible for human resource management should define its functions, indicate the kinds of decisions made, their relative frequency and information needed to make those decisions. These information needs must be analysed in relation to the present information flow and the new information to be developed must be made specific. Once this analysis is done, the basis of the human resource accounting system in terms of its scope and objectives can be defined. The objective may be a total HRA system, a problem-oriented system, a partial system such as budgeting system for human resource costs, or setting or standard costs.

2. Developing Human Resource Accounting Measurements

The first step is to select the types of HRA measurements desired. The choice needs to be exercised between:

(a) Single measurement or a set of measurements

(b) Monetary or non-monetary measurements, and measurements of costs or value, or both.

In the next step, before these measurements selected can be translated into useable forms, their validity and reliability must be tested.

3. Developing Human Resource Accounting Data base

The inputs required for Human Resource Accounting constitute the data base. These include cost data, time sheets, psychological measurements etc. In typical cases, it will become necessary to restructure the organisation's accounting classification with a view to ensuring that all personnel related costs are classified separately. Otherwise, these cost elements are buried and covered in one single classification-administration and general expenses. The accounting classification should be organised in relation to responsibility centres such as recruitment, training, management development etc.

In addition to restructuring the accounting classification, the database must also include non-financial information such as employee attitude survey feedback as a standard ongoing basis. Similarly, the probabilistic estimates of employee mobility compiled in the Human Resource Planning process must be taken into account for measuring human resource value.

4. Pilot Testing the System

After the objectives have been defined, measurements developed, and necessary data base is made available, the next step is to pilot test the system. Care should be taken that the test is not influenced by extraneous problems, and that the management's support and cooperation is available throughout the processes of design and development of the system.

5. Implementing the Human Resource Accounting System

The final phase is the implementation process. It involves essentially, standardising the input output documents, forms, etc., and familiarising the personnel with the new system. Staff orientation as to the uses, purposes, and methods is a key activity in order to operationalise the Human Resource Accounting system without much hasseles.

Any system, over a period or time, may become out of step either because of inherent constraints or changes in the management needs. A continuing review would make the system more responsive to the changing needs, and modifications required would be easy to carry out either by simple adjustments in the existing system or by following the design and implementation process, if there is a need for the same.

HUMAN RESOURCE VALUE ACCOUNTING

Present Value Approaches:

Under these approaches, the value of the human resources of an organisation can be found out in two different ways:

- By discounting the future salaries and other Capital Costs (such as costs incurred on hiring, recruiting, training and developing employees) by a certain rate of discount.
- By discounting the future earnings of the organisation at a certain date by a suitable rate and allocating a part of the present value of earnings to human resources. In consonance with the above two premises, a number of valuation models have been developed.

Lev and Schwartz: Present Value of Future Earnings Model

The model of measurement of human capital suggested by Branch Lev and Aba Schwartz is based on the economic concept of human capital. Capital is defined as the source of incomes discounted by a certain rate. Irving Fisher, one of the originators of human capital theory states that 'the value of capital must be computed from the value of its estimated future net income, not vice-versa.

According to Lev and Schwartz, the value of human capital represented by a person of age 'r' is the present value of his remaining future earnings from his employment. The following formula is given by them for calculating the value of an individual:

Where Vr = the value of an individual r years old
1(t) = the individual's annual earnings up to the retirement
t = retirement age
R = a discount rate.

Lev and Schwartz are of the opinion that the determination of the total value of a firm's labour force is a straightforward extension of the measurement procedure of an individual value to the organisation. The model identifies an individual's expected economic value to the organisation and to his future earnings for his remaining active service life. His future expected income stream is discounted by an appropriate rate to arrive at the present value of all employees.

The model suffers from the following deficiencies:

- earning does not represent true worth.
- A person's value to an organisation is not determined entirely by the person's internet qualities, traits and skills but also by the organisational role in which the individual is placed.
- The model also does not take into account the possibility and probability of an individual leaving the organisation for reasons other than death or retirement.
- The assumption of the model that people will not make role changes during their career with the organisation also is unrealistic.
- Earnings (salary) is an expense. How can the capitalised value of expenses to be incurred in future be an asset? It is the value of the benefit expected to accrue that should be capitalized, and not the amount to be spent for use of the asset.

The neglect of these variables reduces the usefulness of the model considerably yet it considers the economic value of the human beings.

Flameouts Stochastic Rewards Valuation Model

According to this model, the ultimate measure of an individual's value to an organisation is his expected realisable value. The expected realisable value of an individual is the present worth of the future services expected to be provided during the period he is expected to remain in an organisation. This is based upon the notion that human beings, like all other assets, are capable of providing future services that have economic value.

Flameouts Model:

E(Rv) = t=1
E(Rv) = A person's expected realizable value
E(Rv) = Value R to be derived by the organization for each position i
P(Ri) = Probability that an individual would occupy position i
t = time of retirement
m = state of exit
r = discount rate

The model suggests a five-step approach for assessing the value of an individual to the organisation:

- First of all, forecast the period a person will remain in the organisation, i.e, his expected service life.
- Second, identify the service states, i.e., the roles he might occupy.
- Third, estimate the value derived by the organisation when a person occupies a particular position for a specified time period.
- Fourth, estimate the probability of occupying each possible mutually exclusive state at specified future times.
- Finally, discount (at a specified predetermined rate) the expected service rewards to their present value.

The mode is an improvement over Lev and Schwarz model as it (1) takes into account the factors relating to the possibility and probability of employees career movement, and (2) of their leaving the organisation for reasons other than retirement and death. But according to Jaggi and Law, the model falls short of a practical value inasmuch as that probabilities will have to be determined for each individual occupying various states for 'n' period on individual base, and would be tremendously expensive and time consuming and will involve large variance reducing its usefulness.

Prof. S.K. Chakraborty's Model

In his model, Prof. Chakraborty has valued the human resources in aggregate and not on individual basis, low ever managerial and non managerial manpower can be evaluated separately. The value of human resource on a group basis can be found out by multiplying the average salary of the group with the average tenure of employment of the employees in that group and shown as Investment in the Position Statement. The average annual salary payments for next few years could be found out by salary grade structure and promotion schemes of the organisation.

Prof. Chakraborty has further suggested that recruitment, hiring, selection development and training costs of each employee be recorded separately and could be treated as 'deferred revenue expenditure' which is to be written off over the expected average stay of the employee in the organization. If there is a permanent exit on account of death, retrenchment etc., then the balance on the deferred revenue account for that year attributable to that person should be written-off against the income in the year of exit itself. Of course, there are various other models also.

Summary

"Human Resource Accounting may be defined as the measurement and reporting of the cost and value of people as organisational resources. It involves accounting for investment in people and their replacement costs, as well as accounting for the economic values of people to an organisation".

In Human Resource Planning, there is a problem of measuring itself. Personnel inputs should be measured using some common standard inevitably functional. This presents serious difficulty for the personnel function itself, if it has to measure that output in financial terms. One attempt to apply financial denominators to human resources is the human asset or Human Resource Accounting which endeavours to measure both the cost and the value of people to organisations.

In companies, the value of their human resources will be reflected in their annual reports – not forming part of the audited financial statements. It reflects the value of its human resources in the social balance sheet appended as supplemental information to the annual report.

An employee to the firm is described as the value of 'the present value of the difference between wage and marginal revenue product'. An employee's value derives from the ability of the firm to pay less than the marginal revenue product.

According to the American Association of Accountants (AAA), Human Resource Accounting is "a process of identifying and measuring data about human resources and communicating this data and information to interested parties". This definition considers Human Resource Accounting to be an extension of basic functions of accounting namely, identification, measurement and communication of data related to human resources.

Flamhotz refers to Human Resource Accounting as accounting for people as an organisational resource. It involves measuring the costs incurred by business firms and other organisations to recruit, select, hire, train and develop human resources. It also involves measuring economic value to of people to organisations. Eric Flamhotz's definition makes it clear that the term human resource recognises people who form organisational resource.

Human Resource Accounting is a tool designed to assist in the effective and efficient use of management of human resources. Human Resource Management is a system designed to convert human resource inputs into output in terms of human services.

KEY CONCEPTS

- Investment approach
- Incremental Values
- Organisational climate approach
- Humanistic Values
- Organisational Climate
- Accounting Data Base
- Accounting Measurement
- Pilot Testing

Review Questions

1. What is Human Resource Accounting?
2. What is cost? Define the following concepts of costs.
   (1) Standard cost
   (b) Original cost
   (c) Replacement cost
   (d) Outlay cost
   (e) Opportunity cost
3. What is Human Resource Cost?
4. What are the major components of the Original cost of Human Resources?
5. What decision situation can you think of in which non-monetary measures of Human Resources value would be better than monetary value?

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SECTION

Cost Accounting

2

CHAPTERS

9. Cost Accounting: Perspectives
10. Costing and Control of Overheads
11. Costing and Control of Labour
12. Job Order Costing and Target Costing
13. Process Costing and Activity Based Costing
14. Profit Planning-I: Marginal Costing
15. Profit Planning-II: Break Even Analysis
16. Standard Costing and Analysis of Variances

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CHAPTER

9

Cost Accounting: Perspectives

"Direct expenditure comprises those expenses which can conveniently be identified wholly with the particular unit of cost. Indirect expenditure includes all other expenses incurred for the undertaking as a whole and not identifiable wholly with any particular unit of cost."

—Walter W. Bigg

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand:

- *Elements of Cost*
- *Essentials of Cost Accounts*
- *Necessity of Cost Accounting*
- *Objects and Functions of Cost Accounting*
- *Characteristics of Good Costing Systems*
- *Distinction Between Cost and Financial Accounting*
- *Objectives and Advantage of Cost Accounting*
- *Classification of Costs*
- *Different Methods of Costing*
- *Analysis and Classification of Cost*
- *Methods of Classification*

INTRODUCTION

A manufacturer, producing a number of commodities, is interested to know the cost per unit of each commodity so that he may, amongst other things, take this information into consideration while pricing his goods at a profitable yet competitive rates. It is easy to find out the aggregate cost of the production of total output of all categories for a given period. But it is exceedingly difficult, if not impossible, to calculate the cost per unit of each class of commodity from general or financial accounts. The difficulty arises because the aggregate cost is incurred for the production of total output of all categories, and it is not known as to what portion of each item of cost (like raw materials cost, labour cost, factory expenses, office expense and sales expenses) should be allocated to any particular category of output, i.e. particular commodity produced. Such an allocation of each item of cost among different classes of commodities

produced should be done on the basis of reasonable principles, and once determined, these principles should be directly followed throughout. This exactly is the function of Cost Accounts. They analyse the various items of cost, apportion them among the different categories of output, and then ascertain the cost per unit in each case.

Elements of Cost

Elements of cost consists of all the expenses incurred in producing a commodity or executing a contract. Since cost accounts analyse cost scientifically and meticulously a knowledge of the elements or constituents of cost is essential. The following chart gives the complete classification of expenditure.

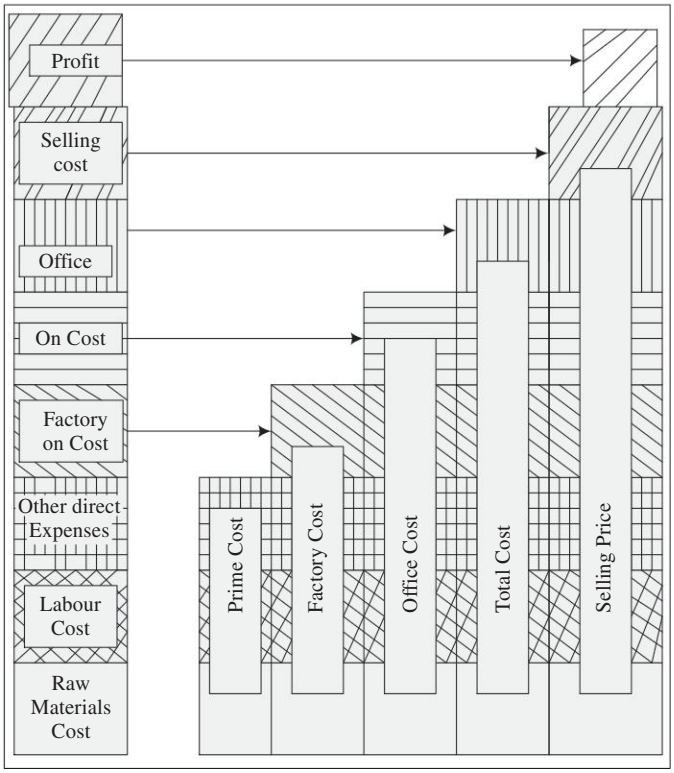


FIG 9.1 Chart Showing Elements of Cost

What applies to manufacturing business also applies to contract business. Very often the contractor has to complete a number of jobs, and he incurs total cost in completing all of them more or less simultaneously. In such case, he would like to know the cost of completing each job individually so as to ascertain the profits made in each case or to submit tender in future for the completion of similar jobs. If he adopts cost accounts, each item of cost incurred by him will be carefully analysed and equitably apportioned to each job, and in this way, the cost per job will be ascertained. Cost accounts render similar service to mines, quarries, breweries and other businesses.

Besides ascertaining the cost per unit or job, a manufacturer or contractor also likes to know the cost of an article or of doing the job at various stages of manufacture (i.e cost of different processes or departments). Since Cost Accounts are highly analytical and each item of cost is carefully analysed and apportioned, they are capable of yielding this information as well. This information can tell the manufacturer or contractor which stage of manufacturer or job completion claims bulk of cost and where economy can lead to substantial reduction of cost.

In an expanding business, the management is compelled to delegate the authority and at the same time the system of control is necessary in measuring the efficiency of persons to whom delegation is made. The figure thrown up by Cost Accounts help the management in this respect.

Lastly, in every business organization, important managerial decisions have to be taken frequently and figures provided by the Cost Accounts are very helpful.

From the foregoing decision, we can say that Cost Accounting is a quantitative method that accumulates, classifies, summarises and interprets information for three major purposes.

1. Ascertainment of cost per unit of articles manufactured or jobs done, as also the cost at various stages of production.
2. Operations planning and control
3. Special decisions

The term 'Costing' refers to the techniques and process of ascertaining cost, in other words, 'costing' means classifying, recording and appropriate allocation of expenditure for determination of the cost of products or services, the relation of this cost to sales value, and the ascertaining of profitability.

This cost may be ascertained:

(a) Historically, i.e after they have been incurred; or
(b) By pre-determined standards, combined with subsequent analysis of variances between these standards, and the actual cost incurred, and
(c) By the use of marginal methods of presentation by either (a) or (b), involving the differentiation between fixed and variable cost.

Essentials of Cost Accounts

Cost Accounts is a Branch of accounts that came to prominence because of the limitations of Financial Accounts. Financial Accounts enable a firm understanding to ascertain the results of operation during a period and to portray the financial position of the undertaking as at the end of the period. Through analysis of the statements, it is usually possible to assess the effectiveness of operational soundness of the immediate future. However, for day-to-day work of the management, Financial Accounts are inadequate and insufficient if the following points are considered:

1. Measurements of efficiently or inefficiently with which each task has been carried out, it not possible with the use of Financial Accounts.
2. Control over expenditure can be effective only if it is known beforehand as to how much should be spent.
3. Pricing is another question that can be solved efficiently with the help of Financial Accounts. Even if prices ordinarily do not depend on the cost, as will be the case if there is competition, often it has to be decided whether orders should be accepted a confessional price or even below cost. Only Cost Accounts can provide information for proper pricing.
4. Often priorities have to be laid down among produce so that profit may be maximised in a given situation. Financial Accounts are not of much help in this case, but Cost Accounts do provide a good deal of relevant information.

Necessity of Cost Accounting

Cost Accounting is a branch of Accounting. It has been developed due to limitations of Financial Accounting. In the present scenario, it is absolutely necessary that a business concern should conduct its activities with utmost efficiency. Those concerns which do not try to continuously improve their products and service, and bring down cost and prices, will sooner or later find themselves out of business. A manufacturer or a contractor or a concern rendering some service, is interested in knowing the cost of producing an article or the cost of completing a job or the cost of rending a service. In addition, they would like to have the knowledge on the cost at various stages of completion i.e., cost of different processes or stages or departments. *Cost Accounting is an analytical system of accounting which discloses the cost per unit of different articles manufactured or jobs done and also the cost at various stages of completion*. In order to accumulate product cost data, the Cost Account maintains special records and accounts which in aggregate are referred to as a Cost Accounting System. The Cost Accounting System is not independent of the financial accounts. It merely represents an elaboration of the basic Financial Accounting System. Cost Accounting is concerned with the classification, accumulation, control and assignment of costs. The Cost Accountant classifies costs according to patterns of behaviour, activities or processes to which they relate products to which they attach and other categories, dependent on the types of measurement, desired costs may be accumulated by accounts, jobs, processes, products or other business segments. From these data, the Cost Accountant calculates reports and analyses the cost of performing different functions such as operations of a process and the manufacture of a product. He also prepares data which assist management to establish plans and to select between alternative courses of action. The Cost Accounting system is directly concerned with control of inventories, plant assets and funds expended on functional activities.

OBJECTS AND FUNCTIONS OF COST ACCOUNTING

The main objects or functions of costing are given below:

a) Determination and Analysis of Costs The main object of Cost Accounts is to disclose cost per unit, job or contract. If production passes through several processes or is divided into separate departments, Cost Accounts further reveals is the cost of each process or department. Cost Accounts also discloses the various constituents of cost, i.e., Prime Cost and Overheads. It provides exhaustive, analytical and accurate allocation of Manufacturing, Administrative and Sales expenses. It also discloses Fixed and Variable Costs or Direct and Overhead Costs. Cost procedures have been developed to record costs and income by departments, processes, operations, lines of products and sales territories. Comparisons by divisions and periods of time can be made in order to evaluate the operating efficiency of each division.

b) Cost Control and Cost Reduction Though Cost Accounts disclose cost per unit at different stages of production, yet their maintenance will only be fruitless unless this information can be put to some useful purpose. La Salle has written, "The mere knowledge of what it costs to produce an article, without using this knowledge to reduce cost, or control production costs, not only devitalises cost system of its main functions…Cost control and Cost reduction – but leaves little, if any, justification for its existence." Therefore, the main object of costing is to maintain costs at a lowest point consistent with the most efficient operating conditions. The best results are obtained from the use of standards as a means of determining what material, labour and overhead costs should be for each unit department, job, group or workers, individual worker and type of product.

c) Planning and Decision Making Cost Accounting comprises special cost studies and investigations which are invaluable to management in determining policies and formulating plans directed towards profitable operations. Such special studies include pricing of new products or services, elimination of

seasonal conditions, expansion and contraction programmes, wage compensation plans, replacement of machinery and equipment and many special problems peculiar to particular industries.

The techniques of Cost Accounting, which produce statistics of the internal operations of a business enterprise, are the best tools by which management may conduct a business towards profitable operations and by which creditors, stock- holders, consumers and Government may evaluate the efficiency and success of the enterprise.

Cost Accounting applies the Principles of Accounting in the same manner as General Accounting and provides management with a detailed record, analysis and interpretation of expenditures incurred in connection with the operation of the business. Cost Accounting brings to management's attention any results that require correction. Cost Accounting creates cost information which assists management in the solution of various types of problems such as product pricing, capital expenditures analysis, expansion of facilities for increased production or sales, make-or-buy decisions, and plant location.

Briefly, Cost Accounting is charged with the five-fold task of:

1. Determining cost and profit for an Accounting Period.
2. Creating inventory values for costing and pricing purposes and, at times, controlling physical quantities.
3. Aiding and participating in the creation and execution of budgets.
4. Establishing methods and procedures that permit control and, if possible, reduction or improvement of costs.
5. Providing management with information in connection with problems that involve choice from among two or more alternative courses.

Cost Accounting, a tool of management, is an integral part of the management process, providing management with records of the costs of products, operations, and standards. It also provides data for special cost studies involving alternative choices regarding products, operations and functions, thus assisting the management in making decisions with respect to sales policies, production methods, purchasing procedures, financial plans and capital structure.

Advantages

A good system of costing will provide the following benefits to the management:

(i) Profitable and unprofitable activities are disclosed and steps can be taken to eliminate or to reduce those activities from which little or no benefit is obtained, or to change the method of production in order to render such activities more profitable. In the absence of costing, the profits of one department may be eaten away by the losses incurred in some other departments.

(ii) Costing enables a concern to measure the efficiency and then to maintain and improve it with the help of invaluable data made available for the purpose of comparisons. For example, if materials spent upon a pair of shoes in 1976 come to Rs. 5 and for a similar pair of shoes the amount is Rs. 5.25 in 1977, the increase may be due to increase in price of materials, it may be due to greater wastage in the use of materials, or inefficiency at the time of buying or unnecessarily high price paid.

(iii) Costing provides such information upon which estimates and tenders are based. In case of big contracts or jobs, quotations cannot be given unless the cost of completing that contract can be found out.

(iv) Costing guides future production policies, by explaining the costs incurred and profits made in various lines of business and processes, and thereby provide data on the basis of which production can be appropriately planned.

(v) An efficient check is provided on stores and materials. (a) Stores Ledger and Materials Abstract are maintained which provide an effective check on the stores and materials used in a business.

(b) By adopting the maximum limit for stores, the total capital outlay is controlled and total financial loss due to overstocking is obviated. (c) Information of stock of various materials and stores is constantly available. This helps in planning the production according to the availability of materials and fresh stocks can be arranged in time. (d) Loss due to carelessness or pilferage or any other mischief is detected. Steps may, therefore, be taken to minimize such losses in future.

(vi) An Efficient check on labour and machines can be done. The costing department will have detailed information about the availability of machine and labour capacity and the work will be so planned that no section is over-worked and no section remains idle. Secondly, the maintenance of time and job cards for workers discloses the losses incurred for idle time and indicates the directions in which these losses may be minimised. Thirdly, the relative advantages of remunerating labour on the time, piece-work or premium plans may be ascertained. Fourthly, it measures the efficiency of the wage system in use.

(vii) It helps in increasing profits. Cost Accounts help the management in maximising the profits by disclosing the sources of loss or waste and to suggest such controls so that waste, leakages and inefficiencies of all departments may be detected and prevented.

(viii) It enables a periodical determination or profits and losses without resort to stocktaking.

(ix) Cost Accounts furnish reliable data for comparing costs in different periods, for different volumes of output, in different departments and processes and in different establishments. This helps in maintaining costs at the lowest point consistent with the most efficient operating conditions.

(x) During period of depression, a businessman has to become very watchful and vigilant in tracking down the concealed/inefficiencies and source of waste so that he may reduce the cost of production to the minimum. During period of depression, a businessman has to resort to price-cutting, and he feels satisfied if he can recover variable costs or marginal cost. Cost Accounting makes a distinction between Fixed and Variable costs and helps the businessman in the determination of prices in the depression period.

(xi) The fixation of price cannot be properly done unless proper figures of cost are available. If prices are fixed without costing information, it is possible that prices quoted may be too high or too low. In periods of depression or slump, it becomes necessary to reduce the price even below the total cost. It is only costing which will guide management in this matter.

(xii) The exact cause of a decrease or an increase in the profit or loss can be detected. A concern may suffer not because the cost of production is high or prices are low, but because the output is much below the capacity of the concern. This fact can be revealed by the Cost Accounts only.

(xiii) Cost information helps the management in solving various problems: (a) Will it be more profitable to purchase a component from a specialist manufacturer or to continue its production? (b) When there is a problem of replacement of labour by machinery, costing information will reveal what cost of production will be if machinery or labour is used. (c) Effects on cost of production of different methods of remunerating labour. (d) It enables the comparison of the result of using various kinds of raw materials on cost.

(xiv) The most important development in Cost Accounting is the use of standards to assist management in the allocation of responsibility and authority and in making estimates and plans for the future. The setting of standards of performance requires preliminary investigation and research involving work of cost accountants, engineers, sales manager and of various departmental heads. Past performance is examined and time and motion studies are made to determine the best attainable standards of material, labour and overheads as to both quantity and price. Actual performance is compared with predetermined standards to determine operating efficiency.

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(xv) The use of budgets has revolutionised Cost Accounting and has made it a preventive device to correct inefficiencies before they creep into business operations. A good budget system shows the executive what he may expect in sales over the next few months; it permits the formulation of a production quota including the kinds and quantities of materials, the number and classes of workers, the amount of overhead and the equipment requirements. It also indicates the financial requirements needed to complete the budget plans. The budget system is a co-ordinated plan of action.

Benefits to the Employees

The personnel of many business enterprises have benefited by the establishment of incentives in the form of piece rates and bonus plans. The policy of paying workers in accordance with their production, rather than on a daily or weekly basis is preferred by efficient and industrious workers. Piece-rate and bonus plans have been subjected to criticism because in some plants, standards have been changed when it appeared that workers were constantly producing above standard and were earning larger wages. This unfair personnel policy has caused workers to be wary of such compensation plans. The standards of labour performance should be determined by a committee, comprising of one or more representative of the plant workers, based upon scientific time and motion study with the guarantee that the standard of performance will be maintained until there has been a change in the nature of the job on the materials used.

Benefits to the Creditors and Investors

There are many creditors who have a stake in the success of business enterprise. It has been a policy of many banking that no loans will be made to industrial firms unless such institution concerns have complete Cost Accounting system which produces cost reports showing sales factory trends. The investors and credit agencies base their judgment of the profitableness and future prospects of an enterprise upon the studies and reports submitted by Cost Accountants. Cost figures generally make possible the determination of future trends of the concern and in many cases of the industry.

Benefits to the Consumers and to the Nation

Many concerns are operated inefficiently owing to avoidable losses such as improper planning and scheduling, wastage and spoilage of materials, idle time and inadequate training of employees, lack of harmony between labour and management and improper internal control of overhead costs. The resultant higher costs have a direct bearing on the prices paid by consumers and affect the general standard of living. The Cost Accountant aids in reducing and controlling costs, and thus performs a service to his neighbours and in the interest of national economy.

Disadvantages of Cost Accounts

Objections are sometimes raised against the system of Cost Accounts and some disadvantages thereof pointed out:

(i) The system is costly and cannot, therefore, be adopted by small concerns.
(ii) The system is very costly and, therefore, the system is not a profitable investment.
(iii) The system may mislead, if errors somehow creep in.
(iv) If standard costing is introduced, it may cause conflicts between Managers and Workers.

Characteristics of a Good Costing System

An ideal system of costing should possess the following characteristics:

(a) Accuracy: Cost Accounts must be accurate and correct otherwise they will prove to be misleading.
(b) Equity: Allocation of indirect expenses to a particular class of output, department or job should be fair and equitable.
(c) Simplicity: As Cost Accounts are highly analytical, there is a tendency towards complexity. Needless elaboration should be scrupulously avoided and care must be taken to keep them as simple as possible.
(d) Elasticity: The Cost Accounting system should be elastic and capable of adapting itself to altered circumstances.
(e) Economy: The cost of running Cost Accounts should be as low as possible and in no case unreasonably high.
(f) Comparability: The records must be maintained in such a manner that the results of one period can be compared with the results of any other period. The records of the past must act as a guide for the future.
(g) Promptness: Prompt recording of the relevant figures in an analytical form is the *sine qua non* of costing. Arrangements should be made for the prompt supply of records by the various departments relating to raw material, stores, labour etc., and the data thus obtained,are promptly analysed and recorded.
(h) Observance of Instructions: The Costing Staff must carefully obey the instructions given to them and even slight deviations must not be permitted.
(i) Periodical Resulting: In order to derive maximum benefit, it is advisable to have the results prepared periodically, so that actual costs can be compared with estimated costs.
(j) Reconciliation with Financial Accounts: The whole system should be so maintained as to make reconciliation with Financial Accounts easy and simple.

DISTINCTION BETWEEN COST ACCOUNTING AND FINANCIAL ACCOUNTING

Following are the major differences between Cost Accounting and Financial Accounting:

(1) Financial Accounts are largely concerned with finished products. They do not deal with the more intangible data as to the components of the cost of the finished product. The Cost Accounting is concerned with the detailed break-up of the cost of production.
(2) The Financial Accountant is concerned with the overall results i.e. the profits or losses of the business as a whole. The Cost Accountant is more concerned with the results of each section of business, of each department, each process, each product and so on.
(3) The Financial Accounting mainly deals with past events, and hence, like a post mortem of the events that have already happened. The more sophisticated techniques of Cost Accounting not only look at past but also take into account the future, e.g. Standard Costing System.
(4) The Financial Accounting consists of the classification, recording analysis of the business transactions in a subjective manner, according to nature of expenditure so as to enable the preparation of periodical Financial Statements. The emphasis is on the business results rather than the aspects of planning and control. Cost Accounting records expenditure in an objective manner, i.e on the basis of its purpose and hence, is better suited for control purposes.
(5) Lastly, the Financial Accounting aims at safeguarding the interest of the business vis-à-vis its proprietors, creditors, lenders, etc. The goal in many cases is to comply with the legal requirements e.g. Companies Act 1956 etc. On the other hand, the Cost Accounting renders information basically for the guidance of the management.

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Objectives and Advantage of Cost Accounting

The main objects and advantages of Cost Accounting are as follows:

1. Ascertainment of Cost: The chief purpose why Cost Accounts are maintained is to ascertain cost and this is their main advantage. It will be noticed that Financial Accounts merely disclose the total cost incurred in producing output, and that too at the end of the financial period. But Cost Accounts reveal cost per unit, cost at different stages, as also the various components of cost like fixed and variable costs or direct and overhead costs. Specifically, these advantages are as follows:

(i) Determination of cost per unit or job: Cost Accounts disclose the cost per unit or job per contract. This information is usually not disclosed by Financial Accounts.

(ii) Determination of cost at different stages of production: If production passes through several processes, or if it is divided into departments, Cost Accounts reveal the cost of each process or department, and the cost at the end of each process. The analytical view of the cost is sometimes very useful and important.

(iii) Disclosure of the constituents of cost: Cost Accounts also disclose the various constituents of cost, so that they can be grouped appropriately to yield valuable information.

2. Usefulness of Cost Date: Though Cost Accounts disclose cost per unit or cost at different stages of production, their maintenance will be fruitless unless this information (i.e the cost data) can be put to some useful purpose. The mere knowledge of what is cost to produce an article without using this knowledge to reduce cost or control production costs, not only devitalises a cost system of its main function – cost control, and cost reduction – but leaves little, if any justification for its existence. As a matter of fact, the cost figures are highly useful in a number of ways. Hence, the second great advantage of Cost Accounts is that the cost figures that they yield are of a very great utility, as is explained below:

(i) Disclosure of profitable and unprofitable activities: Cost Accounts disclose the profitable and non-unprofitable activities of a business, and thus afford a valuable suggestion for reduction or elimination of those which are less or completely non-profitable and for an expansion or adoption of those which are profitable. In the absence of costing, the profits of one department may be eaten away by the losses incurred in some other department, and the businessman may have no idea that by closing down or improving the latter, his business can become highly profitable.

(ii) Helps in fixing prices and giving tenders: By disclosing actual cost of production, Cost Accounts offer to a businessman a reliable basis for fixing prices of his products. Though a businessman must also consider factors like market conditions, price policy of competitors, trade associations attitude, etc., yet cost is the prime factor to be considered. Likewise, cost accounts provide a reliable basis for preparing tenders and estimates. Cost is the fact, price is the policy and estimate is an opinion. The cost provides a guide to price policy and a basis for estimates.

(iii) Guide for future production policies: Cost Accounts explain the cost incurred and profits made in various lines of business and process, and thereby offer data on the basis of which production in a subsequent year can be appropriately planned.

(iv) Disclosure of the effects of wages, production levels on cost: Cost Accounts can reveal the effect of an increase in wages or of a reduction in working hours on the volume of output and the cost per unit. The management can, on the basis of such a study, decide the effects on cost and production of different methods of remunerating labour.

(v) Disclosure of the different types of materials on cost: Cost Accounts enable a comparison of the results of using various kinds and quantities of raw materials on cost. In this way, they afford an incentive for finding out improved process and new ways and means to achieve economy in cost and also to compete with other manufacturers successfully.

(vi) **Disclosure of relative efficiency of different machines:** Cost Accounts also disclose the cost of producing a commodity from the use of different types of machines, and thus enable a businessman to determine the relative efficiency of different machines.

(vii) **Helps in substituting capital for labour and vice versa:** Cost Accounts further enables a businessman to compare the cost of production when capital is substituted for labour and vice versa, thereby enabling him to take a decision on the course which gives reduced cost.

(viii) **Disclosure of the proportion of cost of a process or Material or Labour or Overhead to total cost:** Cost Accounts also disclose to what extent the cost of a particular process of department contributes to the total cost, and this knowledge can suggest the process or department where economy should be practised. Cost Accounts can likewise reveal what proportion material cost, labour cost or an overhead bears to the total cost and of the source of possible economy.

(ix) **Comparisons of cost in different periods and for different volumes of output:** Cost Accounts furnish reliable data for comparing costs :

(a) in different periods
(b) for different volumes of output
(c) in different departments or processes, and
(d) in different establishments.

3) Usefulness of cost office Records: Apart from the aforementioned advantages, the detailed records maintained in a cost office have a range of usefulness far beyond their original purpose. These records prove useful in a number of important directions which is another advantage of Cost Accounts. Some of the use of cost office record are discussed below:

(i) **Check on Materials:** The Accounting System involves the use of different account books and cards like Stores Ledger and Materials Abstract. These provide an effective check on the stores and materials used in a business. Stealing and pilfering are thus held in check.

(ii) **Check on the flow of materials in the factory:** Where production is divided into different processes or in different departments, the flow of materials from one process or department to another process or department, is kept under vigilance and control with the help of cost office record.

(iii) **Check on Persons:** Cost Accounts provide convenient and effective means of controlling individuals by fixing their respective responsibilities. Through cost office records, one can carefully find out whether every worker is fully accounted for and, there is no unaccounted idle time.

(iv) **Check on the Accuracy of Financial Accounts:** Cost Accountant can be and are compared with Financial Accounts and thus, the accuracy of the latter is considerably checked.

4. Usefulness to Management: Cost Accounts further help the management in a number of ways. It has been rightly stated that the ultimate aim of all Cost Accounts is to ascertain accurately each and every cost involved and then to use figures intelligently for the successful management of a business. Some of the ways in which Cost Accounts help the management are discussed below:

(i) **Help in Tracing the Sources of Profit or Loss:** Cost Accounts reveal the sources of profit and loss, and thus enable the management to adopt a correct and profitable production policy.

(ii) **Help in Rectifying Errors in Policy-making:** Detailed accounts can be conveniently prepared at frequent intervals and thus current policies can be criticised and mistakes rectified without loss of time.

(iii) **Help in Increasing Profits:** Cost Accounting helps the management in maximising profit by

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(a) disclosing the cost of various processes or jobs.
(b) disclosing what they should cost and thus disclosing the sources of low or waste,
(c) adding to the efforts of management to exercise such control as will minimise waste, and
(d) stating whether the manufacture of certain commodities increases overhead expenses disproportionately.

(iv) Help during Depression: When business is good and profits keep on coming, businessman becomes somewhat self-complacent and relaxes his rigorous control over items of cost and sources of inefficiency. But during a depression, when even a modest profit will be a blessing, he has to become very watchful and vigilant in tracking down the concealed inefficiencies and sources of waste. By eliminating waste and inefficiency, he can reduce his cost to the very minimum. Also, costing can enable him to keep a very low margin of profit while tendering or quoting, and thus to be in an advantageous position in the competitive struggle. Likewise, when he has to resort to price – cutting, he may be able to do so successfully by reducing some disproportionate overhead or by increasing turnover so that an overhead cost per unit is reduced. Such policies which are essential during depression cannot be safely pursued without the aid of reliable and expert costing.

CLASSIFICATION OF COSTS

If Cost Accounting is to help management in exercising control on costs, it is necessary to analyse and classify costs. Classification of costs is also necessary for detailed recording and true cost ascertainment.

Cost classification in the process of grouping costs according to their common characteristics. Cost may be classified:

(a) By Element
(b) By Function
(c) By Behavior.

Classification of Costs by Element

Under this classification, costs are broadly divided into:

(a) Direct Costs
(b) Indirect Costs

Direct costs are the costs which can be conveniently associated wholly with a particular unit of final product. Such direct costs are treated as the cost of commodity to which they relate. The question of their apportionment among several commodities does not usually arise. Expenditure incurred on raw materials, labour employed and other expenses, which are exclusively incurred for producing a particular article are the items of direct costs.

I. Ascertainment of Cost

1. Determination of cost per unit of job.
2. Disclosure of cost at different stages of production.
3. Disclosure of the components of cost

II. Usefulness of Cost Date

4. Disclosure of profitable and non-profitable activities.
5. Help in fixing prices and giving tenders.

6. Guide for future production policy
7. Disclosure of the effect of different methods of wage payment on cost.
8. Disclosure of the effect of different types of materials on cost.
9. Disclosure of relative efficiency of different machines.
10. Help in substituting labour for capital or vice versa.
11. Disclosure of the importance of the cost of a process or of an overhead to total cost.
12. Help in comparing costs for different periods and volumes of production.

III. Usefulness of Cost Office Records

13. Check on materials
14. Check on flow of materials
15. Check on persons
16. Check on the accuracy of Financial Accounts.

IV. Usefulness to Management

17. Help in rectifying errors in policy-making.
18. Help in increasing profit.
19. Help in weeding out wastages during depression.

Indirect costs or overhead expenses are the expenses incurred for business as a whole (i.e. for the production of several commodities or the completion of several contracts simultaneously). Each of them has, therefore, to be apportioned among all the commodities to which it relates on some reasonable basis. Office expenses, manager's salary, electric charges and factory rent are the examples of indirect or overhead expenses.

Direct costs can be further classified into following three elements:

(i) Cost of direct raw materials.
(ii) Cost of direct labour
(iii) Other direct expenses

Indirect costs can be further classified into following three elements:

(i) Indirect materials
(ii) Indirect labour
(iii) Other indirect expenses.

The following chart gives the complete classification by element of total cost:

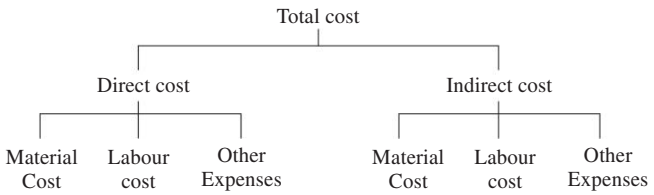


FIG 9.2 Total cost

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A. Direct costs:

a. Direct materials: Direct materials are those materials which enter into and form part of the product, e.g., the clay in bricks, the wood in furniture, the leather in shoes, etc. Direct materials are also called process materials and prime cost materials. Direct materials include:
b. All materials specially purchased or requisitioned for a particular process or job or production order,
c. All components either by purchase or by production similarly used.
d. All materials passing from one process or operation to another.
e. All primary packing materials, e.g. cardboard, boxes, wrappings, cartons etc.

B. Direct labour cost: It refers to the cost of wages paid to operative who help in altering the construction, composition, conformation or condition of the product manufactured by a concern. When a concern does not manufacture, but instead renders a service, the term direct wages refer to the cost of wages paid to those who directly carry out the services, e.g. wages paid to drivers, conductors, etc. for a bus in transport service. Direct wages are also called direct labour, productive labour, process labour, operating labour and prime cost labour.

Under certain circumstances, wages which are commonly treated as indirect may be treated as direct, e.g in contract, costing wages payable to a supervisor who supervises a particular contract are treated as direct wages in ascertaining the cost of the contract. This is so, because the supervisor is specially connected with the activities of the contract, and therefore, wages payable to him can be directly identified with that contract.

C. Other Direct Expenses: Direct expenses are those which are neither direct materials cost nor direct wages, but are directly identifiable with a job or process or operation. Direct expenses are also known as chargeable expenses, prime cost expenses or productive expenses. One of the distinguishing feature of direct expenses is that these expenses are not incurred while a job or contract is in process of execution as direct materials or direct labour are, but these are expenses leading to a job or contract. Again, the utility of these expenses exhaust with the completion of the job or contract. Examples of direct expenses are:

a. Hire-charges of a special concrete mixer required for civil engineering job
b. Cost of special pattern or drawing or layout
c. Cost of a lace prepared for a pair of shoes on order
d. Expenses relating to the receipt of contract e.g gifts and presentations, travelling charges, etc.
e. Maintenance costs of special tools required for the execution of a job or contract.

In short, items of direct expenses are very few and they usually form small part of total cost.

2. Indirect cost:

(i) Indirect materials: Indirect materials are those materials which cannot be traced as part of the product. Indirect materials are also known as cost materials or expense materials, examples of indirect materials are:

a. Fuel, lubricating oil, etc., required for operating and maintaining plant and machinery.
b. Small tools for general use.
c. Materials consumed for repairs and maintenance work.
d. Sundry stores (of small value) used in the factory.

The classification of materials into direct and indirect materials become a matter of convenience and materials of small value which should be termed as direct, may be treated as indirect for the sake of simplicity, for instance, in the manufacture of shirts, the thread used forms part of the finished shirts

and hence should be classified as direct material. But, considering the time and expense involved in measuring the thread required for each shirt, it is desirable that the cost of thread as indirect material cost. Similarly, in the manufacture of shoes the cost of nails used (which can be identified) is treated as indirect materials cost.

ii) Indirect wages: Indirect wages represent the cost of labour employed in the works or factory for doing work which is ancillary to production. In short, wages which cannot be directly identified with a job, process or operation are generally treated as indirect wages. Examples of indirect wages are:

a. Wages of general indirect labour such as inspectors, supervisors etc.
b. Wages for maintenance work such as workshop cleaners, mechanics, etc
c. Wages paid to internal transport men.
d. Idle time wages
e. Miscellaneous allowances to the labour
f. Wages payable to store-keeper, works clerical staff, watch and ward.

iii) Indirect Expenses: These are expenses which cannot be charged to production directly and which are neither indirect materials cost nor indirect wages are regarded as indirect expenses.

Examples of indirect expenses are:

a. Rent, rates and taxes.
b. Insurance
c. Canteen expenses
d. Hospitals and Dispensary
e. Depreciation, repairs, maintenance etc. on plant and machinery.
f. Power, lighting and heating.

Functional Classification of Indirect Cost

From the point of view of preparing cost sheet or cost statement. (i.e Statement giving the break-up of the cost of a product), it is important to classify the indirect costs functionally (rather than classification by element of such costs).

Functionally, indirect costs can be classified as follows:

(1) Factory expenses (or works expenses)
(2) Office expenses (or administrative expenses)
(3) Selling and distribution expenses.

1. Factory Expenses: These comprise of all those expenses incurred on indirect materials, indirect labour and other indirect expenses, which are incurred in the factory, starting from the receipt of the raw materials till the final product is ready for dispatch. The following can be listed as examples of factory expenses:

(i) Indirect materials: Cotton waste, oil, grease, stores and spares, and insignificant raw materials like thread in garment industry, cost of nails in furniture making etc.
(ii) Indirect wages: Salaries and wages paid to supervisors, factory time-keeper, remuneration paid to persons employed in drawing and design office, wages of tool room department, salaries paid to factory, clerical staff etc.
(iii) Indirect expenses: Rent, rates and taxes of factory building, factory lighting and heating, repairs to factory plant and machinery sundry factory expenses etc.

2. Office or Administrative Expenses: These include all those indirect labour, and indirect expenses which are incurred in administration of the organisation, the following can be listed as examples of administrative expenses:

(i) Indirect materials: Such as printing and stationery.

(ii) Indirect wages: Such as salaries of clerical staff, officers and executives in various administrative departments.

(iii) Indirect expenses: Such as rent rates, taxes, insurance of office building, office lighting, depreciation and repairs of office building and office equipment, audit fees, director's fees, etc.

3. Selling and Distribution Overheads: Selling overhead can be defined as cost of seeking to create and stimulate demand and of securing orders.

Distribution overhead can be defined as cost of sequence of operations which begins with making the packed product available for delivery and ends with making the re-conditioned returned empty package, if any, available for re-use. Distribution overhead also includes the cost of transportation of the products to central or local storages and where the goods are sold on the basis of sale or return. It implies cost of delivering the products to the customers and the cost of receiving them back in case where the customer returns the products.

Selling and distribution overhead when taken together, means all the expenses incurred on certain functions like, selling advertising, transporting, warehousing etc. Usually, selling and distribution expenses are incurred after the completion of the production and hence, they are sometimes referred to as After Production Costs.

Some examples of selling overheads are given as under:

(i) Indirect Materials: Such as sales office printing and stationary, advertising materials, catalogues, price list and packing materials.

(ii) Indirect labour: Such as salaries of salesman, commission to salesman, salaries of delivery staff, sales manager, sales and distribution, clerical staff, wages paid to drivers of delivery vehicles, etc.

(iii) Indirect expenses: Such as advertising in newspapers, radio, etc., rents, rates, taxes, insurance of sales office building, warehouse and showrooms.

Cost of after sales services, depreciation of delivery vehicles, running expenses of delivery vehicles etc.

Certain Terms Explained:

(1) Prime cost

(2) Works cost or factory cost

(3) Cost of production or office cost

(4) Cost of sales

(i) Prime cost = Direct cost = Direct materials cost + Direct labour cost + Other Direct expenses

(ii) Works cost or factory cost = Prime cost + Factory expenses

(iii) Cost of Production = Works cost + Administrative expenses

(iv) Cost of sales = Cost of Production + Selling and Distribution Expenses.

Different Methods of Costing

Conditions prevailing in different types of business are different. Several methods or types of cost finding are, therefore, designed to suit the needs of individual business conditions.

One of the most important essential feature in costing system is that the system should be adopted to suit the needs of particular business and it should not be the other way. Any attempt to adopt the business organisation to a costing system, will not work satisfactorily and hence is not desirable.

Thus, various methods of costing have been evolved to suit various business conditions. The basic principles underlying all these methods are the same. They are:

(1) Collecting and analysing the expenditure according to elements of cost, and

(2) Determining the cost for each cost unit or cost centre.

The main factor which is to be considered while choosing a particular method of costing is the nature of the manufacturing operation or process or the service rendered by the enterprise. It is therefore, sometimes said that Costing methods are classified according to the nature of business operation. Just as it is impossible to devise a set of Financial Accounting records which will be suitable to all types of undertaking like Industrial Company, Banking Company, Insurance Company, Wholesaler, etc., similarly, it is impossible to devise a model method of costing which would be applicable to all types of business organisations like builders, engineering industry, chemical industry, shoe industry, cloth industry etc. Various methods of cost finding are, therefore, used in practice depending upon the industry and the nature of the products manufactured by various industries.

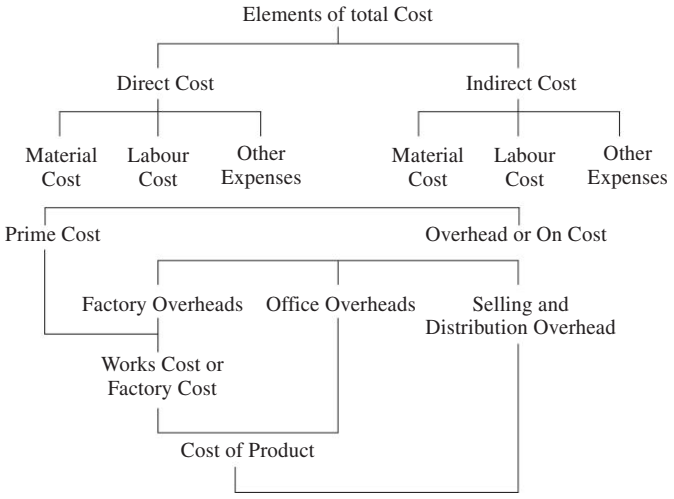


FIG. 9.3 Cost of sales

To summarise, different methods of costing or cost finding are used because business vary in nature and in the type of the products or services they produce. It depends upon the output or production for which the cost is to be determined. Hence, the costing methods to be used are determined with due regard to the methods of production and the unit of cost used.

It should be noted, however, that the general basic principle of cost accounting are the same in every system. Only the method of collecting and presenting the cost vary with the type of production for which the cost is to be determined. The essence of costing is analysis and this analysis of expenses, direct and indirect, will depend primarily upon the particular circumstances of each individual business. The fundamental principles will be the same and yet it is not possible to devise system which can be made

commonly applicable to all types of industries. Therefore, it has been found convenient to classify the principal methods of cost according to the nature of manufacturing or other activity.

Basically, there are two methods of costing and they are:

(1) Job costing, where production results in cost units which are different from each other, and

(2) Process costing, where manufacturing is of identical units, and can be divided into two or more distinct processes or operations. However, there are many methods, they are more or less the variations or combinations of the above mentioned methods.

The main methods of costing can be tabularly summarised as under:

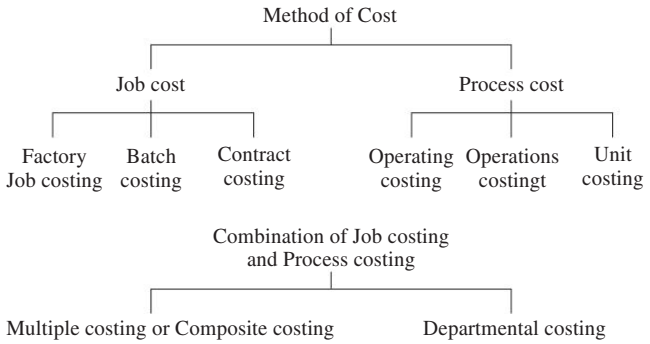


FIG 9.4 Methods of Costing

Techniques of Costing:

Costing methods depend upon the nature of production and the unit of production, basically there are two methods of costing viz.,

(1) where production results in cost units that are different from each other, and

(2) where the cost units are all identical.

Costing techniques depend upon the purpose for which the management requires costing information. Management needs information for various purposes, such as control, decision-making, predicting or estimating profits, price determination, etc. The purpose determines the techniques of costing to be used. Examples of various costing techniques are; post costing, continuous costing, standard costing, marginal costing, absorption costing and so on.

Meaning of Cost Accounting

Cost Accounting is, the accounting for cost. In other words, it is the basic mechanism which helps in ascertainment of cost. According to the Chartered Institute of Management Accountants, London, Cost Accounting is 'the process of accounting for cost from the point at which the expenditure is incurred or committed to the establishment of its ultimate relationship with cost units'. In its wider sense, it embraces the preparation of statistical data, the application of cost control methods and the ascertainment of the profitability of the activities carried out or planned.

Cost Accounting is thus concerned with the following:

(i) Recording of cost

(ii) Classifying and summarising of cost for determination of cost of product or services

(iii) Planning, controlling and reducing of cost, and

(iv) Furnishing of information to the management for decision-making.

The last function of Cost Accounting is gaining considerable importance. It provides information to the management for decisions of all types. It serves multiple purposes on account of which it is generally undistinguishable from Management Accounting.

Main Objectives of Cost Accounting

The main objectives of the cost accounting are as follows:

(i) Ascertaining Costs. Cost Accounting helps in ascertaining costs of products or services. It tells about the cost of each product, job process, completed or manufactured in a factory. In the initial stages, this used to be considered as the main objective of maintaining cost records.

(ii) Controlling Costs. Cost accounting helps in controlling costs. In other words, it helps in keeping the cost within limits. This is possible by adoption of the various costing techniques such as those of budgeting and standard costing. In view of the growing competition among the manufacturers, controlling cost is now being considered as the primary objective of cost accounting. Ascertainment of cost has now become a secondary objective.

(iii) Reducing Costs. Cost accounting also helps in reducing costs. It is to be noted that there is a difference between cost control and cost reduction. Costs are said to be controlled if they are kept within the predetermined limits, while costs are said to be reduced if they can be brought to a lower level as compared to the former level. This is achieved by means of constant research and sincere efforts for reducing the costs. Cost reduction is a new area which is attracting the attention of the cost accountants all over the world in a view of the present recessionary conditions prevailing in the world economy.

(iv) Determining Selling Price. Cost Accounting also helps in determining the selling price of the products. Of course, cost is not the sole factor but this is one of the most important factor which a firm must consider while fixing the selling prices of its products.

(v) Providing Continuous Information. Cost Accounting aims at providing continuous information to management at comparatively short intervals. It provides daily, weekly or monthly information of units produced and accumulated cost together with appropriate analysis.

Important Aspects

- The meaning of cost
- The concept of cost
- Classification of cost
- Meaning of overheads
- Classification of overheads
- Allocation and Apportionment of overheads

Meaning of Cost

The term cost has wide variety of meaning. For example, while buying a book, the question-how much does it cost? Usually this would means the price of the book. But cost in costing terminology is not the same as price. The term cost indicates the amount of expenditure (actual or notional) incurred on or attributable to a specific thing or activity. The concept of cost covers the following areas.

(i) Total Cost: It is the sum of all the items of expenses incurred in the production, sale or distribution of goods and services.

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(ii) Marginal cost: It is the amount by which the total cost varies when the volume of production is increased or decreased by one unit.

(iii) Standard cost: It is the target at which a business should aim. It is an estimate towards which the actual performances are pulled up.

(iv) Conversion cost: It is the cost of producing semi-finished goods or completed products less the cost of directed materials. The aggregate of direct wages and production overheads are applied over raw materials for calculating the conversion cost.

(v) Direct cost: It is the aggregate of all costs that can be directly allocated to products. Hence, it can also be called as traceable cost.

Analysis and Classification of Cost

Preliminary to determining the costs, it is necessary to classify them depending upon the purpose. Classification may be defined as the process of arranging items according to their common characteristics or degree of similarity. Classification of cost may assume the following forms.

(i) Classification by nature
(ii) Functional classification
(iii) Behavioural classification
(iv) Classification for managerial decisions and control.

Classification by Nature

Elements of costs

TABLE 9.1 Direct material

Direct cost	Direct material
Indirect Cost	Indirect material
Direct labour	Direct expenses
Indirect labour	Indirect expenses

Direct material are those which

(1) Go into the product itself, and which

(2) Can feasibly be charged directly to a unit. for eg. in a printing plant, the paper used on a printing job is a direct material, because it satisfies the two conditions stated supra.

Direct labour Direct labour is that labour associated with workers who are engaged in production process. Such of those labour costs that can be conveniently and economically traceable to end products may be called Direct Labour in a nutshell.

E.g. Wages paid to machine operators and assemblers.

Direct expenses Any expenditure other than direct material and direct labour, which can be identified with or allocated to specific units are called direct expenses. They are also called chargeable expenses.

E.g. (1) Cost of special layout, designs or drawings.

(2) Hire of tools for a particular production.

Indirect costs Indirect costs are those which are impractical to charge directly to jobs or units. They can only be apportioned.

Indirect materials Indirect material is of minor importance and which is not directly traceable to finished product. The consumption of such materials are so small or so complex that it cannot be treated as direct material.

E.g. Lubricants, cotton waste and clearing materials.

Indirect labour Indirect labour include the wages of employees whose services cannot be identified and are linked to the end product.

E.g. (1) Salaries of foreman, shop clerks, general helpers.

Indirect expenses These are expenses which cannot be directly, conveniently and wholly allocated to end products.

E.g. Rent, lighting, insurance charges etc.

Classification by nature can be summed up in the following format

Material cost	= Direct material cost	+ Indirect material cost
+		+ +
wages	= Direct wages	+ Indirect wages
+		+ +
expenses	= Direct expensess	+ Indirect expenses
Total cost	= Prime cost	+ Over head

Functional Classification

Functionally, costs can be classified under the following heads:

(1) Prime cost Prime cost or Basic cost of any product comprises those expenses which could be traced directly to it. It consists of (a) the cost of raw materials that go into the product (b) the cost of direct labour operations (c) other direct or chargeable expenses.

Prime cost = Direct material + Direct wages + Direct expenses

(2) Factory cost When the cost of indirect material, indirect labour and indirect expenses incurred at the factory level are added to the prime cost, we arrive at factory or works cost.

Factory cost = Prime cost + works in cost

(3) Cost of production Cost of production is made up of prime cost plus works on cost plus office and administrative overheads.

(4) Cost of sales When selling and distribution overheads are added to the cost of production, we arrive at cost of sales.

Functional classification can be summed up as follows

TABLE 9.2 Statement of total cost

	Rs.
(1) Direct material cost	XX
(2) Direct wages	XX
(3) Direct expenses	XX
Prime cost	XX
(4) Factory or works over head	XX
Factory or works cost	XX
(5) Administration overhead	XX
Cost of production	XX
(6) Selling and distribution overhead	XX
Total cost or cost of sales	XX

(i) Behavioral Classification

Costs can also be classified into fixed, variable and semi-variable in terms of change in activity.

Fixed cost Fixed cost is a cost which does not change in total for a given period despite wide fluctuations in the volume of activity. These costs are constant at all levels of production. E.g. Rent, Insurance charges, management salary.

Variable cost These costs tend to vary with the volume of output. Any increase in the volume of production results in an increase in variable costs and vice versa.

E.g. Cost of direct material

Cost of direct labour, and other direct expenses.

Illustration

Cost or raw materials Rs.5/- per unit.

Faculty rent Rs.5,000/-

Calculate the cost per unit of the variable cost and fixed cost when the production is @ 2000 units.

Solution: 2000 with level of activity

$$\text{Variable cost} = 2000 \times \text{Rs.5/-} = \text{Rs.10,000/-}$$

$$\text{Variable cost per unit} = \frac{\text{Rs.10,000/ –}}{2,000} \text{ units} = 5/-$$

$$\text{Fixed cost} = \text{Rs.5000 (Factory rent – constant at all levels of activity)}$$

$$\text{Fixed cost per unit} = \text{Rs.5,000/2000 units} = \text{Rs.2.50/-}$$

Thus we find, that variable cost per unit is constant while fixed cost per unit changes.

Semi-variable costs Semi-variable costs are those costs which remain constant up to a certain level of output after which they become variable. They radiate the characteristics of fixed and variable cost.

E.g. The earnings of a worker is Rs.150 per week (fixed) plus a bonus of 10p for each unit completed (variable). If he increases his weekly output from 1000 units to 1500 units, his income increases from Rs.250/- to Rs.300/-

(ii) Classification for Managerial Decisions and Control

From the view point of cost control, costs are classified on the area of responsibility.

(a) Controllable and uncontrollable cost Controllable costs are those costs which can be influenced by the action of a specified member.

Direct costs, comprising direct labour, direct material, direct expenses and sum of the overhead are generally controllable by the shop level management.

E.g: The expenditure incurred by the tool room is controllable by the foreman in charge of that section.

Costs which cannot be influenced by the action of a specified member of an undertaking are known as uncontrollable costs.

E.g., the tool room expenditure cannot be controlled by a machine shop foreman even though he receives the services of the tool room.

(b) Normal and abnormal costs Costs which are normally incurred at a given level of output are called normal costs.

A cost which is not normally incurred at a given level of output in the conditions in which that level or output is normally attained.

(c) Avoidable and unavoidable costs Avoidable costs are those costs avoided in some activity of the business to which they relate is discontinued.

Unavoidable costs are those which cannot be eliminated.

E.g. If a product is discontinued, the salary of the factory manager cannot be eliminated (unavoidable costs). But the bad debts that may arise is eliminated as the product is discontinued (avoidable costs).

(d) Shut down and sunk costs An organisation may respond its operation for a period on account of some temporary difficulties.

E.g. shortage of new materials or non-availability of labour. Even though the plant remains idle temporarily, the fixed cost like rent, insurance etc, will have to be incurred. Such costs of idle plant are known as shut down costs.

Sunk or historical costs There are costs which are created by a decision that was made in the past and which cannot be changed in the future also.

E.g. Investments made in plant and machinery, buildings cannot be altered by later decisions.

(e) Product cost or period cost Cost which associated with production and which became part of the costs of the product are called product costs.

E.g. Raw material, direct wages etc.

Costs which are not associated with production and which are associated with a period for which they are incurred, are called period cost.

E.g. Administration costs, rent, insurance, salesman salary etc.

(f) Out-of pocket costs Out-of-pocket costs are defined as costs that must be met with a current expenditure. It is generally a costs expenditure associated with a particular decisions alternative.

E.g. A company has its own trucks for transporting materials. It seeks to replace these trucks by employment of public carriers. In making this decision, the depreciation of the trucks is not to be considered. But, the expenditure on fuel, salary to drivers and maintenance cost should be taken into account. Such costs are termed as out-of-pocket costs.

Overheads Overheads include all costs which are impractical to identify with specific jobs. It is the aggregate of indirect materials, indirect wages and indirect expenses. Such an aggregate of indirect costs (overheads) should be classified to facilitate convenient accounting and effective controlling.

Methods of Classification

(1) Functional classification
(2) Classification according to nature
(3) Behavioural classification.

Behavioural Classification

Overheads do not vary in direct proportion with production. There are overheads unaffected by the variations in production. Such overheads are called fixed overheads.

Example Insurance, salaries for foreman, manager and office expenses.

There are overheads which move along with production. They are called variable overheads. Variable overheads establish a linear relationship with the output.

Example Fuel, power and delivery expenses.

Some overheads neither vary nor remain fixed and stand in between the two. Such overheads are called semi-variable overheads.

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Example: Telephone rent

Allocation and Apportionment of Overheads

After classification of the overheads as aforesaid, they are to be allocated and / or apportioned to cost centres. This process is called departmentalisation or primary distribution of overheads. The process is deemed necessary to determine the unit product cost. Allocation denotes assigning the whole amount to a cost centre, while apportionment stands for pro-ration to cost centres. The distinction between allocation and apportionment is worth considering.

(1) Such of those overheads which can be identified with the specific cost centre, are allocated thereto. If such specific identification is not possible, then the overheads will have to be apportioned on some fair and equitable base.

(2) Some overheads related to a specific cost centre are allocated to it in full, while apportionment divides the overhead amount into minute parts over different cost centres.

Basis of apportionment of overhead costs When it is not possible to allocate overheads to different departments, such costs are to be apportioned or distributed on some basis over departments. The following are the most usual basis of apportionment.

TABLE 9.3

Overhead costs	*Bases of distribution*
Personnel office, welfare, canteen, supervisor, time and wage office, administration, E.S.I etc	Number of employees
Clearing materials, such as cotton waste	Number of machines or arbitrary apportionment based on past experience
Rent, rates, heat and light	Area
Depreciation of plants, machinery and equipment fire insurance	Book value
Repairs to machines	Based on past costs
Materials handling store-keeping	Weight of materials, material requisitions
Electric power, steam consumption	Horse power, horse power multiplied by hours, kwh, or technical estimate.
Heating, building depreciation	Space
Idle time of factory workers	If normal idle time on the basis of past cost.—Recoverable as manufacturing expenses. If abnormal idle time – should be written off to P & L a/c. Not recoverable in ordinary circumstances as manufacturing expenses.
Delivery vans	Weight, volume, tonne, mile
Audit fees	Sales or total cost.

Reapportionment

Though production takes place only in the production department, the service departments helped the main stream of production. It is, therefore, necessary to apportion the cost of the service department costs to production. This is known as reapportionment or secondary distribution.

Absorbtion

There are several methods in use for determining overheads rate. The basic procedure in all the methods is to divide the amount of overhead expenses by the specific base selected.

$$\text{Overhead rate} = \frac{\text{Overhead expenses}}{\text{Total quantum of base (quantity or value)}}$$

Methods of Overhead Absorbtion

(a) Units of output Absorbtion rate computed on the basis of the number of units produced is known as cost unit rate. If the number of units produced is 1000, and the overhead cost is Rs.2000, the rate of absorbtion of overheads per unit is Rs. 2 (2000/1000).

(b) Direct material cost Under this method, manufacturing overhead is related to the value of material consumed. This method is employed when the overhead contains a large portion of costs related to materials.

(c) Direct wages cost Under this method, the manufacturing overhead is divided by the cost of direct wages. As wages are less fluctuating in nature, this method is stable. This method is suitable when the production is labour-oriented and maintains uniform output.

(d) Labour hours Production varies in direct proportion with the labour hours spent. Hence, it is prudent to absorb the overheads on the basis of the labour hours. This method holds good when production is carried out manually.

(e) Machine hours The rate of overhead absorbtion based on the machine hours is the most appropriate in a mechanised cost centre. Poser, depreciation, repairs, maintenance and insurance are related to machinery. As such, a machine hour rate can be used as a method of absorbtion overheads. In order to make this method more meaningful, separate rates for fixed and variable items are calculated.

Methods of Apportionment or Distribution of Service Costs

The distribution of service department costs to the production department is known as secondary distribution of overhead costs.

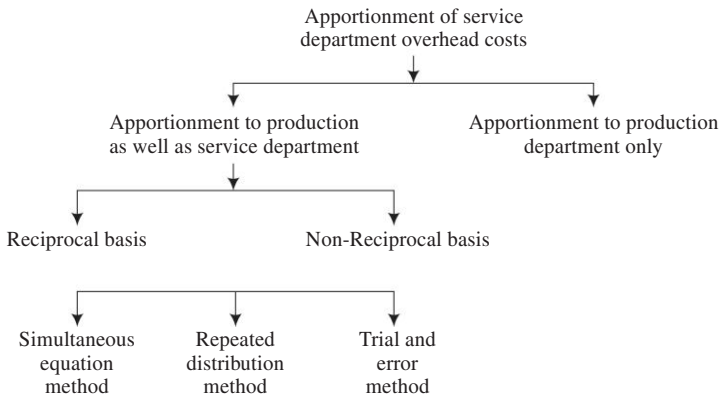


FIG 9.5 Methods of Apportionment

Apportionment to Production as well as Service Department

Under this method, overheads relating to both production and service departments should be distributed to production and service departments. This can either be on reciprocal basis or on non-reciprocal basis.

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(1) Reciprocal basis This method is adopted when interdepartmental services are taken into account. That is, if a service department receives benefits from other service department, the department receiving service should be charged. This can be done under the following three methods.

(a) Simultaneous equation method Under this method, the true total overhead costs of each service department is expressed in the algebraic equation with the help of percentage distribution of service costs.

Illustration 1 A company has three production centres and two service centres. The overhead analysis sheet gives the following overhead costs.

TABLE 9.4

Production centres	*Rs.*	*Service centres*	*Rs.*
A	1000		
B	2000	D	800
C	1500	E	500

The expenses of service centres D and E are apportioned as under

TABLE 9.5

	A	*B*	*C*	*D*	*E*
D	30%	20%	20%	0	800
E	10%	20%	50%	20%	500

Apportion the service centres cost on simultaneous equation method.

Solution

Let X = total expenses of D service centre to be apportioned.
Y = total expenses of E service centre to be apportioned
X = 800 + 0.2y
Y = 500 + 0.3x

(or) $X - 0.2y = 800$ ...(1)

$Y - 0.3x = 500$ ...(2)

Multiplying (1) and 5 adding the result to (2)

$4.7x = 4500$

$x = Rs.957$

Substituting x = 957 in eqn (2) we get,

$y = Rs.787.$

Therefore, the value of service centre D is Rs.957 and E is 787, to be apportioned on the basis of given percentage to the production departments.

TABLE 9.6

	Total Rs.	*A Rs.*	*B Rs.*	*C Rs.*
As per overhead analysis sheet	4500	1000	2000	1500
Service centre D (90% of Rs. 957)	670	287	191	192
Service centre E (80% of Rs.787)	630	79	157	394
	5800	1366	2348	2086

(b) Repeated distribution method Under this method, the total of overhead costs of the service departments are distributed to other service and production department according to the given percentage till the expenses of all service department are exhausted.

Illustration 2 A company has three production centres and two service centres. The overhead analysis gives the following details.

TABLE 9.7

	A	*B*	*C*	*D*	*E*
Electricity	100	50	20	30	10
Rent	20	30	10	5	10

The expenses of service departments D and E are apportioned as under

TABLE 9.8

	A	*B*	*C*	*D*	*E*
D	30%	20%	40%		10%
E	20%	40%	20%	20%	

Apportion the expenses of service departments on repeated distribution method

Solution Overhead analysis sheet

TABLE 9.9

Items	*Total*	*Production centres*			*Service centre*	
		A	*B*	*C*	*D*	*E*
Electricity rent	210	100	50	20	30	10
Rent	75	20	30	10	5	10
Total expenses	285	120	80	30	35	20
Service dept D		10	7	14	–35	4
Service dept E		5	9	5	5	–24
Service dept D		2	1	2	–5	
Total	285	137	97	51		

(c) Trial and error method Under this method, the cost of a service centre is apportioned to another service centre. The cost of another service centre plus apportioned cost from the first centre is apportioned to the first service centre. This process is repeated till the amount to be apportioned becomes negligible.

Illustration Previous problem

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Solution

TABLE 9.10

	Service department	
	D	*E*
Original apportioned amount (Total)	35	20
	–35	4(10% of 35)
	(20% of 24)5	–24
Total of positive figure	40	24

Therefore, the value of service centre D Rs.40 and E Rs.24, to be apportioned on the basis of given percentage to the production department.

(2) Non-reciprocal basis Under this method, the cost of the most serviceable department ie. the department which renders services to all production and service departments, is first apportioned to production departments and other service departments. However, the cost of the last service department is apportioned only to the production departments.

Illustration 3 A company has three production departments and two service departments

The expenses for the period were :

TABLE 9.11

	Service dept		*Production dept*		
	Clerical service	*Stores*	*A*	*B*	*C*
Total overheads	2000	4000	10000	20000	30000
Additional information					
Direct wages	500	500	1000	200	1000
Direct materials	200	300	1200	1800	500
Direct expense	100	200	300	400	500

Prepare overhead analysis sheet.

Solution: Overhead analysis sheet

TABLE 9.12

	Service dept		*Production dept*		
	Clerical service	*Stores*	*A*	*B*	*C*
Overheads	2000	4000	10000	20000	30000
Clerical service centre in proportion to direct wages	–2000	222	444	888	444
Store centre (In proportionate to direct material)	4222	1448	2171	603	1000

Summary

The term 'costing' refers to the techniques and process of ascertaining cost. In other words costing means classifying, recording and appropriate allocation of expenditure for determination of the cost of products or services, the relation of this cost to sales value, and the ascertaining of profitability. Direct costs can be classified into following three elements: Cost of direct raw materials; Cost of direct labour; Other direct expenses. Indirect costs or overhead expenses are the expenses incurred for business as a whole (i.e. for the production of several commodities or the completion of several contracts simultaneously). Each of them has, therefore, to be apportioned among all the commodities to which it relates on some reasonable basis. Office expenses, manager's salary, electric charges and factory rent are the examples of indirect or overhead expenses. Indirect costs can be further classified into following three elements : Indirect materials; Indirect labour; Other indirect expenses. Overheads include all costs which are impractical to identify with specific jobs. It is the aggregate of indirect materials, indirect wages and indirect expenses. Such an aggregate of indirect costs (overheads) should be classified to facilitate convenient accounting and effective controlling. Overheads do not vary in direct proportion with production. There are overheads unaffected by the variations in production. Such overheads are called fixed overheads. There are overheads which move along with production. They are called variable overheads. Variable overheads establish a linear relationship with the output. After classification of the overheads as aforesaid, they are to be allocated and/or apportioned to cost centres. This process is called departmentalisation or primary distribution of overheads. The process is deemed necessary to determine the unit product cost.

KEY CONCEPTS

- Activity Based Costing
- Back Flush Costing
- Cost Sheet
- Direct Labor
- Direct Materials
- Fixed Cost
- Life Cycle Costing
- Material
- Overhead/ Indirect Cost
- Semi-variable Cost
- Value Added Concept
- Variable Cost

REVIEW QUESTIONS

OBJECTIVE QUESTIONS

1. Which of the following is termed as Prime Cost
   a. The operating of a department.
   b. The material cost of a product
   c. The total of direct costs
   d. The amount of wages cost of a product.
   e. The total costs incurred in manufacturing a product.
2. Which of the following is a factory overhead cost?
   a. Showroom rent and rates.
   b. Carriage outwards.
   c. Loose tools.
   d. Sample goods and other free gifts.
   e. Debt collection expenses.

3. Which one of the following is a method of operation costing?
   a. Job costing. b. Batch costing. c. Contract costing
   d. Unit costing. e. All of the above.
4. Which one of the following statement is false?
   a. Unit costing is not applied in those industries where different products are produced simultaneously
   b. In the cement industries, the unit of cost is per ton.
   c. Scrap is a residue, which arises in a manufacturing process but has no recoverable value.
   d. Cost sheet is not the same as statement of cost and profit
   e. Statement of cost and profit when presented in "T" form is production account
5. An organised creative approach, which emphasizes efficient identification of unnecessary cost is known as
   a. Management by objective b. Target costing c. Value analysis
   d. Activity-based costing e. Quality costing.
6. Target costing is
   a. A method of penetration pricing
   b. The maximum manufactured cost for a product which is arrived at by subtracting the acceptable profit margin from the expected market price
   c. The process where the cost of the product is determined and then an appropriate price is chosen
   d. Used to develop a short run price
   e. A method of price skimming
7. Target Costing can be best used in situations where,
   a. The customer can absorb any increase in price
   b. There is no competition for the product
   c. There is a niche market to be serviced
   d. There is competition
   e. Both (c) and (d) above.
8. Which of the following denotes a target cost?
   a. Market price – Desired profit margin
   b. Standard selling price – Standard profit margin
   c. Standard selling price – Target profit margin
   d. Desired selling price – Desired profit margin
   e. Market price – Return on investment.
9. Target costing involves
   a. Producing a product at the lowest cost possible
   b. Designing the production method so that costs can be reduced if the market deteriorates
   c. Setting a selling price that will secure a specific market share and then setting costs accordingly
   d. Ensuring that the costs are in line with the target level for a specific department
   e. Setting a cost, based on attainable standards and then adding a margin to arrive at the price.
10. Which of the following is **false** with regard to target costing?
    a. Target costs are based on external analysis of markets and competitors
    b. Target costing is a cost management tool which reduces a product's costs over its entire life-cycle
    c. It is difficult to sue target costing with complex products that require many sub-assemblies.
    d. Target costs is the budgeted cost plus the desired mark-up
    e. Target costing is used to control costs before the company incurs any production costs.
11. Prevention costs are those costs that are incurred
    a. To reduce the number of defectives produced
    b. Towards after sales services

c. When materials and products fail to meet quality standards and result in manufacturing loss
d. When inferior quality products or services are sold to customers
e. To reduce wastage and scrap.

12. Product recall is an example of
a. Prevention costs b. Appraisal costs c. Internal failure costs
d. External failure costs e. Both (a) and (c) above.

13. Inspection costs are an example of
a. Prevention costs b. Appraisal costs c. Internal failure costs
d. External failure costs e. Both (b) and (c) above.

14. Scrap and costs of spoiled units that **cannot** be salvaged are the example of
a. Prevention costs b. Appraisal costs c. Internal failure costs
d. External failure costs e. Committed costs.

15. The costs incurred to ensure that materials, products and services meet quality standards are known as
a. Quality costs b. Prevention costs c. Appraisal costs
d. External failure costs e. Standard costs.

16. A set of concepts and tools applied for getting all the employees focused on continuous improvement in the eyes of the customers is popularly known as
a. Quality control b. Cost control c. Customer orientation
d. Self management e. Total quality management.

17. Which of the following is **not** a characteristic or assumption of Product life cycle costing?.
a. Product cost, revenue and profit patterns tend to follow predictable courses through the product life-cycle
b. Each phase of the product life-cycle poses different threats and opportunities
c. The products have infinite life period
d. Profit per unit varies as product move through their life cycle
e. Products require different functional.

18. Which of the following is usually the longest stage in the product life-cycle?
a. Introduction phase. b. Growth phase. c. Maturity phase.
d. Saturation phase. e. Decline phase.

19. Under project life-cycle costing, which of the following costs is **not** an initial cost of a capital asset purchased from a supplier?
a. Installation charges b. Research and development costs c. Cost of spares
d. Cost of acquisition e. Commission paid.

20. The main disadvantage(s) of activity-based costing is/are that
a. The managers are not responsible for the cost of activities with their responsibility centers.
b. It is costly
c. It fails to highlight interrelationships among overhead costs in different functional areas
d. It does not identify activities that do not add to the value of the product
e. None of the above.

21. Activity-based costing
a. May be used with job-order but not process costing
b. May be used with process but not job-order costing
c. Tends to increase the number of cost pools
d. Tends to decrease the number of cost pools
e. Both (a) and (c) above.

22. Which of the following statements is **false** in respect of activity-based costing?

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a. It does not segregate variable and fixed costs
b. It tends to be more costly than traditional methods of costing
c. It is based on historical costs
d. It highlights the causes of costs
e. It deals with the direct costs only.

23. Cost drivers are
a. costs linked to two or more other costs
b. Mechanical bases like machine hours, size of equipment etc, used to assign costs to activities
c. Accounting techniques, used to reduce costs
d. Accounting techniques, used to control costs
e. Activities that cause costs to increase as the activity increases

DESCRIPTIVE QUESTIONS

1. Define cost accounting. Explain its objectives.
2. State advantages of Cost Accounting.
3. What do you mean by direct costing?
4. Explain different methods of costing.
5. Briefly illustrate the techniques of costing.
6. Define ascertainment cost.

CASE

1. Differentiate between
(a) Cost Unit and Cost Centre.
(b) Cost Allocation and Cost Apportionment
(c) Direct Cost and Indirect Cost.
(d) Operating Cost and Process Cost.
(e) Cost Reduction and Cost Control.
(f) Committed Fixed Cost and Discretionary Fixed Cost.
2. Distinguish between: Historical Costing and Standard Costing systems.
3. Distinguish between Cost Estimation and Cost Ascertainment. Explain why both are important to a manufacturing concern.
4. What cost unit will you chose for the following industries and why do you choose that unit?
5. Distinguish between Product Costs and Period Costs.
6. What is a Direct Cost? Explain its significance.
7. Distinguish clearly between direct and indirect materials. Under what circumstances may direct materials be charged indirectly to the finished product.
8. Outline the costing system for aluminium industry. Draw, a cost sheet (with assumed figures) showing the cost of finished product.
9. Explain Value Added Concept. Discuss its utility. Prepare a value-added statement with imaginary figures.
10. Write short notes on:
(i) Activity-Based Costing
(ii) Back flush Costing
(iii) Opportunity Cost Concept
(iv) Life Cycle Costing
(v) Cost Centre
(vi) Operation Costing

(vii) Controllable and Uncontrollable Costs
(viii) Absorption Costing

11. The word cost appears to mean different under different settings and applications. In this context, explain and illustrate the use of the following cost concepts. (i) Incremental Costs, (ii) Direct Cost, (iii) Opportunity Cost and (iv) Relevant Cost.

PRACTICAL PROBLEMS

Cost Sheet

1. A company manufactures and retails clothing. You are required to group the costs which are listed below, and numbered 1 to 20 into the following classification (each cost is intended to belong to only one classification):

(a) Direct Materials (b) Direct labour (c) Direct Labour
(d) Indirect Production Overhead (e) Selling and Distribution Costs
(f) Research and Development Costs (g) Finance Cost (h) Administration Costs.

1. Telephone rental plus metered calls.
2. Wages of security guards for factory.
3. Parcels sent to customers.
4. Wages of operators in cutting department.
5. Developing a new product in the laboratory.
6. Wages of fork lift truck drivers who handle raw materials.
7. Wages of storekeepers in materials store.
8. Chief accountant's salary.
9. Cost of painting advertising slogans in delivery vans.
10. Auditor's fee.
11. Cost of advertising on television.
12. Lubricants for sewing machines.
13. Floppy discs for general office computer.
14. Maintenance contract for office photocopying machine.
15. Interest on bank overdraft.
16. Market Research undertaken prior to new product launch.
17. Carriage on purchase of raw materials.
18. Royalty paid on number of units of a particular product produced.
19. Road licenses for delivery Vehicles.
20. Amount payable to a company for broadcasting music throughout the factory.

[Ans.

Cost Element	Item Number
Direct Materials	17
Direct Labour	4
Direct Expenses	18
Finance Cost	15
Research and Development Expenses	5
Selling and Distribution Cost	16, 19, 3, 11, 9
Administration Cost	13, 14, 1, 10, 8
Indirect Product Costs	12, 20, 2, 7, 6]

2. The manufacturing Cost Data of a factory is as under : (Figures are in Rs. 000]

	Work-in-process		Finished Goods		Placed in Process
	Opening	Closing	Opening	Closing	
Direct Material	160	400	900	1,000	1,000
Direct Labour	80	100	100	200	600
Factory Overheads	60	560	200	100	1,200

Sales are Rs 3,900 and selling and administration expenses are rs 900 for the year, (all figures are in Rs '000). You are required to:

(a) Prepare an Income Statement with appropriate supporting schedules;

(b) Compute the Elements of Cost in the Cost of Goods Sold.

[Ans. (a) Net Income Rs 1,000; Cost of goods sold Rs 2,000; Cost of goods manufactured Rs 2,100.

(b) Direct Material Rs 660; Direct Labour Rs 480; Factory Overhead Rs 480]

3. The following particulars have been extracted from books of M.Manufacturing Co. Ltd., Calcutta, for the year ended 31st March, 2008:

	Rs
Stock of materials as on 31.3.2007	47,000
Stock of materials of 31.3.2008	50,000
Materials purchased	2,08,000
Drawing office salaries	9,600
Counting house salaries	14,000
Carriage inwards	8,200
Carriage outwards	5,100
Cash discounts allowed	3,400
Bad debts written off	4,700
Repairs of plant, machinery and tools	10,600
Rent, rates, taxes and insurance (factory)	3,000
Rent, rates, taxes and insurance (office)	1,000
Traveling expenses	3,000
Travellers' salaries and commission	8,400
Production wages	1,40,000
Depreciation written off on machinery, plant and tools	7,100
Depreciation written off on furniture	600
Directors' fees	6,000
Gas and water charges (factory)	1,500
Gas and water charges (office)	300
General charges	5,000
Manager's salary	12,000

Out of 48 working hours in a week, the time devoted by the manager to the factory and office was on an average 40 hours and 8 hours, respectively, throughout the accounting year.

Prepare a statement giving the following information:

(a) Prime cost, (b) Factory overheads and the percentage on production wages (c) Factory cost, (d) General overheads and percentage on factory cost (c) Total cost.

[Ans. Prime Cost Rs.3,53,200; Factory Cost Rs 3,95,000; Cost of Production Rs.4,23,900; Total Cost Rs 4,45,200]

4. The cost of the sale of product 'x' is made up as follows:

Gas and water charges (office)	300
Materials used in manufacturing	10,200
Materials used in packing materials	2,500
Materials used in selling the product	350
Materials used in office	75
Materials used in factory	125
Labour required in producing	2,500
Salary paid to works manager and other principal officers of the factory	450
Expenses indirect – office	250
Expenses – direct – factory	1,000

Bad debts	300
Packing expenses	150
Lighting and heating charges of the factory	200
Expenses – indirect – factory	125

Assuming that all the products manufactured are sold. What should be the selling price to obtain a profit of 20% on cost price?

Illustrate in chart form for presentation to your manger, the divisions of costs of product 'X;.

Relevant Cost

5. A company is considering a contract which will require among other inputs, 50 kg of material M 80 kg of material are in stock which were purchased for Rs 1.60 per kg. The replacement price of M is Rs 1.75 per kg. The material is the stock as a result of a buying error and the company has no other use for it. If not used on this contract, it could be sold for Rs 1.20 per kg. What is the relevant cost of the material to be used in the contract.

   [Ans. Relevant Cost Of Material is 50 kg × 1.20 = Rs 60].

CASE

The Government of India has instituted the dual pricing system in the industry in which your organization operates. You are the Head of the Costing Division of Raja Textiles Co.Ltd. Your company produces a standard type of cloth, 50% of which is procured by the Government at a price of Rs 4 per meter. You are requested by the Managing Director of your company to suggest a suitable price for the cloth to be sold in the open market. Production during 1007-08 has been 20,000 metres of cloth, Relevant information is given below.

Expenditure Cotton	*Rs*
Cotton consumed	10,00,000
Direct labour in Factory	10,00,000
Carriage Inwards	50,000
Indirect Labour in factory	4,00,000
Salary of Works Director and Other Staff in Factory	2,50,000
Water, Power, Local Taxes (Factory)	5,00,000
Dyeing, Bleaching, etc.	10,00,000
Depreciation (Factory)	2,00,000
Excise and Other Taxes	30,00,000
Misc. Expenses (Factory)	1,00,000
Office Salaries	10,00,000
Salary of Managing Director	1,00,000
Depreciation of Machines (Office)	1,00,000
Mis. Office Expenditure	1,00,000
Purchase of Computer for Office	20,00,000
Misc. Purchases of Furniture and Machine for Office	5,00,000
Dividends Paid	12,00,000
Directors' Fees	2,00,000
Advertising and Publicity	10,00,000
Commission paid on Sales	10,00,000
Commission paid to Foreign Buyers	1,00,000
Packing and Forwarding (Sales)	2,00,000
Expenditure on Sales Depots	4,00,000

Following further information is made available: (i) the company expects a fair return of 20% on its paid-up capital, which is Rs 1,00,000, (ii) Marketing expenses outstanding are Rs 1,00,000.

Suggest the open market price after preparing a Cost Analysis Sheet in columnar form.

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CHAPTER 10

Costing and Control of Overheads

"The problem of accurate allocation and distribution of indirect expenses is one of great complexity, and one requiring very careful and individual treatment."

—J.R. Batliboi

LEARNING OBJECTIVES

- *Percentage of Materials Method*
- *Percentage of Direct-wages Method*
- *Percentage on Prime Cost Method*
- *Hourly Rates of Overhead Recovery*
- *The Direct Labour Hour Rate*
- *Combined Machine Hour and Direct Labour Hour Method*
- *Allocation of Selling and Distribution Expenses*
- *Determination of Overheads*
- *Production and Service Departments*

INTRODUCTION

All the expenses over and above direct expenses are called indirect expenses. Indirect expenses are those which are incurred not exclusively for the manufacture of a single commodity or for the completion of a single job, but for the undertaking as a whole. These expenses are also known as Overheads or Oncosts and must be allocated among the various jobs completed or articles produced, so that each job or product bears a fair proportion of indirect expenses. The amount which is thus allocated to each unit of cost, or to each job is called Oncost. The task of the allocation of oncost is of importance, because it is necessary that the amount per unit should be such as to enable the actual indirect expenses to be recovered, i.e., there is no under-recovery or over-recovery. Of course, there will always be a small difference between the actual indirect expenses and the amount recovered, as recovery will be made on the basis of estimation.

The task of allocating indirect expenses becomes easier if there is only one product. In this case, the estimated indirect expenses should be divided by the estimated number of units to be produced, and we shall obtain the indirect expenses per unit of output. This approach obviously cannot work where there are a large number of products of different types of jobs. In this case, it becomes difficult to ascertain

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definitely the exact portion of each class of overhead burden attributable to process or operation or department of the factory. Another difficulty arises that some items like repairs, depreciation, bad debts, taxes, commission, advertisement etc., cannot be exactly determined till the end of the financial oncost It is evident, therefore, that the ascertainment and allocation of the oncost resolves itself into a matter of estimate, but such estimate must be done on most scientific and efficient basis.

Indirect or Overhead expenses or oncosts can be grouped in three classes; (1) Factory expenses, (2) Office expenses, and (3) Selling and Distribution expenses.

VARIOUS METHODS OF CALCULATING ONCOST

Factory Oncost

Factory expenses of indirect nature can be allocated on one of the following basis : (1) Percentage on Materials basis, (2) Percentage on Direct Wages basis, (3) Percentage on Prime Cost basis, (4) Machine-hour Rate basis, (5) Direct Labour-hour Rate basis, and (6) Combined Machine-hour and Direct Labour-hour basis

1. Percentage of Materials Method

Under this method, a definite percentage of the cost of materials consumed in a particular job or product is taken to be the amount of Factory Overheads charged to that job or product. The percentage for the current year is fixed on the basis of past year's experience Suppose, in the preceding year, the cost of direct materials was Rs.80,000 and the factory overheads amounted to

Rs.20,000. The percentage of works overhead to the cost of materials, therefore, was Rs. 20,000 × 100 = 25%, So, for the current year, factory 80,000

overheads can be taken to be 25% of the cost of materials consumed.

This method has the advantage of being simple to calculate and quick and convenient to operate, but it has the following drawbacks:

(a) Only a small proportion of the factory expenses is connected with material, bulk of the factory expenses have no connection with the value of materials used. The cost of materials is subject to considerable fluctuations which will not be accompanied by similar fluctuations in the cost of overhead expenses. So, this method may lead to seriously wrong results.

(b) Under this method, the charge made to a job requiring expensive materials will be heavier than to a job requiring cheap materials. The mere fact that a job consumes materials of a very expensive nature is no justification for the assumption that the indirect expenses appropriate to that job will be proportionately heavier. Sometimes, jobs requiring cheap and inexpensive materials require much greater efforts and skill resulting in greater overhead expenses.

(c) The system makes no distinction between jobs done by skilled and unskilled labour. Where skilled and unskilled labour is both employed on the same type of work, the time taken by the unskilled worker, will normally exceed than that taken by the skilled worker, therefore, greater overhead must be charged from the work employing unskilled labour. Under this system, if the material used is the same, the charges for overheads will be the same.

(d) Most of the indirect expenses i.e., rent, rates, salaries, etc, accrue on time basis. Time, therefore, is the most important factor to be considered in the allocation of indirect expenses, but this factor is completely ignored under this method

(e) This system also does not distinguish between jobs done by machine and jobs done by manual labour.

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Example,

	Job No. 1 Rs	Job No. 2 Rs
Materials consumed	200	200
Direct wages (200 hours of hand Labour @ P. per hour)	40	--
Direct wages (400 hours of machine Labour @ P. per hour)	--	80
Prime Cost	240	280
Works Overhead (20% on material)	40	40
Works Cost	280	320

Equal charge has been made from both the jobs in respect of overheads, but the time occupied upon job No. 2 has been twice than expended upon Job No.1 and secondly, machine has been employed upon Job No 2 while on Job No. 1 hand labour has been employed. These two factors have been ignored. It is apparent that Job No.2 ought to be charged with a fairly greater sum in respect of overhead expenses of Job No.1.

This method is also inequitable, as the price of few materials is subject to considerable fluctuations. Following is the cost statement for the manufacturer of an identical article to different raw material prices:

Example

TABLE 10.1

Year 2005

Raw materials prices	*1st Jan 2005 Rs. 5 per seer Rs*	*10th Jan. 2005 Rs. 5 per seer Rs*	*20th Jan .2005 Rs. 5 per seer Rs.*
Raw materials consumed 100 seers	500	600	700
Direct wages (200 hours @ 20 p.)	40	40	40
Prime cost	540	640	740
Works overheads (20% on materials)	100	120	140
Works cost	640	760	880

This illustration shows that the increase in the price of raw material has caused increase in work overheads, which is unfair.

This method can suitably be applied where (a) cost of materials is a predominating part of the total costs, (b) where similar materials are used in producing different commodities, and (c) where the cost of materials are not subject to wide fluctuations

Percentage of Direct Wages or Labour Method

Under this method, factory expenses are recovered by charging a fixed percentage on the direct wages. This percentage can be ascertained from the past year's experience. Suppose, in the previous year, direct wages paid, in a factory were Rs. 40,000 and the factory expenses amounted to Rs.20,000. We may say, therefore, that factory expenses are 50% on Direct wages. In preparing the Cost Accounts for the current year, factory expenses can be taken to be 50% of the Direct wages.

This method is simple and convenient. This method is far better than the 'Percentage of Materials Basis' due to the following reasons:

(a) Automatic consideration is given to the time factor. If more wages are shown against a job, normally more time should have been spent upon it and more should be charged to that job for factory expenses.

(b) Labour rates are usually far more constant than material prices i.e., wages are not expected to fluctuate much, so the system of calculating work expenses on the basis of direct wages is likely to give stable results.

(c) There is a logical connection between direct wages and factory expenses. Factory expenses certainly depend to a large extent on the number of workers employed and on their rate of wages.

Disadvantages

1. No distinction is made between skilled and unskilled labour. In the illustration given on next page, job A is done by skilled workers and job B by unskilled workers. Skilled workers get higher rates of pay and the jobs finished much earlier. Total wages paid is the same, therefore, under this method works overhead charged from both the jobs is equal. But, this would yield misleading results because jobs done by unskilled workers give rise to more factory expenses than jobs done by skilled workers. Normally, unskilled workers cause a greater waste of materials and more wear and tear of machinery and they need greater supervision. Hence, work done by unskilled workers should have correspondingly higher proportion of works expenses.

TABLE 10.2

	Job A *Rs.*	*Job B* *Rs*
Materials		
Labour:	1,000	600
100 hours at Rs.4 per hour	400	
200 hours at Rs. 2 per hour		400
Prime Cost	1,400	1,000
Works Overheads		
100% on labour	400	400
Works Cost	1,800	1,400

2. If the workers are remunerated on piece basis, the wages will be paid on the basis of output and not on the basis of time occupied thereon, so the question of time occupied upon production will be ignored if this method is adopted.
3. Wages tend to increase with the age of the employees, but workers overhead are unlikely to increase in the same proportion.
4. No distinction is drawn between the production done by hand workers and that of machine workers. The direct wages paid for a job mostly done by hand will be much more than the direct wages for a job mostly done by machinery, and accordingly, under this method the factory oncost chargeable to the former will exceed that chargeable to the latter. But the fact is that the oncost chargeable to the job performed by machinery should be more, as it involves heavy charges in the form of power, repairs, depreciation etc. Similarly, one job may require the services of most expensive machinery, whilst another may be performed by cheap machinery. The difference in the cost of the two services is ignored under this method.

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Example

TABLE 10.3

	Job A *Rs.*	*Job B* *Rs*
Materials	600	600
Labour:		
100 hours at Rs.4 per hour	200	
200 hours at Rs. 2 per hour		80
Prime Cost	800	680
Works Overheads		
100% on labour	200	80
Works Cost	1,000	760

Job A was performed with hand labour and job B with the help of a machinery which costs Rs.50,000 and whose running cost is Rs.5,000 per annum. This fact has been completely ignored.

This method can be suitably applied to the cases where the type of labour employed is more or less uniform, the rate of wages paid to each type of labour is also uniform and machinery is used to a negligible extent or there is uniformity in the use of machinery.

3. Percentage on 'Prime Cost' Method

Under this method, factory expenses are recovered by charging to each job or product, a percentage of the prime cost (Direct Expenses) incurred in respect of the job or product. The percentage is ascertained on the basis of previous year's experience. Suppose, in the previous year the direct materials was Rs.50,000, Direct Wages Rs.30,000 and Chargeable Expenses Rs.20,000 = Rs.1,00,000, Prime Cost and suppose factory expenses during the year were Rs.20,000. So, the percentage of Factory Expenses on Prime Cost comes to Rs.20,000 + 100 = 20%. In preparing Cost Accounts for the current year, factory expenses can be taken 20% on the Prime Cost

This method is simple and requires easy calculations. The main argument in favour of its adoption is that both materials and labour give rise to overhead expenses and both are taken into consideration in this method.

Disadvantages.

1. This method does not distinguish between: (a) jobs done by skilled and unskilled workers, (b) machine production and hand production, (c) fixed and variable overheads and (d) jobs done by expensive and by cheap machines.
2. In combining "Direct Materials' and 'Direct Labour', it combines the disadvantages of both these methods.
3. Where the cost of materials is the predominating item of prime cost, the time factor is completely lost sight of and vice versa:

TABLE 10.4

	Job A *Rs.*	*Job B* *Rs*
Direct Materials	2,000	200
Labour	200	2,000
Prime Cost	2,200	2,200
Works Oncost 20% on Prime Cost	440	440
Works Cost	2,640	2,640

In Job A, Works Oncost is mostly based on materials and in Job B, it is mostly based on direct wages.

Unless, however, a standard article is produced, requiring a constant uniform quantity of materials and number of hours engaged upon its manufacture, the method produces most inaccurate results.

4. Hourly Rates of Overhead Recovery

Percentage methods for the recovery of overhead expenses give reasonable and logical results Where a greater degree of accuracy is required and it is desired to charge each individual job with a share of overhead expenses on such a basis that all the facts are taken into consideration, one of the following methods should be employed:

(a) The Machine Hour Rate Method
(b) The Direct Labour Hour Rate Method,
(c) Combined 'Machine Hour' and 'Direct Labour Hour' Method.

Machine-hour Rate.

(Its Computation is discussed in Chapter 6)

By this method, the hourly cost of running each machine is computed and production passing through the machine is charged at this rate. For example, Machine Hour Rate for A Machine is Re 1, for B Machine Rs. 1'10, for C Machine Rs. 1'20 and for D Machine Rs.1'30 For the execution of a work order, A Machine is used for 40 hours and D Machine is used for 50 hours. The cost of material required is Rs.5,000 and Direct Labour Rs100. The factory cost of the work order will be as under:

TABLE 10.6

	Rs.
Materials	5,000
Labour	100
Prime Cost	5,100
Works Overhead Charges:	
Machine A 20 hours @ Rs. 1'00 = Rs. 20	
Machine B 30 hours @ Rs. 1'10 = Rs. 33	
Machine C 40 hours @ Rs. 1'20 = Rs. 48	
Machine D 50 hours @ Rs. 1'30 = Rs. 65	166
Works Cost	5,266

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It makes a distinction between skilled and unskilled labour and takes into account the time spent on a job. This method gives more accurate results, but this method is expensive and involves intricate calculations. This method is only suitable in big mechanized factories where most of the work is done by machines.

5. The Direct Labour-hour Rate

Machine-hour Rate of allocating indirect expenses to production can only be adopted in these departments in which machinery represents the predominating factor of production. For the recovery of indirect expenses in those departments in which hand labour is employed, the Direct Labour Hour method is adopted. Under this method, if all the workers are engaged upon similar tasks, the total indirect expenditures of that period will be divided by the total estimated working hours of the whole of the workers for that periods and an hourly rate of expense per worker will be ascertained. For example, if the total departmental expenses for a period of four weeks are Rs. 4,000 and total number of hours worked are 2,000, the labour hour

rate will be $= \frac{\text{Rs.4,000}}{\text{H.2,000}}$ = Rs. 2 per hour. If, for completing a job, material required is Rs. 500, Wages Rs.300 and it requires 100 Direct Labour Hours, its works cost will be as under:

	Rs
Materials	500
Wages	300
Prime Cost	800
Works Oncost 100 Labour Hours @ Rs. 2 per hour	200
Works Cost	1,000

This method possesses advantages and disadvantages of Machine-Hour Rate

6. Combined 'Machine-hour and Direct Labour-hour' Method

Where the work is done partly by machines and partly by hand labour, a combination of Machine Hour and Direct Labour Hour Method is used for the purpose of allocating the oncost charges. Such expenses are inseparable from the running of the machine and are allocated on the basis of the Machine-hour Rate and the other expenses which are not directly attached to the machines are allocated on the basis of the direct labour-hour basis.

ALLOCATION OF OFFICE AND ADMINISTRATIVE EXPENSES

These expenses are normally not as considerable as the factory overhead expenses and, therefore, the adoption of a scientific and, complicated system for charging such expenses is not so essential. Where office and administrative expenses are insignificant, they may be added to factory expenses and allocated to the various departments on some equitable basis. Where these expenses are considerable, a separate charge should be made in respect thereof to production. This charge is normally made by the addition of an agreed percentage on the works cost of each individual job. An analysis of the past year's Trading and Profit and Loss a/c will reveal what percentage office and administrative expenses bear to Works Cost. An average of such percentages will be taken for the current year.

ALLOCATION OF SELLING AND DISTRIBUTION EXPENSES

If Selling and Distribution Expenses are small, they may be included in office expenses or not included in the Cost Accounts at all. In the latter case, sufficient margin of profit over works cost may be added for the recoupment of such expenses. If these expenses are considerable, one of the following methods may be followed:

1. Percentage of Works Cost: In this method, on the basis of past year's experience, the percentage of selling expenses to works cost is ascertained and used for finding out the Selling and Distribution Oncost to be charged to each job or product. The method can be followed successfully if one product is produced, where selling expenses are small though various articles are produced, the method will not take into consideration different efforts involved in selling. Efforts will be in the same proportion as the cost of production

2. A Percentage on the Selling Price: From an analysis of past year's accounts, one can determine the percentage which normal selling and distribution expenses bear to the normal turnover Suppose, on the basis of the previous year's experience it is ascertained that selling expenses are 10% of the turnover, and the cost of production is Rs.9,000 than 10 10 i.e 10 or 1 100 – 10 90 9 of the cost of production will be charged as Selling and Distribution Expenses. This method can be followed in those cases where the products are sold at *fixed prices* and *the selling price of each article is known.* If prices fluctuate, the method will not give good results.

3. An Estimated Rate Per Unit: If there is only one product, the total estimated selling expenses can be divided by the total estimated number of units to be sold to give the selling on cost per unit. It would be better if constant and variable expenses are separately treated, if there is more than one product.

Overheads and Output, whatever the method adopted for charging overheads to production, one vital factor has to be estimated, viz., the size of the output over which the indirect expenses are to be spread. This could be based on the results of past years, due allowance being given for new factors, such as increased factory capacity, additional travelers, and variations in market conditions. In other words, an expected level of an activity for the coming period has to be estimated in the light of all available information, so that the estimated overhead expenses can be absorbed. The threefold division of overhead expenses is of greatest importance in costing, i.e., fixed overheads, variable overheads and semi-variable overheads. Fixed expenses do not vary with the volume of production, except over very wide limits. Examples are factory rent and Factory Manager's Salary; Variable expenses vary in proportion to production and in the case of selling overheads in proportion to sales. Examples are electric power, coal, commission paid to agents etc. Semi- variable expenses, are affected by variations in production and sales, but not in the direct proportion. Telephone charges, postage and stamps, office salaries are the examples of such expenses.

Example

TABLE 10.7

Output in units	10,000	20,000	30,000
Appropriate overheads:	Rs	Rs	Rs
Fixed	10,000	10,000	10,000
Variable	10,000	20,000	30,000
Semi-variable	5,000	6,000	7,000
	25,000	36,000	47,000
Total overhead per article	Rs. 2.50	1.80	1.57
Variable overheads per article	Re. 1.00	1.00	1.00

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Dependent upon the level of output selected as most probable at the beginning of the period, the charge overheads would vary from. Rs. 2.50 to Rs. 1.57 per unit.

DEPARTMENTALISATION OF OVERHEADS

Production in every well-organised factory consists of a series of operations performed in departments or production centre. Each centre becomes virtually a separate factory, an independent costing unit. Another method of allocating overheads expenses is first to divide the overheads amongst the several departments requisitioning the materials labour or services in question and then allocating each departmental share of the charges according to basic principles. This is known as departments requisitioning the materials labour or services in question and then allocating each departmental share of the charges according to basic principles. This is known as departmentalisation of overheads. This is usually adopted where some of the charges are of such a nature that some departments do not take advantage of them; in such a case, it is only proper that the cost of such items should be borne by those departments that are benefited by them. The fair basis for departmentalisation of the working and maintenance charges of the crane, is the weight it removes and the length of time for which it is used. The quantities of work turned out in specific departments often play an important part in the calculation of departmental overheads. The value of plant and machineries used in different departments, their maintenance cost, sales operatives working in the different departments, vary from department to department and thus departmental overheads are affected. First of all, overheads are estimated for a particular period, and a summary is prepared. After this, overheads are departmentalised on some equitable basis.

More accurate costing of jobs and products is possible because departmentalisation uses different departmental overhead rates for applying factory overhead. A job or product going through a department is charged with factory overhead for work done in that department, using the department's predetermined rate. Therefore, jobs or products are charged with varying amounts of factors overhead depending on the type and number of departments through which they pass. A single overhead rate can result in the incorrect application of factory overhead jobs or products that do not require similar proportions of processing in all departments.

The cost system is designed to fit the departmentalisation required for production purposes. The system accumulates manufacturing costs according to such departmentalisation whether operations are of the job type or continuous process type. The following factors must be considered in deciding the kinds of departments required to control costs and to establish accurate departmental burden rates:

(a) Similarity of operations, processes, and machinery in each department.
(b) Location of operations, processes, and machinery
(c) Responsibilities for production and costs.
(d) Relationship of operations to flow of product
(e) Number of departments or cost centres.

Some of the factory expenses are conferred to a department and are independent of other departments. Examples of such expenses are wages paid to indirect workers, normal idle time wages, contributions to provident fund or any other social security schemes, depreciation, insurance and repairs of plant and machinery, etc. Quite a few expenses, however, will not be incurred by the departments separately, but will be incurred by the factory as a whole. These expenses are allocated among different departments in the following manner:

(i) Factory Rent and Rates, Depreciation and Repairs and Insurance of Factory Premises—Should be allocated according to floor space occupied by each department

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(ii) Works Manager's Salary and Technical Directors Fees—Should be allocated according to estimated time devoted to each department
(iii) Factory Lighting—It is allocated according to number of points in each department or if possible according to separate meter readings.
(iv) Fuel & Power—According to the material consumption or according to the horse power of machinery installed in the various departments.
(v) Labour Welfare Expenses—Should be allocated according to the number of workers benefited
(vi) Materials of Small Value and Sundries—Will be allocated according to the judgement of the works manager

Production and Service Departments

Departments can be divided into two broad categories—production departments and service departments. Production departments are concerned directly with the production of goods. Service departments are those which enable other departments to work. The boiler room, the transport department and repairs and maintenance departments are known as service departments. For ascertaining the expenses of each department, first of all no distinction is made between production and service departments. But, after finding out the cost of service departments, the total is apportioned to the production departments on some suitable basis. The cost of repairs and maintenance department may be apportioned on the basis of actual service rendered or on the basis of running hours of various machines. The cost of transport department will be apportioned on the basis of quantity of goods handled on behalf of each department. The cost of running the boiler room will be apportioned to production departments in the ratio of the horse-power of machinery installed in each production department. The departmentalisation of expenses is illustrated on the next page.

TABLE 10.8 Departmental expenses sheet

Month Jan 2007

Expenses	*Basis of Allocation*	*Total Amount*	*Production Department*				*Service Power House*	*Depts. Rep. & Mainte.*
		Rs	*A Rs*	*B Rs*	*C Rs*	*D Rs*	*Rs*	*Rs*
Rent and Rates	Area occupied	10,000	5,000	1,000	1,000	1,000	1,000	1,000
Labour welfare Exp.	No. of. workers	5,000	500	1,000	1,500	750	250	1,000
Lighting	No. of. points	500	100	50	150	40	60	100
Supervision	Actual	700	100	200	100	100	150	50
Work's Manager Salary	Actual	10000	3,000	2,000	1,000	2,000	1,000	1,000
Depreciation	Actual	500	120	180	60	40	70	30
Insurance	Actual	400	180	20	140	30	25	5
Supervision	Actual	200	25	30	45	80	10	10
Total of service Depts.							2,565	3195
Apportionment of power house exp.	Horse power of installed Machinery		800	900	565	300	–2,565	–3195
Apportionment of Repairs & Maine.	No. of. Machines		600	995	1,100	500		
		27,300	10,425	6,375	5,660	4,840		

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Example (Departmentalisation of overheads)

Estimated Works Expenses Summary, Year Ended December 31,2006

TABLE 10.9

Charges for previous year 2005	*Expenses*	*Adjustments*	*Estimate for year 2006*	*4 weeks Estimate January 2007*
Rs			Rs	Rs
1,200	Rent and Rates	Increase in rate	1,300	100
260	Lighting	-	260	20
300	Heating	Increase in cost of fuel	325	25
3,000	Indirect wages	Reorganization	2,756	212
600	Depreciation	As plant register	715	55
1,160	Repairs and maintenance	In crease in costs	1,495	115
1,170	Power	25% increase in output	1,560	120
49	Oil, waste, etc	do	65	5
170	Insurance	Allow for additional plant	195	15
110	Canteen expenses	Allow for additional men	130	10
550	Cranes and hoists	Allow for increase in output	650	50
1,150	National insurance	Allow for additional men	1,300	100
1200	Works Manger's Salary	Increase in salary	1,300	100
2,600	Technical Director's Salary	-	2,600	200
190	Sundries	Increase in production	325	25
13,709			14,976	1,152

Work Expenses – Departmental Distribution Summary – 4 weekly Period Jan. 2007

TABLE 10.10

Expenses	*Amount* Rs	*Basis of Apportionment*	*Remarks*	*Dept. A* Rs	*Dept. B* Rs	*Dept. C* Rs	*Dept. D* Rs	*Can-teen* Rs	*Power House* Rs
Rent and Rates	100	Floor space	Site value taken into consideration	30	25	27	10	2	6
Lighting	20	Number of points	No allowance	5	5	4	2	2	2
Heating	25	Number of radiators	for wattage	8	4	5	3	5	—
Indirect Wages	212	Actual		30	30	26	26	40	60
Depreciation	55	Plant register		20	10	10	6	2	7
Repairs and maintenance	115	As estimated	"straight Line" basis	33	40	12	15	5	10
Power	120	-	By Works	-	-	-	-	-	120
Oil, waste, etc	5	no. of machines	Manager	1	1	1	1	-	1
Insurance	15	insured amount	As per schedules to fire policies	5	3	2	2	1	2
				-	-	-	-	10	-

Canteen expenses	10	-		30	20	-	-	-	-
Cranes and hoists	50 100	Actual	- A and B only	25	25	25	21	2	2
National insurance	100	Actual	Number of men				1		
Works Manger's Salary	100	Time occupied	Estimated	40	40	5	10	-	5
Technical	200			100	50	25	25	-	-
Director's Salary	25 1,152	Time occupied Estimated	Estimated	10	5	5	5	-	-
Sundries		—							
				337	258	147	126	69	215
Allocation of canteen Expenses, in proportion to men				18	18	18	15		
Allocation of power and House Expenses, per meters				80	70	65	14	–69	–215
Department totals				435	346	230	1		

Illustration 1 In a company A, B and C are manufacturing Departments and D is a Service Department. The following particulars are available for Jan 2007 of 25 working days of 8 hours each day. All the department worked all these days with **TABLE 10.11**

TABLE 10.11

Expenses	*Total*	*Production Departments*			*Service Dept*
		A	*B*	*C*	*D*
	Rs	Rs	Rs	Rs	Rs
Power and lighting	1,100	200	300	360	240
Supervisor's salary	2,000	-	-	-	-
Rent	500	-	-	-	-
Welfare	600	-	-	-	-
Others	1,200	200	400	4000	200
	5,400				
		A	B	C	D
Supervisor's salary		30%	30%	20%	20%
Number of workers		30	40	20	10
Floor area in sq.ft		600	800	600	500
Service rented by service Department to production departments		50%	30%	20%	—

Calculate labor rate of each of the Department A,B,C

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Solution Distribution Overheads

TABLE 10.12

Expenses	*Distribution base*	*Total Cost*	*Production Deparement*			*Service deptt*
		Rs	*A*	*B*	*C*	*D*
			Rs	Rs	Rs	Rs
Power and Lighting	Direct charge	1,100	200	300	360	240
Supervisor's salary	Time devoted	2,000	600	600	400	400
Rent	Floor Area	500	120	160	120	100
Welfare	No. of worker	600	180	240	120	60
Other	Direct charge	1,200	200	400	400	200
	Total	5,400	1,300	1,700	1,400	1,000
b/f			1,300	1,700	1,400	
services department Expenses (Rs.1,000)	Percentage of service rendered					
Total overhead for the		Rs	500	300	200	
month			1,800	2,000	1,600	
Total labour Hours during the month		Rs	6,000	8,000	4,000	
labour rate			0.30	0.25	0.40	

Note: Total labour hours for all the three departments have been calculated under:

	A	B	C
Working days in the month	25	25	25
Working hours in each day	8	8	8
Total working hours during the month	200	200	200
Number of workers employed	30	40	20
Total labour hours for the month	6,000	8,000	4,000

Fixed, Semi-Fixed, and Variable Overheads

Overhead costs are subdivided into fixed, semi-fixed and variable charges The classification is not absolute, but is one of convenience, because few costs remain fixed under all conditions of plant operation and all costs are variable if a long period of time is considered.

Fixed Costs are commonly described as those which do not vary in total amount with increases or decreases in productive activity or volume of output. Examples of fixed costs are management salaries, building depreciation, rent property taxes, and amortisation of lease holds. Fixed costs per unit decreases as production increases and increases as production declines. The fixed costs are constant in total amount, but fluctuate per unit as production activity changes.

Semi-fixed Costs are those which remain fixed in total amount over a relatively short range of variation in output and then are abruptly changed to a new level, where they remain fixed in total amount for another short range of output. For example, if a third shift is added without increasing plant facilities, normally fixed costs such as supervision salaries may be increased because of the necessity of night supervisors; insurance premiums may be raised because of additional fire, theft, and accident risks.

Variable Costs include repairs, power, workmen's compensation, supplies and indirect labour, which vary with changes in production activity The increase or decrease in variable overhead costs need not be in the same proportion to the change in plant activity, however, in many cases there is a direct proportional relationship. Variable costs per unit remain relatively constant with changes in production

The division of the overhead into fixed, semi-fixed, and variable costs is an important one because it centers the attention of management on those cost items which can be controlled and encourages increasing the volume of production so that by spreading fixed and semi-fixed overhead costs over a larger production, the overhead cost per unit can be reduced.

When overhead costs are properly classified, management is given the opportunity to scrutinise them in detail and to eliminate or decrease outlays which are not essential to efficient operation It is a widely recognised maxim that it is easier to increase overhead costs than it is to decrease them. Cost Accounting records should exhibit overhead costs by type and by departments. Timely and intelligent use of such information may make it possible for the management to effect adjustments which result in increased efficiency, and in larger net profits.

PRACTICAL PROBLEMS

(1) In a certain department of a factory, there are two shops-the total departmental overhead for a year is Rs. 12,000 and the estimated number of direct labour hours is 24,000 (10 men employed for 48 hours per week during 50 weeks in the year).

From the particulars given below, calculate the prime cost and works cost of a work order No.54 which passes through both shops.

(1) Materials consumed at Rs100
(2) Direct Labour Hours: Shop A: 8 hours @ 60 P. per hr.
Shop B: 5 hours @ 75 P. per hr.
(3) Workers overheads are to be levied by means of a direct labour hourrate.

Solution The direct labour hour rate is 50 paise, calculated by dividing Rs.12,000 by 24,000 hours Statement of Cost of Work Order No.54 **TABLE 10.13**

TABLE 10.13

	Rs	*Rs*
Materials consumed		100.00
Direct labour		
Shop A (8 hours @ 60 P. per hour)	4.80	
Shop B (5 hours @ 75 P. per hour)	3.75	8.55
Prime Cost		108.55
Works Overheads		
Shop A (8 hours @ 60 P. per hour)	4.00	
Shop B (5 hours @ 75 P. per hour)	2.50	6.50
Works Cost		115.05

(2) In a manufacturing concern, the factory overhead is a fixed percentage of wages and the office overhead is another fixed percentage of factory cost.

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The following information is obtained from the record of a factory regarding the execution of two orders for the same quantity of a commodity:

TABLE 10.14

	Materials	*Wages*	*Sale Price*	*Percentage of Profit on Cost of Production*
	Rs	Rs	Rs	%
First Order	25,000	20,000	85,800	10
Second Order	36,000	28,000	1,23,760	12

Find out the percentage for factory Overhead and Office Overhead.

Solution:

The cost production of First Order = Rs.78,000 being 10/11 of Rs.85,800

The cost production of Second Order = Rs.1,10,500 being 100/112 of Rs.1,23,760.

Let factory overhead be x% on wages and office overhead be y% on factory cost.

Then,

$$78{,}000 = 25{,}000 + 20{,}000 + 20{,}000\ \frac{X}{100} + \frac{Y}{100}\ (45{,}000 + 200x)$$

$$1{,}10{,}500 = 36{,}000 + 28{,}000 + 28{,}000\ \frac{X}{100} + \frac{Y}{100}\ (64{,}000 + 280x)$$

$$33{,}000 = 200x + 450y + 2xy \quad \text{(i)}$$

$$46{,}500 = 280x + 640y + 28xy \quad \text{(ii)}$$

By multiplying equation (i) by 28 and equation (ii) by 20, we have

$$9{,}24{,}000 = 5{,}600x + 12{,}600y + 56xy$$
$$9{,}30{,}000 = 5{,}600x + 12{,}800y + 56xy$$
$$-6000 = -200y$$

or y = 30 by substituting the value of y in equation (i) we get

$$33{,}000 = 200x + 13{,}500 + 60x$$

or $x = 75$

Therefore, the factory overhead is 75% of wages and office overheads is 30% of factory cost.

(3) Hind Private Ltd. manufactures for sizes of the product 'Modern Model' called A, B,C and D in the Department. The workers are paid the piece rate of Rs 1.00, Rs 1.50, Rs 2.00, Rs 3.00, per unit of the product size A, B, C and D respectively. Dearness allowance paid to the workers is Rs.400 per day. Miscellaneous payments are 20% of the basic wages.

From the following information for the month of January 2007, you are required to find the total cost per unit of each size of the product 'Modern Model'

TABLE 10.15

	Product			
	Size A	*Size B*	*Size C*	*Size D*
Direct Labour (Days)	104	78	52	52
Production (unit)	320	150	70	55
Direct Materials (Rs)	250	150	100	125
Overheads Expenses: Rs				
Indirect Materials 500				
Indirect Labours 572				
Indirect expenses 429				

Solution Statement of total cost per unit of each size **TABLE 10.16**

TABLE 10.16

	Products				*Remarks*
	A	*B*	*C*	*D*	
	320	150	70	55	
Unit produced	0.78	1.00	1.43	2.27	
Direct materials(a)					
Direct labour:	1.00	1.50	2.00	3.00	
Piece rate wage	1.30	2.08	2.97	3.78	
Dearness allowance	0.20	0.30	0.40	0.60	
Misc payments					
	2.50	3.88	5.37	7.38	
Total direct labour (b)	3.28	4.88	6.80	9.65	
Primecost (a+b)	0.62	0.80	1.14	1.82	Basis of Apportionment
Overhead expenses	0.65	1.04	1.49	1.89	Material
Indirect Materials	0.50	.78	1.07	1.48	Value Direct
Indirect Labours	1.77	2.62	3.70	5.19	Labour Days
Indirect expenses					Direct Labour
Total overheads (c)					
Total cost (a+b+c)	5.05	7.50	10.50	14.84	

The Steel Equipment Co produces various articles of sheer metal like steel, almirah, etc for domestic and office use. Its factory has the following shops/services and the amount of overhead expense incurred and other particulars for December 1965 are indicated against each:

TABLE 10.17

		Amount of expenditure	*Amount of Direct labour*	*Hours worked*	*Floor space (sq.ft)*	*Power Consumed*
		Rs	*Rs*			
Maintenance:						
Building		9,600	-	-	-	-
Services		12,000	-	1,000	-	-
Power		4,000	-	400	2,000	-
Cutting		16,000	14,660	1,600	4,000	3,60,000 k.w.h
Assembly		8,000	13,520	1,800	8,000	40000 k.w.h

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The service department costs are distributed to other services departments and to the production departments in the order show above. The basis of distribution of costs is as follows:

	Basis of distribution
Overhead expense of	In Proportion to the hours worked in other
Maintenance deptt.	Department
Building services	On the basis of floor space
Power	On the basis of consumption.

Set up a schedule for collection of overhead expenditure for each shop/service and work out the percentage of overhead expenses to direct labour, separately, in respect of cutting and assembly shop.

Solution Schedule of Overhead Allocation and Apportionment

TABLE 10.18

Expenses	*Basis of Apportion ment*	*Mainte nance deptt*	*Building Services Deptt*	*Power*	*Cutting*	*Assembly*	*Rate of apportion-ment*
Amount of		*Rs*	*Rs*	*Rs*	*Rs*	*Rs*	*Rs*
Expenditure		9,600	12,000	2,000	16,000	8,000	4,000
Maintenance	Hours		2,000	800	3,200	3,600	Rs. 2 per
Building	worked	–9,600	14,000				hour
Services	Floor		–14,000	2,000	4,000	8,000	Rs.1/- per
Power	Space			6,800			Sq.ft
	Actual			–6,800			Rs.612
	Consum						per kwh

Summary

The task of allocating indirect expenses becomes simple if there is only one product. In this case, the estimated indirect expenses should be divided by the estimated number of units to be produced, and we shall get the indirect expenses per unit of output. This approach obviously cannot work where there are a large number of products of different types of jobs. In this case, it becomes difficult to ascertain definitely the exact portion of each class of overhead burden attributable to process or operation or department of the factory. Another difficulty arises that some items like repairs, depreciation, bad debts, taxes, commission, advertisement etc., cannot be determined exactly till the end of the financial oncost It is evident, therefore, that the ascertainment and allocation of the oncost resolves itself into a matter of estimate, but such estimate must be done on most scientific and efficient basis. Departments can be divided into two broad categories—production departments and service departments. Production departments are concerned directly with the production of goods. Service departments are those which enable other departments to work. The boiler room, the transport department and repairs and maintenance departments are known as service departments. For ascertaining the expenses of each department, first of all no distinction is made between production and service departments. But, after finding out the cost of service departments, the total is apportioned to the production departments on some suitable basis. The cost of repairs and maintenance department may be apportioned on the basis of actual service rendered, or on the basis of running hours of various machines. The cost of transport department will be apportioned on the basis of quantity of goods handled on behalf of each department. The cost of running the boiler room will be apportioned to production departments in the ratio of the horse-power

of machinery installed in each production department. When overhead costs are properly classified, management is given the opportunity to scrutinise them in detail and to eliminate or to decrease outlays which are not essential to efficient operation It is a widely recognised maxim that it is easier to increase overhead costs than it is to decrease them. Cost Accounting records should exhibit overhead costs by type and by departments. Timely and intelligent use of such information may make it possible for the management to effect adjustments which result in increased efficiency and in larger net profits.

KEY CONCEPT

- Absorption Costing
- Activity Based Costing
- Back Flush Costing
- Cost Sheet
- Direct Labor
- Direct Materials
- Fixed Cost
- Life Cycle Costing
- Material
- Overhead/Indirect Cost
- Semi-variable Cost
- Value Added Concept
- Variable Cost

REVIEW QUESTIONS

OBJECTIVE QUESTIONS

1. Conversion cost is equal to the total of
   a. Material costs and Direct wages
   b. Material costs and Indirect wages.
   c. Material costs and Factory overheads
   d. Direct wages and Factory overheads
   e. Material costs, directs wages and Factory overheads.
2. Which of the following costs can be significantly influenced by a particular manager?
   a. Direct costs. b. Indirect costs c. Product costs
   d. Period costs e. Controllable costs.
3. Replacement cost is the
   a. Written-down value of the abandoned asset less its scrap value.
   b. Cost which is not essential for the decision under consideration.
   c. Cost at which there could be purchase of an asset identical to that which is being replaced.
   d. Maximum possible alternative earning that might have been earned if the productive capacity or services had been put to some alternative use.
   e. Change in costs due to change in the level of activity.
4. Committed cost is defined as:
   a. Is a cost which is essential for the decision under consideration.
   b. Is a fixed cost, which results from the decisions of the management in the prior period and is not subject to the management control.
   c. Is the cost at which there could be a purchase of an asset or material identical to that which is being replaced or revalued.
   d. Is the maximum possible alternative earning that might have been earned if the productive capacity or services had been put to some alternative use.
   e. Is that portion of the cost, which involves payment to outsiders.
5. Costs that can be traced to a particular cost center or cost unit are called.
   a. Manufacturing costs b. Product costs c. Period costs
   d. Direct costs e. Indirect costs.
6. A direct cost is a cost which

a. Is immediately controllable
b. Cannot be economically identified with the item being costed
c. Is incurred as a direct consequence of a decision
d. Can be economically identified with the item being costed
e. Is the responsibility of the board of directors.

7. The costs that result in appropriations due to the policies of the top management are called
   a. Programmed costs b. Future costs c. Avoidable costs
   d. Unavoidable costs e. Discretionary costs
8. The contribution of income that is foregone by not using a limited resource for its next best alternative use is called
   a. Discretionary cost b. Potential cost c. Opportunity cost
   d. Marginal cost e. Out-of-pocket cost
9. If production increases, variable cost will
   a. Vary on a per unit basis
   b. Remain constant on a per unit basis
   c. Increase by a fixed amount
   d. Remain unchanged
   e. Vary inversely.
10. Fixed costs are those costs that
   a. Vary directly with changes in activity levels
   b. Remain constant on a per unit basis
   c. Remain constant at all activity levels
   d. Vary on per unit basis
   e. Both (c) and (d) above.
11. A cost which has both a fixed and variable component is called a
   a. Step-fixed cost b. Step-variable cost c. Semi-variable cost
   d. Curvilinear cost e. Discretionary cost
12. Research and Development costs incurred for new products is an example of
   a. Sunk costs b. Conversion costs c. Joint costs
   d. Relevant costs e. Avoidable costs
13. Costs that are not relevant for decision-making and are not affected by increase or decrease in volume are
   a. Out-of-Pockets costs b. Differential costs c. Imputed costs
   d. Sunk costs e. Marginal costs.

1. Discuss the various methods of allocating works overhead charges. Give the relative merits and demerits of each system.
2. Discuss the various methods of calculating Oncost. Explain their repective advantages and disadvantages.
3. Explain the different methods of Absorption of Factory Overhead.
4. Explain the term 'oncost'. Discuss briefly the different methods of charging oncost to different jobs. Also explain briefly the comparative advantages.
5. What do you understand by departmentalisation of overheads? Why and how is this done?
6. What do you understand by departmentalisation of overheads? Why is this done? How would you departmentalise the following expenses:-
   (i) Consumable Stores (ii) Power
   (iii) Materials Handing Charges (iv) Repairs and maintenance
7. Distinguish between:-

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(i) Cost classification and Cost allocation
(ii) Cost apportionment and overhead absorption

8. Distinguish between indirect expenditure and overhead charges and describe briefly four different methods of allocating works overhead as a charge to production, stating the advantages and disadvantages of each of them.
9. Some of the major problems of Cost Accounting are associated with the allocation of indirect expenditure. Why is this so? Give a brief indication of the several methods of allocation known to you and indicate the circumstances which would lead you to regard each of them in turn as most appropriate.
10. What is meant by 'Overhead expense? Give various methods of allocating overheads and discuss any two of these in detail giving their merits and demerits.

CASE

The following information relates to the activities of a production department of a factory for a certain period:

Materials used	Rs. 36,000
Direct wages	Rs. 30,000
Labour Hours worked	24,000
Hours of machine operation	20,000
Overhead chargeable to the Deptt.	Rs. 25,000

On one order carried out in the department during the period, the relevant data was:

Materials used	Rs. 2,000	Labour hours	1,650
Direct wages	Rs. 1,650	Machine hours	1,200

Calculate by three different methods the overhead chargeable to the job.

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CHAPTER 11

Costing and Control of Labour

"In arriving at the true Cost of Production of any manufacture, labour must be treated as a commodity for the use of which proper price has to be paid."

—N. Sarkar

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *Departments Controlling Labour Cost*
- *Methods of Remuneration*
  - *The Time Basis*
  - *The Piece Work System*
  - *Bonus Schemes or Premium Plan*
  - *Taylor's Differential Piece-Rate Plan*
  - *Gnatt Bonus System*
  - *Emerson's Efficiency Premium Scheme*
- *Co-partnership and Profit-Sharing Scheme*
- *Idle Time*
- *Labour Turnover*

INTRODUCTION

Labour Cost, representing the human contribution to production, is an important cost factor which requires constant control, measurement and analysis. Proper control and accounting for labour costs constitutes one of the most important problems of management in the operation of a business enterprise, and in the determination of the cost to manufacture and to sell a product or to render a service. Adequate labor control involves verification of the efficiency of labour operations, adequate and appropriate wages rates for different levels of skill, maintenance of product quality, and holding the volume of production to planned levels. To achieve labour cost control, other departments and functions besides the accounting division are involved, such as personnel, production, planning, time and motion study, budgeting and time-keeping

Departments Controlling Labour Cost

(1) The Personnel Department

The chief function of the personnel department is to provide an efficient labour force. Personnel functions most directly related to labour cost control involve employment procedures, job, descriptions, job evaluation and time and motion study The Personnel Director, with the aid of various department supervisors, minor and major executive, is responsible for the execution of policies regarding the employment, discharge, classification of employees, wages and wage systems which have been pre-determined by the Board of Directors or a Committee of Executives An employee placement requisition, is sent to the personnel department whenever a worker is needed for a particular job. The requisition is prepared by the foremen or group leaders and approved by department executives. The specimen of Employee Placement Requisition is given below:

TABLE 11.1

Employee Placement Requistion

Report to…….. (Supervisor's Name) ……on…….. (Time) (Date)			Requisition No…….. Date …… Department …… at
No. of Employees Requested	Job Specification		
	No	Description	
Requisition by……..			Approved By…….....

It is the task of the personnel department to interview applicants for positions and to receive formal applications. The personnel department prepares a personnel card or sheet for each worker who is employed. The personnel record contains data regarding the applicant, and during the period of employment, shows the nature of work or positions, wage rates, promotions and changes in wage classification. The personnel record is a case history which extends from the day a worker is employed until his services are terminated.

(2) Engineering Department

This department maintains control over working conditions and production methods for each job and department or process. Its functions are:

(i) Preparation of plans and specification for each job scheduled for production
(ii) Supervision for production activities
(iii) Inspection of parts and jobs at successive stages of production and the completion of production
(iv) Initiation and supervision of research and experimental work
(v) Safety and efficient working conditions

(3) The Time-Keeping Department

The first step in accounting for labour cost is to secure an accurate record of the time purchased for each employee. To secure such data, it is necessary to:-

(a) Provide an unquestionable evidence of the employee's presence in the plant from the time he enters it until he leaves. The clock card establishes the evidence.

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(b) Provide information with respect to the type of work performed while the employee is at plant. The time or job ticket established this record.

Clock Card. The Clock-Card provides space for the name and number of the employee and usually covers an entire payroll period. The time clock or time recorder is a modern mechanical instrument for recording employee time in and out of office and the factory. When completed, the clock card shows the time a worker started and stopped work each day or shift of the payroll period, with overtime and other premium hours clearly indicated.

At the beginning and close of each shift, a daily time card showing the worker's name, clock number and department is placed in a rack, located at a convenient distance from the time clock. When an employee arrives or leaves, he inserts the card in the time clock device and the time and date is recorded on the card, which he places in another rack located on the other side of the recorder.

Time-Card. The second task of the time-keeping department is to account for the time of each employee in terms of departments, operations, and production orders or jobs. The classification of worker's time may be obtained through the use of the daily time-card for each worker. The 'time-card' shows the worker's name, identification number, and the time in and out for the day, normal and overtime and amount of wages due.

Time Card

Worker's No: 157

Name of the worker's: X — Date of week ending: 30th Nov. 2007

Address: Purana Bazar, Meerut — Normal Hours Rate: Re. 1

Department: Casting — Overtime Hours Rate: Re. 1.50

TABLE 11.2

Days	*Morning*		*Afternoon*		*Overtime*		*Total time*		*Amount of*
	In	*Out*	*In*	*Out*	*In*	*Out*	*normal*	*Over time*	*Wages Rs*
Monday	7.30	12.00	13.30	17.00			8		8.00
Tuesday	7.32	12.02	13.00	16.30			8		8.00
Wednesday	8.00	12.00	13.00	17.00			8		8.00
Thursday	9.00	12.00	13.00	18.00	19.00	22.00	8	3	12.50
Friday	---	---	13.00	17.00			4		4.00
Saturday	7.00	12.00	14.00	17.00			8		8.00

	Rs	Rs.
Deduction: Fine	1.00	48.50
Provident Fund	4.85	5.85
Balance		42.65

Job Card. In addition to registering worker's time of arrival and departure, it is also necessary to record particulars of work done and the time spent on each order or operation. For this purpose, job card is given to each worker which is filled by him and approved by the foreman.

Job card

Form No.....

Worker's Name..... — week ending on.....

Worker's No.....

TABLE 11.3

Date	*Job No.*	*Description of Job*	*Time*		*Hours on Job*	*Rate*	*Amount*	*Signature of Foremen*
			Started	*finished*				

…… …… ……

Signature of wages clerk Signature of cost clerk Signature of the worker

Daily Muster-Roll

If the number of workers are less, the time-keeper or gate-keeper may prepare daily muster-roll, showing the name, class and number, of each worker, time of arrival and departure, hours worked (normal and overtime) and total hours for which wages are to be paid.

Daily Muster-Roll

TABLE 11.4

Work man			*Time of*		*Rate per Hours*	*Work order no.*	*Hour*		
Name	*Class*	*No*	*Arrival*	*Departure*			*Ordinary*	*Over time*	*Total to be paid*

The muster-rolls are analysed by the costing department in a month or so, for ascertaining the labour cost of each job or work order.

Analysis of Muster-Roll

Workman No……

Name…….. Month…….....

Class …… Rate per hour……...

TABLE 11.5

Date	*Time devoted upon each work order*					*Total Hours (Hours)*	*Total Wages (Account)*
	1	*2*	*3*	*4*	*5*		*Rs*

Date …… Signature of Wages Clerk……

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(4) The Payroll Department

The wage sheets or payroll is prepared by the Payroll Department from clock cards, job or time tickets and time-sheets. Departmental payroll sheets, which constitute the recapitulation of date appearing on daily or weekly time reports, are summarised in a muster payroll sheet which forms the basis for the preparation of payroll voucher entry and the posting to Cost Controlling Accounts in the general ledger. In order to maintain a control to safeguard the payroll against the inclusion of names, fictitious employees or the names of employees who have previously left their jobs, the pay master should require the identity of each worker at the time of payment of wages.

TABLE 11.6 Pay Roll or Wages-Sheets

Department No			*(Sheet No)*								*Week ending*				
			WAGES								*Deductions*				
Worker		*Form of Wages*	*Daily wages*						*Over time Wages*	*Bonus*	*Gross Wages*	Advance	Fines	Total	*Amount due*
No	*Name*		*M*	*T*	*W*	*TH*	*F*	*S*							
1	A	* T **P.													
2	B	* T **P.													
3	C	* T **P.													
4	D	* T **P.													
5	E	* T **P.													
		TOTAL													

* T –Time Rate ** P. Piece- work Rate.

(5) The Cost Department

The payroll department sends clock cards, job cards and time cards to the Costing Department. The Costing Department prepares a wage abstract for ascertaining the labor cost of each article produced or service rendered:

TABLE 11.7 Wages Abstract.

Date	*Job No.15*		*Job No 16*		*Job No 18*		*Job No 20*	
	Worker's Name	*Amount*	*Worker's Name*	*Amount*	*Worker's Name*	*Amount*	*Worker's Name*	*Amount*
Total Job. L.F.								

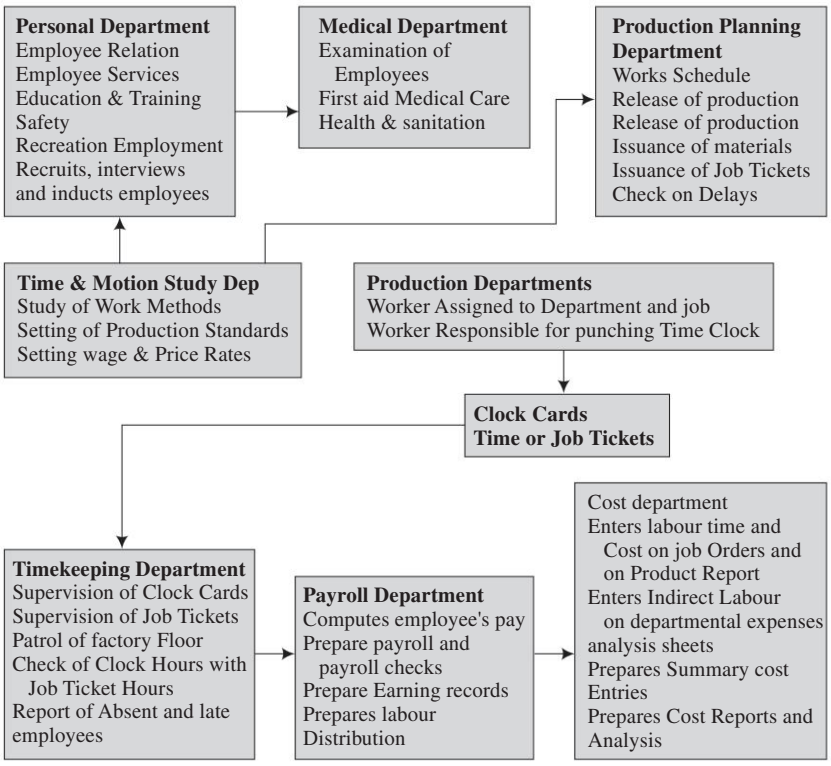


FIG. 11.1 Labour cost Control

METHODS OF REMUNERATION

Various systems of wage payment are in use today. System of remuneration fall broadly under the following headings:

(i) On the basis of time spent in the factory; and
(ii) On the piece work basis.

The aforementioned methods are amplified by some form of bonus or incentive plan. In addition to the above, various forms of co-partnership and profit-sharing schemes are becoming more common. The method of remuneration adopted depends largely on the nature of work performed and, of hours, the wage agreement in force. In a fair wage system, a worker should have a guarantee of a minimum payment, sufficient for a reasonable standard of living, efficient workers should be distinguished from inefficient ones by means of linking wages to output; there should be equal pay for equal work, there should be uniformity of wage rates in the same area or industry, and skilled workers should be remunerated for the effort put in by them to acquire the skill.

Different methods of wage payment are discussed below:

1. The Time Basis

Under this system, the worker is paid at an hourly, daily, or weekly rate, and his remuneration thus depends upon the time for which he is employed, and not upon his production. If, at the instance of the employer, overtime is worked, the wage agreement usually provides that all hours worked in excess

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of an agreed number are paid for at a higher rate. The time basis of remuneration for direct labour is found in those industries where the speed of production cannot be influenced by the energy or dexterity of the worker.

The wages due to each worker is arrived at by extending the hours worked, as shown by the time card, at the appropriate hourly rate. This calculation will normally be done on the card itself, the amount of money being entered only on the Payroll. The deductions for National Insurance, holiday schemes, tools etc, will be entered in the appropriate columns.

Although in many cases the time system of remuneration is the only practicable to adopt, it suffers from the disadvantage of holding out no inducement to the workers to increase their production. Considerable wasted time may be paid for, and, as between the workers themselves, the slow worker receives the same wages as the quick worker, thus tending to cause discontent and increasing the labour cost. The employer aims at obtaining the maximum rate of production, partly to obtain the minimum labour cost per unit of production, and partly to reduce the cost of overhead expenses per unit. Where wages are paid on the time basis, the interest of the employer and worker, are to a certain extent, in conflict.

Illustration 1 (Time Basis wage payment)

The normal week at a certain factory consists of 42 hours, a five-day week being worked and under the agreement, Saturday and Sunday work is paid one and a half time. Compute the wages of X who works the normal week, and for Y, who in addition, works for 6 hours on Saturday morning. The hourly rate of wages is Rs.2/-.

Solution

X's wages for 42 hours @ Rs.2/-	84
Y's wages for 42 hours and 6 hours which	
Are equivalent to hours, I,e, 51 hours @ Rs2/-	102

2. The Piece-Work System

Under this system, a fixed rate is paid for each unit produced, job performed, or number of operations completed, and the worker's wages thus depend upon his output and not upon the time he spends in the factory The rate for a job is fixed by taking into account physical exertion required, the degree of dirtiness of a job and the value of materials involved. Each piece-worker will be given a card or book in which he will record his output and this will be checked by the inspector or checker, who will satisfy himself that the production has reached the required standard. The books or cards will be sent to the wages office for calculation of the wages due. The specimen of piece-work card is given below:

Place Work Card

Worker's name .....

Worker's no ..... work commenced on .....

Week ending ..... Work completed on .....

Description of the job .....

TABLE 11.8

Quantity or number of goods produced	*Approved goods*	*Rejected Goods*	*Rate of payment*	*Amount*

The advantages and disadvantages of the piece wages system are summarised below:

Advantages

(a) The workers are remunerated on their merits.
(b) An inducement is given to the workers to increase their production, and thus, the fixed overhead expenses per unit are reduced.
(c) The employer is enabled to ascertain his exact labour cost per unit or per job.
(d) Greater care is taken by the workers to keep their tools and machinery in order, so that their output may not suffer.

Disadvantages

(a) The quality of output may suffer unless the system of inspection is adequate.
(b) Difficulty may be experienced in fixing an equitable piece-work rate.
(c) There may be careless and excessive use of materials, due to the efforts of the workers to achieve a high output.
(d) High wages will be earned by a few efficient workers, therefore, discontent may be caused among the slow workers.

Illustration 2 (Piece-work System)

Two piece-workers A and B, are both engaged in carrying out a certain job, the piece-work rate is Rs2/-per job. Each works the normal 48-hours week, the number of jobs completed and passed by the inspector are as follows:

A	50 jobs
B	40 jobs

Compute the piece-work Earnings

Solution

A's wages	50 × 2 = Rs.100
B's wages	40 × 2 = Rs 80

Due to greater skill, energy or dexterity, A has earned Rs. 20 more in the same period of time.

BONUS SCHEMES OR PREMIUM PLANS

Bonus or Premium is paid for the efficiency of the worker i.e., when the work is finished before the standard time. The following are the important methods of paying Bonus:

(i) Halsey Plan,
(ii) Rowan Plan,
(iii) Taylor's Differential Piece Rate Plan,
(iv) Gnatt Bonus System, and
(v) Emerson's Efficiency System.

(i) Halsey Plan—Under this system, a standard time is fixed for each job or operation. Wages are paid to the workers for the actual time spent on the job and Bonus or Premium is paid in a fixed proportion to the time saved, i.e., 50% or 40% of the time saved. If no percentage is given in the question, Bonus should be paid for 50% of the time saved.

(ii) Rowan Plan—Under this system also, standard time is fixed for the completion of each job. Wages are paid for the actual time spent upon the job and in addition to it, a Bonus or Premium is paid for the period which is arrived at by applying this formula:

$$\frac{\text{Time Taken} \times \text{Time Saved}}{\text{Standard Time}}$$

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In other words, under this system, Premium is paid in that proportion of the time taken which the time saved bears to the standard time.

Illustration 3 The standard time fixed for the completion of a job is 20 hours. The agreed rate of wages is Rs.2/- per hour. The job was actually completed in 16 hours by a worker. Calculate the total earnings and the effective rate of earnings per hour of the worker, under a) Halsey Bonus Plan (Bonus 50%) b) Rowan Bonus Plan.

(a) Under Halsey Plan,

Standard time	20	hours
Actual time taken	16	"
Time saved	4	"
	Rs.	
Wages: For 16 hours actual time taken) @ Rs.2/- per hour =	32	
Bonus: For 50% of the time saved i.e., For 50% of 4 hours ie, for 2 Hours @ Rs.2/- per hour		
Total Earnings	4	
	36	

Effective Rate of Earnings per hour (Total Earnings

(b) Under Rowan Plan

Standard time	20	hours
Less Actual time taken	16	"
Time saved	4	"

Wages: for 16 hours @ Rs.2/- per hour = Rs.32

Bonus: for the period = time taken x

= Hours 16

= For 3'2 hours @ Rs.2 per hour Rs. 6'40

Total Earnings Rs. 38'40

Effective rate of earnings per hour

(iii) Taylor's Differential Piece-Rate Plan This Plan does not guarantee a daily rate of wages. Under this system, two piece-rates are fixed, the lower of which is much below the normal daily wage-rate. The higher rate comes into operation only after the standard is reached and serves as a very strong incentive to increase output. The system thus results in penalising inefficient workers. The standard of efficiency is arrived at as a result of close analytical time-study of each job. As an illustration, let us assume that the time-rate is Rs.1/- per hour, and the usual rate of output is one piece per hour. Time tests have proved that with maximum effort, two pieces can be turned at, in the same time. If the worker's output reaches the maximum standard, i.e, if he has turned at two pieces per hour, he will be rewarded at the higher rate than the time rate, say at 75 paise per hour. He will thus receive Rs1.50 for the hour.

Illustration 4 The standard work in a factory has been fixed at 40 units per day and the rates of wages are Re.1/- per unit for workers who attain or cross the standard and 75 paise per unit who fail to achieve the standard performance. There are five workers in a Dept. of the factory, their performance is as follows:

A	Ticket No. 4	40 Units
B	" " 5	35 "
C	" " 6	50 "
D	" " 7	55 "
E	" " 8	60 "

Solution

TABLE 11.9

S.no	*Name and ticket number*	*Rate of wages*	*Units produced*	*Total earning Rs*
1	AT. No. 4	@Re.1/	40	40.00
2	B " 5	@Re. 75 paise/	35	26.25
3	C " 6	@Re.1/	50	50.00
4	D " 7	@Re.1/	55	55.00
5	E " 8	@Re.1/	60	60.00
		Total	240	231.25

(iv) Gnatt Bonus System It is a modification of Taylor's Bonus Plan. In the Gnatt System, if the worker performs the allotted task in the time set, he gets the daily wage rate and a stipulated bonus, i.e., 20% to 50% of the wages. If he fails to do so, he gets his daily wage only. In this case, the slow workers are not penalised, but receive their usual time-rate. The piece work rate is usually lower than the higher rate offered under the Taylor-System.

Illustration 5 In a factory the standard output is 8 units in a standard time of 8 hours. The hourly rate of wages is 50 paise. Bonus rate is 25% Output of four workers (A,B,C and D) was 6,7,8 and 10 units. Calculate total earnings of each worker and cost per unit under Gnatt Bonus System

Solution

TABLE 11.10

Workers	*Output in unit*	*Standard time*	*Hourly Rate of wages*	*Wages in rs*	*Bonus 25%*	*Total earning*	*Cost per unit in paise*
A	6	8	50 paise	4.00	-	4.00	66.7
B	7	8	"	4.00	-	4.00	57.1
C	8	8	"	4.00	1.00*	5.00	62.5
D	10	8	"	4.00	2.25*	6.265	62.5

- No Bonus will be paid to A and B, because their output is below the standard. C's output is standard, he will get bonus equal to 25% of wages paid to him.
- Per unit cost of 8 units is 62.5 paise, therefore, the cost of 10 units should be 62.5 × 10 = Rs.6.25—wages paid Rs. 4, the balance Rs.2.25 will be the bonus payable to D.

(v) Emerson's Efficiency Premium Scheme. Under the Emerson's system, if the worker attains 2/3 or 66.66% of the maximum standard set, he receives a 10% Bonus on the day rate, and such bonus gradually increases till 100% efficiency is reached. The plan appeals to the new and slow workers, as a guaranteed day rate is paid even if less than 2/3 of the standard set is accomplished.

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Illustration 6 In a factory, the standard hours fixed are 8 hours a day and the standard output is 10 units per hour. The daily rate is Rs. 6. There are five workers A, B, C, D and E and their outputs are 50 units, 65 units, 45 units, and 100 units respectively. The following is the scheme of giving Bonus to workers:

Up to	67%	Efficiency		Nil
Above	67%	to	80	5%
"	80%	to	90%	10%
"	0%	to	100%	20%

Above 100%, one percentage rise in Bonus for every one per cent rise in efficiency.

Calculate the Wages, Bonus and Total earnings of the workers.

Solution

TABLE 11.11

S.No	*Name and T. No*	*Daily wages*	*Output Units*	*Standard Output = 80 units Efficiency*	*Rate of Bonus*	*Bonus Rs*	*Total earnings*
1	A	6	50	62.5%	-	-	6.00
2	B	6	65	81.25%	10%	0.60	6.60
3	C	6	45	56.25%	-	-	6.00
4	D	6	75	93.75%	20%	1.20	7.20
5	E	6	100	125.00%	45%	2.70	8.70

CO-PARTNERSHIP AND PROFIT-SHARING SCHEMES

A Scheme which enables the worker to share in the prosperity of the business as a whole and gives him a tangible interest in its welfare is of great benefit to both the employer and the employee. Some companies give the worker his share of profits in the form of shares in the company and a permanent interest in the future of business is thus established. These schemes suffer from the following disadvantages.

(i) It is difficult to determine the share of profits to be given to each worker. When the share is paid to the worker in cash, they tend to regard it merely as a bonus.

(ii) Any distribution normally takes place once in a year, the advantage thereof to the worker is so distant that he may lose interest in it.

(iii) If workers are only eligible to participate in profits at the conclusion of specified number of years of service, this leads to dissatisfaction among the newer and younger employees.

(iv) The workers share in the good years, but do not bear these share of losses in bad years.

Idle Time

Idle time is the period of time during which productive factors cannot be effectively employed. It may represent loss of time of labour, machines or equipment due to short supply of materials, want of work, instruction or drawings, etc. The causes of idle time may broadly be classified into three categories namely, productive causes, administrative causes and economic causes.

Productive Causes may further be classified into two groups-normal and abnormal.

Normal Idle Time may be caused due to traveling from factory gate to the department, machine set up and change over from one job to another; repairs and maintenance, waiting for job, materials and instructions, etc. Normal idle time is unavoidable and therefore, an allowance is made in the production time for normal idle time.

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Abnormal Idle Time may be caused due to major repairs, break down of machines, equipments, etc, power failure, fire, earthquake or other accidents, short supply of materials, etc Abnormal idle time due to avoidable causes is controllable and adequate steps may be taken to control such idle time. Idle time due to unavoidable causes is uncontrollable and therefore, such cost may be transferred to Profit and Loss Account.

Administrative Causes responsible for idle time are production bottleneck due to faulty planning, strike or lockout, lack of coordination between different functions. Such idle time is controllable by higher levels of management.

Economic causes responsible for idle time are strong competition seasonal nature of business, fall in demand for products due to contraction of market. Such idle time is to a very large extent uncontrollable, but management may control such idle time by long-term planning and foresight

Labour Turnover

Labour turnover is the rate of displacement of the employees of an undertaking. It is the ratio of aggregate number of men relieved and engaged to the average number of persons on the payroll. It may be measured by the formula

$$\text{Labour Turnover} = \frac{\text{Total No of persons released engaged}}{\text{Average number of persons on the payroll}}$$

Labour turnover leads to engagement of new employees who are inexperienced or less experienced than the persons relieved. They are more susceptible to accident and due to their unfamiliarity of the mechanical processes, they cause more damage to plant and machinery, increase spoilage and consequently cause reduction in output.

The causes of labour turnover may broadly be classified into two categories, namely avoidable causes and unavoidable causes. Among the avoidable causes, redundancy is of considerable importance. Redundancy may be caused by seasonal character of trade, short supply of materials, fall in demand of products, etc. But, the main cause is lack of planning and foresight of management. Optimum use of labour force may be made by means of personnel requirement budget based on sales forecast and production target. The other avoidable causes are job dissatisfaction, dissatisfaction with working conditions or remuneration, lack of cordial industrial relations, etc. The unavoidable causes are personal improvement, retirement, sickness, old age or death etc.

The cost of labour turnover should be expressed as a quotient of total cost over average number of workers employed during the period. Loss of output due to labour turnover may be measured by the formula-

Loss of output = (m-n) r,

m = verage output per hour of all employees

n = Average output per hour of new employees

r = Total number of hours of new employees

Solved Problems

Problem 1 (Halsey System and Rowan Plan)

The standard time for a job is 20 hours at the rate of Re.1/- per hour. The job was actually finished within 15 hours. Calculate the remuneration (a) when Halsey system of giving bonus is adopted, and (b) when Rowan system is adopted.

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Solution

(a) Under Halsey System

Time allowed	20 Hours
Time taken	15 Hours
Time saved	5 Hours
	Rs
Wages for 15 hours @ Re.1/-per hour	15.00
Bonus: For 50% of the time saved (5 hours) ie., for 2 hours @ Re1/- Per hour	2.50
Total Remuneration	17.50

(b) Under Rowan System

Time allowed (standard time)	20 Hours
Actual time taken	15 Hours
Time saved	5 Hours
Wages for 15 hours, actual time	
	Rs.
Taken @ Re.1/-per hour	15'00
Time saved	
Bonus Period = Time taken $\times \frac{\text{Time saved}}{\text{Time allowed}}$	
15 Hours $\times \frac{5 \text{ Hours}}{20 \text{ Hours}}$	3'75
= Bonus for 3'75 hours @ Re.1/- per hout	
Total Remuneration	18'75

Problem 2 Calculate the earnings of a worker under (a) Rowan Premium Bonus System and b) Halsey Weir Premium Bonus System 50% of time saved), from the following particulars;

(a) Hourly rate of wages (guaranteed) 50 P.
(b) Standard time for producing 1 dozen articles is 3 hours
(c) Actual time taken by the worker to produce 20 dozen articles is 48 hours

Solution

(a) Rowan Premium Bonus System

Standard time for producing 20 dozen Articles = 20 × 3 hours	60 Hours
Actual time taken	48 Hours
Time saved	12 Hours
Wages for 48 hours @ 50 P. Per hour	
Bonus	
Period: Proportion of time taken which The time saved bears to the	

Standard time Time taken $\times \frac{\text{Time saved}}{\text{Standard Time}}$

$= 48 \times \frac{12}{60}$ hours

= Bonus for 9'6 hours @ 50 P per hour

Total earnings

(c) Halsey-weir Premium Bonus System

Wages for 48 hours @ 50 P. per hour

Bonus for 50% f the time saved i.e.,

50% of 12 hours=For 6 hours @

50 P. per hour

Total earnings

Type B—Quantity of pieces of work given out and quantity of pieces of work passed.

Problem 3 Calculate the wages and bonus of a worker from the following details:

Name:	X
Ticket No:	5
Job commenced: Ist January 2007 at 8 a.m.	
Job completed: 6th January 2007 at 10 a.m.	680
Quantity of pieces of work given out	600
Work passed or done	10 pieces perhour
Time allowed	50 P. per hour
Worker's rate	
Bonus	40% of the time saved

Assume that the worker has worked a 9 hour's day

Solution

Wages and Bonus Payable to X

(Ticket No. 5)

Work done or passed	600 pieces
Time allowed	10 pieces per hour
Standard Time for 600 pieces	60 hours
Time taken 5 days of hours	
Each and 2 hours	47 "
Time saved	13 "
Wages for time taken	
	Rs.
For 47 hours @ 50 P each	23.50
Bonus : For 40% of the time saved	
i.e., for $\left(13 \times \frac{40}{100}\right)$ = 3'2 hours	
@ 50 P per hour	2'60
Total earnings	26'10

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Notes:

(a) Pieces of work given out have not been taken into consideration

(b) Bonus has been paid under Halsey Plan.

Problem 4 Calculate the amount of wages and bonus earned by Ram Gopal

Ticket No….. 631

Job commenced : Monday 16th July 2007, 8 a.m

Job finished : Saturday 21st July 2007, 1 p.m.

Quantity of pieces of work given out : 638

Quantity of pieces of work passed : 600

Worker's rate : 50 P. per hour

Time allowed : 10 pieces per hour

Bonus : 40% of time saved

Assume that the employee worked

Hours a day and no overtime.

Solution Wages and Bonus Payable to Ram Gopal

Work done or passed	600 pieces
Time allowed	10 pieces per hour
Standard time allowed for 600 pieces =	60 hours
Time taken 5 days of hours each	
And 5 hours =	50 "
Time saved	10 hours
	Rs.
Wages for 50 hours @ 50 P. per hour =	25.00
Bonus for 40% of the time save i.e.,	
For 4 hours @ 50 P. per hour	2.00
Total amount payable to Ram Gopal	27'00

(a) Quantity of pieces of work given are 638, but they have not been taken into consideration as we are concerned only with the work done or passed.

(b) Bonus has been calculated under Halsey Plan, because it is given in the question 'Bonus for 40% of the time saved'.

Type C-Total Earnings and effective rate of earnings per hour of three cooperatives under both plans.

Type D—Bonus related to efficiency

Problem 5 In a manufacturing concern, the daily wages guaranteed for workers is Rs. 2/-. The standard output for the month is 1,000 articles representing 100% efficiency. The rate of wages is paid without Bonus to those workers who show up to 662/3% efficiency. Beyond this, bonus is payable on a graded scale:

Efficiency	Bonus
90%	10%
100%	20%

Further, increase of 1% in bonus for every 1% further rise in efficiency

Calculate the total earnings of A,B,C and D, who have worked 26 days in a month. A's output 500 articles, B's output 900 articles, C's output 1,000 articles and D's output 1,200 articles.

Solution Standard output 1,000 articles per month representing 100% efficiency

TABLE 11.12

Name	*Output*	*Efficiency*	*Percentage of Bonus on wages*	*Wages for 26 days @ Rs 2/*	*Bonus Rs*	*Total earning Rs*
A	500	50%	-	52	-	52.00
B	900	90%	10%	52	5.20	57.20
C	1,000	100%	20%	52	10.40	62.40
D	1,200	120%	40%	52	20.80	72.80

Notes:

(a) No Bonus is given if the efficiency is below 662/3 % from the standard.

(b) After 100% efficiency, 1% Bonus is given for every 1% rise in efficiency.

Problem 6 In a manufacturing company, a daily wages rate guaranteed for a worker is Rs. 1.87 and the standard output fixed for the month is 1,000 articles representing 100% efficiency. The daily wage rate is paid without bonus to those workers who show up to 662/3% of the efficiency standard. Beyond this, there is a bonus payable on a graded scale in a fixed rate to the increased output as under:

Efficiency	Bonus payable
90%	10%
100%	20%

Further increase of 1% for every 1% further rise in efficiency.

Find out the total earnings of four workers, A, B, C and D who have worked for 26 days in a month. Workers output is A 500 articles, B 900 articles C 1,000 articles and D 1,100 articles.

Solution

TABLE 11.13

Name	*Output*	*Efficiency*	*Percentage of Bonus on wages*	*Wages for 26 days @ Rs. 1.87 per day*	*Bonus Rs*	*Total earning Rs*
A	500	*50%	-	48.75	-	48.75
B	900	90%	10%	48.75	4.88	53.63
C	1,000	100%	20%	48.75	9.75	58.50
D	1,100	110%	30%	48.75	14.62	63.37

Notes:

(a) No Bonus is given if efficiency is less than 662/3% from the standard

(b) After 100% efficiency, 1% Bonus is given for every 1% rise in efficiency.

Type E—Calculation of Wages and Bonus under Halsey Plan when a percentage is given and also calculation of factory cost

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Problem 7 In an Engineering Works, the standard time for a job is 16 hours and the basic wage is one rupee per hour. A bonus scheme is instituted so that the worker is to receive his normal rate for hours actually worked and for half the hours saved. Materials for job cost Rs. 20 and the factory overhead is charged on a basis of Rs. 2 per labour hour.

Calculate the wages and the effective rate of earnings per hour if the job is completed (a) in 12 hours and (b) in 14 hours.

Also, tabulate the factory cost of the job on the same basis

Solution

	Job completed in (a) 12 hours	Job completed in (b) 14 hours
Standard time	16 hours	16 hours
Time taken	12 "	14 "
Time saved	4 "	2 "
	Rs.	Rs.
Wages:		
(a) For 12 hours @ Re. 1/- per hour	12'00	
(b) For 14 hours @ Re. 1/- per hour		14'00
Bonus : For 50% of the time saved :		
(a) For 2 hours @ Re 1/- per hour	2'00	
(b) For 1 hour @ Re. 1/- per hour		1'00
(Wages earned) Total earnings	14'00	15'00

Effective rate of earnings per hour

Statement of Factory Cost

	Job completed in (a) 12 Hours	Job completed in (b) 14 Hours
	Rs.	Rs.
Materials	20	20
Labour (wages)	14	15
Prime Cost	34	35
Factory overhead @ Rs. 2 Per labour hour		
(a) For 12 hours	24	
(b) For 14 hours		28
Factory cost	58	63

Problem 8 In an engineering company, the standard time fixed for a job is 20 hours and basic wages Re. 1 per hour. A bonus scheme has been instituted, so that the worker may get his normal rate for the hours actually worked and for half the hours saved.

The material for the job will cost Rs. 50 and factory overhead is to be charged at Rs. 2/- per hour, if the job is completed in (a) 15 hours and (b) 18 hours.

Also calculate the Factory cost of the Job.

Solution

	(a)	(b)
Standard time	20 hours	20 hours
Time taken	15 "	18 "
Time saved	5 "	2 "
Wages:		
	Rs.	Rs.
(a) For 15 hours @ Re. 1/- per hour	15'00	
(b) For 18 hours @ Re. 1/-per hour		18'00
Bonus: For 50% of the time saved:		
(a) For 50% of 5 hours		
i.e., for 21/2 hours @ Re. 1/-per hour	2'50	
(b) For 50% of 5 hours		
i.e., for 1 hour @ Re. 1/-per hour		1'00
Total earnings	17'50	19'00
Effective rate of earnings per hour = -----		
	Factory Cost of the Job	
	(a)	(b)
Materials	50'00	50'00
Wages	17'50	1'00
	67'50	69'00
Factory Overheads :		
@Rs.2/- per labour hour		
(a) for 15 hrs. @ Rs. 2/-	30'00	
(b) for 18 hrs. @ Rs. 2/-		36'00
Factory Cost	97'50	105'00
Type F-Dearness Allowance		

Problem 9 Calculate the earnings of a workman under the Halsey Premium Plan and the Rowan Premium Plan for executing a piece of work in 60 hours as 75 hours allowed. His hourly rate is 25 P. and under the Halsey system, he is to be paid for 50% of the time saved. In addition, he gets a dearness allowance of one rupee per day of 8 hours worked.

Solution Under the Halsey Plan

Standard time Allowed	75 hours
Actual time taken	60 "
Time saved	15 hours
Wages:	
	Rs.
For 60 hours @ 25 P. per hour	15'00
Dearness Allowance:	
Re. 1/-for 8 hours for 60 hours: $\frac{60 \text{ hours}}{8 \text{ hours}} \times$ Re.1 =	7'50
	22'50

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Bonus: 50% of the time saved
i.e., for 71/2 hours;
Wages for 71/2 hours @ 25 P. per hour =
Dearness allowance for 71/2 hours @
Rs. 1/- per hour
Total earnings

Under the Rowan Plan:

Standard time allowed	75 hours
Actual time taken	
Time saved	

Wages for time taken
60 hours at 25 P. per hour
Dearness allowance @ Re. 1/- for 8 hours: $\frac{60}{8} \times$ Re.1 =

Bonus: Proportion of the time taken which the time
Saved bears to the standard time

60 hours 15 hours

$$\text{(Time taken)} \times \frac{\text{(Time saved)}}{\underset{\text{(Standard time)}}{75 \text{ hours}}} = \text{Bonus for 12 hours}$$

Wages: for 12 hours @ : 25 P. per hour
Dearness Allowance for 12 hours @
Re. 1/- for 8 hours
Total Earnings

Problem 10 The normal working week in a factory is 44 hours. A worker is paid 50 P an hour, overtime 11/2 times the hourly rate and a Bonus of 25 P. for every 100 articles produced in excess of 5,000 per week. The total output during 1st week of August 2007 is 5,800 articles, total hours worked during the week are 51, of which 7 hours are overtime. Calculate his wages for the week.

Solution 1st week of August 2007

	Rs.
Basic Wages for 44 hours @ 50 P. per hour	22'00
Overtime for 7 hours @ 75 P. per hour	5'25
Bonus on 800 articles (in excess of 5,000) @ 25 P. per 100 Articles	2'00
Wages if the week	29'25

Type H—Miscellaneous

Problem 11 A workman takes 9 hours to complete a job on daily wages and 6 hours on a scheme of payment by results. His day rate is 25 P. per hour. The material cost of the product is Rs. 4, and the factory overheads are recovered at 150% of the total direct wages. Calculate the Factory cost of the product under (a) the Piece-Work Plan, (b) the Halsey Plan, and (c) the Rowan Plan.

Solution: Rowan plan: Proportion of the time taken, which the time saved bears to The standard time

Earnings under Halsey Plan (method)

	Rs.
Wages: For 6 hours @ 25 P. per hour	1'50
Cost of living bnus : For 6 hours @ 10 P. per hour	0'60

Premium:

i.e., $\frac{2 \times 30}{100}$ hour = 0.6 hour

Wages for 0'6 hours @ 25 P. per hour	0'15
Cost' of living bonus for 0'6 hour @ to P per hour	0'06
Earnings for 6 hours	2'31
	0'385

Hourly rate Rs $\frac{2'31}{6}$.

Earning under Rowan Plan (method)	1'50
Wages for 6 hours @ 25 P. per hour	
Cost of living bonus for 6 hours @ 10 P. per hour	0'60

Premium:

Period: proportion of the time taken Which the time saved bears to the Standard time:

Time taken × $\frac{\text{Time saved}}{\text{Standard time}}$

$6 \times \frac{2}{8}$ = For 11/2 hours

Wages for 11/2 hours @ 25 P per hour	0'375
Cost of living bonus for 11/2 hours @ 10 P per hour	0'150
Total earnings for 6 hours	2'625
Hourly rate of earnings : Rs. $\frac{2'625}{6}$	
Difference	

	Rowan Method Rs.	Halsey Method Rs.	Difference Rs.
Total Earnings			
For 6 hours	2'625	2'310	0'315
Earnings per hour	0'4375	0'3850	0'0525

Problem 12 One foreman, one operator, one laborer and one boy, undertake to manufacture 150 articles on piece-work basis for Rs. 660. Each workman spends 100 ordinary working hours on the work on the work and their wages rates are as follows:

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Foreman and Operator Rs. 2/- per hour, Labourer Re.1/- per hour and the Boy 50 P. per hour

Find out the amount of the piece-work premium and show the amount which each worker will receive by way of premium when it is divided in proportion to the wages paid and show in each case the percentage the premium bears to the wages payments as ordinary rates.

What shall be the total cost of those 150 articles, when other expenses follows : Materials Rs. 1,500, expenses Rs. 600, Selling expenses Rs 440, Carriage inward Rs. 300?

Solution

TABLE 11.14

	Rate per hour Rs	*Wages from 100 hours* Rs	*Proportion to total wages*	*Premium* Rs	*Percentage of premium of wages %*
Foreman	2	200	4/11	40	20%
Operator	2	200	4/11	40	20%
Labourer	1	100	2/11	20	20%
Boy	.50	50	1/11	20	20%
		550		120	

	Rs
Piece-work wages	550
Premium	110
Total wages	660

Total Cost of 150 Articles:	Rs
Materials	1,500
Add Carriage	300
Materials Consumed	1,800
Wages	660
Prime Cost	2,460
Factory expenses	600
Work Cost	3,060
Selling expenses	440
Total Cost	3,500

Problem 13 In a factory, standard wages per day per labour are Rs. 3. Three workers are working in this factory in which work is carried on 6 days in a week. Standard work for 100% efficiency in a week is to manufacture 3,000 units First worker produces 900 units, second worker produces 1,000 units and third worker produces 1,200 units. On 0% efficiency, bonus payable is 10% is 100% efficiency, it is 20%, and on 120% efficiency, it is 40%. Find out the wages and bonus payable to these three workers under the Emerson Efficiency Bonus Plan.

Solution

TABLE 11.15

Workers	*Units Produced*	*Efficiency*	*Wages @ Rs.3/ per day for 6 day*	*Bonus*	*Total earnings*
First	900	90%	18	10% of wages	19.80
Second	1,000	100%	18	= 1.8	21.60
Third	1,200	120%	18	20% of wages	25.20
				= 3.60	
				40% of wages	
				= 7.20	

Problem 14 Two operators, one labourer and one boy, undertake to manufacture 150 articles on piece-work basis for Rs.660. Each workman spends 200 ordinary working hours on the work and their wage-rates are as follows:

Operators Re. 1 per hour for each, labourer 50 P. per hour and the boy 25 P. per hour.

Find out the amount of the piece-work premium and show the amount which each worker will receive by way of premium when it is divided in proportion to the payments at ordinary rates.

What shall be the total cost of those 150 articles if the record of other expenses is as follows:

Material Rs. 1,500, factory expenses Rs. 600, Selling expenses Rs. 440, Carriage Inward Rs. 300?

Solution

TABLE 11.16

	Rate per hour *Rs*	*Wages from 100 hours* *Rs*	*Proportion to total wages*	*Premium* *Rs*	*Percentage of premium of wages %*
I Operator	1	200	4/11	40	20%
II Operator	1	200	4/11	40	20%
III Operator	.50	100	2/11	20	20%
Boy	0.25	50	1/11	10	20%
		550		110	

	Rs
Piece work wages	660
Total wages at hourly rate	550
Total Cost of 150 Articles	110

	Rs
Material	1,500
Wages	660
Carriage inward	300
Prime Cost	2,460
Factory Expenses	600
Works Cost	3,060
Selling expenses	440
Total Cost	3,500

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Problem 15 An analysis of the time card of a worker on a machine shows, that of the total 48 hours, he worked 45 hours (including 4 hours overtime) on production and that 3 hours was idle time due to machine break down.

The rate of the worker is Re. 1/- per hour; overtime is paid at 50% extra.

You are required to allocate the total wages paid to the worker between direct and indirect labour indicating reasons therefore

Solution

Wages for 44 hours @ Re. 1/- per hour

Overtime wages @ Rs. 1'50 per hour

Total Wages of the worker

Of the total time worked, the worker has spent 45 hours on production. It includes overtime also. As such:

Wages for 45 hours @ Rs. 1/- Rs.45'00 (Direct)(to be charged to production)

Overtime allowance @ Re. 0'50 for 4 hours Ea. 2'00 (indirect)
(to be included in factory overhead)

Wages for abnormal idle time @ Re. 1.00 for 3 hours, Rs. 3'00 (abnormal Loss)
(to be transferred to P. & L a/c)

Overtime allowance Rs. 2'00 has been treated as indirect wages in the assumption that it is due to general increase in work. It has been paid for early completion of work due to urgency, this could have been treated as direct also. If overtime had been necessary due to any abnormal reason such as power failure or breakdown of machinery, the overtime allowance would have been treated as an abnormal loss.

Problem 16 Calculate the normal and overtime wages payable to a workman from the following data:

Days	Hours worked
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	

Normal working hours : 8 hours per day.

Normal rate : Re. 0'50 per hour.

Overtime rate : Up to 9 hours in a day at single rate and over 9 hours in a Day at double rate.

Or

Up to 48 hours in a week at single rate and over 48 hours at double rate.

Whichever is more beneficial to the workman.

Solution Normal wages and Overtime wages according to first alternative

TABLE 11.17

Date	*Hours worked*	*Normal hours*	*Overtime Hours*		*Normal wages Rs*	*Overtime Wages Re*	*Total wages Rs*
			Single rate @ .50 paise per hour	*Double rate @ .50 paise per hour*			
Monday	8	8	-	-	4	-	4.00
Tuesday	10	8	1	1	4	1.50	5.50
Wednesday	9	8	1	-	4	0.50	4.50
Thursday	11	8	1	2	4	2.50	6.50
Friday	9	8	1	-	4	0.50	4.50
Saturday	4	4	-	-	2	-	2.00
total	51	44	4	3	22	5.00	27.00

Normal wages and Overtime according to the Second Alternative.

		Rs
Normal wages for 44 hours (Normal hours) @ 0'50 Paise per hour		22.00
Overtime wages for 7 hours (51-44):		
4 hours @ 0'50 paise per hour	2.00	
3 " @ Rs.1/- per hour	300	5.00
Total wages		27.00

According to both alternatives, the worker gets the same amount of overtime wages i.e., Rs.5/-

Note: It is assumed that normal working hours for Saturday are 4 hours

Problem 17 From the following date, calculate total monthly remuneration for 3 workers X,Y and Z:

(i) Standard production per month per worker is 1000 units
(ii) Actual production during a month:
X—800 units
Y—700 "
Z—900 "
(iii) Piece-work rate per unit of actual production 15 paise
(iv) D.S. Rs. 40 per month (fixed)
(v) House rent allowance: Rs. 20 per month (fixed)
(vi) Additional Production Bonus at the rate of Rs. 5 for each percentage of actual production exceeding 75% actual production over standard

Solution

TABLE 11.18

Worker	*Production in units*	*Piece Wage@ 15 Paise*	*D.A @ 40.00 P.A R.s*	*H. Rent @ 20.00 p.a R.s*	*% of actual Production To Standards*	*Over 75% of standards*	*Bonus @ Rs. 5 for each per-centage Rs*	*Total wages Rs*
X	800	120.00	40	20	80%	5%	25.00	205
Y	700	105.00	40	20	70%	-	-	165
Z	900	135.00	40	20	90%	15%	75.00	270

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TOTAL remuneration for the month

X	Rs. 205
Y	Rs. 165
Z	Rs. 270

Problem 18 Calculate what an average labourer costs an employer for a month of 208 hours in 2007 from the following data:

Average basic wage per hour	Paise 30
" D.A. per hour	" 20
No of Sundays in a year	52
No of Saturdays in a year	52
No of unpaid holidays	27
No of days of sick leave on half pay	15
Provident Fund 61/2%	
State Insurance 1%	
Other amenities per month	Rs. 4'00

Solution

No. of hours per month	208
Less no of hours pm. for unpaid holiday $\frac{27 \times 8}{12} = \frac{216}{12}$ (8 hours per day assumed)	18
Less Sick leave per month $\frac{15 \times 8}{12} = \frac{120}{12}$	10
House per month	180

	Rs.
Basic wage for 180 hours @ 30 paise	54'00
D.A. for 180 hours @ 20 paise	36'00
Sick leave for 10 hours on half pay (10 × 25 paise)	2'50
Provident Fund @ 61/2 % of Rs.0 (Rs54 + 16)	5'62
State Insurance @ 1% of Rs.90	0'90
Other amenities	4'00
Total wage per labourer p.m.	103'02

Summary

Proper control and accounting for labour costs constitutes one of the most important problems of management in the operation of a business enterprise and in the determination of the cost to manufacture and to sell a product or to render a service. Adequate labour control involves verification of the efficiency of labour operations, adequate and appropriate wages rates for different levels of skill, maintenance of product quality, and holding the volume of production to planned levels. To achieve labour cost control, other departments and functions besides the accounting division are involved, such as personnel, production, planning, time and motion study, budgeting and time-keeping.

KEY CONCEPTS

- Clock Card
- Idle time

- Time Card
- Job Card
- Daily Muster Roll
- Halsey Plan
- Rowan Plan
- Labour Turn Over

Review Questions

1. Write short notes on
   Wages Abstract, Overtime, Idle Time, Labour Turnover, Time and Job Cards.
2. Discuss the advantages and disadvantages of the following methods of remunerating labour.
   (a) on time basis. (b) piece work method.
3. What do you understand by bonus or incentive plans? Explain with examples any two of them giving their essential features.
4. Explain the principal methods of wage payment and explain any four of them.
5. Describe the procedure for the preparation of wage-sheets.
6. Explain the three principal methods of remunerating labour and mention the types of industry to which each would be suitable.
7. How would you ensure that no dummy workers are included in the pay-roll?
8. Which system of wage payment would you like to introduce in a cotton mill? Give reasons.
9. (a) Name the records and vouchers which you would use for ascertaining the amount of direct charges of the various job accounts.
   (b) What precautions would you take to control overtime?
10. Explain briefly the different methods of Bonus payment.

PROBLEMS

1. The standard output of a product X has been fixed as 12 units per day of 8 hours. The normal wage is Rs. 12/- per day. Determine the total wages payable including bonus, under:
   (a) Time rate (b) Piece rate
   (c) Halsey Plan and (d) Rowan Plan
   When the total production is 10, 16, 24 and 30 units per day. Also compute the labour cost per unit in each of the above cases.

Ans.: (a) Total Labour Cost Rs. 12, per unit Re 120 ; 0.75;0.50;040
Respectively.
(b) Total Labour Cost Rs.10,16,24, and 30 respectively Labour cost per unit re. 1/-
(c) Total Labour Cost Rs.12,1 © Total Labour Cost Rs.12,14,18 and 21 respectively. Labour cost per unit Re. 1'20; 0'75 and 0'70.
(d) Total Labour Cost Rs. 12,15,18 and 19'20 respectively. Labour cost per unit Re 1'20; 0'985;0'75 and 0'64.

2. Calculate the total earnings and effective rate of earnings per hour of the three operatives under Rowan System from the following particulars:-
   The standard time lived for producing 1 dozen articles is 50 hours. The rate of wages is 1 Rupee per hour. The actual time taken for producing 1 dozen articles : A : 45 hours, B : 40 hours and C : 30 hours.
   Also calculate total earnings and earnings per hour under Halsey Plan assuming that Bonus will be paid for 50% of the saved.

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3. Calculate the total earnings and earnings per hour of three operatives under the Rowan Premium Bonus System and Halsey Premium Bonus System, the Bonus being calculated at 50% of the time saved.
The standard time for producing one dozen articles is 20 hours The hourly rate of wages is Re. 1. The actual time taken was : A 16 hours, B 12 hours and C 10 hours

4. A worker is remunerated under the Rowan Premium Bonus System with a guaranteed time rate of Re.0:50 per hour.
His time cards for the week ended 5th Dec., 2007 show:
32 hours on job no.82; 6 hours on job no.83; 29 hours on job no.84.
The time allowed under Rowan Premium System are:
For job no.82, 36 hours; job no.83, 5 hours; job no.84, 13 hours.
Calculate the wages of each job and state the worker's gross wages for the week.

5. In a Devi Manufacturing company, a daily wages rate guaranteed for a worker is Rs.1.87 and the standard output fixed for the month is 1,000 articles representing 100% efficiency. The daily wage rate is paid without bonus to those workers who show up to 66% of the efficiency standard. Beyond this, there is a bonus payable on a graded scale in a fixed rate to the increased output as under:

Efficiency	Bonus payable
90%	10%
100%	20%

Further increase of 1% for every 1% further rise in efficiency.
Find out the total earnings of four workers, A, B,C and D who have worked for 26 days in a month. Bonus Workers, output is A 500 articles, B 900 articles, C 1,000 articles and D1,100 articles.

6. The day rate of wages in two factories A and B for the same kind of work is Rs.2 per day of 8 hours. In factory A, wages are paid on a straight piece work is paid a premium of 50% of the saving wages, and the time allowed is 16 hours, the rate of wages being 25 P. per hour.
If the cost of materials is Rs.2, and the rate of factory overhead 371 P. per hour in both factories, find the factory cost of the job in each factory when the job is done in 14 hours.
What hourly rate of wages is the Workman's earning in each factory?

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CHAPTER 12

Job Order Costing and Target Costing

"The prime cost of an article, plus the work on cost thereof, is said to be works cost, while the addition of office on cost and selling and distribution expenses to the work costs represents total cost of the same article. The addition of the percentage of margin of profit or the deduction of the margin of the loss to the total cost will therefore represent the selling price of the articles, job contract etc".

—G.R. Glover & R.G. Williams

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Cost Sheet*
- *Contract Costing*
- *Materials*
- *Labour or Wages*
- *Other Direct Expenses*
- *Indirect Expenses or Establishment Charges*
- *Sub Contracts Cost*
- *Cost Plus Contracts*
- *Profit on Uncompleted Contracts*
- *Work in Progress Account*
- *Types of Contracts*
- *Long Period Contracts*
- *Target Costing*

INTRODUCTION

Job order costing is a method of costing in which each job or product is treated as a separate entity and identity of the same is maintained all through the production. In this method, each job or product is identified by a job order or works order and a separate account is maintained in respect of each of them. The job order or works order accompanies the job as it progresses from department to department and cost of materials, wages and expenses are charged to the respective job order account as and when

these are incurred. Indirect expenses are charged at predetermined rates on an appropriate basis. The purpose of keeping separate job order account for each job is to facilitate ascertainment of cost of each job and profit or loss made by each of them. A job may comprise a single product such as fabrication of generating plant, an electronic computer or an automatic lathe. It may consists of a number of identical products such as electric motors, lamps, fans etc.

Cost Sheet

Cost Sheet is a loose leaf ledger folio used in job costing to record therein the cost of direct material, direct wages and manufacturing overheads chargeable to respective jobs. Each cost sheet represents a job order account or a section thereof and provides flexibility to the Accounting System. The Cost Sheets are maintained by the Cost Office and are filed in consecutive order in the Work-in-progress Ledger. On completion of a job, the Cost Sheet is removed, the total cost of the job is ascertained and transferred to the finished stock account. The specimen of Cost Sheet is given below:

Cost Sheet

Job order no……. Section…….

Date Commenced…….. Date completed……

TABLE 12.1

Particulars	*Production Department*				*Total*
	A	*B*	*C*	*D*	
Direct Materials					
A					
B					
C					
Direct Wages					
A					
B					
C					
Overheads					
Production Cost					
Administration Cost					
Selling and Distribution Cost					
Total Cost					
Profit					
Sale Price					

CONTRACT COSTING

A contract differs from a job only on size. A contract may be for the construction of a building, a road, a ship or a complicated piece of machinery. In Contract Costing, the principles of Job Costing are applied, and a separate Cost Account is kept for each individual contract. Builders, Civil Engineering Contractors, Constructional and Mechanical Engineering firms, and similar concerns make use of this type of Cost System.

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It is usual to give each contract a distinguishing number to facilitate reference in the books and on various forms which are used. As the greater part of the work is carried out at the site itself, practically, the whole of the expenditure upon a contract can be charged direct to the appropriate contract. The problem of apportioning overheads applies only to the costs of the Head Office and the central stores. Contract Cost Accounts are usually simple, but if the contract continues for more than one Accounting Period, the total profit is apportioned on a reasonable basis so that the financial year may be credited with a just proportion of profit.

General Principles

A Contract or Job Ledger is maintained in which a separate account is opened for each Job or for each Contract undertaken by a contractor. A Contract Ledger should be so ruled out as to give the maximum information. A specimen ruling of the same is given below:

Contract Ledger

Form No……		Contract Price …….....	
Contract No……		Terms of Payment……..	
Site……..		Retention Money……	
Completion Date…….		Work certified…….….....	
Remark……		Date…….….....	Rs.
Date …….....			Rs.
Dr.			Cr.

TABLE 12.2

	Date
	Particulars
	Folio
	Materials
	Wages
	Direct expenses
	Plant
	Sub-Contract costs
	Establishement charge
	Total
	Date
	Particulars
	Folio
	Materials
	Wages
	Direct expenses
	Plant
	Sub-Contract costs
	Establishement charge
	Total

When a contract has been accepted, no record will be made in the financial books. The contract cannot be treated as a debtor until the work is performed. A contract account is opened for each contract undertaken by a contractor. All expenses incurred on behalf of the contract i.e materials, wages, direct expenses, plant, sub-contract costs, etc, are debited on the contract a/c. Expenses accrued or outstanding are shown in the debit side at the end of the Accounting Period, and if the contract is still incomplete, they will be carried down and will be paid next year. Materials and Plant transferred to store, stolen, destroyed, sold and in hand, at the end of the year will appear in the credit side. Materials and Plant, stolen or destroyed, are losses and should be debited to Profit and Loss a/c. Profit or Loss arising from the sale of plant or materials should be transferred to Profit and Loss a/c. After taking into account depreciation on plant, plant in hand should be calculated. A specimen of contract a/c is given below:

Contract No ..... Account

TABLE 12.3

Date	*Particulars*	*Amount*	*Date*	*Particulars*	*Amount*
2006 Jan/Dec	To Materials purchased	-	2006 Jan/Dec	By materials ret to store	-
	Wages paid	-		Plant ret to store	-
	To Plant	-		To Plant sold	
	To Direct expenses	-		Materials sold	
	Sub-contract cost	-		Profit and Loss a/c	-
	On-costs (establishment expenses)	-	31st Dec	Loss on plant sold	-
	To profit & loss a/c	-		Plant stolen	-
31st Dec	To wages accrued	-		Materials stolen	-
	To Direct expenses accrued	-		By plant in hand	-
				By materials in hand	-

The treatment of most important expenses is dealt with hereunder:

A Contract Account is opened for each contract undertaken by the Contract Account. The important expenses incurred are as follows:

Materials

Materials purchased directly or supplied from the store will appear in the debit side. Materials returned to store will appear in the credit side. Amount received from the sale of surplus materials will appear in the credit side, any profit or loss arising from the sales will be transferred to the Profit and Loss a/c. Materials stolen or destroyed by fire will be transferred to the Profit and Loss a/c. Materials in hand at the end of the year will appear in the credit side. Sometimes materials are transferred from one contract to another contract. Contract receiving the materials is debited and the contract giving up the materials is credited.

Example: X undertook a contract for the construction of a canteen building. Materials purchased Rs.50,000, Materials supplied from stores Rs.10,000, Materials returned to store Rs.1,000, Materials cost Rs.2,000 were stolen, Materials worth Rs.200 destroyed by fire, materials cost Rs.1,000 were sold for Rs.800, Materials worth Rs.200 destroyed by fire, Materials cost Rs.1,000 were sold for Rs.800, Materials in hand Rs.10,000. Materials worth Rs.20,000 were received from Hospital contract which was completed. Materials of Rs.500 transferred to a cinema contract.

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TABLE 12.4 Canteen Building Contract a/c

	Rs.		*Rs.*
To materials purchased	50,000	By materials returned to store	1,000
To materials supplied from stores	10,000	By materials sold	800
To materials received from Hospital contract	20,000	Profit & Loss a/c	
		Cost 1,000	
		Sold for 800	200
		By materials transferred to cinema contract	500
		By profit & loss a/c 2,000	
		Materials destroyed by fire	2,200
		By materials in hand c/d	10,000

In the debit side of the Contract Account materials purchased must be shown. If in the question only materials is given, it will be treated as materials purchased.

If materials consumed and materials in hand are given, it will be dealt as follows:

Materials consumed	Rs.50,000
Materials in hand	5,000

TABLE 12.5 Contract a/c

	Rs.	*Rs.*		*Rs.*
To materials consumed	50,000			
Add materials to hand	5,000			
To materials purchased		55,000	By materials in hand c/d	5,000

Normal wastage incurred in stores and materials should be charged to contracts by inflating the rates at which materials are priced out. Stores used in the manufacturing of tools should be charged to works expenses a/c. The value of some materials that actually do not effect the contract price need not be recorded in the books. Instead, just a mention of the quantities received and issued of such materials would suffice.

Example: A contractor undertook a number of contracts during the year 2006 and the following particulars relate to stores:

TABLE 12.6

Stores in Hand Jan1	1,500
Purchases during the year	10,000
Returns to suppliers	500
Materials issued to contracts	8,400
Sales of materials	1,000
Cost of materials sold	720
Stores destroyed by fire	240
Stores used in the manufacture of tools	180
Sales of wastage & scrap	60
Stores on hand, Dec 31	1,350
Materials supplied by contractees as agreed upon	5,000

Prepare Stores Ledger Account

Solution

TABLE 12.7 Stores Ledger Account

2006 Jan 1		*Rs.*	*2006*		*Rs.*
	To stores in hand b/d	1,500	Jan/Dec	By returns to suppliers	500
Jan/Dec	To purchases	10,000	Jan/Dec	By Sub Contracts	
31st Dec	To Profit & Loss a/c	280	Jan/Dec	Sales of Materials	1,000
			Jan/Dec	By Profit & Loss a/c	240
				Works expenses a/c	180
				Sale of scrap	60
			Dec 31	Works expenses a/c	50
				Balance c/d	1,350
		11,780			11,780

Notes:

a. Stores used in the manufacture of tools have been charged to works expenses a/c.
b. Materials recd, from contractees (as agreed upon) will not be recorded in stores ledger, only a memorandum record of the quantity used will be kept.
c. At the end of the year the totals, debit and credit of stores ledger a/c should tally, any difference will be charged to works expenses a/c.

Labour or Wages

All Labour employed at site is regarded as direct, irrespective of the nature of the tasks performed by the workers concerned. If it is desired to ascertain the exact labour cost of completing each section of the contract, the workers must be provided job cards upon which they will record the nature of work they have performed. Separate wage sheets for each contract should be prepared, as this facilitates the work of charging the individual contract accounts. Normally, a certain number of workers will be employed whose time cannot be identified with any particular contract, e.g men engaged at the yard, supervisors and lorry drivers etc. The wages of such workers may be treated as indirect expenses or establishment charges and apportion over the contracts by any suitable method. Wages accrued or outstanding at the end of the year should appear in the debit side.

Example

Wages Rs. 80,000
Wages accrued Rs. 20,000
(Contract commenced on 1st Jan 2005 and accounts are closed on 31st Dec 2006)

TABLE 12.8

		Rs.		*Rs.*
2005 Jan./Dec	To wages	80,000		
2005 31st Dec	To wages accrued c/d	20,000		

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Plant

Careful records of Plant must be maintained to ensure that none is lost or improperly disposed of and that the contract is duly charged for the use of plant. There are two methods of showing plant in the contract a/c. Plant may be specially bought for a contract and it is expected to be used for the contract for a long period. In such a case, the value of plant i.e, cost + capital expenses for its installation, or in case second-hand plant is purchased, the cost + expenses incurred for putting in the working order, should be treated as an expense and should appear in the debit side of the contract a/c. At the end of the year, plant in hand should appear in the credit side, after providing appropriate amount of depreciation. When calculating plant in hand, plant returned to store, plant sold, plant destroyed, etc. should appear in the credit side, after providing appropriate amount of depreciation. When calculating plant in hand, plant returned to store, plant sold, plant destroyed etc. should also be borne into mind. Where a plant is already in stock, and is expected to be used upon the contract for a limited period, then the usual depreciation of the plant should be debited to the contract a/c.

Example Plant costing Rs.50,000 issued to a contract on 1st Jan 2005. Plant worth Rs.1,000 was returned to store, plant cost Rs.2,000 was sold for Rs.2,500. Plant worth Rs.500 was stolen and worth Rs.300 destroyed by fire. Plant in hand at the end of the year was Rs.10,000.

TABLE 12.9 Contract a/c

2005		*Rs.*	*2005*		*Rs.*
1st Jan	To Plant issued to site	50,000	Jan 1	By plant returned to store	1,000
31st Dec	To Profit & Loss a/c	500	Dec 31	By plant sold	2,500
	(Profit on plant sold)			By Profit and Loss a/c	
				Plant stolen 500	
				Plant destroyed by fire 300	800
				By plant in hand c/d	10,000

Example A contractor purchased a plant on 1st July 2005 for a contract. The plant cost Rs.30,000. His accounts are closed on 31st Dec each year.

a. Depreciate Plant by 10% per annum
b. Depreciate plant by 10%

TABLE 12.10

2005		*Rs.*	*2005*		*Rs.*
1st July	To plant purchased	30,000	31st Dec.	By plant in hand c/d	
				Cost 30,000	28,500
				Less Dep @ 10% for six months 1,500	

b.

TABLE 12.11

2005		*Rs.*	*2005*		*Rs.*
1st July	To plant purchased	30,000	31st Dec.	By plant in hand c/d	
				Cost 30,000	27,000
				Less Dep @ 10% for six months 3,000	

Note: When per annum is not given, depreciation will be charged for the full period.

Example A contractor purchased a Plant on 1st Jan 2006 worth Rs.25,000. Plant cost Rs.5,000 was destroyed by fire. Plant cost Rs.1,000 returned to store, at the end of the year.

Depreciate Plant by 10% Accounts are closed on 31st Dec.2006.

TABLE 12.12

2006		*Rs.*	*2006*		*Rs.*
1st Jan	To plant purchased	25,000	31st Dec.	By plant returned	
				Cost	1,000
				Less 10% Dep 100	900
				Plant destroyed by fire 300	5,000
				By plant in hand c/d	17,100

Calculation of Plant in hand

Rs.

TABLE 12.13

Cost of Plant		25,000
Less Cost of plant destroyed	5,000	
Cost of plant returned	1,000	6,000
Plant used		19,000
Less Dep. 10%		1,900
Plant in Hand		17,100

Example A contract was commenced on 1st April 2006. For this contract, a plant of Rs.10,000 was purchased on 1st Oct, 2006. Plant costing Rs.500 was returned to store. Plant costing Rs.200 was sold for Rs.250; Plant destroyed of Rs.100 and Plant stolen of Rs.300. Provide Dep on Plant @ 10%

TABLE 12.14 Contract a/c

Date	*Particulars*	*Amount Rs.*	*Date*	*Particulars*	*Amount*
1st Jan 2006	To plant purchased	10,000	1st Oct. 2006	By plant ret to store	500
31st Mar 2007	To profit & Loss a/c	50	2007	By plant sold	250
			31st Mar	Profit & Loss a/c	500
				By plant destroyed	100
				By plant in hand c/d	8,010

Notes:

TABLE 12.15

Plant in hand		
Cost of plant		10,000
Less Cost of Plant returned to store	500	
Less Cost of Plant sold	200	
Less cost of plant destroyed	100	
Less cost of plant stolen	300	1,100
		8,900
Less dep.10%		890
Plant in Hand		8,010

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If it is not given when the accounting year ends i.e, when books are to be closed, the books should be closed after 12 months from the date of commencement of the contract.

Example: A contractor undertook a contract on 1st Jan 2006. The books are closed on 30th June. A second hand plant of Rs.15,000 was purchased on 1st March 2006 and Rs.1,000 were spent on reconditioning it. On 30th June, portion of the plant costing Rs.2,000 was sold for Rs.1,400. On the same date, a component of the plant costing Rs.500 was returned to store. Plant costing Rs.600 was stolen.

Show Plant in contract a/c. Provide Depreciation (a) @ 15 %, (b) 15% p.a

(a) 15% Depreciation

TABLE 12.16

2006		*Rs.*	*2006*		*Rs.*
Jan/June	(Other expenses)		30th June	By plant returned	
				Store 500	
				Less 15% 75	425
1st Mar	To plant 15,000		30th June	By Plant sold	1,400
	Add reconditioning Charges 1,000	16,000		By profit and Loss a/c	
				Cost 2,000 Less Dep 15% 300 1,700 Less sold 1,400 300	
				Less on Plant stolen 600	900
				By plant in hand c/d	10,965

TABLE 12.17

Plant in hand		
Plant purchased		16,000
Less Cost of Plant sold	2,000	
Less Cost of Plant returned	500	
Less cost of plant stolen	600	3,100
Cost of plant used		12,900
Less dep.10%		1,935
Plant in Hand		10,965

15% Per Annum Depreciation

TABLE 12.18

2006		*Rs*	*2006*		*Rs.*
Jan/June	To Expenses		30th June	By plant ret. to store 500 Less Dep @ 15% P.A for 4 months 25	475
				By Plant sold	1,400
				By Profit and Loss a/c	
1st Mar	To plant	15,000	30th June	Loss on Plant	1,400
	Add reconditioning Charges 1,000	16,000		Sold Cost 2,000	
				Less Dep for 4 months @ 15% 100 1,900 Less sale 1,400 500	
				Plant stolen 600	1,100
				By plant in hand c/d	12,255

TABLE 12.19

Plant in hand		
Plant purchased		16,000
Less Cost of Plant sold	2,000	
Less Cost of Plant returned	500	
Less cost of plant stolen	600	3,100
Cost of plant used		12,900
Less dep.15% P.A for 4 months		645
Plant in Hand		12,255

Example: A plant was purchased at Rs.52,000 on 1st Jan, 2006 for a contract. It was expected that the life of the plant is 5 years and at the end of the 5th year its scrap value will be Rs.2,000. The plant was used for 75 days on Contract No.999. How will you show the plant in the Contract Account?

Purchase Price	52,000
Less Scrap value	2,000
Depreciation to be provided in 5 years or	50,000

365 × 5 = 1,825 days

The plant was used on the contract for 75 days, so depreciation

50,000/1,825 × 75 = Rs.2,055

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TABLE 12.20 Contract a/c No. 999

2006		*Rs.*			*Rs.*
31st Dec	To Dep on plant used upon Contract	2,055			

Other Direct Expenses

Other Direct Expenses will also appear in the debit side. If there are Accrued Direct Expenses, they will be shown separately in the debit side of the Contract a/c at the end of the year as "To Accrued Direct Expenses c/d".

Indirect Expenses or Establishment Charges

The Contractor incurs several office and administrative expenses, which constitute Indirect Expenses or Establishment Charges. Since they are incurred for the benefit of the whole business, they have to be allocated among the different contracts undertaken. The allocation can be made in proportion to

a. Materials
b. Direct wages
c. Prime cost or any other suitable basis.

Example: The following expenses were incurred upon a contract materials Rs.10,000. Materials in hand Rs.1,000 wages Rs.5,000; other expenses Rs.3,000. Charge works on cost 10%, wages and office on cost 5% of works cost.

TABLE 12.21

To materials	*10,000*		*Total cost*	*18,375*
Less in hand	1,000			
Materials used	9,000			
Wages	5,000			
To other expenses	3,000			
Prime cost		17,000		
Add works on cost (10% of wages)		500		
Works cost		17,500		
Office on cost (5% of work cost		875		
Total cost		18,375		18,375

Sub-contracts Cost

Generally, work of a specialised character, e.g., the installation of lifts and special flooring, is passed out to any other contractor by the main contractor. In such cases, the work performed by the sub-contractors form a direct charge to the contracts concerned. Sub-contracts cost will be shown in the debit side of the Contract Account.

Cost of Extra Work

In most of the contracts, additional work, or variations of the work originally contracted for, are required by the contractee. This additional work, being outside the original contract, will be the subject of a separate charge. If the additional work is quite substantial, it should be treated as a separate contract and a

separate a/c should be opened for it. If it is not very substantial a/c as cost of extra work and the extra amount which the contractee has agreed to pay, should be added in the Contract Price.

Example: A contractor undertook a contract, the contract price being Rs.1,00,000. He agreed to perform some extra work for which the contractee agreed to pay Rs.1,000 extra. The total expenditure on the original contract was Rs.80,000 on extra work Rs.800.

TABLE 12.22 Contract Account

To Expenditure on original contract	*80,000*	*By Contractee's a/c*	
To cost of extra work	800	Contract Price	
To Profit & Loss a/c	20,200	Original contract 1,00,000	
		Extra work 1,000	1,01,000
	1,01,000		1,01,000

If the extra work is of a considerable amount, a separate account should be opened for it.

Cost plus-Contracts

Generally, a contract price is settled between the contractor and the contractee. But sometimes the contractee does not settle with the contractor any definite amount to be paid for the work to be done, but agrees to pay the cost of the work done. This plays a definite percentage of profit on cost and such contracts are called cost plus contracts.

Example: X undertook a contract for the construction of a building on the terms that he would be allowed 10% profit on the total cost (b) on the contract price.

The total cost of construction amounted to Rs.6,000, what will be the contract price?

(a)	Total Cost	60,000
	Add 10% on cost for profit	6,000
	Contract Price	66,000
(b)	Total Cost	60,000
	Add 10% Profiton cost for profit	6,667
	Contract Price	66,667

Profit on Uncompleted Contracts

If the contract is not yet completed, the total profit will not be credited to Profit & Loss a/c. Only 2/3 of the profit of Cash recd/Work certified, will be credited to Profit & Loss a/c and the balance will be transferred to work in progress a/c as profit in reserve.

Work-in-Progress Account

In the case of long period contracts, work-in-progress a/c is prepared by the contractor for each contract. In the debit side of the contract a/c, work certified and work uncertified is shown and in the credit side, Profit in Reserve, appears the difference of the Debit and Credit side it work in progress.

Example

TABLE 12.23

2006		*Rs.*	*2006*		*Rs.*
31st Dec	To Contract		31st Dec.	By Contract	
	Work Certified	50,000		Profit in Reserve	5,000
	Work uncertified	10,000		By Balance c/d	55,000
		60,000			60,000

Contractee's Account in the Books of the Contractor. Contractee's personal a/c is opened in the books of the contractor. Whenever any amount is received from him, cash a/c is debited and contractee's a/c is credited. Until contract is completed, amount received from contractee shows advance payments and is deducted from work-in-progress in the Balance Sheet. When contract is completed, contractee's a/c is debited with the Contract Price and Contract a/c is credited.

Example: Books of the Contractor
X's a/c (Contractee a/c)

TABLE 12.24

2006		*Rs.*	*2006*		*Rs.*
31st Dec	To Balance c/d	50,000	31st Dec	By Cash	50,000

Balance Sheet in the Books of Contractor

If a Trial Balance of the contractor is given, a complete Balance sheet will be prepared. But, generally it is asked to show relevant items relating to the contract in the Balance Sheet. If the contract is incomplete, materials in hand, plant in hand, work-in-progress less advances from contractee, will appear in the Asset side of the Balance Sheet. Outstanding or Accrued expenses, Profit credited to Profit & Loss a/c less losses from materials or plant sold or destroyed or stolen will appear in the liabilities side.

Balance Sheet for 2006

TABLE 12.25

Liabilities	*Rs.*	*Assets*	*Rs.*
Wages accrued	1,000	Plant in hand	5,000
Direct expenses accrued	2,000	Materials in hand	3,000
Profit Credited to Profit and Loss a/c	10,000	Work in progress 55,000	
Less Loss on: Plant sold 1,000		Less advances from contractee 50,000	5,000
Materials destroyed 2,000	7,000		

TYPE OF CONTRACTS

Contracts Commenced and Completed During the Same Financial Year

If a contract is begun and completed during the course of a financial year, the contract account will disclose profit or loss made in the contract and will be transferred to General Profit or Loss a/c.

At the date of completion, Plant and Materials left will be transferred to Store and Contractee Personal a/c will be debited with the contract price, and Contract Account will be credited. On receipt of payment, Contractee's Personal Account will be credited and Cash Account will be debited.

Illustration 1 X undertook a contract for constructing a building from Y on 1st Jan 2006. The contract price being Rs.1,00,000. He incurred the following expenses:

TABLE 12.26

Materials consumed	5,000
Materials in hand	1,000
Wages	5,000
Direct expenses	20,000
Plant purchased	10,000

The contract was completed on 30th June 2006, and the contract price was duly received. Provide Depreciation @ 10% on Plant and charge indirect expenses 20% on wages. Prepare necessary accounts in the books of X.

Solution: Books of X
Contract Account

TABLE 12.27

Date	*Particulars*	*Amount*	*Date*	*Particulars*	*Amount*
2006 Jan/June	To materials purchased		2006 June 30	By plant in hand transferred to store	
	Materials consumed	5,000		Cost 10,000	
	Add materials in hand 1,000	6,000		Less 10% Dep 1,000	9,000
	To wages	5,000		Materials in hand transferred to store	1,000
	Direct expenses	20,000		Y (Contractee's Personal a/c)	1,00,000
	Plant purchased	10,000			
	Indirect expenses (20% on wages)	1,000			
June 30	To Profit and Loss a/c	68,000			
		1,10,000			1,10,000

TABLE 12.28 Y's Account

2006		*Rs.*	*2006*		*Rs.*
June 30	To Contract a/c	1,00,000	June 30	By Cash	1,00,000
		1,00,000			1,00,000

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Notes:

(a) When the contract is completed, plant in hand and materials in hand will be transferred to store.

(b) When the contract is completed, Contractee's Personal Account will be debited with the contract Price.

(c) In the Debit side of the Contract Account, Materials Purchased will be shown. Materials Consumed + Materials in hand = Materials Purchased.

Uncompleted Contracts or Long Period Contracts

There are some contracts which take several years for completion. At the end of a financial year, they may be found to be incomplete. Generally, contractors are not so rich that they may wait for the payment till the contract is completed. The contractor will like to receive some payments while the contract is in the process of completion, so that large sums are not locked up in a single contract. Usually advances are made, by the contractee, equal to a fixed percentage of the value of the work certified by the architect or surveyors. The difference between the value of work certified and advance paid by the contractee is called Retention Money. Value of the work certified will be shown in the credit of the Contract Account. If the work has not been certified, the contractee would not make and advance on it. Such work which has been done but not certified, is called work uncertified. Cost of the work uncertified is shown in the credit side of the Contract Account. The following will be treated as work uncertified:

(a) Work done since certification (total expenses incurred after the work was certified)

(b) Unused stock and work uncompleted.

(c) Stock and work uncertified.

Work certified and work uncertified will appear in the credit side of the contract a/c under the heading work-in-progress c/d. If work certified is not given, cash received from the contractee and retention money is given, the amount of work certified should be calculated first. For example, if Rs.10,000 received from the contractee after deducting 20% retention money, work certified will be Rs.10,000 x 100/80 = Rs.12,500. Uncompleted contracts may be classified in the following categories:

Uncompleted Contracts Showing Loss

If the incomplete contract shows loss, the entire loss should be transferred to Profit & Loss a/c.

Illustration 2 The following is the summary of the entries in a Contract Ledger as on 31st December 2006 in respect of Contract No.999:

TABLE 12.29

Materials (Direct)	30,000
Materials (From stores)	6,500
Wages	17,210
Direct Expenses	6,710
Establishment Charges	8,000
Plant	34,200
Sale of scrap	1,820
Sub-contracts Cost	7,210

You are entrusted the following information:

(a) Accruals on 31st December 2006 are : Wages Rs.800 : Direct expenses Rs.1,120
(b) Depreciation on Plant up to 31st Dec.2006 is Rs.8,550
(c) Included in the above summary of entries are wages Rs.1,000 and other expenses Rs.1,500 since certification. The value of materials used since certification is Rs.2,080.
(d) Materials on site on 31st December 2006 cost Rs.10,000
(e) Rs.62,500 had been certified up to 20th December 2006 when 3/8 of the contract remained uncompleted.
(f) The total contract price is Rs.1,00,000.

Prepare Contract a/c No.999 and show what profit or loss should be taken into for the year ended 31st December 2006.

TABLE 12.30 Contract No.999 Account

		Rs.			*Rs.*
2006 Jan/Dec	To materials supplied:		2006 Jan/Dec	By Sale of Scrap	1,820
	Direct	30,000		By Plant is hand c/d	
	From stores 6,500	36,500		Cost 34,200	
	To wages	17,210		Less Dep 8,550	25,650
	To Wages Accrued c/d 800	18,010	31st Dec	By Materials on site c/d work-in-progress c/d work certified 62,500	1,00,000
	Direct expenses 6,710	10,000		Add cost of work uncertified 4,580	67,080
	Direct expenses accrued c/d 1,120	7,830		By Profit and Loss a/c	7,200
June 30	Establishment charges	8,000			1,11,750
	To Plant	34,200	31st Dec		
	To Sub-Contract cost	7,210			
		1,11,750			
1st Jan	To work in progress b/d	67,080	1st Jan	By wages accrued b/d	800
	To plant in hand b/d	25,650	1st Jan	Direct Expenses accrued b/d	1,120
	To materials on site b/d	10,000			

TABLE 12.31

Materials	2,080
Wages	1,000
Other expenses	1,500
Work-in-Progress	
I Method	Rs.
Work certified	62,500
Work uncertified	4,580
	67,080

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Less profit in Reserve		Nil
Work-in-Progress		67,080
II Method		
Total Net Expenditure upon contract		
Less debited to Profit and Loss a/c		
Total Expenditures		1,11,750
Less sale of scrap	1,820	
Plant in hand	25,650	
Materials on site	10,000	
		37,470
Total Net Expenditure		74,280
Less Loss and Contract		7,200
Work-in-Progress		67,080

When 1/3 Work is completed and Contract Shows Profit. If 1/3 work has been completed (Work certified is at least 1/3 the of the contract price), and the contract shows profit, the whole amount should not be credited to Profit & Loss a/c but only a part of it arrived at by applying the following formula, should be credited to Profit & Loss a/c.

Total Profit × 2/3 × Cash Received/Work certified

The remaining profit should be transferred to work in progress a/c as profit in Reserve.

Target Costing

Target costing is the system which supports the cost reduction process in the developing and designing phase of an entirely new model, a full model change or a minor change. The important features of Target Costing system are:

1. It is applied in the developing and designing stage. It is different from standard cost system.
2. It is a technique of cost reduction
3. It is suitable for multi-product small production run firm, rather than in the few product large production run firm.
4. It uses value engineering concepts and a comparison or Target Costing with achieved cost is periodically done.

A simple example of the computation of cost under Target costing system is given below:

1. Estimated allowable cost (arrived as follows):
   a. Target Price .....
   b. Less: Required profit margin .....
   c. Total allowable cost .....
2. Present cost
3. Determine gap or cost reduction needed.
4. Eliminate or reduce the gap by identifying the problems.

In an open competitive market where the price of a product is determined by demand, and supply target costing gains importance, the desired margin of profit can be earned only by cost reduction.

Summary

Job Order Costing is a method of costing in which each job or product is treated as a separate entity and identity of which is maintained all through the production. In this method, each job or product is identified by a job order or works order and a separate account is maintained in respect of each of them.

Cost Sheet is a loose leaf ledger folio used in job costing to record therein the cost of direct material, direct wages and manufacturing overheads chargeable to respective jobs. Each Cost Sheet represents a job order account or a section thereof and provides flexibility to the Accounting System. The Cost Sheets are maintained by the cost office and are filed in consecutive order in the Work-in-progress Ledger. On completion of a job, the Cost Sheet is removed, the total cost of the job is ascertained and transferred to the finished stock account.

Target Costing is the system which supports the cost reduction process in the developing and designing phase of an entirely new model, a full model change or a minor change. It is applied in the developing and designing stage. It is different from standard cost system. It is suitable for multi-product small production run firm rather than in the few product large production run firm.

In contract costing, the principles of Job Costing are applied, and a separate Cost Account is kept for each individual contract. Builders, Civil Engineering Contractors, Constructional and Mechanical Engineering firms, and similar concerns make use of this type of cost system. Contract Cost Accounts are usually simple, but if the contract continues over more than one Accounting Period, the total profit is apportioned on a reasonable basis, so that the financial year may be credited with a just proportion of profit.

KEY CONCEPTS

- Cost sheet
- Work in progress account
- Cost plus contracts
- Cost of Extra Work
- Contract Costing
- Sub-Contracts Cost
- Profit on uncompleted contracts
- Target Costing

Review Questions

OBJECTIVE TYPE QUESTIONS

1. Job costing is basically not used in the following industry
   a. Chemicals b. Shipbuilding c. Machine building
   d. Foundaries e. Automobiles
2. Which of the following statements is/are **true** with respect to job costing
   a. It is cheaper to operate.
   b. It helps the management in minimising the spoilage
   c. It facilitates control of costs
   d. It does not help to make estimates for future similar job.
   e. Both (a) and (b) above.
3. Which of the following is/are **true** regarding job costing?
   a. It is cheaper to operate.
   b. Efficiency of operations can be successfully controlled by job costing.
   c. It is easy to identify the cost of the job accurately.
   d. Profit or loss of a job can be easily calculated.
   e. All of the above.

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4. Which of the following statement/s is/are **true**
   a. In toy manufacture, job costing should be used.
   b. Job costing can be used only in small companies.
   c. The concept of economic batch quantity is similar to that of economic order quantity.
   d. Determination of profit for each job is difficult.
   e. Batch costing is not suitable to identical item producing industries.
5. A job cost sheet basically does **not contain**
   a. Direct labor cost b. Indirect labor cost c. Indirect material cost
   d. Selling and distribution cost e. Manufacturing overhead cost.
6. Which of the following steps is/are **not** part of the general approach to job costing?
   a. Identify the indirect costs associated with each cost allocation base.
   b. Select the cost allocation basis for allocating indirect costs to the job.
   c. Identify the direct costs of the job.
   d. Compute the total cost of the job, adding all direct and indirect costs to it.
   e. All of the above are part of the job costing process.
7. In which of the following situations is job costing most appropriate?
   a. Where two or more products are produced from the same process.
   b. Where the products are dissimilar and non-repetitive in nature.
   c. Where the products are homogenous.
   d. Where the production is in continuous flow.
   e. Where the production is carried on in batches.
8. Which of the following activities correctly classifies the business application to the process costing system and job costing system?
   a. Oil refinery; Wallpaper manufacturer.
   b. Beverage drinks manufacture; Print shop.
   c. Public accounting firm; Aircraft assembly.
   d. Retail banking; Paint manufacturer.
   e. Paint manufacturer; Wallpaper manufacturer.
9. In contract costing;
   a. Work certified is valued at cost price and work uncertified at contract price
   b. Work certified is valued at contract price and work uncertified at cost price
   c. Both work certified and work uncertified are valued at contract price
   d. Both work certified and work uncertified are valued at cost price
   e. Work certified is valued at market price or cost price whichever is less and work.
10. If the work of specialised nature is performed by a sub-contractor, the cost of subcontracting is debited to
    a. Contract account b. Contractee's account c. Profit and loss account
    d. Process account e. Contractor's account.
11. In contract costing, for the contracts which are almost complete, the amount to be credited to Profit & Loss account is on the basis of
    a. Notional profit × (Cash Received/Work Certified) × (1/3)
    b. Notional profit × (Cash Received/Work Certified) × (2/3)
    c. Estimated profit × (Work Certified/Contract Price) × (1/3)
    d. Estimated profit × (Work Certified/Cash Received) × (1/2)
    e. Estimated profit × (work Certified/Contract Price).
12. Which of the following costing methods form(s) part of specific order costing?

i. Job costing. ii. Batch costing.
iii Contract costing. iv Unit costing.

a. Only(i) above
b. Both (ii) and (iv) above
c. Both (iii) and (iv) above
d. Only (i), (ii) and (iii) above.
e. All of (i),(ii),(iii) and (iv) above.

13. In contract costing, payment of cash to the contractor is made on the basis of
a. Work certified b. Uncertified work c. Contract price
d. Cost price e. Work-in-progress.

14. Which one of the following statements is **false?**
a. Job costing can be used in industries using standard costing.
b. Job costing can be used in conjunction with marginal costing.
c. Contract costing is a basic method of specific order costing.
d. Escalation clause in a contract provides that the contract price is fixed.
e. In contract costing, credit is taken only for a part of the profit on incomplete contracts.

15. The factor that influence the most Economical Batch Quantity
a. Set-up cost b. Interest on capital c. Storage cost
d. Manufacturing cost and rate of consumption e. All of the above

16. Investment center is the responsibility centre within an organisation that has control over
a. Cash inflow and cash outflows of the entire organization
b. Costs
c. Revenue
d. Investments of funds
e. (b), (c), and (d) above

17. In responsibility, Accounting System Managers are accountable for
a. Incremental costs b. Differential costs
c. Variable costs but not fixed costs
d. Costs over which they have significant influence
e. Opportunity costs

18. Cost drivers are
a. Costs linked to two or more other costs
b. Mechanical bases like machine hours, size of equipment etc., used to assign costs to activities
c. Accounting techniques used to reduce costs
d. Accounting techniques used to control costs
e. Activities that cause costs increase as the activity increases

19. Which of the following is not true with respect Zero-based budgeting?
a. It is developed using the concept of incrementalization
b. It is done from scratch
c. Previous years figures are not considered as the base
d. It challenges the existence of every budgeting unit and every budget period
e. None of the above

20. A standard which can be attained under the most favorable condition is called
a. Current standard b. Ideal standard c. Basic standard
d. High standard e. Expected standard

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DESCRIPTIVE QUESTIONS

1. What are the main features of Job Order Costing?
2. Give a proforma of Cost Sheet under this Cost system.
3. Explain the purposes which are served by work-in-progress account in contract costing.
4. Is it desirable to calculate profit on uncompleted contracts? If so, to what extent and why? Explain the procedure to ascertain this profit.
5. What do you understand by the Cost Plus method of placing contracts? In what cases is this method usually employed and what are its advantages?
6. What is work-in-progress and how is it calculated in contract account? Explain how this account will be shown in the Balance Sheet.
7. What are the main features of Job order costing? Give a preformed cost sheet under this cost system?
8. Explain the purpose which are served by Work-in-Program a/c in contract costing? How will this Account appear in the balance Sheet of a contractor? Give imaginary illustration.
9. Is it delectate to calculate profit on uncompleted contracts? If so, to what extent and why? Explain the procedure to ascertain this profit.
10. What do you understand by the 'Cost-plus' method of placing contracts? In what cases is this method usually employed and what are its advantages?

PROBLEMS

1. On 1st April, 2007, Contractors ltd., commenced to build a new Cinema hall, the contract price being Rs.3,00,000. The company's financial year ended 30th September 2007, on which date the following expenditure had been incurred in connection with the contract.

	Rs.
Materials	60,000
Wages	42,000
Plan	10,000
Overheads Charges	3,000

Works to the value of Rs.1,20,000 had been certified on 30th September 2007 of which 75% had been received in cash. Work completed but not certified was estimated Rs. 10,500 and materials valued at Rs.5,000 were on hand at the site.

After allowing depreciation at the rate of 10% per annum on plant, prepare an account showing the profit earned to date, and the amount of profit for which the company may take credit in its account on 30th September 2007.

2. The following particulars are extracted from the books of X company for the year ended 31st December 2007:

Materials directly purchased	1,80,000
Materials issued from stores	50,000
Plant purchased	1,60,000
Wages	2,44,000
Direct Expenses	24,000
Proportion of establishment charges	

The contract was for Rs.15,00,000 and up to 31st December 1977, Rs.5,80,000 had been received in cash which represented the full amount of work certified less 20% retention money. Materials on 31st Dec. 2007, were valued at Rs. 15,000; and plant was valued at Rs,1,44,000. Prepare Contract Account showing what profit should be credited to Profit and Loss Account.

3. On 31st December 2007, when the anual accounts of the National Engineering Company Ltd. were prepared, the position of a Bridge Contract, which was commenced on 1st April 2007 was as follows:

Materials	5,95,000
Wages	6,87,000
Sundries	41,000
Plant dispatched to site	1,00,000
Wages accured	17,000
Materials on hand	24,000

The value of work certified was Rs.14,40,000 of which Rs 10,80,000 had been received. Work finished but uncertified was valued at Rs. 40,000. The plant not on site on 31st December 2007, was valued at Rs. 80,000. The contract price was Rs.24,000 and the cost of the work to date was within the estimates.

You are required to give an appropriate account in the Contract Ledger and after taking credit for any profit which may reasonably be brought into account, to show how the particulars relating to the contract should appear in the Balance Sheet of the company, as at 31st December 2007.

4. M/s Daulat Ram and Co., undertook three contracts beginning on 1st February, 1st June and 1st September respectively. Their accounts on 31st December 2007 showed the following position:

Particulars	*Contract A* *Rs.*	*Contract B* *Rs.*	*Contract C* *Rs.*
Contract Price	1,60,000	1,600	1,20,000
Work certified	80,000	64,000	14,000
Work uncertified	2,4000	3,200	800
Materials	28,800	23,200	8,000
Wages	44,000	45,000	5,000
General Expenses	1,600	1,1000	400
Cash received in respect of work certified	60,000	48,000	10,800
Wages accrued	1,400	1,500	1,700
General Expenses accrued	300	200	200
Plant installed	8,000	6,400	4,300
Materials on hand	1,08,000	1,600	1,600

On the respective dates of the contracts, the plant was installed, depreciation thereon being taken at 15% per annum. Prepare (a) Contract Account (b) Work-in-Progress Accounts(c) Show relevant entries in the Balance Sheet as on 31St Dec. 2007.

CASE

The Enterprising Contractors Ltd., having an authorized capital of Rs.1,00,000 divided into 500,6% Preference Shares of Rs.100 each and 5,000 ordinary shares of RS.10 each, commenced operations on 1st January 2007 and during 2007 were engaged on one contract of which the contract price was Rs.4,00,000. The Trial balance extracted from their books on 31st December 2007, showed as follows:

	Rs	Rs
Share Capital:		40,000
6% Preference, fully paid		40,000
Ordinary, Rs.8 paid		8,000
S.Creditors	34,000	
Land and Building at cost	9,000	
Cash at bank		
Contract Account:	75,000	
Materials	20,000	
Plant	1,05,000	
Wages	5,000	
Expenses		
Cash received being 80% or work certified		1,60,000
	2,48,000	2,48,000

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Of the plant and materials charged to the Contract Plant costing Rs.3,000 and materials costing Rs. 2,400 were destroyed by an accident.

On 31st December 2007, Plant which cost Rs.4,000 was returned to store, the value of materials on site was Rs.3,000 and the cost of work done but not certified was Rs.2,000.

Charge 10% Depreciation on Plant. Prepare the Contract Account for the year 2007 and the Balance sheet as on 31st December 2007.

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CHAPTER 13

Process Costing and Activity Based Costing

"Process Cost Accounts are applied to concerns which produce a commodity that has to go through several process and which require to know the cost of each process".

—Sharles

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *The special features of process costing*
- *Direct and Indirect Expenses*
- *Nominal Wastage*
- *Abnormal Effective*
- *Byproducts*
- *Work in Progress*
- *Inter Process Profit*
- *Activity Based Costing*
- *Target Costing*

INTRODUCTION

There are certain commodities which have to undergo several distinct stages of manufacture before completion. These stages are called processes. The expenditure incurred at the various stages of production needs to ascertained at the end of each process. This purpose is very well served by Process Cost Accounts.

According to Wheldon, Process Costing is a method of costing used to ascertain the cost of the product at each process, operation or stage of manufacture, where processes are carried on having one or more of the following features:

(i) Where the product of one process becomes the material of another process or operation.

(ii) Where there is simultaneous production at one or more process of different products with or without by products.

(iii) Where, during one or more processes or operations of a series, the products of materials are not distinguishable from one another, as for instance, when finished products differ finally only in shape or form.

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SPECIAL FEATURES OF PROCESS COSTING

The special features of Process Costing are:

(a) Each plant is divided into distinct process centres each processing a single product.
(b) the product is homogeneous and the units are indistinguishable in process.
(c) both the product and process are standardized.
(d) the product is processed in a specific sequence of operations.
(e) the output of each process is transferred to the next process in a continuous sequence of operations until completion.
(f) on completion, the product is transferred to finished stock.
(g) material, labour and overheads are charged to the process account and any value realisable on disposal of normal loss is credited to it.
(h) product cost is determined by dividing the aggregate process cost by the output of the process.
(i) the cost of abnormal loss and work-in progress are determined on the basis of equivalent units and are credited to the process.

Process Costing is suitable to the following classes of industries:

(i) Manufacturing industries namely, iron and steel, cement, paper, rubber automobile, ceramic etc.,
(ii) Chemical industries such as pharmaceuticals, perfumery, fertilizers etc.
(iii) Mining industries such as oil, coal, sulphur, gold, iron, etc.
(iv) Public utilities such as generation and distribution of electricity, water and gas supply etc.

In such industries, the method of Cost Accounting used is known as Process Accounts. It may be possible to find out the total cost without distinguishing the cost of each process, but it is not desirable to do so. Wastage and by-products of different nature may arise out of each operation, and each operation entails different types of expenses. It would thus be advisable to find out the cost of each operation or process separately. A separate account is opened for each process to which all expenditure incurred thereon are charged. The product of a process is the final product of that process but it is the raw material for the next process. The product of a process can be called Process Product. The Process Product of the last process is the finished product of the factory and transferred to finished product account.

DIRECT AND INDIRECT EXPENSES

The raw materials and sundry supplies required for each process may be requisitioned for store in the usual manner. A requisition in bulk is usually made and a stock of material thus kept in the department itself. Where workers are engaged continuously upon one process, the allocation of wages presents no difficulty. The payroll should be provided with the necessary analysis columns to enable each process account to be debited in total with the labour expended thereon. It will frequently be found that direct labour is only a small element of works cost in the types of undertaking to which process cost are applied, as the worker's task is often of a supervisory nature. If a worker is engaged on the supervision of one or more processes, it may be necessary to apportion his time in accordance with time sheets. All direct expenses incurred with regard to a particular process are debited in that process account. Indirect expenses are bound to be incurred. The normal practice is that indirect expenses are allocated in the proportion of direct wages of each process. It is quite possible that a complicated process should absorb more indirect expenses, therefore, any other reasonable basis for the allocation of indirect expenses may be used according to the nature and the circumstances of the business. In the absence of any information, overheads or on cost should be allocated in the ratio of labour or wages.

Example: From the undermentioned figures, prepare Process Accounts indicating the Cost of Process and the total cost. The production was 480 articles during Jan 2006.

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TABLE 13.1

	Process I	*Process II*	*Process III*
Materials	3,000	1,000	400
Labour	1,600	4,000	1,200
Direct expenses	520	1,440	500

Indirect expenses amounting to Rs.1,700 should be apportioned on the basis of wages. No work-in-progress or Process stocks existed at the beginning or at the end of the month.

Solution Process No. I Account

TABLE 13.2

	Cost Per article Rs.	*Total Cost Rs.*		*Cost per article Rs.*	*Total cost Rs.*
To materials	6.25	3,000	By Process No.II a/c	11.50	5,520
To Labour	3.34	1,600			
To Direct expenses	1.08	520			
To Indirect expenses (4/17 of Rs.1,700)	0.83	400			
	11.50	5.520		11.50	5,520

Process No.II Account

TABLE 13.3

	Cost Per article Rs.	*Total Cost Rs.*		*Cost per article Rs.*	*Total cost Rs.*
To Process No.I a/c	11.50	5,520	By Process No.III a/c	27.00	12,960
To materials	2.08	1,000			
To Labour	8.34	4,000			
To Direct expenses	3.00	1,440			
To Indirect expenses (10/17 of Rs.1,700)	2.08	1,000			
	27.00	12,960		27.00	12,960

Process No.III Account

TABLE 13.4

	Cost Per article Rs.	*Total Cost Rs.*		*Cost per article Rs.*	*Total cost Rs.*
To Process No.II a/c	27.00	12,960	By Finished Stock a/c (output transferred)	32.00	15,360
To materials	0.83	400			
To Labour	2.50	1,200			
To Direct expenses	1.04	500			
To Indirect expenses (3/17 of Rs.1,700)	0.63	300			
	32.00	15,360		32.00	15,360

Indirect expenses have been apportioned in the ratio of Direct Labour i.e 1,600 : 4,000 : 1,200 i.e in the ratio of 4 : 10 : 3 respectively.

Loss Weight or Wastage of no Value

In many industries, adopting the system of Process Costing wastage or loss in weight occurs during the course of manufacture. This loss in weight or wastage may be due to evaporation, moisture and careless handling. Such wastage of no value or loss weight will appear in the credit side of the concerning process. Only weight will appear in the quantity column, nothing will appear in the amount column, as it has no scrap value.

Wastage or Residue having Scrap Value

If the wastage or scrap or residue possesses some value, the process should be credited with the value which the scrap would realize on its sale or the value which can be placed on it. In the credit side of the concerning process, accounts quantity of wastage should appear in the weight column and its value in the amount column.

Example: In a factory, the output passes through A and B processes. In both processes, 5% of the total weight put in is loss and 10% is scrap which realises from processes A and B Rs.20/- and Rs.30/- per ton respectively.

The following details are available:

TABLE 13.5

		A	*B*
Materials used	Tons	8,000	1,000
Cost of Materials per ton	Rs.	30	50
Wages	Rs.	20,000	10,000
Manufacturing Expenses Prepare process accounts	Rs.	15,000	5,000

Solution

TABLE 13.6

	Tons	*Rs.*		*Tons*	*Rs.*
To materials cost Rs.30 per ton	8,000	2,40,000	By loss in weight (5% 8,000 tons)	400	-
To wages		20,000	By Scrap (10% of 8,000 Tons sold @ Rs.20 per ton)	800	16,000
To manufacturing expenses		15,000		6,800	2,59,000
	8,000	2,75,000		8,000	2,75,000

Process B

TABLE 13.7

	Tons	*Rs.*		*Tons*	*Rs.*
To Process A (output recd)	6,800	2,59,000	By loss in weight (5% 7,800 tons)	390	-
To wages		10,000	By Scrap (10% of 7,800 tons sold @ Rs.30 per ton)	780	23,400
To manufacturing expenses		5,000	Finished Stock (output)	6,630	3,00,600
To Materials @ Rs.50 per ton	1,000	50,000			
	7,800	3,24,000		7,800	3,24,000

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Normal Wastage and Abnormal Wastage or Abnormal Effective

Wastage may be of two kinds – Normal and Abnormal. Normal and Abnormal process losses must be distinguished. Wastage which is bound to arise is normal wastage and must be treated as an additional charge on the usable units produced. The scrap value of the normal wastage and its quantity will appear in the credit side of the concerning process. Normal process losses consist of a) Losses inherent in the material or process due to chemical charges or physical reasons. b) Unavoidable, spoiled units or quantities, withdrawals for test or sampling.

Any wastage, arising in excess of normal wastage or caused by circumstances outside the ordinary course of manufacture, must be regarded as abnormal wastage. Abnormal process losses, comprise of deficiencies of finished products due to carelessness, bad plant design or operation or other errors. The valuation of Abnormal wastage should be done with the help of this formula.

(Normal cost of Normal Output/Normal Output) × Units of Abnormal Wastage

Abnormal wastage a/c should be debited and concerning process a/c should be credited with the value of Abnormal wastage. If this Abnormal wastage has got any scrap value it should be credited to Abnormal Wastage a/c. The balance of Abnormal Wastage a/c should be transferred to Costing Profit and Loss a/c.

In some cases the actual wastage incurred may be less than the normal wastage with the result that it is a profit realised in that process. This is termed Abnormal Effectives or Abnormal efficiency. It should be valued in the similar manner as Abnormal wastage. Abnormal Effectives will appear in the debit side of the concerning process, as the Abnormal Effectives a/c will be credited. The amount of profit resulting from abnormal effectives will be reduced by the loss resulting from the reduction in the sale of normal wastages. The balance of Abnormal Effective a/c will be transferred to Costing Profit and Loss a/c.

Abnormal Wastage

Example: In process A, 100 units of Raw Material were introduced at a cost of Rs.1000. The other expenditure incurred by the process were Rs.600. Of the units introduced, 10% are normally spoilt in the course of manufacture and they possess a scrap value of Rs.3/- each. The output of process A was only 75 units.

TABLE 13.8 Process A Account

	Units	*Rs.*		*Units*	*Rs.*
To Raw Materials	100	1,000	By Normal Wastage (10% of 100 units @ Rs.3/- each)	10	30
To other expenses		600	Abnormal wastage	15	262
			By Process B output (Cost per unit = 1308/75 = 17.44)	75	1,308
	100	1,600		100	1,600

Units entered	100
Less Normal wastage	10
Normal output	90
Actual output	75
Units of Abnormal wastage	15
Value of Abnormal wastage	

Normal cost of Normal output/Normal output × Units of Abnormal wastage

= Rs.1,600 – 30 = 1,570 Normal cost of normal output.

= (Rs. 1,570/90) × 15 = Rs. 262.67 or Rs. 262.

Abnormal Wastage Account

TABLE 13.9

	Units	*Rs.*		*Units*	*Rs.*
To Raw Materials	100	1,000	By Normal Wastage (10% of 100 units	10	30
To Process A	15	262	By Cash scrap value of wastage	15	45
			By Costing profit and loss a/c	-	217
	15	262		15	262

Abnormal Effectives or Efficiency

In process B, 75 units of a commodity were transferred from Process A at a cost of Rs.1308. The additional expenses incurred by the process were Rs.202. 20% of the units entered are normally spoilt and sold @ Rs.4/-. The output of the Process was 70 units.

TABLE 13.10 Process B Account

	Units	*Rs.*		*Units*	*Rs.*
To Process A	75	1,308	By normal wastage (20% i.e, 15 units sold @ Rs.4/-)	15	60
To Additional expenses		202	By process C (output) Cost per units 1692/70 Rs.24.17	70	1,692
To Abnormal Effective	10	242			
	85	1,752		85	1,752

Normal output: Units entered – Normal wastage

= (75 – 15) = 60 units

Actual output = 70 units

Abnormal Effectives = 10 units

Valuation of Abnormal Effectives

(Normal Cost of Normal output × Normal output) × Units of Abnormal Effective

Normal cost of Normal output

Rs. 1,308 + 202 – 60 = Rs.1,450

(1,450/60) × 10 = Rs.241.67 or Rs.242.

Abnormal Effectives Account

TABLE 13.11

	Units	*Rs.*		*Units*	*Rs.*
To Short fall in the sale of normal wastage @ Rs.4/-	10	40	By Process B	10	242
To Costing Profit and Loss a/c	-	202			
	10	242		10	242

By-products

In some industries, certain by-products emerge as a normal feature. Where by-products are of small value, amount realised from the sale of by-products should be utilised in reduction of the cost of the main product and credited to the amount of the process from which they have been derived. Where by-products are of considerable value, the total expenditure incurred upon a process should be apportioned between the main product and the by-product, so that the cost of by-product may be ascertained. By-product a/c should be credited, to the by-product a/c, so that profit or loss may be ascertained separately. Alternatively, by-product a/c may not be opened, process a/c may be credited with their sale-proceeds and profit or loss resulting from such sale may be transferred to Profit and Loss a/c. In certain cases, by products are not yielded in a saleable condition and the manufacturer has to incur further expenditure on it, before they can be sold. In such cases, it is essential to open a separate by product a/c, by debiting by product a/c and crediting concerning process a/c. The by-product a/c will be further debited with the expenditure incurred in its processing. A separate by-product a/c should be opened for the by-products of each process.

Example: In process A, 1,000 tons of materials was introduced at a cost of Rs.50,000. Other expenses incurred upon the process were Rs.10,000. Loss in weight in the process was 50 tons and 150 tons residue was sold for Rs.500. The By-products of the process were 200 tons and were sold at cost plus 20%.

TABLE 13.12 Process A

	Tons	*Rs.*		*Tons*	*Rs.*
To materials introduced	1,000	50,000	By Loss in weight	50	-
To other expenses		10,000	By Residue sold	150	500
			By Process A By Product a/c	200	14,875
			By Process B a/c	600	44,625
	1,000	60,000		1,000	60,000

Total Output = 1,000-200 tons = 800 tons

Total Cost Rs.60,000 – 500 = Rs.59,500

Cost of By Products = 59,500/800 × 200 = Rs.14,875

Process A By-Product Account

TABLE 13.13

	Tons	*Rs.*		*Tons*	*Rs.*
To Process A a/c	200	14,875	By Sales	200	17,850
To Profit and Loss a/c (cost + 20%)		2,975			
	200	17,850		200	17,850

Alternative method – (When by product a/c is not to be prepared)

TABLE 13.14 Process A Account

	Tons	*Rs.*		*Tons*	*Rs.*
To materials introduced	1,000	50,000	By Loss in weight	50	-
To other expenses		10,000	By Residue sold	150	500
To Profit and Loss a/c			By sale of By-products	200	17,850
Profit on By products sold		2,975	By Process B a/c	600	44,625
	1,000	62,975		1,000	62,975

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If only sale value of by-products is given, it is not given whether they are sold at a profit or loss, then it would be assumed that by–products are sold at cost price and no profit no loss has incurred upon them.

Work-in-Progress

It would be rare to find that there is no partly finished goods in a process of manufacture. There is always some quantity of partly finished units or work-in process of work in progress. The valuation of work in progress present good deal of difficulty, because there are units in various stages of completion. Work-in-progress can be valued at actual cost, i.e., an attempt may be made to find out how much materials have been used upon the unfinished units and how much amount of labour and expenses have been spent on them. An alternative method is to convert partly finished units into equivalent finished units. For example, if 20 % work has been done on the average of 200 units still in process, then 200 such units will be equal to 40 completed units. The cost of work in progress will be equal to 80 completed units.

Inter Process Profits

The usual practice is to transfer the output to the next process at cost and from the last process to finished stock a/c also at cost. But sometimes the transfer is made at market price i.e, at inflated amount of cost, which is known as the Transfer Price. In this way, each process shows a profit and these profits are credited to the Profit and Loss Account. The main advantage of such a method is that efficiency or inefficiency at each stage will be known immediately.

The inflation of inter-process transfer prices has the effect that process stocks appear in the excess of cost. The inter process profits included in the stocks must be eliminated, as this profit is unrealised profit. This amount for unrealised profits included in stocks of each process should be calculated and should be transferred to 'Reserve for Unrealised Profit' by debiting the Profit and Loss Account. If percentage of profit on cost is given we have to find out percentage on cost of goods profits on Transfer Price. For example, if each process charges 25% profit on cost of goods transferred, the percentage on "Transfer Price' will be 25/125 × 100 = 20%.

Example: A product passes through two processes A and B. Output of A is transferred to Process B at cost plus 25%, and finished output is similarly transferred to Finished Stock at cost plus 25%. There was no work in progress in either process on 31st December. On this date, the following further information is available:

TABLE 13.15

	Process A *Rs.*	*Process B* *Rs.*
Materials Consumed	8,000	24,000
Wages	12,000	16,000
Closing Stock (valued at Prime cost)	4,000	12,000

Out of the finished stock, a portion remained at hand valued at Rs.18,000 and the balance for Rs.58,000. Prepare the process and finished stock Accounts. Question of on cost and opening stock has been ignored.

Prepare Process Accounts

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Solution

TABLE 13.16 Process A

	Rs.		*Rs.*
To Materials Consumed	8,000	By closing stock (31st Dec)	4,000
To wages	12,000	By Process B (transfer of output)	20,000
To profit & Loss Account (profit 25% on Rs.16,000 cost of goods transferred)	4,000		
	24,000		24,000

TABLE 13.17 Process B

To process A (output rece)	20,000	By closing stock (31st Dec)	12,000
To materials consumed	24,000	By finished stock (finished output)	60,000
To wages	16,000		
To profit & loss a/c (25% profit on Rs.48,000)	12,000		
	72,000		72,000

TABLE 13.18 Finished Stock Account

To Process B (Finished output)	60,000	By Sales	58,000
To profit & loss a/c	16,000	By Closing Stock (31st Dec)	18,000
	76,000		76,000

TABLE 13.19

Profits:	*Rs.*
Process A	4,000
Process B	12,000
Finished Stock	16,000
	32,000

The entire amount Rs.32,000 cannot be credited to Profit & Loss Account as it includes unrealised profit included in process stocks and unsold finished stock. So, a reserve for unrealised profit will have to be credited.

Reserve for unrealised Profit

Process A: Closing Stock valued at prime cost, therefore no reserve. Nil

Process B: Closing Stock Rs.12,000 of which 20,000/60,000 has been received from Process A which includes 25% profit on cost or 20% profit on transfer price (25/125 × 100) So R.12,000 × 20/60 × 20/100 = 800

Finished Stocks: Closing stock Rs.18,000 entirely received from Process B, which has charged 20% profit thereon so, Rs.18,000 × 20/100 = Rs.3,600 profit.

Profit Charged by Process B: Rs. 3600

Prime cost of this stock to Process B = Rs.18,000 less Rs.3,600 = Rs.14,400

Process B has also received a proportion i.e. 20,000/60,000 of this stock from process A i.e., stock recd. from A = 14,400 × 20/60 = Rs.4,800 which has also charged 20% profit on Transfer Price. Therefore, profit charged by Process A = 4,800 × 20/100 = 960.

So total Reserve for Unsold Finished stock:

TABLE 13.20

Profit charged by Process A	960	
Process B	3,600	4,560
Total Reserve for unrealized Profit		5,360

TABLE 13.21 Profit & Loss Account

Total Profit	32,000
Less: Reserve for unrealized Profit included in stock	
Profit to be taken credit of	5,360
	26,640

TABLE 13.22 In the Balance Sheet Stocks will appear as follows:

Process A	4,000
Process B (12,000 – 800)	11,200
Finished Stock (18,000 – 4,560)	13,440
Total	28,640

ACTIVITY BASED COSTING (ABC)

Under the traditional Cost Accounting System, overheads are usually allocated based on direct labour hours by computing the overhead rate as follows:

Overhead rate per direct Labour hour = total manufacturing overheads/ Total Direct Labour hours.

As such, a product involving large number of Direct Labour Hours will get allocated a higher manufacturing overhead irrespective of the extent to which various activities are utilised for the manufacture of that product, e.g a product requiring relatively large number of direct labour hours will receive a large proportion of set up and inspection overheads, even though such overheads might have been incurred to relatively lesser extent for that product. Hence, modern management accountants have expounded the theory that overhead shall be distributed to the activities first and then to the various products benefited by the activity.

Nowadays, direct labour costs have shrunk as a percentage of total cost in most manufacturing industries. Additionally, overhead functions have assumed greater importance (e.g product design, quality control, customer service, etc). Consequently, direct labour hour loses its relevance as a base for allocating overheads.

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ABC system emphasises the need to understand the overhead cost behaviour and ascertain what causes overhead costs and how they relate to products. Also ABC recognises the fact that in the long run, most manufacturing costs are not fixed and seeks to understand the forces that cause overhead costs to change over a period of time. Business must understand the factors that drive major activities, the cost of such activities and how these activities relate to products.

ABC begins with the identification of non-value-added activities, which are defined as any activities that are performed with a company, but, which do not add any value to the product manufactured (such as inspection time, move time, wait time, number of set-ups, number of production orders). These non-value-added activities are generally referred to as cost-drivers – causes of non-value added costs. Subsequently, the overhead costs caused by/driven by these activities are also identified. This leads to the computation of transaction-based, or activity-based overhead allocation rates. In short, in an activity-based Cost System, the costs are first traced to activities and then to products.

TARGET COSTING

Target Costing is the system which supports the cost reduction process in the developing and designing phase of an entirely new model, a full model change or a minor model change. The important features of Target Costing system are:

1. It is applied in the developing and design stage. It is different from standard cost system.
2. It is a technique of cost reduction.
3. It is suitable for multi-product small production run firm rather than in the few product large production run firm.
4. It uses value engineering concepts and a comparison of Target Costing with achieved cost is periodically done.

A simple example of the computation of cost under Target costing system is given below :

1. Estimated allowable cost (arrived as follows):
   Target price
   Less : Required profit margin
   Total allowable cost
2. Present cost
3. Determine gap or cost reduction needed.
4. Eliminate or reduce the gap by identifying the problems.

In an open competitive market where the price of a product is determined by demand and supply target costing gains importance, the desired margin of profit can be earned only by cost reduction.

1. It provides the organisation with a systematic way to evaluate different operations and programs undertaken by the management. It enables management to allocate resources according to priority of the programs.
2. It ensures that every program undertaken by the managers is essential for the organisation and is being performed in the best possible way.

SUMMARY

Process Costing is a method of costing used to ascertain the cost of the product at each process, operation or stage of manufacture, where the product of one process becomes the material of another process or operation (or) where

there is simultaneous production at one or more process of different products with or without by-products (or) where, during one or more processes or operations of a series, the products of materials are not distinguishable from one another, as for instance, when finished products differ finally only in shape or form.

Activity Based Costing system emphasises the need to understand the overhead cost behaviour and ascertain what causes overhead costs and how they relate to products. Also Activity Based Costing recognises the fact that in the long run, most manufacturing costs are not fixed and seeks to understand the forces that cause overhead costs to change over a period of time. Business must understand the factors that drive major activities, the cost of such activities and how these activities relate to products.

Activity Based Costing begins with the identification of non-value-added activities, which are defined as any activities that are performed with a company but which do not add any value to the product manufactured (such as inspection time, move time, wait time, number of set-ups, number of production orders). These non-value-added activities are generally referred to as cost-drivers – causes of non-value added costs. Subsequently, the overhead costs caused by/driven by these activities are also identified. This leads to the computation of transaction-based, or activity based overhead allocation rates. In short, in an activity-based cost system, the costs are first traced to activities and then to products.

KEY CONTENTS

- Abnormal effectiveness
- By-products
- Inter-process profits
- Residue having scrap value
- Direct and Indirect expenses
- Normal Output
- Activity Based Costing
- Target Costing

Review Questions

OBJECTIVE QUESTIONS

1. An operation costing system is
   a. Identical to a process costing system except that actual cost is used for manufacturing overhead
   b. The same as a process costing system except that materials are allocated on the basis of batches of production
   c. The same as a Job Order Costing System except that materials are accounted for in the same way as they are in a process of Costing System
   d. The same as a Job Order System except that no individual allocations are made since actual costs are used throughout
   e. A system in which manufacturing activities are finely divided into individual, discrete steps or operations.
2. Operation costing is appropriate for products that are:
   a. Homogenous and a result of continuous process.
   b. Heterogeneous and a result of discontinuous process
   c. Produced in batches or production runs
   d. Related to automobile repair shop
   e. Related to food and beverage industries.
3. Which of the following statements regarding similarities between process costing and job order costing are **true?**

i. Both assign production costs to units of output.
ii. Both require extensive knowledge of financial accounting
iii. The flow of costs in the same.
a. Only (i) above.
b. Both (i) and (iii) above.
c. Both (ii) and (iii) above.
d. Only (iii) above.
e. All of (i), (ii) and (iii) above.

4. The objective of process costing is to calculate the costs of units completed. To do this, it is required to determine the cost per unit, but this can be complicated when
   a. There is no beginning or ending inventory and all goods are started and completed
   b. Beginning inventory has incomplete units and its equivalent units must then be computed
   c. Ending inventory has incomplete units and its equivalent units must then be computed.
   d. Costs change from period to period and the firm has not decided which cost flow assumption to use (weighted-average, FIFO or LIFO)
   e. Only (b), (c) and (d) above.
5. Which of the following industries does **not** use the process costing?
   a. Oil refineries b. Distilleries c. Sugar
   d. Chemical. e. Aircraft manufacturing.
6. Process costing is based on
   a. Average cost concept b. Marginal cost concept c. Incremental cost concept
   d. Standard cost concept e. Differential cost concept.
7. Unacceptable units of production that is an inherent result of the production process is known as
   a. Scrap b. Normal loss. c. Abnormal loss
   d. Rework e. Wastage.
8. Abnormal loss is calculated as under
   a. Normal cost of normal output – Scrap value of abnormal loss × Unit of abnormal loss Normal output
   b. Normal cost of normal output – Scrap value of abnormal loss × Normal output Unit of abnormal loss
   c. Normal cost of normal output × Units of abnormal loss
   d. Normal cost of normal output × Normal output/Units of abnormal loss
   e. Total cost × Unit of abnormal loss total input.
9. For the valuation purpose, abnormal loss is treated on par with
   a. Normal loss b. Opening work-in-process c. Good units
   d. Closing work-in-process e. Bad units
10. Which of the following is **true** when there is an abnormal loss?
    a. It should be ignored.
    b. Debit Abnormal Loss account and Credit process account.
    c. Credit Abnormal Loss account and Debit process account.
    d. Debit Abnormal Loss account and Credit profit and Loss account.
    e. Credit Abnormal Loss account and Debit profit and Loss account.
11. Whenever there is a sale of abnormal loss goods, the sale proceeds
    a. Should be debited to abnormal loss account
    b. Should be credited to abnormal loss account
    c. Should be credited to process account
    d. Should be debited to profit and loss account.

12. In processing goods through a factory, materials are successively run through production departments A B. For product costing purposes, items received from department A should be treated by department B as:
    a. Equivalent units b. Normal loss units c. Raw materials
    d. Work-in-progress e. Finished goods.
13. In which of the following situations is process costing used?
    a. When small numbers of distinctly different products are manufactured.
    b. When large numbers of different products are manufactured.
    c. When large numbers of nearly identical products are manufactured.
    d. When small numbers of nearly identical products are manufactured.
    e. When the fixed costs of manufacturing exceed the variable cost of manufacturing.
14. In the computation of manufacturing cost per equivalent unit, the weighted average method of process costing considers
    a. Current Costs only
    b. Current Costs + Cost of closing WIP
    c. Current Costs + Cost of opening WIP
    d. Current Costs + Cost of opening WIP
    e. Cost of opening work-in-process + Cost of closing-work-in process.
15. Equivalent units of production are used in process accounting to:
    a. Measure the efficiency of the production process
    b. Measure the effectiveness of the cost center
    c. Allocate overheads to production
    d. Establish standard costs
    e. Provide a means of allocating costs to partially completed units.
16. The objective of standard costing is to
    a. Determine profitability of a product
    b. Determine break-even production level
    c. Control cost
    d. Allocate costs with more accuracy
    e. Eliminate the need for subjective decisions by management
17. Which of the following statement most appropriately describe(s) the role of budget?
    a. Budgets should be administered rigidly so that people believe in them
    b. Attaining the budget is an end in itself
    c. Managers should commit to the budget and keep it as adopted
    d. Changing conditions call for changes in plans and long-term goal of the organization should be the guide for changes to the budget itself
    e. All of the above are true
18. Which of the following is not a characteristic or assumption of Product Life Cycle Costing?
    a. Product cost, revenue and profit patterns tend to follow predictable courses through the product life-cycle
    b. Each phase of the product life-cycle poses different threats and opportunities
    c. The product have infinite life period
    d. Profit per unit varies as product move through their life-cycle
    e. Products requires different functional emphasis in each phase
19. In activity-based costing system, the primary criteria for making cost allocation decisions is
    a. Cause and effect b. Benefits received c. Fairness
    d. Ability to bear e. Total cost before taking into overhead costs
20. Which of the following will improve return on investment if other factors are constant?

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a. Reducing expenses
b. Increasing selling prices
c. Increasing sales volume while holding fixed expense constant
d. Increasing assets
e. All of (a), (b) and (c) above

21. Which of the following statement is false with respect to Total Quality Control (TQC)?
    a. TQC is a management process based on the belief that quality cost are minimized with zero defects
    b. The proponents of TQC do not advocate that 'quality is free'
    c. TQC begins with the design and engineering of the product
    d. TQC is often associated with JIT manufacturing
    e. TQC is sometimes referred to as TQM
22. In an investment center, the manager is accountable for
    a. Costs only b. Cash flows only c. Investments only
    d. Revenues and costs only e. Investment, revenue, and costs
23. Which of the following is/are not a general method for determining the transfer prices?
    a. Cost-base transfer pricing b. Income- based transfer pricing
    c. Market-based transfer pricing d. Negotiated transfer pricing
    e. All of the above
24. If the selling sub-unit is operating at full capacity and can sell everything produced either internal or external, the transfer price of the product will be fixed up on the basis of
    a. Negotiation between the divisions b. Market price c. Variable cost
    d. Cost plus a mark-up e. Full cost pricing
25. Which of the following transfer pricing methods will preserve the sub-unit autonmy?
    a. Negotiated pricing b. Cost based pricing c. Variable cost pricing
    d. Full cost pricing e. None of the above

DESCRIPTIVE QUESTIONS

1. Explain the working of process costing and give the salient features of the system. For which kinds of businesses is Process Costing suitable?
2. Define Normal Wastage, Abnormal Wastage and Abnormal Effectives and explain the effect of each of them on the ascertainment of cost of an article. How should they be treated in the process of manufacture of a product?
3. What is 'By-Product'? How should it be treated in the ascertainment of the cost of the main product?
4. In the course of the manufacture of a certain product, a liquid by-product is obtained which after distillation and refining has a considerable market value. Outline the method of accounting which would recommend for the determination of the cost of the main product and of the by-product.
5. How would you account for wastage in the cost of production? Distinguish between normal and abnormal wastage.
6. A certain product passes through five distinct processes at a factory before it becomes a finished article ready for sale. Each process is dealt within a separate department, but, in the fourth process some of the raw materials is purchased and not obtained from the prior process. State and explain your views as to the price at which the transfers from process to process should be made.
7. What do you mean by the terms joint products and by-products. Write a brief note on them.
8. How would you account for wastage in Cost of Production? Distinguish between wastage and loss in weight.
9. What do you mean by Inter Department Transfer Profit? How is the actual profit calculated?
10. Write short notes on

(i) Normal and Abnormal Waste (ii) Abnormal effectives
(iii) Scrap (iv) Valuation of Work-in-Progress.

11. What is process costing? Mention the names of a few industries where this method of costing is applied. Suggest a suitable Performa cost – sheet.
12. Many of the problems associated with process cost accounts related to the treatment of wastage and valuation of partially completed work in progress. What are these problems and how can they be dealt with in a Cost Accounting System.
13. What are special features of process costs? To which classes of manufacture are they generally applied. Illustrate briefly your answer.
14. Discuss with figures the methods of treatment of process loss and wastage under a process costing method.

PROBLEMS

1. An article passes through three processes of manufacture From the following figures, show the cost of each of the three processes during the month of January 2007.

	Process No. 1	Process No. 2	Process No. 3
	Rs	Rs	Rs.
Materials used	15,000	5,000	2,000
Labour	8,000	20,000	6,000
Direct expenses	2,600	7,200	2,500

The indirect expenses amounting to Rs. 8,500 may be apportioned on the basis of wages. No account need be taken of stocks-in-hand and Work-in-progress at the beginning and close of the month. The number of articles produced during the month was Rs. 240

Ans: Process No. 1. Total Cost Rs.27,600; Cost per article Rs.115.
Process No. 2. Total Cost Rs.27,600; Cost per article Rs.115.
Process No. 3. Total Cost Rs.27,600; Cost per article Rs.115.

2. Fenokin, a particular brand of phenyle of Calcutta Chemical Co. Ltd., passes through three important processes. During the month of January, 2008, 600 gross of bottles were produced. The cost books show the following informations:

	Process No. A	Process No. B	Process No. C
	Rs	Rs	Rs.
Materials	8,000	4,000	3,000
Labour	6,000	5,000	5,000
Direct Expenses	1,200	400	1,000
Cost of Bottles	–	4,060	–
Cost of Corks	–	–	650

The indirect expenses for this period was Rs.3,200. The by – products of process B were sold for Rs.480 and the residue of Process C sold for Rs. 250.

Prepare the account in respect of each of the processes showing its cost and cost of production of the finished product per gross of bottles.

Ans: Process No. A. Total Cost Rs.16,400; Cost per article Rs.27.32.
Process No. B. Total Cost Rs.30,380; Cost per article Rs.50.633.
Process No. C. Total Cost Rs.40,780; Cost per article Rs.67.967.

3. A pencil manufacturer makes two types of pencils 'Black' and 'Coloured'. They undergo two processes, 'Factory and Finishing'. Raw materials used in the factory and general expenses are apportioned in the ratio of output of each class. The output in 2007 was 24,000 gross Black and 8,400 gross Colored; the actual cost of labor for each process is ascertained; "other charges" for each process are apportioned in the ratio of finishing labour. From the following particulars, prepare a statement of the cost per gross of item of each process in the cost of manufacturer; and the profit per gross if the selling prices are per gross Rs. 10.00 and Rs. 9.50 respectively

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	Rs
Factory raw materials	
Opening stock	36,800
Purchases	1,07,100
Closing stock	49,400
Factory Wages: Black	42,000
Coloured	13,650
Factory charges	36,800
Finishing Wages: Black	20,000
Coloured	5,600
Finishing raw materials:	
Opening stock	7,100
Purchases	33,700
Closing stock	8,900
Finishing charges	19,200
General expenses	36,450

Ans: Black - Total Cost Rs. 2,27,750, cost per gross Rs.9.50
profit per gross Rs. 0.50. Coloured - Total Cost Rs. 72,450,
cost per gross Rs. 8.63 profit per gross Rs. 0.87.

4. In a factory the output passes through three processes to completion. The production of each process is passed on to the next process immediately on completion.

	Process		
	A	B	C
	Rs	Rs	Rs.
Materials and Wages	18,000	12,000	10,000
Manufacturing expenses	12,000	6,000	4,000
Output in unit	10,000	12,000	15,000
Opening Stock in units	–	5,000	8,000
Closing Stock in units	1,000	3,000	

Ans: A. Total Cost Rs.30,000; per unit Rs.3.00.
B. Total Cost Rs.60,000; per unit Rs.5.00.
C. Total Cost Rs.99,000; per unit Rs.6.60.

5. In a factory, the output passes through three processes. The output of one process is transferred to the next process:

	Process		
	A	B	C
	Rs	Rs	Rs.
Direct Wages	10,000	20,000	30,000
Machinery expenses	5,000	15,000	20,000
Oncost	2,000	2,000	5,000
Raw Materials consumed	23,000	–	–
	Units	Units	Units
Output (Gross)	21,000	–	–
Wastage	1,000	1,500	2,500
Opening Stock	–	2,000	3,000
Closing Stock	–	500	1,000

Prepare Process Accounts

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Ans: Process A. Total Cost Rs. 40,000; per unit Rs.2.00.
Process B. Total Cost Rs. 80,000; per unit Rs.4.00.
Process C. Total Cost Rs. 1,43,000; per unit Rs.7.33.

6. In a factory, three processes are employed. The output process A is transferred to B and of B to C. It has been the experience that wastage in Process A is 2%, Process B 5%, Process C 10%.
The scrap value of wastage in Process A and B is Rs.20 per hundred units and in process C, Rs.50 per hundred units.

	Process A Rs	Process B Rs	Process C Rs.
Materials	10,000	8,000	6,000
Wages	5,000	4,000	3,000
Manufacturing expenses	3,000	3,000	1,000
Oncost	2,000	2,000	500

In Process A 5,000 units were purchased worth Rs. 10,000.
The output were as follows:

Process A	4,500 Units
Process B	4,400 Units
Process C	3,500 Units

Prepare Process Accounts
Ans: Process A – Abnormal wastage 400 units at Rs. 2,447; output 4,500 unit of Rs.27,533.

7. The following details are available from the books of a factory in which two processes are employed.

	Process A	Process B
Materials	1,000 tons at Rs. 50 per ton	–
Wages	Rs. 30,000	Rs.20,000
Factory Overhead	50% of wages	30% of wages
Wastage	100 tons	200 tons
By - products	100 tons sold At cost plus 20%	200 tons sold At cost plus 25%

In Process A, 5,000 units were purchased worth Rs. 10,000.
The outputs were as follows:

Process A	4,500 Units
Process B	4,400 Units
Process C	3,500 Units

Prepare necessary Ledger Accounts.
Ans: Profit on sale of By- products- A Rs.2,111; B Rs. 9,204.

8. The main product of All India Copra Products Ltd., passes through three processes namely: Crushing, Refining and Finishing. The following figures are extracted from the company's books for the month ending 31st October 2007:

	Crushing £	Refining £	Finishing £
Wages	1,200	480	720
Motive Power	250	175	115
Steam	260	216	220

Stores	50	965	–
Repairs	136	160	68
Sundry Expenses	635	320	110

2,450 tons of Copra were consumed at £ 45 per ton. The output of the Crude oil was 1,450 ton; Refined oil 1,025 tons; and 1000 tons casked ready for delivery.

Sales of crude oil amounted to 290 tons at cost plus 25%. Sale of copra sacks amounted to £ 115; 730 tons of residuals from copra were sold for £ 4,360; 100 tons of Refining Process waste were sold for £ 1,170.

Casks used in the Finishing Process cost £ 2,850. Finished oil in casks was sold for £ 125 per ton. You are required to draw up a cost sheet showing: (a) Cost per ton of output of each process (b) Total Profit for the month.

Ans: Crushing Process - Profit on 290 tons crude oil sold
£ 5,411.75. Balance of output transferred to Refining 1,160 Tons at £ 86,588.75.
Refining Process – output 1,025 tons, cost £ 87,734.75.
Finishing Process – output 1,000 tons at £ 88,967.75.

9. A product passes through three processes to completion. These processes are known as A, B and C. The output of each process is charged to the next process at a price calculated to give a profit of 20 percent on the transfer price. The output of process C is charged to Finished Stock on a similar basis.

There was no partly-finished work in any process at 31st December on which date the following information was obtained:

	Process A	Process B	Process C
	Rs	Rs	Rs.
Materials consumed	4,000	6,000	2,000
Labour	6,000	4,000	8,000
Stock – 31st December	2,000	4,000	6,000

Stock in each Process have been valued at prime cost.

There were no stocks in hand on 1st January and the question of oncost has been ignored. Of the goods passed into Finished Stock, Rs. 4,000 remained in hand on 31st December, the rest has been sold for Rs. 36,000.

Prepare the Process Accounts and show the amount of actual profit to be taken to the credit of Profit and Loss Account.

Ans: Total Profit Rs.22,000; Reserve for unrealized profit
Process B – Rs.400; Process C Rs.1,120(800 + 320);
Finished Stock Rs.1,398(800 + 427 + 171);
Total Reserve Rs, 2,918.

10. The output of Process A is charged to Process B at 20% on the transfer price. The output of Process B is charged to Finished Stock on a similar basis.

At 31st December, 2007, the following information with regard to the process is ascertained:

	Process A	Process B
	Rs	Rs
Stock on 1st January, 2007		
Materials consumed		
Direct Labour		
Oncost		
Stock on 31st December, 2007		

Finished product in stock on 1st January, 2007 was valued at Rs. 1,000 and at 31st December, 2007 at Rs.1,500.

Sales amounting to Rs.95,000 were affected during the year.

All Process stocks have been valued at Prime Cost to process concerned. Show the Process Account Finished Stock Account and ascertain the total Profit ignoring the reserve for unrealized profit.

Ans:

Total profit	Rs.
Process A	8,345
Process B	16,500
Finished stock	13,000
	37,845

11. The finished product of a factory passes through two processes. The materials are added at the beginning of the first process. From the following details, work out the value of closing inventory and the value of materials transferred to the second process:

Process I	Rs
Opening inventory	50,000
Materials	1,37,500
Labour	2,50,000
Overhead	2,00,000
	Unit
Opening inventory (25% Complete)	20,000
Put in process	60,000
Transferred to Process II	50,000
Closing inventory (20% Complete)	25,000
Spoilage during process	5,000

Ans: Effective units 50,000; work-in-progress Rs.58,750; Transferred to process II 50,000 units valued Rs. 5,78,750.

CASE

The Contract Ledger of Messrs. R.K.& Sons showed the following expenditure on account of a contract on 31 December 2006.

	Rs
Materials	2,10,000
Wages	2,93,000
Plant	70,000
Sundry expenses	15,000
Establishment charges	10,000

The contract was started on 1st January 2006 and the contract price was Rs.10,00,000; cash received on account to date was Rs. 4,80,000 representing 80 per cent of the work certified, the remaining 20 per cent being retaing until completion. The value of plant on 31st December 2006 was Rs. 20,000 and the value of materials on hand was Rs.6,000. The cost of work finished but not certified on the said date was Rs.50,000

Some of the materials costing Rs.20,000 were found unsuitable and were sold for Rs.16,000 and a part of the plant costing Rs. 5,000 unsuited to the contract was sold at a profit of Rs.1,000.

In order to calculate the profit made on the contract to 31st December, 2006, the contractor estimated further expenditure that would be incurred in completing the contract and to the credit of Profit and Loss account for the year, the proportion of the estimated net profit to be realized on the contract which the value of work certified bore to the contract price. The estimates of future expenditure were as under:

(a) That the contract would be complete by 30th June 2007.

(b) That a further sum of Rs.30,000 would have to be spent on the plant and the residual value of the plant on the completion of the contract would be Rs.12,000.

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(c) That materials in addition to those on hand on 31st December, 2006, would cost Rs.1,00,000 and that further sundry expenses of Rs.7,000 would be incurred.
(d) That the wages, for the completion of the contract would amount to Rs.1,69,000.
(e) That the establishment charges would cost the same amount per month as in the previous year.
(f) That Rs.18,000 would be sufficient to provide for contingencies.

Prepare Contract Account for the year ended 31st December, 2006, and show the calculation of the amount to be credited to the profit and loss account for the year. Also show how the relevant figures would appear in the balance Sheet as on that date.

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CHAPTER 14

Profit Planning-I: Marginal Costing

"Marginal costing is a technique of determining the amount of change in the aggregate costs due to an increase of one unit over the existing level of production".

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *Concept of Marginal Costing*
- *Basic Characteristics of Marginal Costing*
- *Working of Marginal Costing Income Determination*
- *Role of Contribution*
- *Break-up of Semi Variable Expenses*
- *Practical Application of Marginal Costing*
  - *Level of Activity Planning*
  - *Mix of Sales*
  - *Marginal Costing and Pricing*
  - *Profit Planning and Marginal Costing*
- *Determination of Sales Mix*
- *Discontinuance of a Product Line*
- *Make or Buy Decisions*
- *Selling in a New Market*
- *Equipment Replacement Decision*
- *Buy of Lease Decisions*

INTRODUCTION

Marginal Costing is also known as Direct Costing or Variable Costing. It has made a new entry in the field of Accounting and is gaining more acceptance gradually.

In U.K.it is known by the name of Marginal Costing while U.S.prefers Direct Costing or Variable Costing.

The technique signified by the medley of these words has been able to produce strong views both for and against itself, with the result that it has become a subject of lively ranging controversy during recent times.

Marginal Cost is derived from the word 'Margin' and is a well-known concept of economic theory. In this way, and in line with the economic meaning of the term, it is narrated in simple words as the cost that arises from the production of extra increments of output. Naturally, it does not exist where there is no production of extra increments.

It has been defined by the Institute of Cost and Works Accountant, London, in its publication 'A Report on Marginal Costing' as:

"The amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit."

According to the Institute of Chartered Accountants of England:

"Marginal Cost in every expense whether of production, selling or distribution incurred by the taking of a particular decision."

From this point of view, Marginal Costs will be similar with variable costs, i.e. prime costs and variable overheads, in the short run but, in a way, would also include fixed costs in planning production activities over a long period of time involving an increase in the productive capacity of the business. In this way, marginal costs are related to change in output under particular circumstances of a case.

However, where an increase in fixed costs is envisaged in the wake of an accretion to the productive capacity, as consequently to the level of activity, fixed costs are dealt with as a part of what are called 'differential costs' so that the usage of the term 'Marginal Cost 'is restricted in actual practice only to causes involving a more effective utilisation of the existing installed capacity for a better recovery of fixed per unit of output. In this chapter let us see how marginal costing removes all the difficulties involved in the allocation, apportionment and recovery of fixed costs.

CONCEPT OF MARGINAL COSTING

According to the Institute of Cost and Works Accountants, London:

"Marginal Costing is the ascertainment, by differentiating between fixed costs and variable costs, of marginal costs and of the effect on profit of changes in the volume and type of output."

In this context, Marginal Costing is not a system of costing in the sense in which other systems of costing, like process or job costing are, but it has been designed simply as an approach to the presentation of accounting information meaningful to management from the viewpoint of adjusting the profitability of an enterprise by carefully studying the impact of the entire range of costs according to their respective nature.

The concept of Marginal Costing is a formal recognition of ideas underlying flexible budgets, break-over analysis and cost volume profit relationships which involve a change in the conventional treatment of fixed overheads in relation to income determination.

Basic Characteristics of Marginal Costing

The concept of marginal costing is based on the important distinction between product costs and periods costs, the former in relatin to the period of time rather than the volume of production.

Marginal Costing regards as product costs only those manufacturing costs which have a tendency to vary directly with the volume of output. This is in full contrast to the conventional system of costing under which all manufacturing costs- fixed as well as variable are treated as product costs. Variability with volume is the criterion for the classification of costs into product and period categories.

In this way, marginal costing needs the analysis of costs to fixed and variable. Even the semi-variable costs have to be closely and critically analysed in order to resolve themselves into their fixed and variable components depending upon whether they tend to remain fixed or vary with the output. In this way, marginal costing shows the effect of costs on the level of output planned.

Working of Marginal Costing-Income Determination Under Absorption and Marginal Costing

According to traditional costing systems, fixed costs of production are assigned to products to be subsequently released forward as part of the cost of inventory depending upon whether a period's production was sold or not during the same period. Such an approach to the treatment of fixed costs brought into vogue various methods as allocation of overheads to different departments on an equitable basis, and their proper apportionment to units produced. However, the various methods devised fail to give precise results and sometimes even lead to absurd situations.

Marginal costing removes all the difficulties involved in the allocation, apportionment and recovery of fixed costs. It is able to accomplish this by excluding fixed costs from product costs and by writing them off wholly against operations of the period.

Consequently, when the volume of output differs from the volume of sales, the net income reported under marginal costing will differ from that reported under absorption costing.

Example: Comparative Income Statement under Marginal Costing and Absorption Costing of Jai Ltd.

(i) Under Absorption Costing	Rs.	Rs.
Sales 2,000 units @ Rs.10 each		2,000
Less Cost of sales:		
Variable manufacturing costs		
2,100 units @ Rs.6 each		12,600
Fixed manufacturing costs		2,000
Less Inventory at close	15,200	
100 units @ Rs.10 each	1,000	14,200
Gross Margin or Profit	5,800	
Less Total selling and Administrative expenses	800	5,000

Workings

The cost of inventory at cost of each unit inventory at close has been calculated as follows:

Units manufactured		2,100
Units of inventory at close		100
/Ratio of closing inventory to total production	= 100	1
2,100	= 21	
/cost of inventory at close	= 1/21 × 15,200 /1	
	= Rs.800.	
Thus, the cost of inventory at close	= Rs.800/100 = Rs.8per unit.	

(ii) Under Marginal Costing

	Rs.	Rs.
Sales 2,000 Units @ Rs.10 each		20,000
Less Variable cost of sales:		
Variable manufacturing cost		
–2,100 Units @ Rs.6 each	12,600	
Less Inventory at close -100 Units @		
Rs.6 each	600	12,000
Variable Gross Margin		4,000
Less Inventory selling and Administrative		
Expenses		600
		3,400
Operative Contribution Margin		

Less Fixed costs		
Fixed Manufacturing Costs	2,300	
Fixed Selling Adminstrative		
Expenses	400	2,700
Net Income	700	

Workings

The cost of inventory at close as well as the cost of each unit of inventory at close, has been calculated as follows:

The ratio of closing inventory to total production
= 100/2,100 = 1/21

Cost of inventory at close = 1/21 × 12,600/1 Rs. 600.

Thus, the cost of each unit of inventory at close
= Rs. 600/100 units
= Rs. 6.

The difference of Rs. 200 in the income calculated under the methods is due to the difference between the cost of closing inventory which, under the absorption costing, is Rs.800 and under marginal costing, is Rs.600. This is the result of holding back Rs.200 from out of the total fixed manufacturing cost of Rs.2,600 as cost of inventory under the method of absorption costing whereas Rs.200 is realised immediately as a period charge under Marginal Costing.

The perusal of the Absorption Costing statement and Marginal Costing statement shows that the former gives more information than the latter. Though this might be correct, the information furnished by the Absorption Costing statement cannot be as useful as the one given by Marginal Costing statement, because the conventional costing statement rarely classifies costs into fixed and variable components. Thus, managers who are accustomed to look at operations from a break-even analysis and flexible budget viewpoint, find that the conventional income- statement fails to detail with cost-volume profit relationship. Managers are left with no option but to take time for an attempt to reconcile and interpret two or more sets of figures which portray a single operating situation. To furnish with the volume of production, it cannot calculate the effect on profit from Absorption Costing statement, but it can and is more efficient to present important and operating statements.

Role of Contribution

Contribution is of vital importance for the system of Marginal Costing. The rationale of contribution lies in the effect that, where a business manufactures more than one product, the profit realised on individual products cannot possibly be calculated due to the problem of apportionment of fixed costs to different products that is done away with under Marginal Costing. Hence, some method is needed for the treatment of fixed assets and marginal costing's answer to challenge is 'contribution'.

Example:

(i) All fixed costs regarding as general fixed costs Marginal Cost Statement

TABLE 14.1

	Departments			*Total*
	X	*Y*	*Z*	
	Rs.	*Rs.*	*Rs.*	*Rs.*
Sales	1,50,000	2,00,000	3,00,000	6,50,000
Less variable costs	1,20,000	1,15,000	2,00,000	4,35,000
Contribution	30,000	85.000	1.00.000	2.15.000
Less fixed costs				1,25,000
			1,00,000	
Profit				1,15,000

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Comment. The loss of Rs.30,000 shown by department X has been due to the arbitrary basis of the apportionment of fixed overheads to different departments.

The fact has been underlined by the Marginal Cost statement which does not attempt to allocate fixed costs to the various department X, the total contribution as well as profit would be reduced by Rs.10,000. Hence, the company would not stand to gain anything by closing department X, rather it would lose under such an eventuality.

(ii) On the basis of specific fixed costs, Statement of Comparative Profitability

TABLE 14.2

	Departments			*Total*
	X *Rs.*	*Y* *Rs.*	*Z* *Rs.*	*Rs.*
Sales	1,50,000	2,00,000	3,00,000	6,50,000
Less variable costs	1,20,000	1,15,000	2,00,000	4,35,000
Contribution	30,000	85,000	1,00,000	2,15,000
Less Specific fixed costs	5,000	90,000	30,000	1,25,000
Net contribution	25,000	(5,000)	1,70,000	2,15,000
Less general fixed Costs				1,00,000
Profit				1,15,000

Comment. Though the second statement shows the same profit of Rs. 1,15,000 as is shown by the first statement, it tells an entirely different story.

According to the above statement, it is department Y which incurs a loss of Rs.5,000 instead of department X. The position has been brought about by the availability of fixed costs specifically assigned to different departments. It also highlights the anomalies created by the apportionment of fixed costs on some arbitrary basis, according to sales in this example.

It is also clear that if department Y is closed, the total contribution as well as profit would be tendered only if either the working of department Y cannot be improved so as to show a profit or at least to break even, or the price of its products cannot be increased. It is better from the viewpoint of business to offer a wider range of choice to its customers.

The position on the closure of department Y can be shown as mentioned hereon:

TABLE 14.3

Statement of Comparative Profitability

	Departments			*Total*
	X *Rs.*	*Y* *Rs.*	*Z* *Rs.*	*Rs.*
Sales	1,50,000	4,00,000	5,00,000	
Less Variable costs	1,20,000	2,00,000		3,20,000
Contribution	30,000	2,00,000		2,30,000
Less specific fixed costs	15,000	30,000		45,000
Net Contribution	15,000	1,70,000		1,95,000
Less General fixed costs				1,00,000
Profit				95,000

Thus, profit increases by Rs.20,000 on the closure of department Y, the amount being exactly equal to the loss incurred in that department.

Break-up of Semi-variable Expenses

In view of the fact that Marginal Costing divides all costs broadly into fixed and variable, components of semi-variable expenses constitutes by far the most challenging problem of Marginal Costing.

The methods mostly used for this purpose are high and low points method, statistical scattergraph method and the method of least squares.

(i) High and Low Points Method This method is based on the analysis of historical data relating to periods of high and low business operations. In selecting these periods and in dealing with costs incurred during such periods, care should be taken to see that figures are not distorted by any abnormal factors.

This method can be calculated by the example given below of costs incurred in the upkeep of plant by a business concern:

TABLE 14.4

	Activity level In terms of Direct Labours hours No	*Percentage*	*Costs (in Rs)*
High	12,000	100	6,000
Low	5,000	40	3,000
Range of Variation	7,000	60	3,0000

$$\text{Variable rate} = \frac{\text{Variation in cost}}{\text{Variation in Activity level}}$$

$$= \frac{\text{Rs.3,000}}{7{,}000}$$

= 24% per direct labour hour

The fixed element of maintenance cost of plant at two points of activity can then be reached at as thus:

TABLE 14.5

	High Rs.	*Low Rs.*
Total costs	6,000	3,000
Variable cost @ 25% per Direct labour hour	4,500	2,250
Fixed cost component	1,500	750

Sometimes, this is also expressed by means of a formula which is:

Variable cost = (C1-C2) × L1/L1-L2

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Where

C1 = Cost at high level of activity
C2 = Cost at level of activity
L1 = High level of activity
L2 = Low level of activity

Therefore

$$\text{Variable cost} = \frac{(6{,}000 - 3{,}000) \times 100\%}{100\% - 40\%}$$
$$= 3{,}000 \times 100/60$$
$$= 5{,}000$$
$$\text{Variable rate per hour} = \frac{\text{Rs.}5{,}000}{12{,}000}$$
$$= 24\%$$

(ii) Statistical Scattergraph Method It is a widely used diagrammatic or graphic method for isolating the fixed and variable portions of semi-variable costs.

Accordingly, in this method, costs and figures relating to the level of activity are plotted on along the vertical or Y axis and horizontal or X axis respectively, thereby resulting in a particular period at a certain level of activity. A line is then drawn by visual inspection in such a manner that there are ideally as many dots above the line as there are below it, in order to make it typical of the majority of dots on the graph.

From the contact point of this line with the vertical axis, another line across the face of the graph is drawn parallel to the base, so that it shows the field component of a particular item of semi-variable expense while the portion of the diagram lying between the two lines shows variability of an expense as volume of production increases.

Besides, the fact that dots in the figure are never to be found in a perfect linear pattern, the line of total expense is drawn as a straight line and, in most cases, the straight line would, for all intents and purposes, be a fair representation of the total expense relating to an item of semi-variable cost as no single line would conform to all observations.

The method can be made clear by the example concerning expenses incurred on the salaries of supervisor.

(iii) Method of Least Squares A mathematical technique of 'least squares' is also used for computing a more exact line, called regression line showing total cost of a semi-variable expense than what is possible according to the scattergraph method.

The method of least squares is based on the basic regression equation $Y = a + bx$ where a is the fixed portion and b is the degree of variability.

Steps involved in putting the method to use are given hereafter:

(a) The simple means of two concerned variables – scales of operations and total expense- are calculated.
(b) The deviations of actual figures in the two variables from their respective averages calculated under step(a) above are found out with proper algebraic signs.
(c) The deviations relating to the variable relating to scale of operations are squared.
(d) Deviations of the actual figures of the two variables from their respective means are multiplied together and products obtained.

(e) Products under point (d) are added.
(f) Squared deviations under point(c) are totaled.
(g) The total of point (e) is divided by the total of point (f) to arrive at the variable rate of an expense.
(h) The fixed portion of the total expense can be calculated by deducting the product of variable rate and the average of the scale of operation from the average cost of the items of response.

These steps can be shown by the example.

TABLE 14.6

Month	*(X) Direct labour hours Deviations Number from mean(X) deviation*	*(Y) salaries of Supervisors Deviations Squared Amount in Rs. 37*	*Products XY*	*3,300*	*from Mean (Y) 3 & 6 X2*	*of colum*
1	*2*	*3*	*4*	*5*	*6*	*7*
January	3,500	–200	12,000	65	+8	–800
February	3,100	–600	3,50,000	60	+6	–2,000
March	3,500	–200	12,000	60	+6	–600
April	3,800	+300	1,50,000	58	+3	+ 900
May	4,100	+500	4,60,000	51	–6	–5,000
June	3,100	–200	80,000	50	–3	–1,300
July	2,700	–800	8,20,000	49	–6	+6,000
August	2,700	–800	8,20,000	49	–6	+6,000
September	3,200	–300	1,50,000	52	–3	+1,500
October	3,600	0	0	52	–3	0
November	4,200	+700	5,00,000	57	+2	+700
December	4,700	+1200	1,50,000	67	+9	+13,300
Total	42,200		35,04,000	670 = ∑x2		38,200 = ∑y

On the basis of the aforementioned table, we have

(i) Variable rate $= \frac{\Sigma xy}{\Sigma x2}$

$= \frac{38,200}{35,04,000}$

= Rs .0045 per labour hour.

(ii) Fixed expense = Average cost – (Variable Cost × Average hours)
= Rs.56 – (Rs.0045 × 35.17 hours)
= Rs.56 – Rs.15.50
= Rs.40.50

The same result can be obtained by the use of the basic regression equation Y = a + bx

$$b = \frac{38,200}{35,04,000}$$

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$$= \text{Re. } 0045$$

$$Y = \frac{\text{Rs.}670}{12}$$

$$= \text{Rs.}56$$

$$X = \frac{42{,}200 \text{ hours}}{12}$$

$$= 3517 \text{ hours}$$

Substituting figures in the basic equation, we have

$$\text{Rs.}56 = a + (\text{Re.}0045 \times 3517 \text{ hours})$$

$$\text{Rs.}56 = a + \text{Rs.}15{,}50$$

$$a = \text{Rs. } 56 - \text{Rs.}15.50$$

$$= \text{Rs.}40.50$$

Thus, fixed expenses are verified to be Rs.40.50

There is, of course, some difference between the results got by scattergraph and least square methods so far as the monthly fixed expenses under the former are Rs.50, while they are Rs.40.50 according to the latter. The difference is due to the fact that the line is the mathematical procedure of the least square method. Hence, least square method is preferred by cost accountants and industrial engineers responsible for budget preparation.

PRACTICAL APPLICATIONS OF MARGINAL COSTING

(a) Level of Activity Planning This is one of the very common problems confronting a business regarding the level of activity for which it should have plans ready. Such plans may envisage an expansion or contraction of productive activities depending upon the qualitative conditions in the market. This expansion or contraction has to be arranged before the events overtake the business. For this, management would like to have a contribution at different levels of activities and marginal costing proves very useful from this viewpoint:

Example:

TABLE 14.7

Marginal cost Statement
(at 100% level of activity with 30,000 units)

	Total cost Rs.	*Cost per unit Rs.*
Materials	3,00,000	10,000
Labour	60,000	2.00
Variable factory overheads	30,000	1.00
Marginal factory cost	3,90,000	13.00
Fixed Factory overheads	10,000	-
Total Factory Cost	4,00,000	13.33

Thus, the marginal factory cost per unit is Rs.13.00 and total production cost per unit is Rs.13.33

Workings

(i) Calculation of variable factory overheads per unit:

$$\frac{\text{Rs.60,000} - \text{Rs.30,000}}{\text{5,000 units}}$$

= Rs.6.

(ii) Calculation of fixed factory overheads:

Factory overheads – (No. Of units at certain level of activity X variable factory overheads per unit)

Rs.30,000 – (5,000 units × Rs.2.50)

/Rs.30,000 – R.12,500

= Rs.17,500

The amount can be verified by making calculations at any other level of activity

(iii) Variable factory c\overheads at 100% level of activity 3,000 units × 6

= Rs. 18,000

(b) Mix of Sales Mostly business concerns have a variety of product lines, each making its own contribution to fixed expenses. Changes in the operating profit can result from shifts in the mixture of products sold in spite of the fact that sales prices are unchanged and the total volume of sales expressed in terms of money remains the same. If such a situation is brought out, by changes in distribution channels or sales to different classes of customers, if such an arrangement affects the quantum contribution over variable costs. It is in this context that Marginal Costing is called upon to uniform management concerning the most profitable mix of sales from the entire range of selected alternatives.

TABLE 14.8

Marginal cost Statement (per unit)

	A product Rs.	*B product* Rs.
Direct materials	9	7
Direct wages	8	5
Variable overheads	10	7
Marginal cost	27	19
Contribution	3	1
Selling Price	30	20

The directors want to be acquainted with the desirability of adopting the following sales mixes in the budget for the next periods (1) 300 units of A and 300 units of B

TABLE 14.9

Selection of sale

	A Rs.	*B* Rs.	*Total* Rs.
300 units of A and 300 units of B.	900	300	1,200
Contribution	-	-	-
Less Fixed overheads			600
			600

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(c) Marginal Costing and Pricing The determination of prices of products manufactured or services rendered by a business is often thought to be difficult problem, in general, faced by management of an enterprise. Still, the problem involved in pricing is the matching of demand and supply.

For example, if a person travels from Delhi to New York by a leading international airline, he may, by some obscure airline of a country of the Middle East, may be able to arrange the trip by paying only half of the normal fare.

These two diametrically opposite positions can be reconciled by pointing out that, while normal fares by leading airline concerns so as to cover all costs of operation including fixed costs which are bound to be considerable, smaller concerns may fix fares at a level as to cover only Marginal Costs and yield some contribution towards profit owing to their inability or recluctance to do away with their business due to huge funds being sunk in capital investments.

By placing emphasis on contribution margin, the technique of Marginal Costing offers a simple as well as clear portrayal of the relationship between specific product costs and the different possible selling prices being considered. This is due to the fact that contribution margin is unaffected by the allocation of indirect costs.

Example

TABLE 14.10

Marginal Cost Statement

	Present Price	*Price reduction Of 5%*	*Price reduction 10%*	*Price reduction 15%*
Sale Price	4,90,000	3,80,000	3,60,000	3,40,000
Less Variable cost	1,00,000	1,00,000	1,00,000	2,40,000
Contribution	3,00,000	2,80,000	2,60,000	2,40,000
Less fixed costs	80,000	80,000	80,000	80,000
Profit	2,20,000	2,00,000	1,80,000	1,60,000
Contribution per unit	5.00	4.00	3.00	2.00

As profit is to be maintained at the present level of Rs. 2,20,000, the contribution has also to be Rs. 3,00,000 at present when the total scale proceeds from 40,000 units are 4,00,000.

The number of units required to be sold at different levels of price reduction would be calculated as in this way:

$$\frac{\text{Total Contribution Required}}{\text{Contribution per unit sale}}$$

Hence

At 5% reduction: $\frac{\text{Rs } 2,20,000}{4}$

$= 55,000$ units

At 10% reduction $\frac{\text{Rs.}2,20,000}{\text{Rs.}3}$

$= 77,000$ units

At 15% reduction $\frac{\text{Rs.}2,20,000}{2}$

$= 1,10,000$ units

(D) Profit Planning Marginal Costing The calculation of contribution ratio enables the planning of future operations in such a way as to obtain either maximum profit or to maintain a specified level of profit. In this way, it is helpful in profit planning.

Example

TABLE 14.11

Marginal Cost Statement for current year
(Prior to a acceptance of 20% excess order)

		Per Piece Rs.	*Total Amount Rs.*
Variable Costs:			
Direct Material		5.00	
Direct Labour		2.00	
Variable sales overhead		2.50	
Variable sales overhead		.50	
			4,00,000
Sales value		15.00	6,00,000
Contribution		5.00	2,00,000
Fixed cost:	Rs.		
Works overhad	1,20,000		
Add 10%	12,000	1,32,000	
Sales overhead	50,000		
Add 10%	5,000	55,000	1,87,000
Profit		13,000	
Planned profit = Rs. 18,000			
Increase in profit = Rs.18,000 – 13,000 = 5,000			
Minimum price for 20,000 articles (order for 20% of capacity)			
Can be worked out as under			
		Rs.	
Variable cost @ Rs.19/-		2,00,000	
Add increase in profit		5,000	
		2,05,000	
Minimum sales price per unit = Rs.205.000			
20,000 = Rs.12.50			

Problem of Key Factor Under the marginal cost concept, profitability of a product or process is measured with reference to its contribution. It is based on the assumption that it is possible to increase the manufacture of the product giving the highest marginal contribution to any desired extent and there is no limitation in this respect. Practically, however, this assumption is not valid and the efforts to produce as many units of the selected product as they would like to. Such factor which is equally important in the determination of profitability is known as 'key factor' or 'limiting factor' or 'governing factor' or 'principle factor' or 'Scarce factor'. This is the factor, the extent of whose influence must first be assessed in order to ensure maximisation of profit.

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Basic Equation of Marginal Costing The technique of Marginal Costing hinges on the contribution made by a product towards fixed costs and profit of the undertaking.

Contribution can be looked at from two angles – either as the total of fixed costs and profits, or as the difference between sales and variable and direction costs.

For the sake of convenience, contribution can be started by way of equation as thus:

Sales – Direct and variable cost = fixed costs + profit

This is at times shortened as –

$$S - V = F + P$$

The formula has been so framed that if three of the above four calculating components are available, one can be easily found out. From this viewpoint, the equation is of fundamental importance.

Again, its significance also lies in the fact that a formula for calculating sales at break-even point (to be discussed later on) has been derived from the basic equation and the formula is-

$$\text{Sales at Break-even point} = \frac{\text{Fixed cost} \times \text{Sales}}{\text{Sales} - \text{Variable costs}}$$

CONCEPT OF DECISION–MAKING

Decision making is the essence of management since it may make or mar the success of the business as a whole. In general, it refers to taking the final step in deliberations before acting. In management terms, it means the process of choosing among alternative courses of action, since if there is no choice, there is no decision to make. A decision always involves a prediction. Function of a decision-maker is therefore to select courses of action for the future.

Steps in Decision-Making

The following are the steps to be taken for making decisions on a rational basis.

1. Defining the Problem The problem should be clearly and precisely defined. In the absence of such a definition, the quantitative amounts that are relevant to its solution cannot be determined. In many cases, the definition of the problem or even the recognition of the fact that the problem exists, may be the most difficult part of the entire decision-making process.

2. Identifying Alternatives The alternative courses of action for the solution of the problem should be identified. In many cases, the problem becomes more complex on account of identifying many alternatives. In such a case, the analyst should eliminate on a judgement basis those alternatives which are clearly unattractive. A detailed analysis of the remaining alternatives should be undertaken.

3. Evaluating Quantitative Factors Usually, each of the alternatives is associated with a number of advantages (relevant revenues) and disadvantages (relevant cost). The decision maker should evaluate each of the relevant factors for deciding which alternative has the largest net advantage.

4. Evaluating Qualitative Factors In many cases, the advantages and disadvantages associated with particular alternatives may not be capable of being expressed strictly in qualitative terms. In some cases, the qualitative factors may be so dominating that decision may have to be based solely on them, though, in terms of qualitative factors, it may not be beneficial. For example, it is a known fact that many people can meet their transportation needs at cheaper cost by using public conveyances rather than by operating their own vehicles. In spite of this, people use their vehicles for reasons of prestige, convenience and other factors which can not be expressed in quantitative terms.

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1. **Obtaining additional information**. The decision-maker should obtain any other information which be thinks will be helpful in arriving at a decision. Obtaining such additional information involves extra cost and extra time. The decision-maker should, therefore, take these factors also into consideration before asking for additional information.
2. **Reaching a decision.** After identifying, evaluating and weighing the various factors and obtaining additional information, the decision-maker can make a decision and act on it.
3. **Appraisal of the results.** This is the most important step in decision-making. The decision-maker having implemented the decision should carry out periodical appraisal of the results. This will enable him in correcting his mistakes, revising the targets and making better predictions in the times to come.

The important operating matters in respect of which decisions are to be taken by a firm :

The following are some of the important operating matters in respect of which decisions are to be taken by a firm:

Determination of the Sales Mix

The term sales mix refers to the quantity to be sold of different products. While taking such a decision, the following factors are to be kept in mind.

(a) Since profit maximisation is one of the major objective of the firm, that sales mix should be selected which will help in achieving this objective. This requires giving the highest priority to the product which gives the highest contribution and least priority to the product which gives the least contribution.

(2) Products giving negative contribution should be identified. Their production should be discontinued unless there are other reasons to continue their production.

(3) The sales mix should be determined keeping in view the long-term profitability of the products. In other words, short-term gains should not be made at the cost of long-term gains.

Discontinuance of a Product Line

The following factors should be considered before taking a decision about the discontinuance of a product line.

(a) The contribution given by the product.

(b) The capacity utilisation i.e whether the firm is working at full capacity or it has idle capacity. In case a firm is having idle capacity, the production of any product which can contribute towards the recovery of fixed cost, can be justified.

(c) The availability of alternate product to replace the product which the firm wants to discontinue. This is necessary since the existing product is already contributing towards meeting the fixed cost of the firm. In case this product is to be discontinued, some other product giving a higher contribution should be produced.

(d) The long-term prospects in the market for the product.

(e) The effect on sale of other products. In some cases, discontinuance of one product may result in heavy decline in sales of other products affecting the overall profitability of the firm.

Make or Buy Decisions

In order to decide whether a firm should make a product (or part of a product) by itself or buy it from an outside supplier, the following factors should be taken into consideration:

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(a) The price at which the outside supplier is prepared to supply the product. It should be noted that in case the product is bought from outside instead of manufacturing in the firm itself, there will be saving only in Marginal Cost.
(b) Whether the outside supplier would be in a position to maintain the quality of the product?
(c) Whether the supplier would be regular in his supply?
(d) Whether the supplier is reliable? In other words, whether he is financially and technically sound?

In case answer to any of the questions (b), (c) and (d) is in negative, it is advisable for the firm not to buy the product from outside supplier, though he may be prepared to supply at a price lower than the marginal cost of the product.

Selling in a New Market

Decision regarding selling of the goods in a new market (whether Indian or foreign), should be taken after considering the following factors:

(a) Whether the firm has surplus capacity to meet the new demand.
(b) What price is being offered by the new market? In any case, such a price should be more than the variable cost of the product plus any additional expenditure which the firm may have to incur for selling its products in the new market.
(c) Whether such sale would affect the sale of goods in the existing market? This should particularly be seen in those cases where a firm intends to sell the product in a foreign market at a price lower than that in the domestic market. Before taking such a decision, the firm must see that the foreign buyer does not dump the goods in the domestic market itself.

Equipment Replacement Decision

The following factors should be kept in mind while deciding about replacing a capital equipment.

(a) The incremental investment in the new equipment.
(b) The incremental savings on account of the new equipment. It will be advisable to calculate the average incremental savings over the remaining life period of the old equipment.
(c) Cost of raising incremental funds required for the new equipment.

In case the average return on investment is more than the average cost of capital required for replacement of the equipment, the firm may opt for replacing an existing equipment by a new one.

Change Vs Status Quo

A firm is frequently confronted with the problems of continuing the existing policies or changing to the new ones. Such change may relate to reduce or not reduce the selling price, process or not to process a product further etc. While taking such a decision, the management must keep in mind like any other matter, the long-term interests of the firm. For instance, it is non-profitable for a firm to sell its product below its variable or marginal cost. However, it may have to resort to such practice to kill the new competitors in the field or in periods of trade depression etc.

Expand or Contract

A firm is also sometimes faced with the problem of expansion of its business operations or contracting them. Expansion of business operations results in economics of scale greater flexibility, lower cost and

greater capacity of the firm to meet the customers, specifications. However, such expansion creates many organisational, legal and financial problems.

Since wealth maximisation is a firm's primary goal, the expansion of business operations should be viewed from that angle. Expansion results in increase in fixed cost. In order to meet the increased fixed cost, the firm must increase its sales. The management must, therefore, see whether the firm will be in a position to make additional sales to meet additional fixed costs before launching on any expansion programme.

Buy or Lease Decision

A firm anticipating an expansion of its production capacity may decide either to buy or take on lease the fixed assets it may require. In case the firm buys its own fixed assets, the firm will require additional funds to buy such assets. However, it will have the advantage of claiming depreciation or investment allowance in respect of such assets, resulting in tax benefits. In case it decides to take the asset on lease, the firm will not be entitled to claim depreciation taxable profits. In case of purchase of a fixed asset, the firm stands to gain in periods of inflation on account of appreciation in the values of the assets acquired. Moreover, the firm will have greater certainty about the availability of such assets for the use of the firm. In case the firm takes an asset on lease, it will not lose in terms of interest which would have been otherwise payable if it had purchased the asset. Thus, the decision-maker must take all these factors into consideration and decide about the course of action which result in maximum profit to the firm.

Illustration 1

Determination of Sales Mix.

Following information has been made available from the cost records of United Automobiles Ltd, manufacturing spare parts:

TABLE 14.12

Direct materials	*Per unit*
X	Rs. 8
Y	6
Direct wages	
X	24 hours @ 25 paise per hour
Y	16 hours @ 25 paise per hour
Variable overheads	150 % of direct wages
Fixed overheads (total)	Rs.750
Selling price	
X	Rs.25
Y	Rs.20

The directors want to be acquainted with the desirability of adopting any one of the following alternative sales mixes in the budget for the next period.

(a) 250 units of X and 250 units of Y
(b) 400 units of Y only
(c) 400 units of X and 100 units of Y
(d) 150 units of X and 350 units of Y

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State which of the alternative sales mixes you would recommend to the management.

Solution Marginal Cost Statement (per unit)

TABLE 14.13

Direct materials	*X*	*Y*
Direct wages	8	6
Variable overheads	9	6
Marginal cost	23	16
Contribution	2	4
Selling price	25	20

Selection of Sales Alternative

TABLE 14.14

a. 250 units of X and 250 units of Y Contribution:	
Product X 250 units × 2	= Rs.500
Product Y 250 units × 4	Rs.1,000
	Rs.1,500
Less : Fixed overheads	750
Profit	750
b. 400 units of Y only	
Contribution 400 × 4	Rs.1,600
Less : Fixed overheads	750
Profit	850
c. 150 units of X and 350 units of Y	
Contribution:	
Product X 150 × 2	300
Product Y 350 × 4	1,400
	1,700
Less: Fixed overheads	750
Profit	950

The alternative (d) is most profitable since it gives the maximum profit of Rs. 950.

Illustration 2

Discontinuance of a Product line. A manufacturer is thinking whether he should drop one item from his product line and replace it with another. Below are given his present cost and output data:

TABLE 14.15

Product	*Price*	*Variable cost per unit*	*Percentage of sales*
Book shelfs	60	40	30%
Tables	100	60	20%
Beds	200	120	50%

Total fixed costs per year	Rs.7,50,000
Sales last year	Rs.25,00,000

The change under consideration consists in dropping the line of tables in favour of cabinets. If this dropping and change is made, the manufacturer forecasts the following cost and output data:

TABLE 14.16

Product	*Price*	*Variable cost per unit*	*Percentage of sales*
Book shelfs	60	40	50%
Cabinets	160	60	10%
Beds	200	120	40%

Total fixed costs per year Rs.7,50,000
Sales last year Rs.26,00,000

Is this proposal to be accepted ? Comment.

Solution Comparative Profit Statement

TABLE 14.17

	Existing situation				*Proposed situation*			
	Book shelfs	*Tables*	*Beds*	*Total*	*Book Shelfs*	*Cabinets*	*Beds*	*Total*
Sales	7,50,000	5,00,000	12,50,000	25,00,000	13,00,000	2,60,000	10,40,000	26,00,000
Less: Variable costs	5,00,000	3,00,000	7,50,000	15,50,000	8,66,667	97,500	6,24,000	15,88,166
	2,50,000	2,00,000	5,00,000	9,50,000	4,33,333	1,62,500	4,16,000	10,11,833
Less : Fixed cost				7,50,000				7,50,000
				2,00,000				2,61,833

The above analysis shows that the manufacturer will stand to gain in case he drops the production of tables in preference to cabinets. However, the demand for cabinets should be of a permanent nature.

Working Notes:

Existing situation:

Computation of sales and variable costs

TABLE 14.18

	Sales	*Variable costs*
Book shelfs	25,00,000 × 30/100	7,50,000 × 40/60
	7,50,000	5,00,000
Tables	25,00,000 × 20/100	5,00,000 × 60/100
	Rs.5,00,000	Rs. 3,00,000
Beds	25,00,000 × 50/100	12,50,000 × 120/200
	12,50,000	Rs.7,50,000

Proposed situation:

Computation of sales and variable costs

TABLE 14.19

	Sales	*Variable costs*
Book shelfs	26,00,000 × 50/100	13,00,000 × 40/60
	13,00,000	Rs.8,66,667
Cabinets	26,00,000 × 10/100	26,00,000 × 60/100
	Rs.2,60,000	Rs. 97,500
Beds	26,00,000 × 40/100	10,40,000 × 120/200
	10,40,000	Rs.6,24,000

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Illustration 3

Exploring New Market: A company annually manufactures 10,000 units of a product at a cost of Rs.4 per unit and there is home market for consuming the entire volume of production at the sale price of Rs.4.25 per unit. In the year 1977, there is a fall in the demand for home market which can consume 10,000 units only at a sale price of Rs.3.72 per unit. The analysis of the cost per 10,000 units is:

Materials	Rs.15,000
Wages	Rs.11,000
Fixed overheads	Rs.8,000
Variable overheads	Rs.6,000

The foreign market is explored and it is found that this market can consume 20,000 units of the product if offered at a sale price of Rs.3.55 per unit. It is also discovered that for additional 10,000 units of the product, (over initial 10,000 units), the fixed overheads will increase by 10 per cent. Is it worthwhile to try to capture the foreign market?

Solution Statement showing the advisability of selling goods in foreign market

TABLE 14.20

	Year 2006	*Year 2007*		
	Home market 10,000 units	*Home market 10,000 units*	*Foreign market 20,000 units*	*Total 30,000 units*
Materials	15,000	15,000	30,000	45,000
Wages	11,000	11,000	22,000	33,000
Fixed	8,000	8,000	1,600	9,600
Variable	6,000	6,000	12,000	18,000
Total cost	40,000	40,000	65,600	1,05,600
Profit	2,500	2,800	5,400	2,600
Sales	42,500	37,200	71,000	1,08,200

From the above, it is clear that it is advisable to sell goods in the foreign market. It will compensate not only for the loss on account of sale in domestic market, but will also result in an overall profit of Rs.2,600

Illustration 4

Exploring New Markets.

A manufacturer who has been in the line of manufacturing and selling shoes has been utilizing 70% of his capacity. He has costed his shoes as follows:

Average costs per pair of shoes:

	Rs.
Raw material	10
Wages	5
Other overhead expenses	6
Depreciation	3
Selling price	25

Present production is running at around 5,000 pairs per month. The costing is done on 70% capacity basis which is 6,000 pairs per month.

An offer for export of 2,000 pairs per month for 6 months is available at a sale price of Rs.22 per pair net of all export related expenses and incentives.

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Solution Comparative Statement of Profit

TABLE 14.21

Output	*Existing Position 5,000 units*	*Export Order 2,000 units*	*Total 7,000 units*
Sales	1,25,000	44,000	1,69,000
Raw material	50,000	20,000	70,000
Wages	25,000	10,000	35,000
Other Overhead expenses	30,000	12,000	42,000
Total available cost	1,05,000	42,000	1,47,000
Contribution	20,000	2,000	22,000
Depreciation	18,000	-	18,000
Profit	2,000	2,000	4,000

Acceptance of export order would result in 100% increase in available profit. Hence, the order should be accepted.

Working Notes:

1. In the absence of information regarding the nature of other overhead expenses, an assumption that these expenses are variable has been made. Even if these expenses are assumed to be fixed the export order should still be accepted because in that case contribution per unit will be Rs.10 per unit (i.e Rs.25 – 15) instead of Rs.4 (25 – 21) as under the above assumption.
2. Depreciation has been assumed to be a fixed charge. The costing has been done on the basis of output of 6,000 units, hence the total depreciation has been taken as Rs.18,000.

Illustration 5

Make or Buy Decisions.

The Managing Director of A Pvt Ltd., asks for your assistance in arriving at a decision as to whether to continue manufacturing a component X or to buy it from an outside supplier. The component X is used in the finished product of the company. The following data are supplied:

1. The annual requirement of component X is 10,000 units. The lowest component from an outside supplier is Rs.8.00 per unit.
2. The component X is manufactured in the machine shop. If the component X is bought out, certain machinery will be sold at its book value and the residual capacity of the machine shop will remain idle.
3. The total expenses of the Machine Shop for the year ending 31-3-2006 is as follows: During that year the Machine shop manufactured 10,000 units of X:

Material	Rs.1,35,000
Direct Labour	Rs.1,00,000
Indirect Labour	Rs.40,000
Power and Fuel	Rs.6,000
Repairs and Maintenance	Rs.11,000
Rate, Taxes and Insurance	16,000
Depreciation	20,000
Other overhead Expenses	29,600

The following expenses of the Machine Shop apply to the manufacturing of component X:

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	Rs.
Materials	35,000
Direct Labour	56,000
Indirect Labour	12,000
Power and Fuel	600
Repairs and Maintenance	1,000

The sale of machinery used for the manufacture of component X would reduce:

Depreciation by Rs. 4,000 and Insurance by Rs.2,000

If the component X is bought out, the following additional expenses would be incurred:

Freight Re.1.00 per unit

Inspection Rs.10,000 per annum.

You are required to prepare a report to the Managing Director showing the comparison of expenses of Machine Shop (i) when the component X is made, and (ii) when bought out.

Solution: Comparative Statement of Cost

TABLE 14.22

	To make component X	*To buy Component X*
Direct material	35,000	
Direct Labour	56,000	
Indirect Labour	12,000	
Power and Fuel	600	
Repairs and Maintenance	1,000	
Depreciation	4,000	
Insurance	2,000	
Total Variable Cost	1,10,600	
Variable cost per unit	Rs.11.06	Rs.
Purchase price per unit		8.00
Freight charge per unit		1.00
Inspection charge per unit		1.00
Cost per unit	11.06	10.00

It is preferable to buy component X than to make it in the shop, because the variable cost per unit is less by Rs.1.06. Only variable cost is to be considered, since fixed costs would remain the same under both the circumstances. Even if the production of component X is discontinued, fixed cost cannot be saved. Moreover, the capacity which would remain idle on account of buying this component from the market, can be utilized for some other purpose in the near future.

Illustration 6

Equipment Replacement Decision

A company purchased a machine two years ago at a cost of Rs.60,000. The equipment has no salvage value at the end of its useful life of six years and the company is charging depreciation according to straight line method. The company learns that a new equipment can be purchased at a cost of Rs.80,000 to do the same job and having an expected economic life of 4 years without any salvage value. The advantage of the new machine lies in its greater operating efficiency which will reduce the variable operating expenses from the present level of Rs.1,65,000 to Rs.1,30,000 per annum. The sales volume is expected to continue at Rs.2 lacks per annum for the next four years.

You are required to evaluate the usefulness of the proposal.

Solution: A natural tendency on the part of most of the accountants and the managers is to reject the proposal on the ground that the present machine is functioning well and is expected to render useful service for another four years. Its scrapping at the present time would result in a loss of Rs.40,000, the undepreciated book value.

This actually is not the correct approach. The book value of the old machine is irrelevant while taking the decision for its replacement. It represents a cost incurred as a result of the decision made two years ago. The depreciation expense merely reflects apportionment of that past cost over the fiscal periods, whose income benefits from the use of the asset.

The book value of the old asset should, therefore, be eliminated as a factor while deciding whether to buy or not to buy the machine. Moreover, from the accounting point of view, an immediate write-off of Rs.40,000 or as depreciation of Rs.10,000 per annum for four years, results in no difference in total cost and product's profits for the next 4 years when taken as a whole. The following table analyses the profitability or otherwise of the new machine.

Statement showing the profitability of the present and the new machine over a period of 4 years:

TABLE 14.23

	Present Machine	*New Machine*	*Increase (Decrease) in Costs*
Sales	8,00,000	8,00,000	
Variable costs	6,60,000	5,20,000	1,40,000
Loss on account of writing-off of the old machine	40,000	40,000	
Depreciation of new machine	-	80,000	80,000
Total Costs	7,00,000	6,40,000	60,000
Net Profit	1,00,000	1,60,000	60,000
Average annual incremental income			15,000
Incremental investment			80,000
Return on incremental investment			18.75%

The above data is an indicator of the fact that there will be 18.75% return on additional investment of Rs.80,000. The return seems to be quite reasonable and therefore, it will be appropriate for the company to go in for the replacement of the present machinery by a new machine.

Change Versus Status quo

Illustration 7

The following details have been furnished to you regarding two proposals which are for consideration before a firm.

a. Improvement in the quality of the product, which will result in an additional sale of 5,000 units at the existing price. However, this improvement in quality will result in increase in the variable cost by 10 paise per unit.

b. Reduction in the selling price of the product by 12 paise per unit. This will push up sales by 5,000 units.

In both cases, the fixed expenses will increase by Rs.1,000.

The present sales of the firm are 10,000 units at the rate of Rs.2.10 per unit. The variable cost is Rs.1.60 per unit and the total fixed costs are Rs.3,000.

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You are required to state whether it will be appropriate for the firm to select any of the new proposals or should it continue with the existing scheme.

Solution:

TABLE 14.24

	Present case	*Proposed case*	
Expected sales (units)	10,000	15,000	15,000
Selling price (Rs.)	2.10	2.10	1.98
Variable cost (Rs.)	1.60	1.70	1.60
Contribution (Rs.)	0.50	0.40	0.38
Total contribution (Rs.)	5,000	6,000	5,700
Fixed expenses (Rs.)	3,000	4,000	4,000
Profit (Rs.)	2,000	2,000	1,700

The above analysis shows that it will be appropriate to continue with the status quo. However, if there is a possibility of increasing the selling price in future, proposal (a) may be considered.

Expand or Contract

Illustration 8

A company is considering expansion. Fixed costs amount to Rs.4,20,000 and are expected to increase by Rs.1,25,000 when plant expansion is completed. The present plant capacity is 80,000 units a year. Capacity will increase by 50 % with the expansion. Variable costs are currently Rs.6.80 per unit and are expected to go down by Rs.0.40 per unit with the expansion. The current selling price is Rs.16 per unit and is expected to remain same under either alternative. What are the break-even points under either alternative? Which alternative is better and why?

Solution: Computation of Break-Even point under the two alternatives

TABLE 14.25

	Present Position	*After Expansion*
Fixed Costs	Rs.5,20,000	5,45,000
Capacity (units)	80,000	1,20,000
Variable cost per unit	6.80	6.40
Contribution margin per unit	9.20	9.60
Selling price per unit	16	16
Break even point 4,20,000/9.20	45,652 units	5,45,000/9.60 = 56,771 units

Assuming that the whole production can be sold, the profit under the two alternatives will be as under:

TABLE 14.26

Present	*Position After*	*Expansion*
Sales	Rs.12,80,000	19,20,000
Variable cost	5,44,000	1,20,000
Contribution	7,36,000	11,52,000
Fixed Cost	4,20,000	5,45,000
Profit	3,16,000	6,07,000

It is obvious from the above calculations that profits will nearly double after the expansion. Hence, the alternative of expansion is preferable.

Scope of Marginal Costing

Marginal Costing is practically applied in the following areas of decisions.

1. Fixation of selling prices in trade depression, seasonal fluctuation in demand, spare capacity etc.
2. For assessment of profitability of departments or products or processes.
3. Closing Down of a business (temporary or permanent)
4. Make or Buy decisions
5. Expand or Buy decisions
6. Level of Activity Planning
7. Determination of Sales Mix
8. Profit Planning.

Illustration 9: A company manufacturing a single product presents the following data relating to the six months (ended 30th June 2006 and to the following six months i.e ended 31st December 2006)

TABLE 14.27

	Six months	*Six months*
	to 30th June	31st December
Production	90,000 units	24,000 units
Sale	45,000 units	69,000 units
Variable costs per unit	Rs.100 each	Rs.100 each
Fixed costs	Rs.75,000	Rs.75,000

Normal Activity per annum:

Units to be produced	3,00,000
Variable costs	Rs.1.00 per unit
Fixed costs	Rs.1,50,000 or (Rs.0.50 per unit)

Selling price has been fixed and charged at Rs.2.50 per unit.

Prepare Income Statements under Marginal costing and Absorption costing (orthodox costing).

Income Statement under Absorption costing Income Statement of M/s…

for the year ended 31st December, 2006

TABLE 14.28

	6 months to 30th June 2006	*6 months to 31st Dec. 2006*
Sales at Rs.2.50 per unit	1,12,500	1,72,500
Stocks:		
Add: Closing stocks 45,000 units at Rs.1.50 per unit	67,500	
	1,80,000	1,72,500
Less: Opening stocks 45,000 units at Rs.1.50 per unit	-	67,500
		1,05,000

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Less: Cost of Production: 90,000 units at Rs.1.50 per unit 24,000 units at Rs.1.50 per unit	1,35,000	36,000
	45,000	69,000
Adjustment for fixed cost:		
Less: Under absorption 60,000 units at Rs.0.50	30,000	
Less Under absorption 1,26,000 units at 0.50		63,000
Profits	15,000	6,000

Income Statement under Marginal costing:

Marginal Profit and Loss Statement of M/s…..

for the year ended 31st December 2006

TABLE 14.29

	6 months to 30th June 2006	*6 months to 31st Dec. 2006*
Sales at Rs.2.50 per unit	1,12,500	1,72,500
Less: Variable costs	45,000	69,000
Contribution	67,500	1,03,500
Less: Fixed costs	75,000	75,000
Loss/Profit	7,500	28,500

Note: See that Income statement under Marginal Costing shows the costs of sales (and not the costs of production). Absortion Income Statement shows the costs relating to production and hence takes into account the calculation of closing stock. Thus, in Absorption Income Statement fixed overheads are carried forward to the next period through their inclusion in the closing stocks. Actually, fixed costs are period costs and should be written-off against the revenue of the year in which they were incurred. Thus, inclusion of fixed costs in the value of stocks is the main criticism against the absorption costing. Unlike Absorption Costing, Marginal Costing does not carry forward the fixed cost to next period through stock.

With this background, and before we move towards the heart of the Marginal Costing technique, let us consider the advantages and limitations of the technique.

ADVANTAGES AND LIMITATIONS OF MARGINAL COSTING TECHNIQUE

Under Marginal Costing, period costs (i.e fixed costs) are not apportioned to products, only Marginal Costs (i.e prime cost plus variable overheads) are apportioned. As only variable costs are considered as product, costs we may obtain many advantages which are also subject to certain limitations. Both are outlined below:

Advantages: Following are the advantages of the system:

1. The system is simple to understand and easy to work. It is generally free from the complication of under or over-absorption of overheads.
2. Per unit marginal costs of any product remains the same irrespective of the volume of production.
3. The system simplifies the problems of price-estimation and price fixation.
4. It includes only the marginal costs in the valuation of the stock and working progress. This exclusion of period costs from the stock valuation seems to be a logical and realistic approach.
5. The system becomes more useful in controlling costs as it divides the costs into fixed and variable.

6. The system considers sales figures and not production figures. Marginal Income Statement is concerned with sales figures and accordingly, shows what has been earned from sales during the period.
7. The Break-Even calculation and charts, Profit Volume ratio and graphs are very useful aids that quicken the level of activity and profitability calculations.

Limitations: The system is not free from limitations.

Following are the limitations of the Marginal Costing technique:

1. Application of this technique involves determination of marginal costs, which in turn would require the separation of costs into fixed and variable. Task of separation of costs is not simple. Errors in the said process would produce misleading results. The system avoids the complication of under or over-absorption of overheads. However, over or under absorption of variable costs would always be there on account of price increase. Similarly, there may also be difference between the estimated output and the actual output on account of excessive spoilage or such other reason.
2. Per unit marginal cost remains the same irrespective of the volume of production. This may be true for short run. In long run, variable costs would not remain constant on account of changes in the value of money, increase in output after a certain level, increase in sales after a certain level, etc. Thus, variable costs would not remain constant per unit of output. These costs, of course, would remain constant for a particular point of time at which the prices of materials, wage rates etc., and internal conditions of business remain constant.
3. Problems of price estimation and fixation are simplified on account of the fact that marginal costs remain constant. However, as has been stated in (2) above, the system is useful in price estimation and fixation in the short-term. Fixation of adequate price should not ignore fixed (or period) costs. Over a long period, both fixed costs as well as marginal costs have to be considered. Fixed costs should also be covered by the price charged for each job.
4. Costs can be controlled easily if one knows the character of the cost. Under this technique, costs are divided into fixed and variable. Such division of costs facilitates cost control. We may treat such a division of costs as an advantage of the Marginal Cost System if such division is made only under the Marginal Costing. In other words, division of the cost into fixed and variable is not an exclusive advantage of Marginal Costing. Even in the absence of employment of Marginal Costing, costs can be classified into fixed and variable costs for the purpose of flexible budgeting and standard costing.
5. Reports under Marginal Costing are based on sales figures (and not production figures). Thus, efficiency of the products departments may be easily made (on the basis of sales) but at the same time, these is no knowledge regarding production. The effects of over and under capacity working also is not known.

   Under Absorption Costing system, the effects of over and under capacity working would be illustrated by the over and under absorption of fixed overheads.
6. Break-even calculation charts etc. facilitate and quicken the level of activity, profitability calculations (by knowing the effect on profit of increase or decrease in the volume of output). However, these techniques (BEP, P/V Ratio, etc) themselves are subject to many limitations.

Accordingly, contribution may be described with the help of the following formula:

Contribution = Sales value – Marginal cost of sales:

Contribution = Fixed cost + Net profit.

Marginal Cost Equation is based on the above theory. (The same will be discussed later.).

We have seen that Marginal Costing takes into account only marginal cost (and not fixed cost). Accordingly, the figure of contribution would be important as it would be arrived at after meeting the marginal costs, but before meeting the fixed costs. This is why the concept of contribution is used, in

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1. Determination of Break-even point
2. Determination of profitability of departments, products, etc
3. Fixation of selling prices under abnormal and normal circumstances.
4. Selections of sales mix.

Thus, the contribution made by product or a department is a very important factor for taking management decisions.

Illustration 10: The management, of Alpha Ltd, is worried about the performance of Department Z and wants to close the department. The following data have been collected from the accounts for the past year:

TABLE 14.30

	Department		
	X	*Y*	*Z*
Sales Revenue	16,000	8,000	12,000
Marginal costs:			
Direct Material	2,000	1,000	2,000
Direct labour	800	1,000	3,200
Variable overhead	2,000	1,000	4,000
Fixed overhead cost	4,000	2,000	3,000
Total costs	8,800	5,000	12,200

You are required to present the information in the mot suitable manner and also indicate whether the Department Z should be closed down.

Assume that there is no department which may entirely separate and self-contained. Accordingly, there are no fixed costs traceable to a particular department.

Alpha Ltd.

Marginal Profit and Loss Statement for the year ended

TABLE 14.31

Department	*Sales value Rs.*	*Marginal cost Rs.*	*Contribution Rs.*
X	16,000	4,800	11,200
Y	8,000	3,000	5,000
Z	12,000	9,200	2,800
	36,000	17,000	19,000
Less Total fixed costs			9,000
Net profit Rs.			10,000

If the department Z is closed down altogether, the position would be as follows:

TABLE 14.32

Department	*Sales value Rs.*	*Marginal cost Rs.*	*Contribution Rs.*
X	16,000	4,800	11,200
Y	8,000	3,000	5,000
	24,000	7,800	16,000
Less Total fixed costs			9,000
Net profit Rs.			7,200

If department Z is closed down, then the profit is reduced by Rs.2,800 (i.e Rs.10,000 – 7,200). See that reduction of Rs.2,800 in the profit is exactly equal to the contribution made by department Z (see the former Marginal Cost statement).

Comment: Department Z should not be closed down as it makes contribution of Rs.2,800 towards fixed costs and profit. As per the data produced in question, total costs incurred by Department Z are Rs.12,200 and sales revenue Rs.12,000. Accordingly, it seems to make a loss of Rs.200. This misleading picture is drawn because of the apportionment of fixed costs. If we prepare marginal cost statement, we can know the true profitability of the Department Z, closure of which would result in reduction of Rs.2,800 in contribution as well as profit.

Hence, it is advisable to continue Department Z.

Illustration 11: Management wants to discard Department A on the basis of the following data:

TABLE 14.33

	Dept A	*Dept B*
Sales Revenue	24,000	36,000
Less Marginal costs	20,000	27,000
	4,000	9,000
Less: Fixed costs:	5,200	7,800
Profit or loss Rs.	(–) 1,200	(+) 1,200

Detailed study of the total fixed costs which have been apportioned by the management on the basis of sales revealed the following facts:

TABLE 14.34

	Rs.	*Rs.*
Traceable Fixed costs:		
Dept. A	1,000	
Dept. B	9,500	10,500
The Balance untraceable		2,500
Total fixed costs Rs.		13,000

Advise the management

The management is advised for closure of Department B instead of Department A. If Department B is closed, profit of Rs. 500 will be earned. Thus, total profit will be Rs.500 instead of No profit and No loss. The above advise is based on the following calculations.

TABLE 14.35

Dept.	*Sales value*	*Marginal cost*	*Contribution*	*Traceable fixed cost*	*Net contribution*
A	24,000	20,000	4,000	1,000	(+)3,000
B	36,000	27,000	9,000	9,500	(–) 500
	60,000	47,000	13,000	10,500	2,500
Less General fixed costs:					2,500
Net Profit Rs.					Nil

Check profit or loss if Dept. A is discontinued:

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TABLE 14.36

	Department B
Sales value	36,000
Marginal cost	27,000
Contribution	9,000
Less: Fixed cost	
Traceable 9,500	
General 2,500	12,000
Net loss:	3,000
Profit or loss if Dept B is discontinued	
Dept A. Rs.	
Sales value	24,000
Less: Marginal cost	20,000
Contribution	4,000
Less Fixed cost	3,500
Net profit	500

Notes: Though illustrations No.5 and No.6 involve the application of Direct Costing, they are specifically given to illustrate different approach.

Instead of a closure of any department, steps may be taken to put it on more profitable basis by costs reduction techniques, more effective utilisation of capacity available in the department, etc. Effect of key factor should also be considered and the contributions (or / P/V Ratios) should be weighed accordingly, (this will be discussed later on).

Illustration 12: Natraj Products Ltd. considers the elimination of Department from the basis of the following Income statement for the year ended 31st December 2006.

Income Statement
For the year ended 31st December 2006

TABLE 14.37

	Dept. A	*Dept. B*	*Total Rs.*
Sales Revenue	2,01,000	67,500	2,68,500
Cost of Goods sold	1,02,000	45,000	1,47,000
Gross Margin Rs.	99,000	22,500	1,21,500
Operating Expenses:			
Insurance	1,350	900	2,250
Advertising	6,300	1,800	8,100
Salesmen's salaries	15,000	9,000	24,000
Office Salaries	5,250	2,550	7,800
Bad Debts	1,500	750	2,250
Rent	16,500	7,500	24,000
Depreciation	3,000	1,800	4,800
Miscellaneous	2,700	1,350	4,050
Total operating Expenses	51,600	25,650	77,250
Net Operating Income (Or loss)	47,400	(3,150)	44,250

Additional Information:

On account of elimination of Department B

1. There will be a 10% decline in the sales of Department A. The cost of goods sold varies directly with sales volume.

2. The operating expenses of Department A will decrease as follows :
   (a) Insurance by 10%
   (b) Bad debts by 8%
   (c) Miscellaneous expenses by 10%
3. The elimination of Department B will have the following effect on the operating expenses of Department B.
   (i) Advertising salesmen's salaries, insurance and bad debts will be eliminated.
   (ii) 80% of Miscellaneous expenses will not be incurred.
   (iii) Office salaries will be reduced by Rs.1,400 through the dismissal of some part-time employees.
   (iv) There will be no reduction in rent or depreciation expenses.

You are required to prepare the Income Statement after taking into account the proposed elimination of the Department B.

TABLE 14.38

	Dept. A	*Dept. B*	*Total Rs.*
Sales Revenue	1,80,900	-	1,80,900
Cost of Goods sold	91,800	-	91,800
Gross Margin Rs.	89,100		89,100
Operating Expenses:			
Insurance	1,215	-	1,215
Advertising	6,300	-	6,300
Salesmen's salaries	15,000	-	15,000
Office Salaries	5,250	1,150	6,400
Bad Debts	1,380	-	1,380
Rent	16,500	7,500	24,000
Depreciation	3,000	1,800	4,800
Miscellaneous	2,430	270	2,700
Total operating Expenses	51,075	10,720	61,795
Net Operating Income (Or loss)	38,025	10,720	27,305

Note: On account of elimination of the Department B, Net Operating Income of Natraj Products Ltd, would be reduced by Rs.16.945 (i.e Rs.44,250 – Rs.27,305).

This reduction has been analysed as follows:

TABLE 14.39

Decrease in contribution		
Department A: 10% decrease in gross margin due to 10% decrease in sales	9,900	
Dept. B i.e, 100% on account of proposed elimination	22,500	32,400
Less: Saving in operating expenses		
Department of A (51,600 – 51,075)	525	
Dept. B (25,650 – 10,720)	14,930	15,455
Reduction in Net profit Rs.		16,945

Illustration 13: A company which sells four products, some of them unprofitable, proposes to discontinue the sale of one of them.

The following information is available regarding income, costs and activity for the year ended 31st March 2007.

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TABLE 14.40

	Product			
	A Rs.	*B Rs.*	*C Rs.*	*D Rs.*
Sales	3,00,000	5,00,000	2,50,000	4,50,000
Cost of Sales at Purchase price	2,00,000	4,50,000	2,10,000	2,25,000
Area of storage	50,000	40,000	80,000	30,000
No. of parcels sent	1,00,000	1,50,000	75,000	1,75,000
No. of invoices sent	80,000	1,40,000	60,000	1,20,000

Its overhead costs and basis of allocation are:

TABLE 14.41

	Rs.	*Basis of allocation to products*
Fixed Costs:		
Rent and Insurance	30,000	Sq.ft.
Depreciation	10,000	Parcels
Salesmen's Salaries and Expenses	60,000	Sales volume
Administrative wages and Salaries	50,000	Invoices
Variable costs:		
Packing wages and Materials		20 paise per parcel
Commission		4% of sales
Stationary		10 paise per invoice

You are required to:

(a) Prepare profit and loss statement showing the percentage of profit or loss to sales for each product.

(b) Compare the profit if the company discontinues sales of product B with the profit if it discontinues product C.

TABLE 14.42 Profit and Loss Statement

	Product			
	A Rs.	*B Rs.*	*C Rs.*	*D Rs.*
Cost of sales at purchase price	2,00,000	4,50,000	2,10,000	2,25,000
Packing wages and Materials	20,000	30,000	15,000	35,000
Commissions	12,000	20,000	10,000	18,000
Stationary	8,000	14,000	6,000	12,000
	2,40,000	5,14,000	2,41,000	2,90,000
Fixed costs:				
Rent and Insurance	7,500	6,000	12,000	4,500
Depreciation	2,000	3,000	1,500	3,500
Salesmen's salaries and expenses	12,000	20,000	10,000	18,000
Administrative Wages and Salaries	10,000	17,500	7,500	15,000
Total cost	2,71,500	5,60,500	2,72,000	3,31,000
Sales	3,00,000	5,00,000	2,50,000	4,50,000
Profit or Loss	28,500	60,500	22,000	1,19,000

Profit if either product B or product C is discontinued:	
Profit if product B is discontinued:	
Net profit	65,000
(Rs.28,500 – Rs.60,500 – R.22,000 + Rs.1,19,000)	
Add: Negative contribution made by B	14,000
	79,000
Profit if product C is discontinued:	
Net profit	65,000
Less: Contribution made by product C	9,000
(Rs.2,50,000 – Rs.2,41,000)	56,000

Thus, if the company discontinues sales of product B, the profit would be Rs.79,000 as compared with that of Rs.56,000 if it discontinues the sales of product C.

Notes:

1. Product B has negative contribution i.e marginal costs exceed sale value by Rs.14,000. Hence, elimination of this product would stop loss to the extent of Rs.14,000.
2. Product C has a positive contribution of Rs.9,000 (sales value less total variable costs). Hence, elimination of this product would result in decrease in the amount of net profit to the extent of Rs.9,000 i.e the contribution made by this product.

MEANING OF KEY FACTOR

Key factor is the factor which limits the volume of output. The extent of the key factors influence should first be assessed in order to ensure maximisation of resources.

The Key factor is also known as limiting factor or governing factor, Scarce Factor or Principal Budget Factor.

Key factor may not be a single one. There may be two or more key factors.

Moreover, key factor may not remain the same. It may change in accordance with the changing conditions.

Usually sales is the key factor, but sometimes, materials labour plant, capacity, capital management may also be key factors.

From the above, we may say that the contribution is not the only factor that may be considered in measuring the profitability. Profitability of the product may be subject to key factor/s (if any). Thus, over and above the contribution made by the product, effect of key factors/s (if any) should be considered. Consideration of the effect of key factors/would be more important when the products involved make an equal contribution. In such a case, the product which uses the smallest quantity of materials or needs the fewest number of hours may be selected. When contribution and key factor are known, the relative profitability can be assessed with the help of the following formula:

$$\text{Profitability} = \text{Contribution/Key factor}$$

For example, when sales is the key factor, profitability is determined by dividing contribution per unit by selling price per unit. Thus, profitability is determined by contribution /sales ratio which is popularly known as P/V Ratio (or profit volume ratio). P/V Ratio will be explained in detail later on. When labour is the key factor, profitability is determined by dividing the contribution by labour hours. To illustrate, suppose the contribution per unit of product A and Product B is Rs.20 and 10 respectively and Direct

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Labour Hours needed by these products are 20 and 5 respectively, the relative profitability of the products would be product A:

Rs.20/20 hours or Rs.1 per hour and product B: Rs.10/5hours or Rs.2 per hour.

Thus, effect of the key factor should first be assessed.

However, it should be noted that assessment of the key factor is useful only when there are two or more products. Moreover, the key factor may be said to be more useful in profitability comparison rather than in price fixation. Generally, the main object of assessing the factor is to weigh the contribution from each product. It may be argued against this that there is no necessity for assessing the key factor in measuring the relative profitability of the products as the presence of key factor will be reflected in the variable cost. For example, if material is the key factor, then presence of this key factor (i.e short supply of material) will be reflected by the material prices. Similarly, if labour is the key factor, then respective cost per direct labour hour will be reflected in the variable costs. If the product needs more labour hours, direct labour cost included in the variable costs would also be more. Thus, due weight would automatically be given.

Illustration 14: Given below is the information in respect of product X and Product Y of XY Limited:

TABLE 14.43

	Product X	*Product Y*
Direct Labour at 50 p.per hour	40 hours	8 hours
Variable overheads 100% of direct wages		
Direct material	Rs.80	Rs.80
Fixed overheads	Rs.12,000 per annum	

Selling price: Product X Rs.200 per unit and Product Y Rs.8 per unit You are rquired

1. To prepare Marginal Cost Statement and
2. To recommend which one of the following sales mixes should be adopted assuming that there is no limiting factor (except sales)
    1. 200 units of X and 100 units of Y
    2. 100 units of X and 200 units of Y
    3. 300 units of X only
    4. 300 units of Y only

To recommend the product mix when direct labour hours available are 4,800 hours only. Assume that the maximum production capacity otherwise available for each of the products X and Y is 400 units.

TABLE 14.44 Marginal Cost Statement

	Product X	*Product Y*
	Rs.	*Rs.*
Direct materials	80	80
Direct wages	20	4
Variable overheads	20	4
Marginal cost Rs.	120	88
Contributions	80	40
Selling price per unit Rs.	200	128

Selection of Sales Mix:

	Product X	*Product Y*	*Total*
	Rs.	*Rs.*	*Rs.*
200 units of X and 100 units of Y			
Contribution	16,000	4,000	20,000
Fixed overheads:			12,000
Profit			8,000
100 units of X and 200 units of Y			
Contribution	8,000	8,000	16,000
Fixed overheads:			12,000
Profit			4,000
300 units of X only			
Contribution	24,000		24,000
Fixed overheads:			12,000
Profit			12,000
300 units of Y only			
Contribution		12,000	12,000
Fixed overheads:			12,000
Profit			Nil

From the above, production of 300 units of X is more profitable.

Let us see the relative profitability of products when labour is the key factor.

TABLE 14.45

	Product X Rs.	*Product Y Rs.*
Contribution per unit	80	40
Profitability = Contribution/Labour hours	80/40	40/8
	Rs.2	Rs.5

Thus, when labour is the key factor, product Y is more profitable than product X.

There are 4,800 Direct Labour hours available. As product Y is nore profitable than Product X, during shortage of Labour supply, maximum production of this product (i.e Y) is recommended. Accordingly, maximum production of 400 units Y (i.e. utilisation of 100% capacity available for product Y) is recommended. This will need 400 × 8 or 3,200 direct labour hours. Balance hours (i.e 4,800 – 3,200) will be utilised in producing.

1,600/40 or 40 units of X.

Thus, product mix will consist of 400 units of Y and 40 units of X is recommended.

TABLE 14.46 Statement of Profit

Contribution from 400 units Y	16,000
Contribution from 40 units of X	3,200
Total contribution:	19,200
Fixed cost	12,000
Profit	7,200

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If labour hours remain the key factor, any other Mix will yield profit less than Rs,7,200.

Illustration 15: Ravi Limited manufacturers two products X and Y. Data relating to these products are given below:

TABLE 14.47

	Product X Rs.	*Product Y Rs.*
Sales	150	250
Material cost (Rs.6 per kg)	30	78
Direct wages (Rs.5 per hr)	45	85
Variable overhead	16	28

You are required to comment on the profitability of each product under the following circumstances:

i. When total sale potential in units is limited.
ii. When total sales potential in value is limited.
iii. When raw material is in short supply.
iv. When production capacity is the key factor.

TABLE 14.48 Statement of Contribution

	Product X		*Product Y*	
Sales		150		200
Less: Marginal Cost:				
Material	30		78	
Direct wages	45		85	
Variable overhead	16	91	28	191
Contribution per unit		59		59

Comment on the profitability of each product under different circumstances:

When total sales in units is limited:

Profitability = Contribution per unit

= Rs.59 for X and Rs.59 for Y

Hence, both products are equally profitable.

When total sales in value is limited:

Profitability = Contribution/Sales (i.e P.V Ratio)

= 39.32% for product X and 23.6% for product Y

Hence, Product X is more profitable as P/V Ratio of product X is higher than that of product Y.

When raw material is in short supply:

Profitability = Contribution/Material (Kg.) per unit

Product X = Rs.59/5 Kg = Rs.11.80 per Kg.

Product Y = Rs.59/13 Kg = Rs.4.54 per kg.

Hence, product X is more profitable as contribution per kg. of raw material for product X is more.

When production capacity is the key factor:

Profitability = Contribution/Hours
Product X = Rs,50/9 hrs = Rs.5.56 per hour
Product Y = Rs.59/17 hrs = Rs.3.47 per hour

Hence, Product X is more profitable as contribution for hour of product X is more.

To conclude in case total sales potential in units is limited, both products are equally profitable. But in all other cases No.2,3,and 4, product X is more profitable.

COST VOLUME PROFIT RELATIONSHIP

Cost volume profit relationship is the relationship of the cost of production and the volume of production with the profit. We know that fixed costs remain fixed irrespective of the volume of production. On the other hand, variable costs (or marginal costs) vary directly with the volume of production. We may, therefore, know the effect of the change in these costs, selling price and volume naturally require a determination of relationship that exists between these factors (i.e cost volume and profit).

Determination of the cost volume profit relationship is very helpful in determination of product mix, profit-planning, etc.

Cost volume profit relationship may clearly be shown with the help of marginal cost equations. This fact has been explained below:

Marginal Cost Equations

As cost of production, volume of production and sales revenue (and therefore profit) are inter-connected, relationship that exists between these forces may be shown with the help of equations. These equations are called marginal cost equations.

We already know that contribution (or variable profit or marginal profit of Gross margin) represents the difference between the sales and marginal cost. This difference is called contribution because it contributes towards fixed costs and profit.

The above difference (relationship) may also be presented under the following equations:

1. Sales – Marginal costs = Contribution
2. Fixed costs + Profit = Contribution

From the above mentioned two equations, we get Fundamental Marginal cost Equation which has been shown below:

3. Sales – Marginal costs = Fixed costs + profit, i.e S – M = F + P

If we know any three of the four items shown above, the missing item can easily be find out.

The Profit–Volume Ratio

As has already been stated earlier that fixed costs remain fixed regardless of the volume produced, while sales and marginal cost vary directly with sales and production. From this fact, one can easily understand that there must be a relationship between contribution (which represents difference between sales and marginal cost) and sales. This relationship when expressed in form of a ratio of contribution to sales, is called P/V Ratio (Profit – Volume Ratio).

Thus, we get another formula showing cost volume profit relationship. This has been shown below:

P/V Ratio = Sales – Marginal cost/Sales
= Contribution/Sales

OR Sales = Contribution/(P/V Ratio)

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P/V Ratio shows contribution per rupee of sales. It should be noted that P/V Ratio remains constant at all levels. As the fixed costs remain constant in the short term, P/V Ratio may also be expressed in the following form:

P/V Ratio = Change in contribution/change in sales
= Change in profit/change in sales

Thus, P/V Ratio is also useful in measuring the rate of change of profit due to change in volume of sales.

To sum up, all the above equations show the cost volume profit relationships. It should be noted that Break-Even sales, margin of safety (all explained subsequently), are calculated on the basis of these equations. Determination of Break-Even sales, and Margin of safety on the basis of these equations will be discussed later on.

P.V Ratio: Meaning – Its Improvement and its Application

As mentioned earlier, P/V Ratio shows the relationship between the contribution and the value of sales.

Formula for determination of P/V Ratio:

P/V Ratio = Sales – Marginal cost of sales/Sales × 100

Contribution/Sales × 100

Suppose selling price per unit is Rs.100, and contribution per unit is Rs.40, the P/V ratio = 40/100 × 100 = 40%

As the fixed cost remains constant in the short term, P/V ratio will also measure the rate of change in profit due to change in volume of sales in two different periods. This may be found out by the following formula.

P/V Ratio = Change in contribution/Change in Sales
= Change in profit/Change in Sales

Improvement of P/V Ratio

P/V ratio is a ratio of contribution to sales. Therefore, any increase in contribution will improve the P/V ratio. Contribution may be increased by increasing selling price, reducing variable costs by efficient utilisation of available resources. Thus, P/V Ratio can be improved by:

1. Increase in selling price and/or
2. Reduction in variable costs.

Aforementioned are the steps to improve P/V Ratio for each line of product. If we consider a composite P/V ratio (or overall P/V Ratio or Average P/V Ratio or P/V Ratio for a number of products), it can be improved by improving sales-mix in such a manner that will include more profitable products (i.e products having a high P/V ratio) and exclude or reduce less profitable products (i.e products having a low P/V Ratio). It is important to note here that while considering say, which products have the highest P/V Ratio, the effect of the key factors should also be assessed and the respective P/V Ratios should be weighted accordingly.

Above notes also throw light on the fact that P/V Ratio should not be considered alone. Study of P/V Ratio together with the Margin of Safety (discussed later on), the volume of sales, the fixed costs etc. would be more useful.

Application of P/V Ratio

Following are some of the problems to which the P/V Ratio can be applied:

1. Determination of profitability of a line of product and overall profitability of a number of products.
2. Comparison of profitability of various lines of products, sales, areas, individual factories, companies and methods of sale, etc.
3. Calculation of Break-Even Point sales, profit for different turnovers, turnover for desired profit, etc.

Again, it should be noted that profit/volume ratio should not be considered in isolation. In actual practice, results shown by calculations involving P/V Ratio should be used as guides to the decision-making process.

Illustration 16: Calculate P/V Ratio for the Product X and Product Y on the basis of the following information.

TABLE 14.49

	Product X		*Product Y*	
	Rs.		*Rs.*	
Selling price	290		400	
Variable costs:				
Direct Materials	94		120	
Direct Labour	80	174	120	240
Contribution		116		160

Product X takes 16 labour hours and product Y involves 24 labour hours. There is a shortage of skilled labour necessary for producing both products. Weigh the P/V Ratios accordingly.

Ans. P/V Ratio = Contribution/Sales × 100

Hence in case of X : P/V Ratio = 116/290 × 100 = 40%

in case of Y : P/V Ratio = 160/400 × 100 = 40%

On account of shortage of skilled labour necessary for the production of X and Y, labour becomes the key factor. Hence, we may get more real picture of the profitability of the products by weighing the respective P/V Ratios.

Accordingly, direct labour hours would be taken as weights. Direct labour hours needed for product X are 16 and for Product Y are 24. Thus, ratio of direct labour hours is 2:3 or 1:1 ½. Accordingly, amended P/V ratio would be worked out as below:

Product X : 40% = 40%/1 and Product Y = 40%/1 ½ = 26.2/3%

Thus, weighted P/V Ratios are as below:

	Product X	Product Y
Weighted P/V Ratios	40%	26 2/3%
Contribution per direct labour hour		
Contribution/Labour hours = 116/16 = Rs.7.25		160/20 = Rs.6.67

Note: As per weighted P/V Ratios, production of product X is more desirable.

Meaning of Break-Even Point (BEP) and Determination of Break-Even Point:

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Break-Even Point may be defined as that point at which contribution is exactly equal to fixed cost. In other words, Break-Even Point represents that volume of output at which neither a profit is made nor loss is incurred. It may be described as a point No profit-No loss .

Determination of Break-Even Point is very helpful in knowing the :

i. Effect of increase/decrease in selling price, fixed costs, variable costs, volume of sales etc.
ii. Effect of changes in sales mix
iii. Determination of volume of sales to earn the required profit.
iv. Effect on net profits of introducing a new line or discontinuing an existing line etc.

A. Determination of Break-Even Point:

Fundamental Marginal cost equation is as follows:

$$S - V = F + P$$

Where S-Sales;

V – Variable or Marginal costs;

F – Fixed cost and P – Profit.

The above mentioned equation can be used for ascertainment of Break-Even Point. That is, at Break-Even Point, there will be no profit or no loss (total costs = total sales) so that P = 0.

That is $S_1 - V_1 = F$ ...(1)

Where S_1 = Sales at Break Even Point

V_1 = Marginal cost in relation to S1

but

$$V_1/V = S_1/S$$

or $V_1 = V\ S_1/S$ ...(2)

Substituting the value of V_1 in equation (1)

$$S_1 - V\ S_1/S = F$$

$$S_1\ (S - V/S) = F \text{ or } S_1 = F \times S/S - V$$

Note: Students should remember that if the amount of fixed costs is multiplied by the selling price per unit (and not total sale value), then the marginal cost per unit should be deducted from the selling price unit.

On the contrary, if the amount of fixed costs is multiplied by the total sales value, the resulting figure should then be divided by the total sales value reduced by total marginal cost.

Thus, Break-Even Sales = Fixed cost × Selling price per unit/(Selling price per unit-Marginal cost per unit)

Or Fixed cost × sales value (total)/(Sales value – Total marginal cost)

Illustration 17: Sales at Break-even point in case of the following data will be determined as below:

TABLE 14.50

	Per unit	*Total*
Sales	20	40,000
Less: Marginal cost	4	8,000
Contribution	16	32,000
Less: Fixed cost	8	16,000
Profit Rs.	8	16,000

Break-Even Point Sales:

= Fixed cost × Selling price/(Selling price-Marginal cost per unit)
= 16,000 × Rs.20/20 – 4
= Rs.20,000

If we take total figures instead of per unit figures:

$$\text{Break-Even Sales} = \frac{\text{Fixed cost} \times \text{Sales Value (Total)}}{\text{Sales value} - \text{Total Marginal cost}}$$

Rs,16,000 × 40,000/40,000 – 8,000 = Rs.20,000

Notes: If we want to know the break-even sales in units, the following formula should be adopted:

Break-Even Point = Fixed costs/Contribution per unit

In case of Illustration 8, BEP in units will be

= Rs.16,000/16 = 1,000 units

Selling price is Rs.20 per unit. Hence, Break-Even sales will be 1000 × Rs.20 or Rs.20,000.

All the above calculations may be checked as follows:

Check: Sales 1,000 units at Rs.20 each		20,000
Less: Marginal cost @ Rs.4 per unit	4,000	
Fixed cost	16,000	20,000
	Profit	Nil

Other formula based on fundamental marginal cost equation given below :

$$\text{Break-Even Point} = \frac{\text{Fixed cost}}{1 - \text{Marginal cost/sales}}$$

In Illustration 8, BEP = 16,000
8,000/40,000 = Rs.20,000.

Determination of Break-Even Point with the use of Profit/Volume Ratio Equation:

P/V Ratio = Contribution/Sales = Fixed cost + Profit/Sales

(Because fixed cost + Profit = Contribution)

Accordingly, P/V ratio adjusted for sales at Break-Even Point would be:

P/V Ratio = Fixed cost/Sales

(Because profit at BEP would be NIL)

Sales at Break-Even Point = Fixed cost/P/V Ratio

Taking the Illustration above, Break-Even Point on the basis of P/V Ratio would be determined as follows:

P/V Ratio = Contribution/Sales × 100 = 32,000/40,000 × 100 = 80%.

(Note: Unit price may also be taken as below:)

P/V Ratio = Contribution per unit/Sales per unit = 16/20 × 100 = 80%

(As is obvious, the illustration involves production of a single unit)

Now, Break-Even Sales = Fixed cost/(P/V Ratio) = 16,000/80%
= Rs.20,000.

Determination of Break-Even Point with the use of Break-Even Chart:

Break-Even Chart is a graphical presentation of the cost volume profit relationship. Sales at Break-Even Point with the use of Break-Even chart is determined as below:

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To construct Break-Even Chart, following procedure should be adopted:

1. A Break-Even Chart is drawn on a graph paper: Costs and Revenue are plotted on the Y axis and activity or volume is plotted on the X axis. X axis may be expressed in a number of ways e.g.,
   a. Percentage level of activity (Plant capacity being represented by 100%)
   b. Volume in Units
   c. Standard Hours
   d. Sales Value.

Where, however, there are a number of products of different measuring units which require different plant capacity, it is difficult to plot them on the basis of percentage activity or volume. Here, Standard Hours may be the appropriate expression. In other cases, sales value is widely used because profit is not realised unless goods are sold. However, when sufficient data are available, it is desirable that a combination of methods of expression is used.

2. Represent fixed cost by a line parallel to X axis. Plot the variable costs for different levels of activity over fixed cost line. Join the variable cost line to fixed cost line at zero activity level. The resultant line will represent total cost line, variable costs having been added to fixed cost.
3. Similarly, determine sales value at various levels of activity and plot them on the graph paper and join these point and extend the line up to zero in the graph. This line will represent sale value.
4. The sales line will cut the total cost line at a point which is known as Break-Even point. The Break – Even sales will be determined by dropping a perpendicular to the X axis from the point of intersection and measuring the horizontal distance from the zero point to the point at which the perpendicular is drawn. Another perpendicular to the Y axis from the point of intersection will indicate (Vertically) the Break-Even sales.

The aforementioned procedure is applied for Illustration 0.9

Note: The Break-Even chart will give a vivid picture of profit or loss at different levels of activity. For instance, where the sales line is above the total cost line, there is profit and where it is below the total cost line there is a loss, and where total cost equals total sales, there is no profit no loss.

Margin of Safety

Margin of safety represents the amount of difference between the actual volume of sales (i.e sales at selected activity) and the Break-Even sales. Larger the margin of safety, more sound will be the business.

Margin of safety may be improved by the following steps:

i. Increase in selling price
ii. Increase in volume of sales.
iii. Change in the sales mix in such a manner that will include more profitable products.
iv. Decrease in Fixed costs
v. Decrease in Variable (Marginal) costs.

Excess of the actual volume of sales over the Break-Even sales is technically called Margin of Safety because the businessman is safe to that extent. It shows that he is above the break-even point. In case of low margin of safety a serious drop in output or sales will reduce profits considerably. Low margin of safety may be a sign of high fixed overheads. In such a position it is better to increase the output or sales to absorb fixed costs. On the other hand, a high margin of safety ensures profits even after a serious drop in the output or sales. That is why reasonable margin of safety is necessary.

Calculation of Margin of Safety

As is clear from the above discussion, margin of safety is calculated by deducting Break-Even Sales from actual amount of sales.

Thus, Margin of Safety = Actual Sales – Break Even Sales. As contribution is expressed as a percentage of sales (i.e P/V ratio), Margin of Safety may also be expressed as percentage of actual sales. Accordingly, percentage will be presented as below:

Margin of safety (Sales)/Actual sales × 100

Margin of safety also be calculated with the help of the following formula (i.e with the use of P/V ratio):

Margin of safety = Profit/(P/V Ratio)

The above formula has been developed from the original formula i.e Actual sales, BEP Sales.

This is explained below:

Margin of Safety = Actual sales – BEP sales

Now, P/V Ratio = Contribution/Sales

i.e. Sales = Contribution/(P/V ratio) = Fixed cost + Profit/(P/V Ratio)

Whereas Break-Even Sales = Fixed cost/(P/V Ratio)

Margin of Safety = Profit/(P/V Ratio)

Illustration 18:

TABLE 14.51

Sales	50,000
Less: Marginal cost	30,000
Contribution	20,000
Less: Fixed cost	10,000
Profit	10,000

Calculate Margin of Safety using the P/V Ratio and Break-Even Sale on the basis of the given data:

Margin of sales (using Break-Even Sales)

$$\text{Break-Even Sales} = \frac{\text{Fixed cost}}{\text{1-Marginal cost/sales}}$$

$$= \frac{10{,}000}{1 - 30{,}000/50{,}000}$$

= Rs.25,000

Note: BEP sales may also be calculated as below:

BEP Sales = Fixed Cost × Sales/Contribution

= 50,000 × 10,000/20,000 = R.25,000

BEP sales =Fixed cost/(P/V Ratio) = 10,000/40% = Rs.25,000

P/V Ratio = Contribution/Sales 20,000/50,000 × 100 = 40%

Margin of Safety = Actual sales – BEP sales

= 50,000 – 25,000

= Rs.25,000

Note: Here, the words Actual sales may represent past sales, current sale or budgeted sales depending on the period for which margin of safety is being calculated. Thus, actual sales would represent sales at selected activity.

Margin of Safety: Using P/V Ratio

Margin of Safety = Profit/(P/V Ratio) = 10,000/40% = Rs.25,000/-

Margin of Safety at selected level of activity when expressed in percentage will be 50% as below:

Margin of safety/Actual sales × 100 = 25,000/50,000 × 100 = 50%

Does a simple Break-Even chart only portray the sales at Break-Even Point?

No. Even a simple Break-Even chart portrays the following important information together with the break even position of the concern:

i. Profits or Losses at different levels of output.
ii. Fixed cost and variable cost and their relationship
iii. The margin of safety and angle of incidence.

Let us take the same illustration given above under margin of safety calculations and also assume that units produced and sold are 5000 in quantity.

In this illustration, fixed costs are Rs.10,000, profit is Rs.10,000. Variable cost Rs.30,000. Break-Even Sales Rs,25,000 and Margin of safety Rs.25,000. It should be noted that Break-Even Sales in units would be 25,000/10 or 2,500 units.

Margin of Safety which is 50% of actual sales (sales of selected activity) in quantity would also be 2,500 units.

Let us see how a single and simple Break-Even Chart portrays all these facts:

(Profit area covers 40,000 to 50,000 = Rs.10,000)

Variable costs Area covers 10,000 to 40,000 = Rs.30,000

Fixed costs = 0 to 10,000 = Rs.10,000

Similarly, Break-Even Point sales is 2,500 units, in quantity and Rs.25,000 in value.

Margin of safety starts from 2,500 units and ends with the actual volume of sales i.e from 2,500 to 5,000 units. In value, see the area from Rs,25,000 to Rs.50,000. Thus, margin of safety is 2,500 units or Rs.25,000.

Angle of Incidence is the angle which is formed by the sales line and the total cost line at the break-even point. A large angle of incidence indicate a high rate of profit. On the contrary, a narrow angle shows low rate of profit. Angle of incidence may also be called the profit path.

Thus, even a simple break-even chart portrays important information.

Additional Notes:

It would be interesting to compare the respective positions of the concerns (i.e angle of incidence margin of safety profit etc) portrayed by the break charts in Fig. 1 and Fig. 2.

There are also other forms of a break-even chart. These are

i. Contribution Break-Even chart showing contribution
ii. Break-Even chart showing profit appropriations
iii. Cash Break-Even chart showing the amount of cash required to break-even to pay interest on Debentures, dividends on preference shares, etc.
iv. Control Break-Even Chart showing Budgeted and actual profits.

v. Profit Break-Even Chart showing the profit and loss at different levels of sales. Profit chart for different prices may also be drawn. This chart will indicate the effect on profit of charging different prices.
vi. Analysis Break-Even chart showing the divisions of variable (marginal) costs and also the profit appropriations
vii. Break-Even Charts for each product may also be drawn. These charts may be of two types a) Break-Even chart showing the profitability of the product (i.e. Simple Break Even chart. b) Break-Even chart showing the contributability of the product.
viii. Break-Even Chart showing optimum output.

Aforementioned are the alternative forms of Break-Even Chart which provide useful information. Contribution Break-Even Chart and Profit chart (or profit graph) are also practically illustrated below. The same illustration has been adopted for the purpose.

Contribution Chart

The contribution chart is constructed as below:

1. Select a scale for output and sales on X axis and costs or revenue on Y axis.
2. Plot the variable costs from zero operations and draw the variable cost line accordingly.
3. Draw the fixed costs line above the variable cost line. It should be noted that unlike a simple Break-Even Chart, a fixed cost line slopes upwards from left to right (and not a horizontal line).
4. Draw the sales line commencing from zero and operations.

Special Features:

1. Unlike break-even chart, fixed costs are represented by a line sloping upward from left to right.
2. Unlike break-even chart, two lines commence from zero operations i.e sales line and variable cost line (in a simple Break-Even chart only sales line commences from zero operations.

Profit Chart (or Profit Graph):

Construction of profit chart involves the following simple procedures:

i. To select a scale for sales on X axis and for profit and fixed costs (or loss) on Y axis.
ii. To draw the profit line by plotting the profits at corresponding sales.

This has been illustrated below taking illustration 18.

Information portrayed by profit chart:

Profit chart is an improvement over a simple Break-even chart.

1. Vertical line which is above the horizontal line represents profits whereas the vertical line below the horizontal line represents loss.
2. Profit line indicates that profit at break- even point is zero and at zero operations, the loss is equal to the total amount of fixed costs (i.e Rs.10,000).
3. Profit at the sale of 5,000 units is Rs.10,000 whereas profit at the sale of 6,000 units and 7,000 units is Rs.14,000 and Rs.18,000 respectively.

Profits at these levels may be checked as below:

1. Profit on sale of 5,000 units is Rs.10,000 as per illustration.
2. Profit on sale of 6,000 units and 7,000 units.

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TABLE 14.52

	Per units	*6,000 units*	*7,000 units*
Sales	10	60,000	70,000
Less: Marginal	6	36,000	42,000
		24,000	28,000
Less: Fixed cost		10,000	10,000
Profit		14,000	18,000

Fixed costs remain the same regardless of the volume produced.

Marginal costs vary accordingly.

Break-even point, Margin of safety, etc are represented by the chart as usual.

Limitations of a Simple Break-Even Chart

Before we mention the limitations of a simple break-even chart, let us consider the following:

1. In a simple break-Even chart, fixed cost line is drafted parallel to the X axis. This shows that the fixed costs remain fixed regardless of the volume produced.
2. Variable cost line which is drawn above the fixed cost lines rises according to the level of output. This shows that the variable (or marginal) costs vary with the output. This line is shown as a straight line.
3. Sales line commences from zero and then rises upwards from left to right directly varying with the output. This indicates that sales revenue is directly related to the output. This line is also shown as a straight line.

With this background, let us consider the limitations of a simple Break-Even Chart:

Variable cost line (i.e total cost line because it is drawn above the fixed cost line or in other words, it represents the variable costs added to fixed costs), which is shown as a straight line may in actual practice, not be straight. This line will be a straight line only if the costs vary in direct proportion or in other words only when there is a linear relationship between the costs and output/sales. But in actual practice, such linear relationship does not exist. Break-Even chart assumes the linear relationship. With this assumption, the maximum profit at the maximum level of production is implied. Consequently, this assumption may be said to be incorrect.

Sales line representing sales revenue should also not be shown as a straight line. Sales line will be a straight line only if the demand remains the same regardless of the volume produced. As is obvious, in actual practice, it will not be so. Pricing of the product, volume produced etc. are the factors affecting the demand. Accordingly, the sales line if shown as a straight line will misrepresent the true facts.

If the enterprise manufactures a number of products, the horizontal axis of the break-even chart cannot present the output and sales in units. Moreover, a single break-even chart will not portray the results of selling of different products (having different contributions).

Break-Even chart does not portray any additional information. The information portrayed by the break-even chart may be shown through schedules.

Conclusion

Despite the above limitations, BEP charts are frequently used. This is because the limitations imposed on account of straight line will have a little value in case the business operates with a narrow range of output. Moreover, use of a number of break-even charts for different products etc. may avoid the

limitation imposed on account of a single break-even chart. Further, it should be noted that the information portrayed the BEP charts will be more effective and also clear as compared with that shown by various accounting schedules. Even person with a non-accounting background may also be able to know the situation at a glance.

Graphical presentation of Break-even analysis is particularly favoured by new enterprises, by enterprises experiencing trade difficulties, and also by highly profitable enterprises considering expansion scheme which may entail heavy increase in fixed costs.

Illustration 19: Calculate sales required to earn a profit of Rs.25,000 using the following data:

Year 2005 : Sales Rs.1,00,000 Profit : Rs.10,000

Year 2006 : Sales Rs.1,20,000 Profit : Rs.18,000

Ans: Required sales = Required contribution/(P/V Ratio) × 100

P/V Ratio = Change in Profit/Change in sales × 100

8,000/20,000 × 100 = 40%

Formula for Required sales involves the calculation of required contribution, which in turn will require amounts of fixed costs and required profit:

Hence, Required contribution = Fixed costs + Required profit.

Accordingly, at first fixed cost (Which remains fixed) should be determined. They would be determined as below:

Contribution = Fixed costs + Profit

Fixed costs = Contribution – Profit

Contribution for the year 2005 will be 40% of Rs.1,00,000 (i.e sales of that year) = Rs.40,000

Profit for the year 2005 is Rs.10,000.

Hence, fixed costs = Contribution – Profit

Rs.40,000 – Rs.10,000

= Rs.30,000.

Now, required contribution would be calculated as follows:

Required contribution = Fixed cost + Required profit

= Rs.30,000 + Rs. 25,000

= Rs.55,000

Now, apply the formula for required sales.

Accordingly, required sales = Required contribution/(P/V Ratio) × 100

= Rs.1,37,500

Thus sales amounting to Rs.1,37,500 will be required to earn a profit of Rs.25,000.

Check: Sales:	1,37,500
Less: Variable costs	82,500
Contribution	55,000
Less: Fixed cost	30,000
Profit Rs.	25,000

Note: Variable cost are:

60% of sales:

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= 60 × 1,37,500/100
= Rs.82,500
(See note below)

Note:

1. It should be noted that P/V ratio is useful in finding out variable costs. For this purpose, P/V Ratio should be deducted from 100%. Resulting percentage would represent percentage of variable costs to sales. In the above case, P/V ratio is 40%. Hence, variable costs would be 60% (i.e 100% – 40%) of sale.
2. In the above answer, cost structure and selling price have been assumed to be constant in the two years.

Illustration 20: Calculate The P/V Ratio
Break-Even Sales
Profit when sales are Rs.1,10,000
Sales required to earn a profit of Rs.25,000 and
Margin of safety in the year 2006.

Year 2005 : Sales Rs.1,30,000 profit Rs.10,000
Year 2006 : Sales Rs.1,50,000 profit Rs.15,000

Ans.

P/V Ratio	Sales	Profit
2005	1,30,000	10,000
2006	1,50,000	15,000
Increase Rs.	20,000	5,000

P/V Ratio = Change in profit/Change in sales × 100
5,000/20,000 × 100 = 25%

Break-Even Sales:

Break-Even Sales = Fixed cost/contribution × sales
Contribution for 2006 = 25 % of sales = 25% of Rs.1,30,000 = Rs.32,500.
Fixed costs = Contribution – Profit
32,500 – 10,000 = Rs.22,500
BEP = Rs.22,500/Rs.32,500 × 1,30,000 = Rs.90,000.
Profit when sales = Rs.1,10,000
Contribution = Sales × P/V Ratio = 1,10,000 × 25% = Rs.27,500
Profit = contribution – fixed costs
= Rs.5,000

Sales required to earn a profit of Rs.25,000

Required sales = Required contribution/(P/V ratio) × 100
= Rs.22,500 + Rs.25,000
= Rs.47,500
Accordingly, Required sales = Rs.47,500/25% = Rs.1,90,000.

Margin of safety for 2006:

Margin of safety = Actual sales – BEP sales
= Rs.1,50,000 – Rs.90,000

= 60,000

(Note: Cost structure and selling prices have been assumed to be constant).

Illustration 21: Assuming that the cost structure and selling prices remain the same in period I and II find out:

a. Profit/Volume ratio
b. Break Even Point for sales
c. Profit when sales are Rs.1,00,000
d. Sales required to earn a profit of Rs.20,000
e. Safety margin in period II.

Period	Sales	Profit
I	1,20,000	9,000
II	1,40,000	13,000

Ans. a. P/V Ratio:

P/V Ratio = Changes in profits/Change in sales × 100

Rs.4,000/Rs,20,000 × 100 = 20%

Break-Even Point for sales:

Break-Even Point = Fixed expense/P/V ratio

Fixed expenses = Sales – Profit – Variable expenses

1,20,000 – 9,000 – 80% of 1,20,000

= Rs.15,000

(Again, it should be noted that variable expenses from 80% of sales as P/V Ratio is 20%).

Accordingly, Break-Even Point = Rs.15,000/20% = Rs.75,000

Alternatively, BEP for sales may also be calculated as below:

= F × S/S – V = Rs.15,000 × Rs.1,20,00/Rs.1,20,000 – Rs.96,000

= Rs.75,000

Profit when sales are Rs.1,00,000:

Profit = Contribution – Fixed cost

Contribution = Sales × P/V ratio

= Rs.1,00,000 × 20% = Rs.20,000

Profit = Rs.20,000 – Rs.15,000

= Rs.5,000

Sales required to earn a profit of Rs.20,000.

Required sales = Required contribution/(P/V Ratio) × 100

Required contribution = Fixed costs + Required Profit

= Rs.15,000 +20,000

= Rs.35,000

Required sales = Rs.35,000/20 × 100 = Rs.1,75,000.

Margin of safety in period II.

Margin of safety = Actual output – output for BEP

= Rs.1,40,000 – Rs.75,000

= Rs.65,000.

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Illustration 22: Calculate the amount of profit before and after the reduction of selling price on the basis of the following information.

Before reduction in selling price:

Margin of safety	Rs.1,00,000
P/V Ratio	40%

After reduction in selling price.

Margin of safety	Rs.75,000
P/V Ratio	25%
Fixed costs amounted to	Rs.40,000

Also prepare a cost sheet before and after reduction of selling price.

Ans. Profit Before reduction in selling price

Margin of safety = Profit/(P/V Ratio)

Profit = Margin of safety × P/V ratio

Rs.1,00,000 × 40%

= Rs.40,000

Profit after reduction in selling price:

Profit = Margin of safety × (P/V ratio)

= Rs,75,000 × 25%

= Rs.18,750.

Cost sheet before and After Reduction in Selling Price

TABLE 14.54

	Before reduction in price	*After reduction in price*
Sales value	2,00,000	2,35,000
Less: Variable costs	1,20,000	1,76,250
Contribution	80,000	58,750
Less: fixed costs	40,000	40,000
Profit	40,000	18,750

Notes:

1. Fixed costs + Profit = Contribution
2. Contribution/(P/V ratio) = Sales
3. Sales – Contribution = Variable costs

1. Accordingly, contribution before reduction of price.
   = Rs.40,000 + Rs.40,000 = Rs.80,000
2. Sales value before reduction of price
   = Rs.80,000/40% = Rs.2,00,000
3. Variable costs before reduction of price
   = Rs.2,00,000 – Rs.80,000 = Rs.1,20,000

Figures after reduction in selling price may also be worked out in the same manner.

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Alternatively, instead of the above working, the following working may also be adopted to arrive at the figures for preparation of cost sheet:

1. Sales: (Before price Reduction)
   Sales = Margin of safety + BEP sale
   Now BEP sales = Fixed Expenses + P/V ratio
   = Rs.40,000/40%
   = Rs.1,00,000
   Sales Rs.1,00,000 + Rs.1,00,000 = Rs.2,00,000.
2. Variable costs:
   P/V ratio is 40% hence, variable costs will be 60% of sales
   Hence, variable costs = 60% of Rs.2,00,000
   = Rs.1,20,000

Similar procedure should be adopted to obtain the required figure after reduction of selling price.

Illustration 23: The Everest Snow Company manufactures and sells direct to consumers 10,000 Jars of Everest Snow per month at Rs.1.25 per Jar. The company's normal production capacity is 20,000 Jars of snow per month. an analysis of cost for 10,000 Jars shows:

TABLE 14.55

Direct material	1,000
Direct labour	2,475
Power	140
Miscellaneous supplies	430
Jars	600
Fixed expenses of manufacturing	7,955
Selling and administration	
Rs.	12,600

The company has received an offer for the export under a different brand name of 1,20,000 jars of snow at 10,000 jars per month at 75 paise a jar.

Write a short report on advisability or otherwise of accepting the offer.

Statement showing position with export order

TABLE 14.56

	Present Position (Capacity 50%)	*For export offer (Capacity 50%)*	*Total (Capacity 100%)*
Sales (Units)	10,000	10,000	20,000
Sales price (Rs.)	1.25	0.75	-
	Rs.	Rs.	Rs.
Sales value	12,500	7,500	20,000
Less : Marginal cost			
Direct material	1,000	1,000	
Direct labour	2,475	2,475	
Power	140	140	

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Misc. supplies	430	430	
Jars	600 4,645	600 4,645	9,290
	7,855	2,855	10,710
Less: Fixed costs	7,955	-	7,955
Profit (+) Loss (–)	(–)100	(+)2,855	(+)2,755

The existing position shows a loss of Rs.100. This can be improved by accepting the proposed offer as the said offer increases profit by Rs.2,855. However, before taking a final decision, due consideration must be given to the following points:

1. Whether there will be increase in costs on account of special packing, freight etc.
2. Whether the Government will grant subsidy and provide for important of raw materials, if any.
3. Whether reduction in export price will adversly affected the demand in home market in the long run.
4. Whether there will be an increase in the costs if the export orders are not received in future.
5. Whether the surplus capacity can be utilised for production of more profitable products.

Illustration 24: Consider on the basis of the following data as to reasonableness of accepting a foreign order:

1. Variable costs per unit = Rs.24
2. Selling price per unit = Rs.40
3. Break Even volume : 60% production capacity
4. Total production capacity : 50,000 units.
5. Margin of safety : 1,00,000 units (before export order)
6. Export order : 10,000 units at Rs.30 per unit

Note: Units to be exported require some modifications resulting in an increase of Re. 1 in variable costs per unit.

TABLE 14.57 Statement showing position with export order

	Present Position (Capacity 50%)	*For export offer (Capacity 50%)*	*Total (Capacity 100%)*
Sales (Units)	40,000	10,000	50,000
Sales price (Rs.)	40.00	30.00	-
	Rs.	Rs.	Rs.
Sales value	16,00,000	3,00,000	19,00,000
Less: Marginal cost	9,60,000	2,50,000	12,10,000
	6,40,000	50,000	6,90,000
Less: Fixed costs	4,80,000	-	4,80,000
Profit Rs.	1,60,000	50,000	2,10,000

Export order should be accepted so far as cost considerations are concerned. Acceptance of the said order will result in an increase of Rs.50,000 in the contribution and the net profit.

Workings:

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(i) Production and sales at selected level of Activity : Margin of safety is 10,000 units.
Break-Even Point is 60% production capacity
(i.e 60% of 50,000 units) = 30,000 units
Sales at Selected activity = Break-Even Point Sales + Margin of safety
= 30,000 units + 10,000 units
= 40,000 units.

(ii) Fixed costs:
Break-Even Point (in units) = Fixed costs/Contribution per unit
= 30,000 units × Rs.16 per unit
= Rs.4,80,000
Fixed cost amount to Rs.4,80,000.

(iii) Total variable costs at current production and for Export order:
At current production : 40,000 units × Rs.24 = Rs.9,60,000
For Export order : 10,000 units × Rs.(24 + 1) = Rs.2,50,000

Illustration 25: Ravi products Limited produces T.V sets and sells them at Rs.2,500 each. Variable cost per unit is Rs.1,250. Fixed costs amount to Rs.125 lakhs.

Company operates at 75% production capacity and produces 12,000. TV sets accordingly. It considers the following two proposals.

A. 10% reduction in price to yield an increase in sales volume from 12,000 units to 14,000 units.
B. 10% increase in price with decrease in volume of sales from 12,000 units to 11,000 units.

You are required to prepare a statement comparing goods revenue contribution and the P/V ratio of the two alternatives with present results. Which proposal is more profitable.

TABLE 14.58 Comparative Profit/Loss Statement

	Current Position	*Proposal A*	*Proposal B*
Sales unit	12,000	14,000	11,000
Sales Price	2,500	2,250	2,750
Sales Revenue	3,00,00,000	3,15,00,000	3,02,50,000
Variable cost	1,50,00,000	1,75,00,000	1,37,50,000
Contribution	1,50,00,000	1,40,00,000	1,65,00,000
Fixed cost	1,25,00,000	1,25,00,000	1,25,00,000
Net profit	25,00,000	15,00,000	40,00,000
P/V Ratio	50%	44.44%	54.55%

Proposal B is more profitable as the contribution and P/V ratio is the maximum. However, before taking a final decision, other cost and non-cost considerations like labour, possibility of labour unrest on account of retrenchment of labour staff, and utilisation of production capacity should be given due consideration.

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Summary

Under Marginal Costing, period costs (i.e fixed costs) are not apportioned to products, only marginal costs (i.e prime cost plus variable overheads) are apportioned. As only variable costs are considered as product costs, we may obtain many advantages which are also subject to certain limitations. The system is simple to understand and easy to work. It is generally free from the complication of under or over-absorption of overheads. Per unit marginal costs of anyproduct remains the same irrespective of the volume of production. The system simplifies the problems of price-estimation and price fixation. It includes only the marginal costs in the valuation of the stock and working progress. This exclusion of period costs from the stock valuation seems to be logical and realistic approach. The system becomes more useful in controlling costs as it divides the costs into fixed and variable. The system considers sales figures and not production figures. Marginal income statement is concerned with sales figures and accordingly, shows what has been earned from sales during the period. The Break-Even calculation and charts, Profit Volume ratio and graphs are very useful aids that quicken the level of activity and profitability calculations.

Each advantage has its own limitations, which throws light on the fact that the advantage should not be taken at its par value. On the other hand, it does not mean that the system is not at all advantageous. If nature of the business, internal conditions in which it operates, external conditions, time period (i.e short-term or long-term) covered, etc., are taken into account while making the decisions on the basis of this technique, the technique would, no doubt, provide the best guidance and this is why inspite of the limitations, the system is extensively used for cost control, profit planning and decision-making.

The term contribution is of fundamental importance in the Marginal Costing technique. The term contribution is also known as Marginal Profit or Variable Profit or Gross Margin and such other names. The amount of contribution represents the difference between the sales and Marginal cost of sales. The difference is called contribution because it contributes towards fixed costs and profit.

KEY CONCEPTS

- Marginal cost
- Margin of safety
- Key Contribution
- Decision-Making
- Differential Cost
- Relevant Cost
- Sales Mix
- PV Ratio
- Product Line
- Profit Planning
- Make or Buy Decisions
- Variable Expenses

Review Questions

Objective Questions

1. 'An economic sacrifice, measured in terms of standard monetary unit, incurred or potentially to be incurred, as a consequence of a business decision to achieve a specific objective is referred as:
   a. Cost b. Profit c. Selling price
   d. Loss e. Contribution.
2. Cost units are;
   a. The smallest segment of activity or area of responsibility for which costs are accumulated
   b. The units of output in the production of which costs are incurred
   c. Accounting measurements used to evaluate whether or not performance is proceeding according to plan
   d. Accounting techniques used to control cost
   e. All of the above.
3. The logical sub-unit for collection of costs is called as:

a. Cost behavior b. Cost control c. Cost center
d. Cost object e. Both (c) and (d) above.

4. Cost drivers are
   a. Characteristics of an activity or event that causes costs to be incurred by the activity or event.
   b. Accounting techniques used to control costs.
   c. Accounting measurements used to evaluate whether or not performance is proceeding according to plan
   d. Mechanical basis, such as machine hours, computer time, size of equipment, etc., used to assign costs to activities
   e. Both (a) and (b) above
5. Costs which are ascertained after they have been incurred are known as;
   a. Sunk costs b. Historical costs c. Predetermined costs
   d. Opportunity costs e. Imputed costs.
6. A sunk cost is a cost that
   a. Need to be incurred in order for the organization to continue to function but over which management may have little or no discretion.
   b. Has already been incurred at the time that a decision is being considered and is therefore, not of importance for the new decision under consideration.
   c. Would be avoided if a job, process or activity were not undertaken
   d. Tends to remain unchanged despite often wide changes in output or activity
   e. Planned to be incurred in relation to the temporary closing of a department or division or enterprise.
7. The method of costing that leads itself to break-even analysis is:
   a. Standard Costing b. Marginal Costing c. Absorption Costing
   d. Absolute Costing e. Operating Costing.
8. When production exceeds sales volume, the net income reported under absorption costing will exceed that reported income under variable costing because the
   a. Fixed overhead cost attributable to the unsold production is deferred in the ending inventory under absorption costing
   b. Fixed overhead cost is treated as period cost under variable costing
   c. Fixed overhead cost is treated as period cost under absorption costing
   d. Both (a) and (b) above
   e. Both (b) and (c) above.
9. Given the sales volume, which of the following circumstances would lead to an increase in contribution margin?
   a. When variable cost per unit remains the same.
   b. When variable cost per unit decreases
   c. When fixed cost decreases.
   d. When variable cost per unit increases.
   e. When fixed cost increases.
10. Contribution margin is defined as excess of sales percentage over the
    a. Break-even sales b. Fixed cost c. Margin of safety
    d. Variable cost e. Total cost.
11. Which of the following changes will affect the unit contribution margin?
    a. Changes in fixed cost
    b. Changes in variable cost per unit
    c. Changes in selling price per unit
    d. Both (a) and (c) above

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e. Both (b) and (c) above.

12. Which of the following costs is **not** deducted from sales revenue in computation of contribution margin?
    a. Direct materials. b. Direct labor c. Fixed factory overheads.
    d. Variable factory overheads e. Variable selling overheads
13. Costs that are **not** relevant for decision-making and are not affected by increase or decrease in volume are
    a. Out-of-pocket costs b. Differential costs c. Imputed costs
    d. Sunk costs e. Marginal costs
14. The benefit foregone as a result of taking a particular action is called the
    a. Sunk cost b. Conversion cost c. Opportunity cost
    d. Programmed cost e. Discretionary cost
15. Which of the following cost is considered for decision-making program?
    a. Sunk cost. b. Out-of-pocket cost c. Discretionary cost
    d. Committed cost e. Unavoidable cost.
16. The relevance of a particular cost to a decision is determined by the
    a. Basis of apportionment of cost b. Size of the cost
    c. Risk involved in the decision d. Accuracy of the cost
    e. Potential effect on the decision
17. Which of the following costs is **not** relevant to the decision-making program?
    a. Out-of-pocket cost b. Differential cost. c. Avoidable cost.
    d. Historical cost e. Opportunity cost.
18. The term relevant cost applies to all the following decision situations except the
    a. Acceptance of a special order b. Manufacture or purchase of component parts
    c. Determination of a product price d. Replacement of equipment
    e. Addition or deletion of a product line.
19. The decision regarding the determination of sales mix depends upon
    a. Idle capacity available b. Break-even point
    c. Selling price per unit of each product
    d. Contribution per unit of each product
    e. Cost per unit of each product.
20. A decision regarding selling goods in new market should be taken after considering
    a. The availability of surplus capacity b. The increase in profits
    c. The domestic market price d. Both (a) and (b) above
    e. Both (a) and (c) above.
21. The following factor/s should be considered before taking a decision about the discontinuance of a product line
    a. The contribution given by the product
    b. The effect on sale of other products
    c. The long-term prospects in the market for the product
    d. Both (a) and (b) above
    e. Both (a),(b) and (c) above.
22. A company's approach to make or buy decision
    a. Depends on whether the company is operating at or below break-even
    b. Depends on whether the company is operating at or below normal value
    c. Involves an analysis of avoidable costs
    d. Requires use of absorption costing
    e. Requires use of activity-based costing.

23. In make or buy decision, the relevant costs include
    a. Factory management costs plus variable manufacturing costs
    b. Variable manufacturing costs plus depreciation costs
    c. Avoidable fixed costs plus variable manufacturing costs
    d. Variable manufacturing costs plus unavoidable fixed costs
    e. Avoidable fixed costs plus depreciation costs.
24. Which of the following factors need to be considered in a make or buy decision?
    a. The capability of the company to make the item in terms of capacity.
    b. The availability of outside suppliers who can deliver the same in terms of quantity, time and quality
    c. The opportunity cost of using existing capacity to manufacture alternative items, which would make a greater contribution
    d. The differential cost of making and buying the item.
    e. All of the above
25. Differential Cost means
    a. Only Variable Cost b. Only Fixed cost
    c. The change in cost due to change in level of activity
    d. Differences between fixed cost and Variable Cost
    e. Both (a) and (c) above
26. The decision regarding closing down of factory or some segment depends on
    a. Fixed Cost
    b. Variable cost of Products manufacturing in that factory or segment
    c. Contribution towards fixed cost
    d. Both (b) and (c).
    e. Both (a) and (b)
27. Which of the following is **not** an example of control decision?
    a. The action required to make actual sales equal to budgeted sales.
    b. Necessary steps for improving efficiency of labor in order to prevent the actual cost from exceeding the planned limits.
    c. The production required for the current year
    d. Alternative methods of production which may reduce the per unit cost.
    e. Given an increase in the cost per unit, whether the product can be sold at a specified price in order to maintain the existing profit per unit.
28. The opportunity cost of making a component part in a factory with no excess capacity is the
    a. Fixed manufacturing cost of the component
    b. Variable manufacturing cost of the component
    c. Total manufacturing cost of the component
    d. Cost of production given up in order to manufacture the component
    e. Net benefit given up from the best alternative use of the capacity.
29. When the objectives of the decisions are in conflict, one objective may be specified as the decision criterion and the other objectives are called as
    a. Secondary criteria b. Differential criteria c. Constraints
    d. Irrelevant criteria e. Opportunity costs.
30. Which of the following is **true?**
    a. All future cost are relevant costs.
    b. Costs which are pertinent for decision-making are termed as variable cost
    c. Past cost are also considered for decision-making
    d. Every management decision deals with present.

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e. Costs, which do not change between alternatives, are to be ignored for decision-making.

31. A company has an idle plant capacity It gets a bulk order, which will **not** affect prices of company products in the market. Such a bulk order may be accepted at a price which is more than its
    a. Total cost b. Variable cost c. Fixed cost
    d. Contribution e. Variable cost plus any opportunity cost of idle capacity.
32. An export order is generally accepted at
    a. Below total cost b. Above total cost c. Below marginal cost
    d. Below fixed cost e. Below total cost but above marginal cost.

DESCRIPTIVE QUESTIONS

1. What do you know understand by marginal costing?
2. What is the concept of marginal cost?
3. What is the concept of marginal costing?
4. What are the basic characteristics of marginal costing?
5. In what manner marginal costing works?
6. What is the role of contribution in marginal costing?
7. What do you know about break-up of semi-variable expenses?
8. What do you know about High and Low point Method?
9. What is the significance of statistical scatter graph method?
10. What do you know about the method of least squares?
11. In what way practical application of marginal costing is possible?
12. In what way level of activity planning is done?
13. What do you understand by Mix of sales?
14. How marginal costing and pricing is determined?
15. In what way marginal costing is useful in profit planning ?
16. What is the problem of key factor under marginal cost concept?
17. What is the basic equation of marginal costing?
18. What are the advantages of marginal costing?
19. What are the disadvantages of marginal costing?
20. Discuss:
    "Marginal costing may be considered to be very useful technique from the point of view of management."
21. Explain the concept of decision-making. State the various steps involved in the decision-making process.
22. Discuss the important operating matters in respect of which decisions are to be taken by a firm. What factors should be kept in mind in respect of each of such decisions?
23. Prepare a statement comparing gross revenue, profit contribution and P/V ratio of these two alternatives with present results. Which suggestion would you recommend?
24. Explain how semi-variable costs could be split into fixed and variable costs.
25. What is meant by differential cost? Explain the practical utility of differential cost analysis.
26. What is meant by break-even analysis? Explain the important assumptions and practical significance of break-even analysis.
27. Explain briefly the principles of cost and pricing governing the following facts of life:
    (a) In any transport system, season tickets are always cheaper than normal ones.
    (b) Gift expect the professionals to charge heavy fees.
    (c) Clients expect the professionals to charge heavy fees.
    (d) An air conditional theatre with equality comfortable chairs charges different rates for witnessing the same performance.

28. What are the uses of Break-even Analysis & Direct Costing?
29. Mention the types of problems which a Management Accountant can expect to solve with Break-even Analysis.
30. "Marginal Costing is an administrative tool for the management to achieve higher profits and efficient operation". Discuss.
31. Explain under what circumstances marginal costing plays important role in price fixation?
32. Explain how marginal costing technique is useful in day-to-day decision-making.
33. What are the chief advantages of break-even analysis? Outline the assumptions behind this analysis.
34. Write briefly about Cost-Volume-Profit Analysis.
35. Examine the concept of 'Margin of Safety' and give its uses for decision-making.
36. Explain the concept of BEP and CVP. Explain as to how are they useful for the managers for their decision-making.
37. What are the limitations of marginal costing? Explain.
38. Distinguish between Marginal Costing and Total Costing techniques of Cost Analysis.
    How are the Profit Statements under the two techniques Present?
39. Mention any four important factors to be considered in Marginal Costing Decisions.
40. Discuss the relationship between Angle of Incidence, Break-even level and Margin of Safety.

PRACTICAL PROBLEMS

Absorption/Marginal Cost Statements

1. Kaku Ltd. produces one standard type of article. The result of the Last 4 months of the year 2008 are as follows:

	Output (Units)
September 2008	200
October 2008	300
November 2008	400
December 2008	600

Prime cost is Rs. 10 per unit. Variable expenses are Rs. 2 per unit. Fixed Expenses are Rs. 36,000 per annum. Find out cost per unit of each month.

2. From the following data, prepare statements of cost according to both absorption costing and marginal costing systems:

	Product A Rs.	Product B Rs.	Product C Rs.
Sales	30,000	60,000	80,000
Direct Material 12,000	25,000	36,000	
Direct Labour	8,000	10,000	14,000
Factory Overheads:			
Fixed	6,000	8,000	6,000
Variable	2,000	3,000	5,000
Administration Overheads Fixed	1,000	2,000	2,000
Selling Overheads			
Fixed	2,000	2,000	3,000
Variable	1,000	3,000	3,000

[Ans. Absorption Costing-Profit(Loss): Product A Rs.(2000), Product B Rs. 7,000; Product C Rs. 11,000; Marginal Costing-Contribution; Product A Rs. 7,000, Product B Rs. 19,000, Product C Rs. 22,000]

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3. Production costs of Oriental Enterprises Limited are as follows:

	Level of activity		
	60%	70%	80%
Output (in units)	1,200	1,400	1,600
Cost (in Rs.)			
Direct Materials	24,000	28,000	32,000
Factory Labour	7,200	8,400	9,600
Factory Overheads	12,800	13,600	14,400
Works Cost	44,000	50,000	56,000

A proposal to increase production to 90% level of activity is under consideration of management. The proposal is not expected to involve any increase in fixed factory overheads.

Prepare a statement showing the prime cost, total marginal cost and total factory cost at 90% level of activity.

[Ans. Prime Cost Rs. 46,800, Marginal Cost Rs. 54,000, Works Cost Rs. 62,000]

[Hint. Fixed overheads Rs. 8,000]

4. A company is at present working at 90% of its capacity and produces 13,500 units per annum. It operates a flexible budgetary control system. The following figures are obtained from its budget:

	90%	100%
	13,500 units	15,000 units
	Rs.	Rs.
Sales	15,00,000	16,00,000
Fixed Expenses	3,00,500	3,00,500
Semi-variable Expenses	97,500	1,00,000
Variable Expenses(other than material and labour)	1,45,000	1,49,500

Labour and material cost per unit remain the same under present conditions. Profit margin has been 10% on sales.

(i) You are required to determine the different cost of producing 1,500 units by increasing capacity to 100%.

(ii) What would you suggest for an export price for these 1,500 units taking into account that the overseas prices are lower than those of the home market?

[Ans. (i) Rs. 97,170 (ii) Cost per unit comes to Rs. 64.78.

The selling price should not be less than this price.]

[Hint: Cost of materials and labour of 13,500 units comes to Rs. 8,07,000 by working backward.]

5. A firm has two factories, the product being the same in both cases. The following is the relevant information about the two factories.

	I	II
Capacity p.a.	10,000 units	15,000 units
Variable cost per unit	Rs. 70	Rs. 55
Fixed Cost p.a.	Rs. 4,00,000	Rs. 9,00,000

The demand is only 20,000 units. State how the capacity in two factories should be utilised.

[Ans. Both factories have to be operated for meeting demand in full. However, Factory II has a lower variable cost per unit. Hence, Factory II Should produce 15,000 units and Factory I should produce 5,000 units]

Break-Point: Profit Planning, etc.

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6. Sales of a product amount to 200 units per month at Rs. 10 per unit. Fixed overhead is Rs. 400 per month and variable cost Rs. 6 per unit. There is a proposal to reduce price by 10%. Calculate the present and future P/V ratios and find by applying P/V ratios, how many units must be sold to maintain total profit.
[Ans. Present P/V Ratio 40%; Future P/V Ratio 33 1/3%; units to be sold 267].

7. Merry Manufacturers Ltd., has supplied you the following information in respect of one of its products:

	Rs.
Total Fixed Costs	18,000
Total Variable Costs	30,000
Total Sales	60,000
Units Sales	20,000

Find out (a) contribution per unit, (b) break-even point, (c) margin of safety, (d) profit, and (e) volume of sales to earn a profit of Rs. 24,000
[Ans. (a) Rs. 1,50, (b) 12,000 units, (c) 8,000 units, or Rs. 24,000, (d) Rs. 12,000, (e) 28,000 units]

8. From the following data, calculate:
(i) Break-even point expressed in amount of sales in rupees.
(ii) Number of units that must be sold to earn a profit of Rs. 60,000 per year.
(iii) How many units must be sold to earn a net income of 10% of sales?

Selling price	Rs. 20 per unit
Variable manufacturing costs	11 per unit
Varible selling costs	3 per unit.
Fixed factory overheads	5,40,000 per year
Fixed selling costs	2,52,000 per year

[Ans. (i) Rs. 26,40,000; (ii) 1,42,000 units; (iii) 1,98,000 units]
[Hint. For (iii) Pressure × as the number of units to be sold.].

9. Ahmed Khan sells a popular brand of men's sports shirts at an average price of
Rs. 28/- each. He purchases the shirts from a supplier at a unit cost of Rs. 18/-. The costs of operating his shop are all fixed costs and amount to Rs. 54,000 a year. He pays commission to his salesman at the rate of Rs. 1 for every shirt sold through the particular salesman.
Required:
(i) How many shirts must be sold in a year to break-even?
(ii) Compute the sales revenue at the break-even.
(iii) Compute the monthly sales revenue required to earn a net profit before tax of Rs. 45,000 in a year.
[Ans. (i) 6,000 shirts, (ii) Rs. 1,68,000 (iii) Rs. 25,667]

10. (a) A company has fixed expenses of Rs. 90,000 with sales at Rs. 3,00,000 and a profit of Rs. 60,000. Calculate the profit/volume ratio. If in the next period, the company suffered a loss of Rs. 30,000. Calculate the sales volume.
(b) What is the margin of safety for a profit of Rs. 60,000 in (a) above?
[Ans. (a) 50%, Rs. 1,20,000; (b) Rs. 1,80,000]

11. An analysis of Sultan Manufacturing Co. Ltd., led to the following information:

Cost element	Variable cost (% of sales)	Fixed costs Rs.
Direct Material	32.8	
Direct Labour	28.4	
Factory Overheads	12.6	1,89,000
Distribution Overheads	4.1	58,400
General Administration Overheads	1.1	66.700

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Budgeted Sales are Rs. 18,50,000. You are required to determine:

(i) The break-even sales volume;
(ii) The profit at the budgeted sales volume; and
(iii) The profit of actual sales;
  (a) drop by 10% and
  (b) increase by 5% from budgeted sale.

[Ans. (i) Rs. 15,00,000, (ii) Rs. 73,500, (iii) Rs. 34,650, (b) Rs. 92,925].

12. Company A and Company B, both under the same management, make and sell the same type of product. Their budgeted Profit and Loss Account for January-June 1986 are as under:

	Company A		Company B	
	Rs	Rs	Rs	Rs
Sales	3,00,000	3,00,000		
Less: Variable cost	2,40,000		2,00,000	
Fixed Cost	30,000	2,70,000	70,000	2,70,000
		30,000		30,000

You are required to:

(i) Calculate the Break-even Point for each company.
(ii) Calculate the sales volume at which each of the two companies will profit by Rs. 10,000.
(iii) Access how the profitability will change with decrease or increase in volume:

[Ans. Company A Company B
(i) Rs. 1,50,000 (i) Rs. 2,10,000
(ii) Rs.2,00,000 (ii) Rs. 2,40,000
(iii) P/V Ratio 20% (iii) 33 1/3%]

13. The budgeted sales of three products of a company are as follows:

	Product B		
	X	Y	Z
Budgeted sales in units	10,000	15,000	20,000
Budgeted selling price per unit	4	4	4
Budgeted variable cost per unit	2.5	3	3.5
Budgeted fixed expenses(total)	2,000	9,000	7,500

From the information, you are required to compute the following for each product:

(a) The budgeted profit.
(b) The budget break-even sales.
(c) The budgeted margin of safety in terms of sales value.

		X	Y	Z
[Ans.	(a)	Rs.3,000	Rs. 6,000	Rs.2,500
	(b)	Rs.32,000	Rs.36,000	Rs.60,000
	(c)	Rs.8,000	Rs.24,000	Rs.20,000]

14. From the following information, calculate the break-even point and the turnover required to earn a profit of Rs. 36,000.

Fixed overheads	Rs. 1,80,000
Variable cost per unit	2
Selling price	20

If the company is earning a profit of Rs. 36,000, express the 'margin of safety available to it.

[Ans. BEP 10,000 units, Turnover required for desired profit Rs. 2,40,000, Margin of Safety Rs. 40,000]

15. The Reliable Battery Co. furnishes you the following information:

	Year 1996	
	First half	Second half
Sales	Rs. 8,10,000	Rs. 10,26,000
Profit earned	21,600	64,800

From the above, you are required to compute the following assuming the fixed cost remains the same in both the periods:

(i) Profit/Volume Ratio.

(ii) Fixed cost.

(iii) The amount of profit or loss where sales are Rs. 6,48,000.

(iv) The amount of sales required to earn a profit of Rs. 1,08,000.

(Ans. (i) 20%; (ii) Rs. 1,40,000; (iii) Loss Rs.10,800; (iv) Rs. 12,42,000.]

16. Tractors Ltd., have been an installed capacity of 5,000 tractors per annum. They are presently operating 35 per cent of installed capacity. For the coming year, they have budgeted as follows:

Production/Sales	4,000 units
Costs:	Rs.(crores)
Direct Materials	8.00
Direct Wages	0.60
Factory Expenses	0.80
Administration expenses	0.20
Selling Expenses	0.20
Profit	1.00

Factory expenses as well as selling expenses are variable to the extent of 20 percent. Calculate break-even capacity utilization percentage.

[Ans. BEP 2,000 units, BEP as a percentage of installed capacity 40%]

17. Calculate from the following data (i) the value of output at which the business breaks-even, and (ii) the percentage capacity at which it breaks-even:

	Budget for year Estimated 100% capacity expenditure (Rs.)	1990 based on shut-down (Rs.)
Direct Wages	2,09,964	–
Direct Materials	2,44,552	
Works Expenses	1,81,820	93,528
Selling and Distribution Expenses	61,188	40,188
Administration Expenses	30,000	20,508
Net Sales	8,40,000	

[Ans. Rs. 4,85,746; (ii) 53.8%]

[Hint. Shut-down costs are Fixed Costs.]

18. From the following data, you are required to calculate the break-even point and net sales value at this point:

Selling Price per unit	Rs. 25
Direct Material Cost per unit	8
Direct Labour Cost per unit	5
Fixed Overheads	24,000

Variable Overheads @ 60% on direct labour Trade discount 4%

If sales are 15% amd 20% above the break-even volume, determine the net profits.

[Ans. BEP(units) 3,000 B.E. Sales(Net) Rs.72,000, Net Profit when Sales are above 15% of B.E. Volume Rs. 3,600, Net Profit when are above 20% of B.E. Volume Rs. 4,80,000]

19. The Taylor Company produces two products, A and B. Expected data for the first year of operations are:

	A	B
Expected Sales(units)	8,000	12,000
Selling Price	Rs. 45	Rs. 55
Variable Costs	30	35

Total fixed costs are expected to be Rs. 3,60,000 for the year. You are required to answer the following:

(i) If sales, prices and costs are as expected, what will be the operating income and the break-even volume in sales revenue?

(ii) Assume that prices and costs were as expected but Taylor sold 12,000 units of A and 8,000 units of B. Re-calculate the operating income and the break-even volume in sales revenue.

[Ans. (i) Operating Income Nil; Break-even Sales Rs. 10,20,000

(iii) Loss Rs. 20,000; Composite Break-even Sales Rs. 10,37,763 Compressing sales of Product A Rs. 6,22,658 and sales of Product B Rs. 4,15,105]

20. The Kisan's Implements Factory which has been specializing in the production of a patented plough-share finds its sales dropping due to increasing competition from other concerns producing similar products. It is felt that the reduction of the selling price from Rs. 3 per share to Rs. 2.50 will increase the volume of sales and enable the profit to be maintained at the same level as in the previous year.

Assuming that the total fixed charges of the concern are Rs. 2,00,000 per annum, variable cost per unit Rs. 1.50 and the volume of sales Rs. 4,50,000; indicates the number of units that the concern should plan to produce and sell.

Tabulate the results of the previous year and the current year showing (a) the number of units produced, (b) selling price realised, (c) cost price (including fixed and variable costs), and (d) the profit at the end of the year.

[Ans. (a) Previous Year: 1,50,000 units, Current year: 2,25,000 units; (b)Selling Price: Previous year Rs. 4,50,000, Currrent Year Rs. 5,62,500 (c) Cost Price: Previous year Rs. 4,25,000; Current Year Rs. 5,37,000 and (d) Profit: Previous Year Rs. 25,000; Current Year Rs. 25,000]

21. The particulars of two plants producing an identical product with the selling price are as under:

	Plant A	Plant B
Capacity utilisation	70%	60%
	(Rs. Lacs)	(Rs. Lacs)
Sales	150	90
Variable Costs	105	75
Fixed Costs	30	20

It has been decided to merge Plant 'B' with Plant 'A'. The additional fixed expenses involved in the merger amount to Rs. 2 lacs.

Required:

(i) Find the break-even point of Plant 'A' and Plant 'B' before merger and the break-even point of the merged plant.

(ii) Find the capacity utilization of the integrated plant required to earn a profit of Rs. 18 lacs.

(Ans. (i) Break-even point Plant A Rs. 100 lacs, Plant B Rs. 120 lacs, Merged Plant Rs. 212.16 lacs.

(iii) Sales for desired profit Rs. 285.6 lacs, capacity utilisation 78.4%.]

22. The 'Titan Plastic Toys and Utensils' manufactures children's toys and household utensils of various types and sizes from a uniform material and operates the batch system of costing for ascertainment of costs.

Each month's production is determined in advance and the different types and sizes of utensils are put through production. Each type and size is allotted a unit value. eg., 5 Us., 20 Us., 47 Us., and so on, and the total production cost in a month is spread over the total 'Us' produced.

The cost of 100 'Us'is taken as a convenient unit of production and is ascertained as follows:

Material per unit of 100 'Us'	Rs. 10.00
Labour per unit of 100 'Us'	3.00
Electric power for heating, moulding, shaping, etc.,	4.00
Variable overheads	5.00
Total Variable Cost	22.00

Having regard to market conditions, the selling price of finished goods to the extent 100 'Us' is fixed at Rs. 40. The fixed expenses amount to Rs. 50,950 per annum. Assuming the scope for sales to be unlimited what should be the volume of output in 'Us':

(i) to absorb the fixed overhead; and

(ii) the turnover to earn a profit of Rs. 50,000 per annum.

[Ans. (i) 2,83,056 units; (ii) 5,69 = 0,834 units]

23. S. Ltd., furnishes you the following information relating to the half year ended 30th June, 2008:

Fixed Expenses	Rs. 45,000
Sales Value	1,50,000
Profit	30,000

During the second half of the year, the company has projected a loss of Rs. 10,000.

Calculate:

(i) The break-even point and margin of safety for six months ending 30th June, 2008.

(ii) Expected sales volume for second half of the year assuming that the P/V ratio and fixed expenses remain constant in the second half year also.

(iii) The break-even point and margin of safety for the whole year 2008.

[Ans. BEP Rs. 90,000; M.S. Rs. 60,000; (ii) Rs. 70,000;

(iv) BEP Rs. 1,80,000; M.S. Rs. 40,000]

24. The following are the cost and sales data of a manufacturer selling three products X, Y, and Z.

Product	Selling Price Per unit	Variable Cost per	Percent of unit Rupee Sales Volume
X	Rs. 4	Rs. 3	20
Y	5	4	40
Z	8	6	40

Capacity of the manufacturer; Rs. 15,00,000 total sales volume, Annual fixed cost; Rs. 2,30,000.

(i) Find the break-even point in rupees.

(ii) Calculate his profit or loss in rupees.

[Ans. (i) Rs. 10,00,000; (ii) Rs. 46,000]

25. The following figures relate to a company manufacturing a varied range of products;

	Total Sales	Total Cost
Year ended 31st December, 2007	22,23,000	19,83,600
Year ended 31st December, 2008	24,51,000	21,43,200

Assuming stability in prices, with variable costs carefully controlled to reflect pre-determined relationships and an unvarying figure for fixed cost, calculate:

(a) The profit/volume ratio, to reglect the rates of growth for profit and sales.

(b) Fixed cost.

(c) Fixed cost percentage to sales.

(d) Break-even point.

(e) Margin of safety for the year 2007 and 2008.

[Ans. (a) 2007: 30%, 2008:30% (b) 2007: Rs. 4,27,500, 2008: Rs. 4,27,500; (c) 2007: Rs. 19.23, 2008: 17.44%; (d) 2007:Rs. 14,25,000, 2008:Rs. 14,25,000; (e) 2007: Rs. 7,98,000, 2008: Rs. 10,26,000]

26. At the budgeted activity of 75% of total capacity, a company earns a P/V ratio of 25% and a profit of 10% on sales. During the course of the year, the company had to reduce its price of the product by 10% due to recession and poor offtake. The company was able to achieve actually a production and sales volume for the year equivalent to 50% of its total capacity. The sales value at this level was Rs. 13,50,000 at the reduced price of Rs. 9.00 per unit. Due to reduction in production, the actual variable costs went up by 2% of the budget. Required:
    (i) Comparative statement of profitability at the budgeted and actual activity.
    (ii) Find the P/V ratio, break-even point in value and units of production at the actual sales activity.
    [Ans. (i) Profit(Loss): Budgeted Activity Rs. 2,25,000, Actual Activity (Rs. 1,35,000), (ii) P/V Ratio 15%, Break-even sales Rs. 22,50,000; Units 2,50,000]
27. A company has three units, A, B, and C, each manufacturing the same product. The following details are available:

	A	B	C
	Rs.	Rs.	Rs.
Variable Cost per unit	2.50	2.20	2.10
Fixed Cost per annum	78,000	1,08,000	1,20,000

    Calculate the range of output over which each of the units would be most economical.
    [Ans. The following range of output will be most economical; Plant A; For less than 1,00,000 units; Plant B: Between 1,00,000 and 1,25,000 units; Plant C: For output of higher than 1,25,000 units]
28. The following estimated data are given:
    (a) Cost of investigation of variance = Rs. 800
    (b) Cost of correcting the out of control process = Rs. 2,000
    (c) Cost of allowing the process to remain out of control = Rs. 10,000
    (d) Probability of being in control = 0.95
    (e) Probability of being out of control = 0.05
    Calculate the expected values of investigations and not investigating.
29. A machine which originally costs Rs. 12,000 has 'an estimated life of 10 years and is depreciated at the rate of Rs. 1,200 per year. It has not been used for some time, however, as expected production orders did not materialize.
    A special order has now been received which would require the use of the machine for two months.
    The current net realizable value of the machine is Rs. 8,000. If it is used for the job, its value is expected fall to Rs. 7,500. The net book value of the machine is Rs. 8,400. Routine maintenance of the machine currently costs Rs. 40 per month. With use, the cost of maintenance and repairs would increase to Rs. 60 per month.
    What would be the relevant cost of using the machine for the order so that it can be charged as the minimum price for the order.
    [Ans. Minimum price to be charged will be Rs. 540 (i.e., marginal user cost Rs. 500 + Addl. Cost of maintenance and repairs Rs. 40). Besides this, loss of interest for two months on Rs. 8,000 i.e., present saleable value of the machine, can also be considered for calculating minimum selling price.]
30. Draw a break-even chart on the basis of following data:
    Plan capacity: 1,60,000 units per year
    Fixed cost: Rs. 4,00,000 Variable cost: Rs. 5 per unit
    Selling price: Rs. 10 per unit.
    [Ans. BEP 80,000 units]
31. From the following particulars, draw a break-even chart and find out the break-even point:

	Rs.
Variable Cost per unit	15
Fixed Expenses	54,000
Selling Price per unit	20

What should be the selling price per unit, if the break-even point is to be brought down to 6,000 units?

[Ans. Old BEP 10,800 units; New Selling Price Rs. 24 per unit]

32. (a) Plot the following data on a graph and determine the break-even point:

Direct labour	Rs. 100 per unit
Direct material	Rs. 40 per unit
Variable overheads	100% of direct labour
Fixed overheads	Rs. 60,000
Selling price	Rs. 400 per unit.

(b) In order to increase efficiency in production, the concern installs improved machinery which results in fixed overhead of Rs. 20,000 but the variable overhead is reduced by 40%.

You are required to plot the data on the above graph and to determine the new break-even point assuming that there is no change in sale price.

[Ans. Old BEP at 50% capacity Rs. 1,50,000, New BEP Rs. 1,60,000]

33. From the following data, draw a simple break-even chart:

Selling price per unit	Rs. 10.00
Trade Discount	5%
Direct Material cost per unit	3.00
Direct Labour cost per unit	2.00
Fixed Overhead	10.000

Variable overheads 100% on direct labour cost.

If sales are 10% and 15% above the break-even volume, determine the net profits.

[Ans. B.E. sales Rs. 38,000; if sales are 10% above, B.E. Sales Volume, Profit will be Rs. 1,000; if sales are 1% above B.E Sales Volume, profit will be Rs. 1,500]

34. After a study of cost-volume relationship, the Kalinga Tubes Company concluded that its costs for any given volume of sales could be expressed as Rs. 1,00,000 for fixed costs plus variable costs equal to 60% of sales. The company's range of volume was from zero to Rs. 8,00,0000 of sales.

Prepare a graph which will illustrate this cost-volume relationship. Also draw a proper sales line to the graph to form a break-even chart. Determine the break-even point. A competitor operating a plant of the same size as Kalinga Tubes also with fixed cost of approximately Rs. 1,00,0000 per year, but this break-even point is Rs. 3,00,000 of sales. What may be the probable causes of the difference between this break-even point and that of the Kalinga Tube Company?

[Ans. BEP of sales Rs. 250,000. In case of the competitor P/V Ratio is 33 1/3%. In other words, his variable cost per unit is more.]

[Hint: Take sales at different levels in percentages]

Key factor

35. From the following data, which product would you recommend to be manufactured in a factory, time being the key factor?

	Per unit of Product A	Per unit of Product B
Direct Material	Rs. 24	Rs. 14
Direct Labour at Rs. 1 per hour	2	3
Variable Overhead at Rs. 2 per hour	4	6
Selling Price	100	110
Standard Time to produce	2 hours	3 hours

[Ans: Product A recommended]

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36. From the following data, recommend the most profitable product mix, presuming that direct labour hours available are only 700:

	Products	
	A	B
Contribution per unit	Rs. 30	Rs. 20
Direct Labour per unit	10 hrs.	5 hrs.

The maximum production possible for each of the products A and B 100 units.
The fixed overheads are Rs. 1,000.
[Ans. Product A 20 units; Product B 100 units. Net Profit Rs. 1,600]

37. (a) From the following data, which product would you recommend for manufacture in the factory?

Per unit of	Product A	Product B
Standard Manufacturing Time	2 hours	3 hours
Direct Materials	Rs. 50	Rs. 30
Direct Labour @ Rs.10 per hour	20	30
Variable Overheads @ Rs. 6 per hour	12	18
Selling Price	200	240

Total Machine Hours available in the factory are.60,000.

(b) Calculate the effect on profit of a proposal change in "Sales Mix" from the following data:

Existing Sales Mix	M	N	O	P	Total
Sales (in Rs.)	80,000	1,00,000	40,000	20,000	2,40,000
Variable Cost (in Rs)	48,000	68,000	32,000	8,000	1,56,000
Fixed Cost (in Rs.)	-	-	-	-	58,800
Proposed Sales Mix	Rs. 60,000	88,000	80,000	12,000	2,40,000

[Ans: (a) Product A is recommended (b) Decrease in Profit Rs. 8,640, Present Profit Rs. 25,200, Proposed Profit Rs. 16,560.]

Application CVP Analysis

38. Polestar Electronics decides to effect a 10% reduction in the price of its product because it is felt that such a step may lead to a greater volume of sales. It is anticipated that there are no prospects of a change in total fixed costs and variable cost per unit. The directors wish to maintain the net profits at the present level. The following information has been obtained from its books:

Sales: 10,000 units	Rs.2,00,000
Variable Costs	Rs.15 per unit
Fixed Costs	Rs.40,000

How would management proceed to implement this decision?

39. The following particulars are given: Current unit price Rs.1,000; Unit variable cost Rs.500; Fixed cost Rs. 30 lakhs.
The following two suggestions are under the consideration of the management of an industrial company: a) Ten percent reduction in price to yield an increase in sale volume from 6,600 to 7,900 units. b) Ten percent increase in price with decrease in volume of sale from 6,600 to 5,700 units.

40. The Sales Director of your concern requires you to compute the sales volume necessary in order to:
(i) Break-even
(ii) Make a profit of Rs.4 per unit of the product
(iii) Make a profit of 30% on sales
(iv) Maintain the present profits in rupees with an increase of Rs.20,000 in fixed costs and a decrease of Rs.2 per unit in the out-of-pocket costs
(v) Maintain the present profit with an increase of Rs.20,000 in fixed costs and a decrease of Rs.2 per unit in the out-of-pocket costs.
(vi) Maintain the present profit per unit of product with the revision in fixed costs and out of pocket costs as in (v).

(vii) Maintain the present percentage of profit to sales with the revision in fixed costs and out of pocket costs as in (v).

In the covering note to the Director, you are required to explain lucidly how a single formula can be applied to compute these various levels of volume desired. The cost data of your firm as computed by the cost accountant is as below:

Sales Rs.1,00,000 at Rs. 10 per unit

Out of pocket costs Rs.50,000 Rs. 5 per unit

Burden on Rs.30,000 Rs.3 per unit

Profit Rs.20,000 Rs.2 per unit

41. The overhead expenses of a factory producing a single article at different operating levels are as follows:

Operating level capacity	Works overhead
60%	Rs.33,000
80%	Rs.36,000
100%	Rs.40,000
120%	Rs.50,000

The factory is currently working at 60 percent operating level and its annual sales amounted to Rs.1,44,000. Selling prices have been based on 100 percent capacity and have the following relationship with costs at this level:

Factory cost	… 66.67% of sales value
Prime cost	… 75.00% of factory cost
Administrative and selling expenses	… 20.00% of sales value

The management receives an offer for carrying out some work for another company valued at Rs.33,000 per annum which will take up 40 percent of capacity. The prime cost for the work is estimated at Rs.20,000. There will be additional administrative expenses of Rs.1,500 per annum, in view of the variable administrative overhead. The sales manager estimates that the sales of the company's own product will increase to 80 percent of capacity by the time the new order materialises. Calculate the profits on current production. Give your views supported by figures on the advisability of taking up the new work.

42. A trading organisation buys and exports shoes at f.o.b prices to foreign buyers. Fixed expenses amount to Rs.6 lakhs per annum and variable costs are as follows: Cost of packing, rail freight and charges up to the point of placing the goods on ship Rs.2 per pair; and cost of shoes Rs.25 per pair.

Tabulate each element of cost, the total cost and unit cost for sale of 1 lakh, 2 lakhs, 2.5 lakhs, 3 lakhs and 3.5 lakhs of pairs per year. Find out from the tabulated data what selling prices could be offered for negotation with the foreign buyers for each level of annual turnover to secure a minimum net profit of Rs.2 per pair. There is severe competition and the trader gets a final offer from a foreign buyer A for the supply of 2.5 lakh pairs @ Rs.29 per pair. Comment whether the organisation would lose or gain.

In case he gains, find out the total profit. In case he loses, should he accept the offer as he has a reasonably fair chance to get another offer for the supply of one lakh pairs from a foreign buyer B at the same price.

Ans. Yes, if order of another 1 lakh pairs is forthcoming.

43. The Snow Company manufactures and sells direct to consumers 10,000 jars of Everest Snow per month at Rs.1.25 per jar. The company's normal production capacity is 20,000 jars of snow per month. An analysis of cost for 10,000 jars shows:

Direct material	Rs.1,000
Direct labour	2,475
Power	140
Miscellaneous supplies	430
Jars	600
Fixed expenses of manufacturing, selling and administration	7,955
Total	12,600

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The company has received an offer for export under a different brand name of 1,20,000 jars of snow @ 10,000 jars per month at 75 paise a jar. Write a short report on the advisability or otherwise of accepting the offer advisable to accept the offer.

CASE

1. Ashok Matha Limited manufacturers and sells a single product X whose selling price is Rs. 40 per unit and the variable cost is Rs.16 per unit.
   (a) If the fixed costs for this year are Rs. 4,80,000, and the annual sales are at 50% margin of safety, calculate the rate of net return on sales assuming an income tax level of 40%.
   (b) For the next year, it is proposed to add another product line whose selling price would be Rs. 50 per unit and the variable cost Rs. 10 per unit. The total fixed costs are estimated at Rs. 6,66,600. The sales mix of X: Y would be 7:3. At what sales next year, would Evenkeel Ltd. break-even; give separately for both X and Y, the break-even sales in rupees and quantities.
2. With a view to increase the volume of sales, Ambitions Enterprises has in mind a proposal to reduce the price of its products by 20%. No change in total fixed costs or variable costs per unit is estimated. The directors, however, desire the 'present level of profit to be maintained.
   The following information has been provided:

Sales 50,000 units	Rs.5,00,000
Variable Costs	Rs. 5 per unit
Fixed Costs	Rs. 50,000

   Advise management on the basis of the various calculations made from the data given.

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CHAPTER 15

Profit Planning-II: Break Even Analysis

"The analytical technique employed to study the inter-relationship of cost volume & price and its impact as behaviour of profit is known as profit volume cost analysis."

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Marginal Cost Equations*
- *Behaviour of Fixed & Variable costs*
- *Contribution*
- *Contribution Ratio*
- *Angle of Incidence*
- *Margin of Safety*
- *Calctlations of Margin of Safety*
- *Contribution Chart*
- *Profit Graph*
- *Limitations of Break Even Chart*

INTRODUCTION

Cost Volume Profit Relationship is the relationship of the cost of production and the volume of production with the profit. We have learnt so far that fixed costs remain fixed irrespective of the volume of production. On the other hand, variable costs (or marginal costs) vary directly with the volume of production. We may, therefore, infer that the effect of the change in these costs, selling price and volume naturally require a determination of relationship that exists between these factors (i.e cost volume and profit).

Determination of the Cost Volume Profit Relationship is very helpful in determination of product mix, profit-planning, etc. This chapter gives a broad idea about the relationship between contribution and sales.

Cost Volume Profit Relationship may clearly be shown with the help of Marginal Cost equations. This fact has been explained below:

Marginal Cost Equations

As cost of production, volume of production and sales revenue (and therefore, profit) are inter-connected, relationship that exists between these forces may be shown with the help of equations. These equations are called marginal cost equations.

We have learnt that contribution (or variable profit or marginal profit of Gross Margin) represents the difference between the sales and marginal cost. This difference is called contribution because it contributes towards fixed costs and profit.

The above difference (relationship) may also be presented under the following equations:

1. Sales – Marginal costs = Contribution
2. Fixed costs + Profit = Contribution

From the aforementioned two equations, we get Fundamental Marginal Cost Equation which has been shown below:

3. Sales-Marginal costs = Fixed costs+ profit, i.e S-M = F + P

If we know any three of the four items shown above, the missing item can easily be found out.

While the Sales and Marginal costs vary directly with sales and production, the fixed costs remain constant. From this fact, one can easily understand that there must be a relationship between contribution (which represents difference between Sales and Marginal Cost) and sales. This relationship when expressed in form of a ratio of contribution to sales is called P/V Ratio (Profit – Volume Ratio).

Thus, we get another formula showing Cost Volume Profit Relationship. This has been shown below:

P/V Ratio = Sales-Marginal cost/Sales
= Contribution/Sales

OR Sales = Contribution/(P/V Ratio)

P/V Ratio shows contribution per rupee of sales. It should be noted that P/V Ratio remains constant at all levels. As the fixed costs remain constant in the short term, P/V Ratio may also be expressed in the following form:

P/V Ratio = Change in contribution/change in sales
= Change in profit/change in sales

Thus, P/V Ratio is also useful in measuring the rate of change of profit resulting from a change in the volume of sales.

To sum up, all the above equations show the Cost Volume Profit Relationships. It should be noted that Break-Even sales, Margin of Safety (all explained subsequently), are calculated on the basis of these equations. Determination of Break-Even sales, and Margin of Safety on the basis of these equations will be discussed later on.

P.V RATIO: MEANING–ITS IMPROVEMENT AND ITS APPLICATION

As mentioned earlier, P/V Ratio shows the relationship between the contribution and the value of sales.

Formula for determination of P/V Ratio:

P/V Ratio = Sales – Marginal cost of sales /Sales × 100

Contribution/Sales × 100

Suppose selling price per unit is Rs.100 and contribution per units is Rs.40, the P/V ratio = 40/100 × 100 = 40%

As the fixed cost remains constant in the short term, P/V ratio will also measure the rate of change in profit due to change in volume of sales in two different periods. This may be found out by the following formula.

P/V Ratio = Change in contribution/Change in Sales
= Change in profit/Change in Sales

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Improvement of P/V Ratio

P/V ratio is a ratio of contribution to sales. Therefore, any increase in contribution will improve the P/V ratio. Contribution may be increased by increasing selling price, reducing variable costs by efficient utilisation of available resources. Thus, P/V Ratio can be improved by:

1. Increase in selling price and/or
2. Reduction in variable costs.

Improve P/V Ratio for each line of product. If we consider a composite P/V ratio (or overall P/V Ratio or Average P/V Ratio or P/V Ratio for a number of products), it can be improved by improving sales-mix in such a manner that will include more profitable products (i.e products having a high P/V ratio) and exclude or reduce less profitable products (i.e products having a low P/V Ratio). It is important to note here that while considering say, which products have the highest P/V Ratio, the effect of the key factors should also be assessed and the respective P/V Ratios should be weighted accordingly.

Above notes also throw light on the fact that P/V Ratio should not be considered alone. Study of P/V Ratio together with the Margin of Safety (discussed later on), the volume of sales, the fixed costs etc. would be more useful.

Application of P/V Ratio

Following are some of the problems to which the P/V Ratio can be applied:

1. Determination of profitability of a line of product and overall profitability of a number of products.
2. Comparison of profitability of various lines of products, sales, areas, individual factories, companies and methods of sale etc.
3. Calculation of break-even point sales, profit for different turnovers, turnover for desired profit etc.

Again, it should be noted that profit/volume ratio should not be considered in isolation. In actual practice, results shown by calculations involving P/V Ratio should be used as guides to the decision-making process.

Illustration 1: Calculate P/V Ratio for the Product X and Product Y on the basis of the following information.

TABLE 15.1

	Product X		*Product Y*	
	Rs.		*Rs.*	
Selling price	290		400	
Variable costs:				
Direct Materials	94		120	
Direct Labour	80	174	120	240
Contribution		116		160

Product X takes 16 labour hours and product Y involves 24 labour hours. There is a shortage of skilled labour necessary for producing both products. Weigh the P/V Ratios accordingly.

Ans. P/V Ratio = Contribution/Sales × 100

Hence in case of X : P/V Ratio = 116/290 × 100 = 40%

in case of Y : P/V Ratio = 160/400 × 100 = 40%

On account of shortage of skilled labour necessary for the production of X and Y, labour becomes the key factor. Hence, we may get more real picture of the profitability of the products by weighing the respective P/V Ratios.

Accordingly, direct labour hours would be taken as weights. Direct labour hours needed for product X are 16 and for Product Y are 24. Thus, ratio of direct labour hours is 2:3 or 1:1 ½. Accordingly, amended P/V ratio would be worked out as below:

Product X : 40% = 40%/1 and Product Y = 40%/1 ½ = 26.2/3%

Thus, weighted P/V Ratios are as below:

	Product X	Product Y
Weighted P/V Ratios	40%	26 2/3%
Contribution per direct labour hour		
Contribution/Labour hours = 116/16	= Rs.7.25	160/20 = Rs.6.67

Note: As per weighted P/V Ratios, production of product X is more desirable.

Meaning of Break-Even Point (BEP) and Determination of Break-Even Point

Break-Even Point may be defined as that point at which contribution is exactly equal to fixed cost. In other words, Break-Even Point represents that volume of output at which neither a profit is made nor loss is incurred. It may be described as a point, No profit-No loss.

Determination of Break-Even Point is very helpful in knowing the:

i. Effect of increase/decrease in selling price, fixed costs, variable costs, volume of sales etc.
ii. Effect of changes in sales mix
iii. Determination of volume of sales to earn the required profit.
iv. Effect on net profits of introducing a new line or discontinuing an existing line etc.

DETERMINATION OF BREAK EVEN POINT

Fundamental Marginal Cost equation is as follows:

$$S - V = F + P$$

Where S – Sales;

V – Variable or Marginal costs;

F – Fixed cost and P – Profit.

The above mentioned equation can be used for ascertainment of Break Even Point. That is, at Break Even Point, there will be no profit or no loss (total costs = total sales) so that P = 0.

That is $S_1 - V_1 = F$ ...(1)

Where S_1 = Sales at Break Even Point

V_1 = Marginal cost in relation to S1

but $V_1/V = S_1/S$

or $V_1 = V\ S_1/S$ ...(2)

Substituting the value of V_1 in equation (1)

$$S_1 - V\ S_1/S = F$$

$$S_1(S - V/S) = F \text{ or } S_1 = F \times S/S - V$$

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Note: Students should remember that if the amount of fixed costs is multiplied by the selling price per unit (and not total sale value), then the Marginal Cost per unit should be deducted from the selling price unit.

On the contrary, if the amount of fixed costs is multiplied by the total sales value, the resulting figure should then be divided by the total sales value reduced by total marginal cost.

Thus, Break-Even Sales

= Fixed cost × Selling price per unit/(Selling price per unit-Marginal cost per unit)

Or Fixed cost × sales value (total)/(Sales value – Total marginal cost)

Illustration 2: Sales at Break-Even point in case of the following data will be determined as below:

TABLE 15.2

	Per unit	*Total*
Sales	20	40,000
Less: Marginal cost	4	8,000
Contribution	16	32,000
Less: Fixed cost	8	16,000
Profit Rs.	8	16,000

Break Even Point Sales:

= Fixed cost × Selling price/(Selling price – Marginal cost per unit)

= 16,000 × Rs.20/20 – 4

= Rs.20,000

If we take total figures instead of per unit figures:

$$\text{Break Even Sales} = \frac{\text{Fixed cost} \times \text{Sales Value (Total)}}{\text{Sales value} - \text{Total Marginal cost}}$$

Rs,16,000 × 40,000/40,000 – 8,000 = Rs.20,000

Notes: If we want to know the break even sales in units the following formula should be adopted:

Break Even Point = Fixed costs/Contribution per unit

In case of Illustration 8, BEP in units will be,

= Rs.16,000/16 = 1,000 units

Selling price is Rs.20 per unit. Hence, Break-Even sales will be 1000 × Rs.20 or Rs.20,000.

All the above calculations may be checked as follows:

Check: Sales 1,000 units at Rs.20 each		20,000
Less: Marginal cost @ Rs.4 per unit		4,000
Fixed cost	16,000	20,000
	Profit	Nil

Other formula based on fundamental marginal cost equation given below:

$$\text{Break Even Point} = \frac{\text{Fixed cost}}{1 - \text{Marginal cost/sales}}$$

$$\text{In Illustration 8, BEP} = \frac{16{,}000}{1 - 8{,}000/40{,}000}$$

= Rs.20,000.

Determination of Break-Even Point with the use of Profit/Volume Ratio Equation:

P/V Ratio = Contribution/Sales = Fixed cost + Profit/Sales

(Because fixed cost + Profit = Contribution)

Accordingly, P/V ratio adjusted for sales at Break-Even Point would be:

P/V Ratio = Fixed cost/Sales

(Because profit at BEP would be NIL)

Sales at Break Even Point = Fixed cost/P/V Ratio

Taking the Illustration above, break-even point on the basis of P/V Ratio would be determined as follows:

P/V Ratio = Contribution/Sales × 100 = 32,000/40,000 × 100 = 80%.

(Note: Unit price may also be taken as below:)

P/V Ratio = Contribution per unit/Sales per unit = 16/20 × 100 = 80%

(As is obvious, the illustration involves production of a single unit)

Now, Break Even Sales = Fixed cost/(P/V Ratio) = 16,000/80%

= Rs.20,000.

Determination of Break-Even Point with the use of Break-Even Chart:

Break-Even chart is a graphical presentation of the Cost Volume Profit Relationship. Sales at Break-Even Point with the use of Break-Even chart is determined as below:

To construct break-even chart, following procedure should be adopted:

1. A break even chart is drawn on a graph paper: Costs and Revenue are plotted on the Y axis and activity or volume is plotted on the X axis. X axis may be expressed in a number of ways, e.g
   a. Percentage level of activity (Plant capacity being represented by 100%)
   b. Volume in Units
   c. Standard Hours
   d. Sales Value.

Where, however, there are number of products of different measuring units which require different plant capacity, it is difficult to plot them on the basis of percentage activity or volume. Here, Standard hours may be the appropriate expression. In other cases, sales value is widely used because profit is not realised unless goods are sold. However, when sufficient data is available, it is desirable that a combination of methods of expression is used.

2. Represent fixed cost by a line parallel to X axis. Plot the variable costs for different levels of activity over fixed cost line. Join the variable cost line to fixed cost line at zero activity level. The resultant line will represent total cost line, variable costs having been added to fixed cost.
3. Similarly, determine sales value at various levels of activity and plot them on the graph paper and join these point and extend the line up to zero in the graph. This line will represent sale value.
4. The sales line will cut the total cost line at a point which is known as Break-Even point. The Break – Even sales will be determined by dropping a perpendicular to the X axis from the point of intersection and measuring the horizontal distance from the zero point to the point at which the perpendicular is drawn. Another perpendicular to the Y axis from the point of intersection will indicate (Vertically) the Break Even sales.

The above mentioned procedure is applied for Illustration 0.9

Note: The Break-Even chart will give a vivid picture of profit or loss at different levels of activity. For instance, where the sales line is above the total cost line, there is profit, and where it is below the total cost line, there is a loss, and where total cost equals total sales, there is no profit no loss.

Behaviour of Fixed & Variable Costs

When a cost does not change with the increase in volume it is called fixed cost. Example are rent, insurance, repair etc. these costs are constant. In a graphic presentation of behaviour of fixed costs, the fixed cost curve descends while total fixed cost is constant at all levels of production.

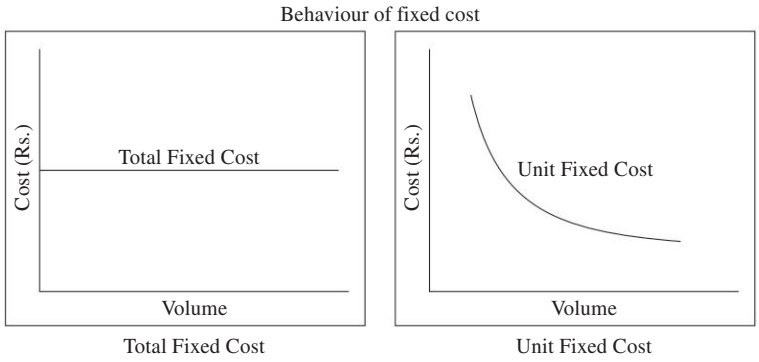


FIG. 15.1

When a cost changes in proportion to the changes in volume, it is called variable cost (i.e.) raw material. If production increases, total cost of raw materials increases in the same proportion of level of production. The undernotes graphical presentation shows the total variable cost and the least variable cost.

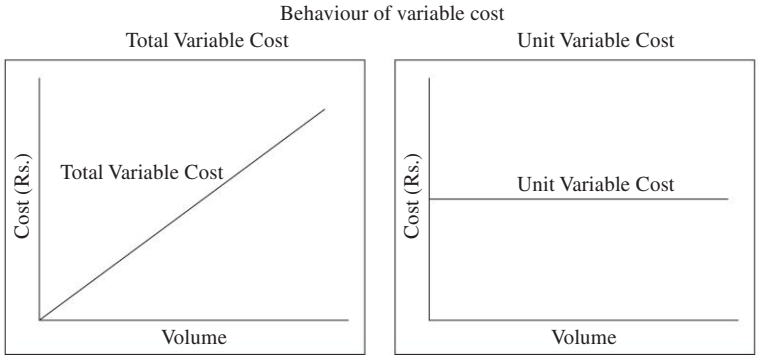


FIG. 15.2

When the selling price per unit is more than its variables cost, the excess is called contribution. Total contribution with the number of units sold.

Contribution per cost = Selling price per unit – Variable Cost

Total contribution = Total Fixed cost + Profit

Profit = Total contribution – Total Fixed cost

Loss = Total contribution – Total contribution

Contribution Ratio

The ratio establishes the relationship between contribution and sales value. It is also called P/V Ratio where 'P' represents profit and 'V' refer to volume of sales.

$$\text{Contribution Ratio} = \frac{\text{contribution per unit}}{\text{Selling price per unit}}$$

Or

$$\text{P/V Ratio} = \frac{\text{change in prefect or contribution}}{\text{Change in sales}}$$

Angle of Incidence

The break-even point is indicated where the total cost line and total sales line intersect each other. The angle that is formed with their intersection is called angle of incidence

Margin of Safety

The excess of actual or budgetary sales over the break-even sales are called 'MOS'. It is the difference between actual sales minus break-even sales.

Margin of Safety = Estimated sales and sales at break-even point

Margin of Safety represents the amount of difference between the actual volume of sales (i.e sales at selected activity) and the Break-Even sales. Larger the Margin of Safety, more sound will be the business.

Margin of Safety may be improved by the following steps:

i. Increase in selling price
ii. Increase in volume of sales.
iii. Change in the sales mix in such a manner that will include more profitable products.
iv. Decrease in Fixed costs
v. Decrease in Variable (Marginal) costs.

Excess of the actual volume of sales over the Break-Even sales is technically called Margin of Safety because the businessman is safe to that extent. It shows that he is above the break-even point. In case of low margin of safety, a serious drop in output or sales will reduce profits considerably. Low Margin of Safety may be a sign of high fixed overheads. In such a position, it is better to increase the output or sales to absorb fixed costs. On the other hand, a high Margin of Safety ensures profits even after a serious drop in the output or sales. That is why reasonable margin of safety is necessary.

Calculation of Margin of Safety

As is clear from the above discussion, Margin of Safety is calculated by deducting Break-Even Sales from actual amount of sales.

Thus, Margin of Safety = Actual Sales – Break Even Sales. As contribution is expressed as a percentage of sales (i.e P/V ratio), Margin of Safety may also be expressed as percentage of actual sales. Accordingly, percentage will be presented as below:

Margin of safety (Sales)/Actual sales × 100

Margin of safety also be calculated with the help of the following formula (i.e with the use of P/V ratio):

Margin of Safety = Profit/(P/V Ratio)

The above formula has been developed from the original formula i.e Actual sales BEP Sales.

This is explained below:

Margin of Safety = Actual sales – BEP sales

Now, P/V Ratio = Contribution/Sales

i.e Sales = Contribution/(P/V ratio) = Fixed cost + Profit/(P/V Ratio)

Where as Break Even Sales = Fixed cost/(P/V Ratio)

Margin of safety = Profit/(P/V Ratio)

Illustration 3:

TABLE 15.3

Sales	50,000
Less: Marginal cost	30,000
Contribution	20,000
Less: Fixed cost	10,000
Profit	10,000

Calculate Margin of safety using the P/V Ratio and Break Even Sale on the basis of the given data:

Margin of sales (using break even sales)

$$\text{Break Even Sales} = \frac{\text{Fixed cost}}{1 - \text{Marginal cost}}$$

$$= \frac{10{,}000}{1 - 30{,}000/50{,}000}$$

= Rs. 25,000

Note: BEP sales may also be calculated as below:

BEP Sales = Fixed Cost × Sales/Contribution

= 50,000 × 10,000/20,000 = R.25,000

BEP sales = Fixed cost/(P/V Ratio) = 10,000/40% = Rs.25,000

P/V Ratio = Contribution/Sales 20,000/50,000 × 100 = 40%

Margin of Safety = Actual sales – BEP sales

= 50,000 – 25,000

= Rs. 25,000

Note: Here, the words Actual sales may represent past sales, current sale or budgeted sales depending on the period for which Margin of Safety is being calculated. Thus, Actual sales would represent sales at selected activity.

Margin of Safety: Using P/V Ratio

Margin of Safety = Profit/(P/V Ratio) = 10,000/40% = Rs.25,000/-

Margin of Safety at selected level of activity, when expressed in percentage, will be 50% as shown below:

Margin of Safety/Actual sales × 100 = 25,000/50,000 × 100 = 50%

Does a simple Break-Even chart only portray the sales at Break-Even Point?

No. Even a simple Break-Even chart portrays the following important information together with the break-even position of the concern:

i. Profits or Losses at different levels of output.
ii. Fixed cost and variable costs and their relationship
iii. The Margin of Safety and Angle of Incidence.

Let us take the same illustration given above under Margin of Safety calculations and also assume that units produced and sold are 5000 in quantity.

In this illustration, fixed costs are Rs.10,000, profit is Rs.10,000. Variable cost Rs.30,000. Break-Even Sales Rs. 25,000 and Margin of Safety Rs.25,000. It should be noted that Break-Even Sales in units would be 25,000/10 or 2,500 units.

Margin of Safety which is 50% of actual sales (sales of selected activity) in quantity would also be 2,500 units.

Let us see how a single and simple Break-Even Chart portrays all these facts:

(Profit area covers 40,000 to 50,000 = Rs.10,000)

Variable costs Area covers 10,000 to 40,000 = Rs.30,000

Fixed costs = 0 to 10,000 = Rs.10,000

Similarly, Break-Even Point sales is 2,500 units, in quantity and Rs.25,000 in value.

Margin of Safety starts from 2,500 units and ends with the actual volume of sales i.e from 2,500 to 5,000 units. In value, see the area from Rs. 25,000 to Rs.50,000. Thus, Margin of Safety is 2,500 units or Rs.25,000.

Angle of Incidence is the angle which is formed by the sales line and the total cost line at the break-even point. A large Angle of Incidence indicates a high rate of profit. On the contrary, a narrow angle shows low rate of profit. Angle of Incidence may also be called the profit path.

Thus, even a simple break-even chart portrays important information.

Additional Notes:

It would be interesting to compare the respective positions of the concerns (i.e Angle of Incidence, Margin of Safety, Profit etc) portrayed by the break charts in Fig 1 and Fig 2.

There are also other forms of a break-even chart. These are

i. Contribution Break-Even chart showing contribution
ii. Break-Even chart showing profit appropriations
iii. Cash Break-Even chart showing the amount of cash required to break-even to pay interest on Debentures, dividends on preference shares, etc.
iv. Control Break-Even Chart showing Budgeted and actual profits.
v. Profit Break-Even Chart showing the profit and loss at different levels of sales. Profit chart for different prices may also be drawn. This chart will indicate the effect on profit of charging different prices.
vi. Analysis Break-Even chart showing the divisions of variable (marginal) costs and also the profit appropriations.

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vii. Break-Even Charts for each product may also be drawn. These charts may be of two types a) Break-Even chart showing the profitability of the product (i.e Simple Break-Even chart). b) Break-Even chart showing the contributability of the product.

viii. Break-Even Chart showing optimum output.

Aforementioned are the alternative forms of Break-Even Chart which provide useful information. Contribution Break-Even Chart and Profit chart (or profit graph) are also practically illustrated below. The same illustration has been adopted for the purpose.

Contribution Chart

This chart is constructed as below:

1. Select a scale for output and sales on X axis and costs or revenue on Y axis.
2. Plot the variable costs from zero operations and draw the variable cost line accordingly.
3. Draw the fixed costs line above the variable cost line. It should be noted that unlike a simple Break-Even Chart, a fixed cost line slopes upwards from left to right (and not a horizontal line).
4. Draw the sales line commencing from zero and operations.

Special Features:

1. Unlike break-even chart, fixed costs are represented by a line sloping upward from left to right.
2. Unlike break-even chart, two lines commence from zero operations i.e sales line and variable cost line (in a simple Break-Even chart only sales line commences from zero operations.

Profit Chart (or Profit Graph)

Construction of profit chart involves the following simple procedures:

i. To select a scale for sales on X axis and for profit and fixed costs (or loss) on Y axis.

ii. To draw the profit line by plotting the profits at corresponding sales.

This has been illustrated below taking illustration 18.

Information portrayed by Profit Chart:

Profit Chart is an improvement over a simple Break even chart.

1. Vertical line which is above the horizontal line represents profits whereas the vertical line below the horizontal line represents loss.
2. Profit line indicates that profit at break- even point is zero and at zero operations, the loss is equal to the total amount of fixed costs (i.e Rs.10,000).
3. Profit at the sale of 5,000 units is Rs.10,000 whereas profit at the sale of 6,000 units and 7,000 units is Rs.14,000 and Rs.18,000 respectively.

Profits at these levels may be checked as below:

1. Profit on sale of 5,000 units is Rs.10,000 as per illustration.
2. Profit on sale of 6,000 units and 7,000 units.

TABLE 15.4

	Per units	*6,000 units*	*7,000 units*
Sales	10	60,000	70,000
Less: Marginal	6	36,000	42,000
		24,000	28,000
Less: Fixed cost		10,000	10,000
Profit		14,000	18,000

Fixed costs remain the same regardless of the volume produced.

Marginal costs vary accordingly.

Break-even point, margin of Safety, etc are represented by the chart as usual.

Limitations of a Simple Break-Even Chart

Before we mention the limitations of a simple break-even chart, let us consider the following:

1. In a simple break-even chart, fixed cost line is drafted parallel to the X axis. This shows that the fixed costs remain fixed regardless of the volume produced.
2. Variable cost line which is drawn above the fixed cost line, rises according to the level of output. This shows that the variable (or marginal) costs vary with the output. This line is shown as a straight line.
3. Sales line commences from zero and then rises upwards from left to right directly varying with the output. This indicates that sales revenue is directly related to the output. This line is also shown as a straight line.

With this background, let us consider the limitations of a simple break-even chart:

Variable cost line (i.e total cost line because it is drawn above the fixed cost line or in other words, it represents the variable costs added to fixed costs), which is shown as a straight line may, in actual practice, not be straight. This line will be a straight line only if the costs vary in direct proportion or in other words, only when there is a linear relationship between the costs and output/sales. But, in actual practice, such linear relationship does not exist. Break-Even chart assumes the linear relationship. With this assumption, the maximum profit at the maximum level of production is implied. Consequently, this assumption may be said to be incorrect.

Sales line representing sales revenue should also not be shown as a straight line. Sales line will be a straight line only if the demand remains the same regardless of the volume produced. As is obvious, in actual practice, it will not be so. Pricing of the product, volume produced, etc. are the factors affecting the demand. Accordingly, the sales line if shown as a straight line, will misrepresent the true facts.

If the enterprise manufactures a number of products, the horizontal axis of the break-even chart cannot present the output and sales in units. Moreover, a single break-even chart will not portray the results of selling different products (having different contributions).

Break-Even chart does not portray any additional information. The information portrayed by the break-even chart may be shown through schedules.

Conclusion

Despite the above limitations, BEP charts are frequently used. This is because the limitations imposed on account of straight line will have a little value in case the business operates with a narrow range of output. Moreover, use of a number of break-even charts for different products etc., may avoid the limitation imposed on account of a single break-even chart. Further, it should be noted that the information portrayed by the BEP charts will be more effective and also clear as compared with that shown by various accounting schedules. Even a person with a non-accounting background may also be able to know the situation at a glance.

Graphical presentation of Break-even analysis is particularly favoured by new enterprises, by enterprises experiencing trade difficulties, and also by highly profitable enterprise considering expansion scheme which may entail heavy increase in fixed costs.

Illustration 4 Calculate sales required to earn a profit of Rs.25,000 using the following data:

Year 2005 : Sales Rs.1,00,000 Profit : Rs.10,000
Year 2006 : Sales Rs.1,20,000 Profit : Rs.18,000

Ans: Required sales = Required contribution/(P/V Ratio) × 100
P/V Ratio = Change in Profit/Change in sales × 100
8,000/20,000 × 100 = 40%

Formula for Required sales involves the calculation of required contribution, which in turn will require amounts of fixed costs and required profit:

Hence, Required contribution = Fixed costs + Required profit.

Accordingly, first fixed cost (Which remains fixed) should be determined. They would be determined as below:

Contribution = Fixed costs + Profit
Fixed costs = Contribution – Profit

Contribution for the year 2005 will be 40% of Rs.1,00,000 (i.e sales of that year) = Rs.40,000
Profit for the year 2005 is Rs.10,000.

Hence fixed costs = Contribution – Profit
= Rs.40,000 – Rs.10,000
= Rs.30,000.

Now, required contribution would be calculated as follows:

Required contribution = Fixed cost + Required profit
= Rs.30,000 + Rs.25,000
= Rs.55,000

Now apply the formula for required sales.

Accordingly, required sales = Required contribution/(P/V Ratio) × 100
= Rs.1,37,500

Thus, sales amounting to Rs.1,37,500 will be required to earn a profit of Rs.25,000.

Check: Sales:	1,37,500
Less: Variable costs	82,500
Contribution	55,000
Less: Fixed cost	30,000
Profit Rs.	25,000

Note: Variable cost are:
60% of sales:
= 60 × 1,37,500/100
= Rs.82,500
(See note below)

Note:

1. It should be noted that P/V ratio is useful in finding out variable costs. For this purpose, P/V Ratio should be deducted from 100%. Resulting percentage would represent percentage of variable costs to sales. In the above case, P/V ratio is 40%. Hence, variable costs would be 60% (i.e 100% – 40%) of sale.
2. In the above answer, cost structure and selling price have been assumed to be constant in the two years.

Illustration 5: Calculate The P/V Ratio
Break-Even Sales
Profit when sales are Rs.1,10,000
Sales required to earn a profit of Rs.25,000 and
Margin of safety in the year 2006.
Year 2005 : Sales Rs.1,30,000 profit Rs.10,000
Year 2006 : Sales Rs.1,50,000 profit Rs.15,000

Solution:

P/V Ratio	Sales	Profit
2005	1,30,000	10,000
2006	1,50,000	15,000
Increase Rs.	20,000	5,000

P/V Ratio = Change in profit/Change in sales × 100
5,000/20,000 × 100 = 25%

Break-Even Sales:

Break-Even Sales = Fixed cost/contribution × sales
Contribution for 2006 = 25% of sales = 25% of Rs.1,30,000 = Rs.32,500.
Fixed costs = Contribution – Profit
32,500 – 10,000
Rs. 22,500
BEP = Rs.22,500/Rs.32,500 × 1,30,000 = Rs.90,000.
Profit when sales = Rs.1,10,000
Contribution = Sales × P/V Ratio = 1,10,000 × 25% = Rs.27,500
Profit = contribution – fixed costs
= Rs.5,000

Sales required to earn a profit of Rs.25,000
Required sales = Required contribution/(P/V ratio) × 100
= Rs.22,500 + Rs.25,000
= Rs.47,500
Accordingly Required sales = Rs.47,500/25% = Rs.1,90,000.

Margin of Safety for 2006:
Margin of Safety = Actual Sales – BEP sales
= Rs.1,50,000 – Rs.90,000
= 60,000

(Note: Cost structure and selling prices have been assumed to be constant).

Illustration 6: Assuming that the cost structure and selling prices remain the same in period I and II, find out:

a. Profit/Volume ratio
b. Break Even Point for sales
c. Profit when sales are Rs.1,00,000
d. Sales required to earn a profit of Rs.20,000
e. Safety margin in period II.

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Period	Sales	Profit
I	1,20,000	9,000
II	1,40,000	13,000

Solution a. P/V Ratio:

P/V Ratio = Changes in profits/Change in sales × 100

Rs.4,000/Rs,20,000 × 100 = 20%

Break Even Point for sales:

Break Even Point = Fixed expense/P/V ratio

Fixed expenses = Sales – Profit – Variable expenses

1,20,000 – 9,000 – 80% of 1,20,000

= Rs. 15,000

(Again, it should be noted that variable expenses from 80% of sales as P/V Ratio is 20%).

Accordingly, Break-Even Point = Rs.15,000/20% = Rs.75,000

Alternatively BEP for sales may also be calculated as below:

= F × S/S – V = Rs.15,000 × Rs.1,20,00/Rs.1,20,000 – Rs.96,000

= Rs. 75,000

Profit when sales are Rs. 1,00,000:

Profit = Contribution – Fixed cost

Contribution = Sales × P/V ratio

= Rs. 1,00,000 × 20% = Rs.20,000

Profit = Rs. 20,000 – Rs.15,000

= Rs. 5,000

Sales required to earn a profit of Rs. 20,000.

Required sales = Required contribution/(P/V Ratio) × 100

Required contribution = Fixed costs + Required Profit

Rs. 15,000 + 20,000

= Rs. 35,000

Required sales = Rs. 35,000/20 × 100 = Rs. 1,75,000.

Margin of Safety in period II.

Margin of safety = Actual output – output for BEP

= Rs. 1,40,000 – Rs.75,000

= Rs. 65,000.

Illustration 7: Calculate the amount of profit before and after the reduction of selling price on the basis of the following information.

Before reduction in selling price:

Margin of safety	Rs.1,00,000
P/V Ratio	40%

After reduction in selling price.

Margin of safety	Rs.75,000
P/V Ratio	25%
Fixed costs amounted to	Rs.40,000

Also prepare a cost sheet before and after reduction of selling price.

Solution Profit Before reduction in selling price

Margin of safety = Profit/(P/V Ratio)

Profit = Margin of safety × P/V ratio

Rs.1,00,000 × 40%

= Rs.40,000

Profit after reduction in selling price:

Profit = Margin of safety × (P/V ratio)

= Rs,75,000 × 25%

= Rs.18,750.

Cost sheet before and After Reduction in Selling Price

TABLE 15.5

	Before reduction in price	*After reduction in price*
Sales value	2,00,000	2,35,000
Less: Variable costs	1,20,000	1,76,250
Contribution	80,000	58,750
Less: fixed costs	40,000	40,000
Profit	40,000	18,750

Notes:

1. Fixed costs + Profit = Contribution
2. Contribution/(P/V ratio) = Sales
3. Sales – Contribution = Variable costs
    1. Accordingly, contribution before reduction of price.
    = Rs.40,000 + Rs.40,000 = Rs.80,000
    2. Sales value before reduction of price
    = Rs.80,000/40% = Rs.2,00,000
    3. Variable costs before reduction of price
    = Rs.2,00,000 – Rs.80,000 = Rs.1,20,000

Figures after reduction in selling price may also be worked out in the same manner.

Alternatively, instead of the above working, the following working may also be adopted to arrive at the figures for preparation of cost sheet:

1. Sales: (Before price Reduction)

Sales = Margin of safety + BEP sale

Now BEP sales = Fixed Expenses + P/V ratio

= Rs.40,000/40%

= Rs.1,00,000

Sales Rs.1,00,000 + Rs.1,00,000 = Rs.2,00,000.

2. Variable costs:

P/V ratio is 40% hence, variable costs will be 60% of sales

Hence, variable costs = 60% of Rs.2,00,000

= Rs. 1,20,000

Similar procedure should be adopted to obtain the required figure after reduction of selling price.

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Illustration 8: The Everest Snow Company manufactures and sells direct to consumers 10,000 Jars of Everest Snow per month at Rs.1.25 per Jar. The company's normal production capacity is 20,000 Jars of snow per month. an analysis of cost for 10,000 Jars shows:

TABLE 15.6

Direct material	1,000
Direct labour	2,475
Power	140
Miscellaneous supplies	430
Jars	600
Fixed expenses of manufacturing	7,955
Selling and administration	
Rs.	12,600

The company has received an offer for the export under a different brand name of 1,20,000 jars of snow at 10,000 jars per month at 75 paise a jar.

Write a short report on advisability or otherwise of accepting the offer.

Solution Statement showing position with export order

TABLE 15.7

	Present Position (Capacity 50%)		*For export offer (Capacity 50%)*		*Total (Capacity 100%)*
Sales (Units)	10,000		10,000		20,000
Sales price (Rs.)	1.25		0.75		-
	Rs.		Rs.		Rs.
Sales value	12,500		7,500		20,000
Less: Marginal cost					
Direct material	1,000		1,000		
Direct labour	2,475		2,475		
Power	140		140		
Misc.supplies	430		430		
Jars	600	4,645	600	4,645	9,290
		7,855	2,855	10,710	
Less: Fixed costs	7,955		-	7,955	
Profit (+) Loss (–)	(–)100		(+)2,855		(+)2,755

The existing position shows a loss of Rs. 100. This can be improved by accepting the proposed offer, as the said offer increases profit by Rs. 2,855. However, before taking a final decision, due consideration must be given to the following points:

1. Whether there will be increase in costs on account of special packing, freight etc.
2. Whether the government will grant subsidy and provide for importance of raw materials, if any.
3. Whether reduction in export price will adversly affect the demand in home market in the long run.

4. Whether there will be an increase in the costs if the export orders are not received in future.
5. Whether the surplus capacity can be utilised for production of more profitable products.

Illustration 9: Consider on the basis of the following data as to the reasonableness of accepting a foreign order:

1. Variable costs per unit = Rs.24
2. Selling price per unit = Rs.40
3. Break-Even volume: 60% production capacity
4. Total production capacity: 50,000 units.
5. Margin of Safety: 1,00,000 units (before export order)
6. Export order: 10,000 units at Rs.30 per unit

Note: Units to be exported require some modifications resulting in an increase of Re.1 in variable costs per unit.

Statement showing position with export order

TABLE 15.8

	Present Position (Capacity 80%)	*For export offer (Capacity 20%)*	*Total (Capacity 100%)*
Sales (Units)	40,000	10,000	50,000
Sales price (Rs.)	40.00	30.00	-
	Rs.	Rs.	Rs.
Sales value	16,00,000	3,00,000	19,00,000
Less: Marginal cost	9,60,000	2,50,000	12,10,000
	6,40,000	50,000	6,90,000
Less: Fixed costs	4,80,000	-	4,80,000
Profit Rs.	1,60,000	50,000	2,10,000

Export order should be accepted so far as cost considerations are concerned. Acceptance of the said order will result in an increase of Rs.50,000 in the contribution and the net profit.

Workings:

i. Production and sales at selected level of Activity : Margin of Safety is 10,000 units.
Break-even point is 60% production capacity
(i.e 60% of 50,000 units) = 30,000 units
Sales at Selected activity = Break-Even Point Sales + Margin of Safety
= 30,000 units + 10,000 units
= 40,000 units.

ii. Fixed costs:
Break Even Point (in units) = Fixed costs/Contribution per unit
= 30,000 units × Rs.16 per unit
= Rs. 4,80,000
Fixed cost amount to Rs.4,80,000.

iii. Total variable costs at current production and for Export order:
At current production: 40,000 units × Rs.24 = Rs.9,60,000
For Export order: 10,000 units × Rs.(24 + 1) = Rs.2,50,000

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Illustration 10: Ravi Products Limited produces T.V. sets and sells them at Rs.2,500 each. Variable cost per unit is Rs. 1,250. Fixed costs amount to Rs. 125 lakhs.

Company operates at 75% production capacity and produces 12,000. TV sets accordingly. It considers the following two proposals.

A. 10% reduction in price to yield an increase in sales volume from 12,000 units to 14,000 units.

B. 10% increase in price with decrease in volume of sales from 12,000 units to 11,000 units.

You are required to prepare a statement comparing goods revenue contribution and the P/V ratio of the two alternatives with present results. Which proposal is more profitable.

Solution Comparative Profit/Loss Statement

TABLE 15.9

	Current Position	*Proposal A*	*Proposal B*
Sales unit	12,000	14,000	11,000
Sales Price	2,500	2,250	2,750
Sales Revenue	3,00,00,000	3,15,00,000	3,02,50,000
Variable cost	1,50,00,000	1,75,00,000	1,37,50,000
Contribution	1,50,00,000	1,40,00,000	1,65,00,000
Fixed cost	1,25,00,000	1,25,00,000	1,25,00,000
Net profit	25,00,000	15,00,000	40,00,000
P/V Ratio	50%	44.44%	54.55%

Proposal B is more profitable as the contribution and P/V ratio is the maximum. However, before taking a final decision other cost and non-cost considerations like labour, possibility of labour unrest on account of retrenchment of labour staff, utilisation of production capacity should be given due consideration.

Illustration 11: From the following information, draw up a chart to show break-even-point

Fixed costs (Total) - Rs. 40,000
Variable costs (per unit) - Rs. 2
Selling price (per unit) - Rs.3

Solution Contribution or C = S – V or Selling Price per unit-Variable cost per unit:
= Rs.3 – 2 = Re.1.

Break-Even-point or

$$BEP = \frac{\text{Fixed Costs}}{\text{Contribution}} \text{ or } \frac{F}{C}$$

= Rs.40,000/1
= 40,000 units

40,000 units × selling price per unit i.e., Rs.3 = Rs. 1,20,000. When output is 40,000 units, Total cost and Total sales will be Rs. 1,20,000.

In the graph given on next page, the horizontal scale OX shows volume of production expressed in units. The vertical scale OY shows sales and cost in terms of thousand Rupees. In the chart, three lines are drawn. The first line shows fixed cost which is parallel to the base scale and has no relation with the output.

The sales line (total sales) is drawn from the point where there are no sales (intersection of horizontal and vertical scales).

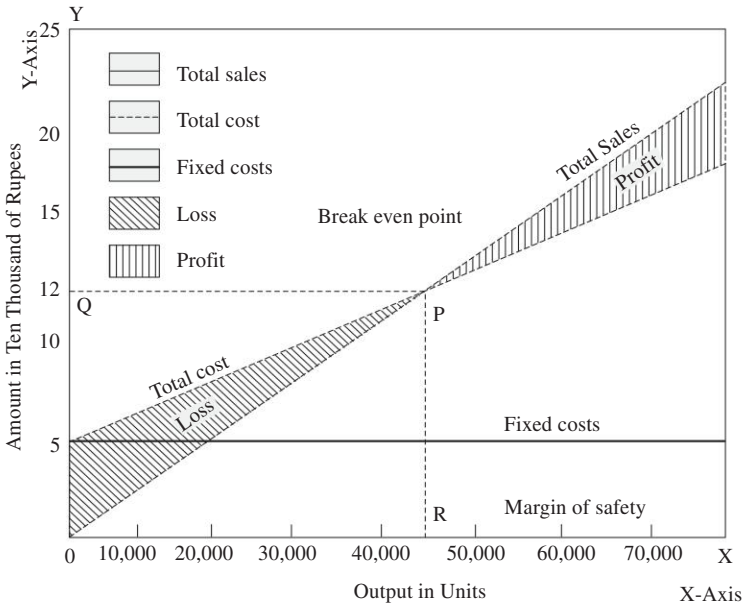


FIG. 15.3

The total cost line (variable costs + fixed costs) is drawn from the point of taxed costs. The total costs and total sales lines interest meet each other at point 'P' which is a B.E.P. From this point, perpendicular is drawn which touches output at R (40,000 units) and Revenue at Q (Rs. 1,20,000. If the output is below 40,000 units, total cost and total sales will be at a loss. If output exceeds 40,000 units there will be a profit. Output in excess of 40,000 units i.g, RX shows Margin of Safety.

Illustration 12:

(a) A company budgets a production of 5,00,000 units at a variable cost of Rs.20 each. The fixed costs are Rs. 20,00,000. The selling price is fixed to yield 25% profit on cost. You are required to calculate (i) BEP, (ii) Profit Volume Ratio.

(b) If the selling price is reduced by 20%, find

(i) The effect of price reduction on the BEP and Profit/Volume Ratio.

(ii) The number of units requited to be sold at the reduced selling price to obtain an increase of 20% over the budgeted profit.

Solution

(i) $\text{BEP} = \dfrac{\text{Fixed Costs}}{\text{Contribution}}$

Fixed costs = Rs.20,00,000

Fixed cost per unit = Rs.20,00,000/5,00,000 = Rs. 4 per unit

Total cost = FC + VC = 30; 4 + 20. Per unit

Selling Price = Cost + 25% = Rs. 24 + 6 = Rs. 30 per unit

Contribution = S – V = 30 – 20 = Rs. 10 per unit

BEP = Rs.20,00,000/10 = 2,00,000 units

(ii) P/V Ratio = $\frac{\text{Contribution}}{\text{SellingPrice}} = \frac{10}{30}$ = 1/3 33 1/3%

(a) If the Selling Price is reduced by 20% i.e., Rs.30 – 6 = Rs.24

(i) Contribution or C = S – V = 24 – 20 = Rs.4

$$\text{BEP} = \frac{20,00,000}{4} = 5,00,000 \text{ units.}$$

P/V Ratio C/S = 4/24 = 1/6 or 16.7%

(b) If the Selling Price is reduced by 20% i.e., Rs.30 – 6 = Rs.24

(i) Contribution = C = S – V = 24 – 20 = Rs.4

$$\text{BEP} = \frac{20,00,000}{4} = 5,00,000 \text{ units.}$$

P/V Ratio C/S = 4/24 = 1/6 or 16.7%.

(ii) Budgeted Profit = 5,00,000 units × Profit per unit Rs. 30 – 24 = 6

= Rs.30,00,000

Which is to be increased by 20% i.e., Rs.36,00,000

$$\text{Output required for Desired Profit per unit} = \frac{\text{Fixed costs} + \text{Desired Profit}}{\text{Contribution}}$$

$$= \frac{56,00,000}{4}$$

= 14,00,000 Units

Illustration 13: From the following information, find out: (a) Contribution, (b)Break-Even-Point, (c) Margin of Safety,and (d) Profit:

	Rs.
Total Fixed Costs	9,000
Total Variable costs	15,000
Total sales	30,000
Units sold	10,000 (Units)

How many units should be sold to earn a profit of Rs.12,000?

Solution

(a) Contribution = Selling Price per unit – Variable Cost Per unit i.e., C = S

$$\text{Selling Price per unit} = \frac{30,000 \text{ (Total sales)}}{10,000 \text{ (Units sold)}}$$

= Rs.3

$$\text{Variable Cost per unit} = \frac{15,000 \text{ (Total Variable cost)}}{10,000 \text{ (Units sold)}} = \text{Re.1.50}$$

C = Rs.3 – 1.50 = Re.1.50.

(b) $\text{Break – Even – Point} = \frac{\text{Fixed Expenses}}{\text{Contribution}}$

BEP = F/C = 9000/1.50 = 6,000 Units.

(c) Margin of Safety = Units Sold – Break-Even-Point (Quanitity)

= 10,000 – 6,000 = 4,000 units.

(d) Profit = Units sold × Contribution – Fixed Expenses
= 10,000 × 1.5 – 9,000
= 15,000 – 9,000 = 6,000

Volume of Sales to earn a profit of Rs.12,000

$$= \frac{\text{Fixed Expenses + Desired Profit}}{\text{Contribution}} = \frac{9{,}000 + 12{,}000}{1.5} = \frac{21{,}000}{1.5}$$

= 14,000 units.

In the above graphs, lines of Total Cost and Total Sales interest meet each other at Point A, which is a Break-Even-Point. A perpendicular from this point touches X-axis at point P, and Y-axis at point Q. AP shows the Break-Even-Point at which the level of output is OP (units 6,000) and Cost and Sales are equal i.e. OQ Rs.18,000. When the level of output exceeds Break-Even-Point, it shows Margin of Safety. OT shows present level of output; at this level the sales are BT, margin safety PT, Cost ST (Variable Costs SK, Fixed Costs KT and Profit BS). For a desired level of Profit i.e., Rs.12,000 i.e. CS the level of output should be increased to OX.

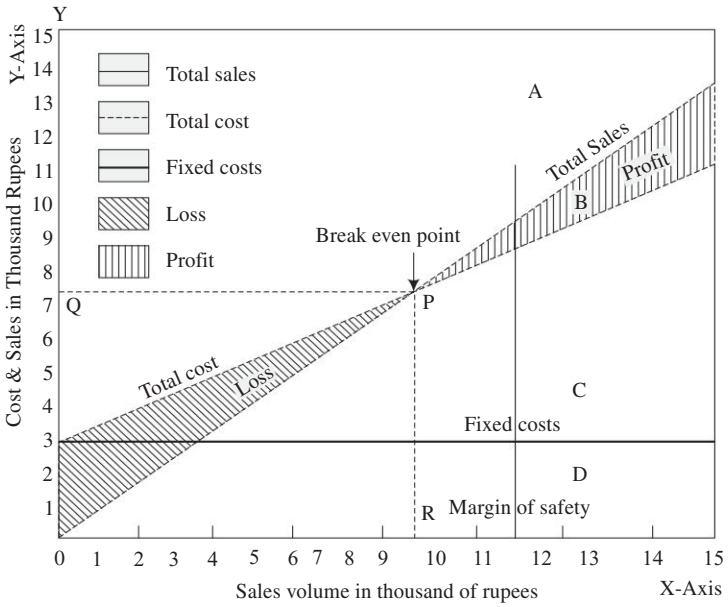


FIG. 15.4 Calculation of BEP from Sales Volume

Some firms sell a large number of products and therefore, it may be necessary to ascertain what sales volume is necessary to meet fixed expenses. In such a case, first of all we will calculate Profit Volume Ratio or PVR:

$$\text{PVR} = \frac{\text{Variable Costs}}{\text{Sales}}$$

Fixed Costs divided by PVR will give the Break-Even-Point of BEP.

$$\text{BEP} = \frac{\text{Fixed Costs}}{\text{PVR}}$$

Alternatively, the Break-Even-Point can be calculated by applying the following formula:

$$\text{BEP} = \frac{\text{Fixed Cost} \times \text{Sales}}{\text{Sales} - \text{Variable Costs}}$$

Percentage of variable overheads to sales will be worked out for preparing Break-Even-Chart. The following problem will amply clarify the above formula.

Illustration 14: From the following, calculate the Break-Even-Point and show it on a graph paper.

	Rs.
Sales	12,000
Fixed Costs	3,000
Variable Costs	7,200

Solution First of all, we will calculate Profit Volume Ratio or PVR

$$\text{PVR} = 1\ \frac{\text{Variable Costs}}{\text{Sales}} = 1 - \frac{7,200}{12,000} = 1\frac{3}{5} = 2/5.$$

Fixed Costs divided by PVR will give the Break-Even-Point of BEP

$$\text{BEP} = \frac{\text{Fixed Costs}}{\text{PVR}} = \frac{3,000}{2/5}$$

$$= \frac{3,000 \times 5}{2/5} = \text{Rs.}7,500.$$

$$\text{BEP} = \frac{\text{Fixed Costs} \times \text{Sales}}{\text{Sales} - \text{Variable Costs}}$$

$$= \frac{3,000 \times 12,000}{12,000 - 7,200} = \frac{3,60,00,000}{4,800}$$

$$= \text{Rs. } 7,500$$

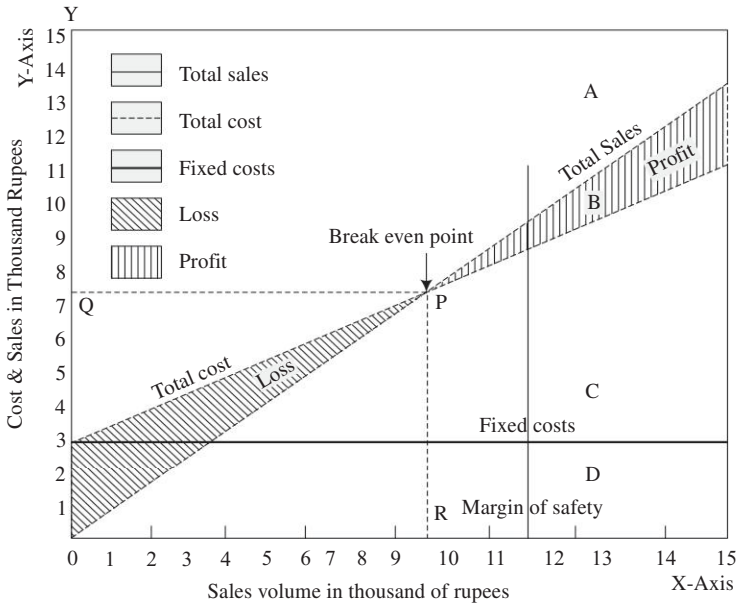


FIG. 15.5

In graph 3, X-axis measures sales volume in amount and the Y-axis measures total expenses as well as sales volume. The lines of Total Cost and Total Sales intersect at point P, which is a Break-Even-Point. The perpendicular drawn from this point touches X-axis at R and Y-axis at Q points. At OR sales Volume the Cost is OQ which both are Rs. 7,500 i.e., no profit and no loss. When the sales exceed this point, there will be profit. AD shows the present level of sales, at which the cost is BD (BC Variable and CD Fixed) and the profit is AB. RD shows the present Margin of Safety.

Illustration 15: From the following particulars relating to a company, calculate the Break-Even-Point and present it on a graph paper.

	Rs.
Sales	20,00,000
Variable Overheads	12,00,000
Net Profit	2,00,000

Solution

$$\text{Break-Even-Point} = \frac{\text{Fixed Costs}}{\text{PVR}}$$

$$\text{PVR or Profit Volume Ratio} = 1 - \frac{\text{Variable Costs}}{\text{Sales}} = 1 - \frac{12,00,000}{20,00,000}$$

$$= 1 - 12/20$$

$$= 8/20.$$

$$\text{BEP or Break-Even-Point P} = \text{Fixed Costs/PVR}$$

$$= \frac{\text{Rs.}6,00,000 \times 20}{8}$$

$$= 15,00,000 \text{ (OR)}$$

$$\text{BEP} = \frac{\text{Fixed Costs} \times \text{Sales}}{\text{Sales} - \text{Variable Costs}}$$

$$= \frac{6,00,000 \times 20,00,000}{20,00,000 - 12,00,000}$$

$$= \frac{12,00,00,00,00,000}{8,00,000}$$

$$= \text{Rs. } 15,00,000.$$

In graph 4, the lines of Total Cost and Total Sales interest at point P from where a perpendicular touches X-axis at R and Y-axis at Q points, which are both Rs.15,00,000, showing no profit no loss. AD or OD shows the present level of sales at which the cost is BD (BC Variable Cost and CD Fixed Costs) and A,B profit. RD is the present Margin of Safety.

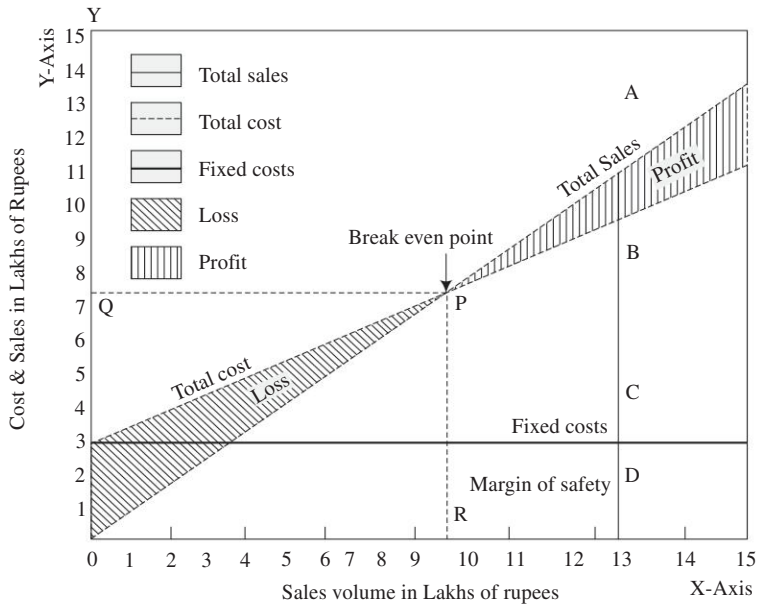


FIG. 15.6

Illustration 16: The following figures relate to two products A and B dealt by a firm:

	A	B
	Rs.	Rs.
Annual Sales	25,00,000	25,00,000
Annual Profits	3,50,000	3,50,000
Fixed Costs	9,00,000	2,50,000
Variable Costs	12,50,000	19,00,000

Prepare a Break- Even-Chart for each product. What deductions can you make from these charts with reference to various market condition for each product.

Solution

$$\text{Break-Even-Point for Product A} = \frac{\text{Fixed Costs} \times \text{Sales}}{\text{Sales} - \text{Variable Costs}}$$

$$= \frac{9,00,000 \times 25,00,000}{25,00,000 - 12,50,000}$$

$$= \frac{9,00,000 \times 25,00,000}{12,50,000}$$

$$= 18,00,000.$$

$$\text{Break-Even-Point for Product} = \frac{\text{Fixed Costs} \times \text{Sales}}{\text{Sales} - \text{Variable Costs}}$$

$$= \frac{12,50,000 \times 25,00,000}{25,00,000 - 19,00,000}$$

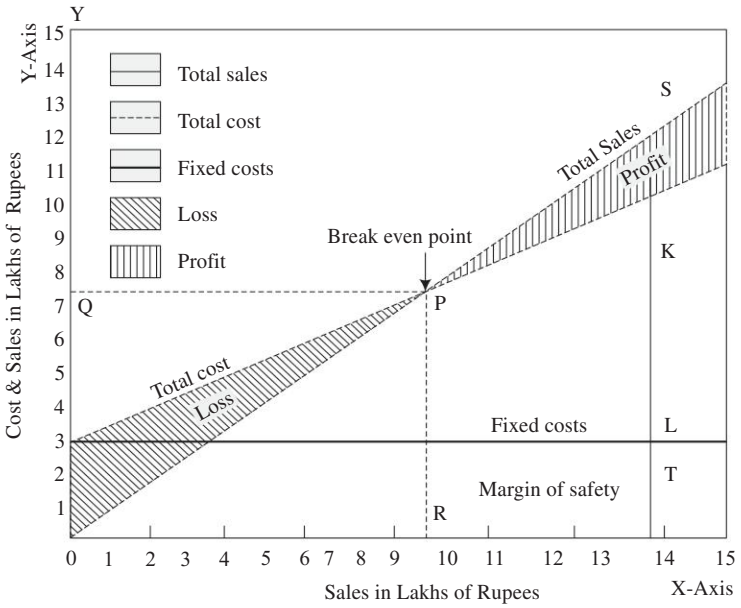


FIG. 15.7

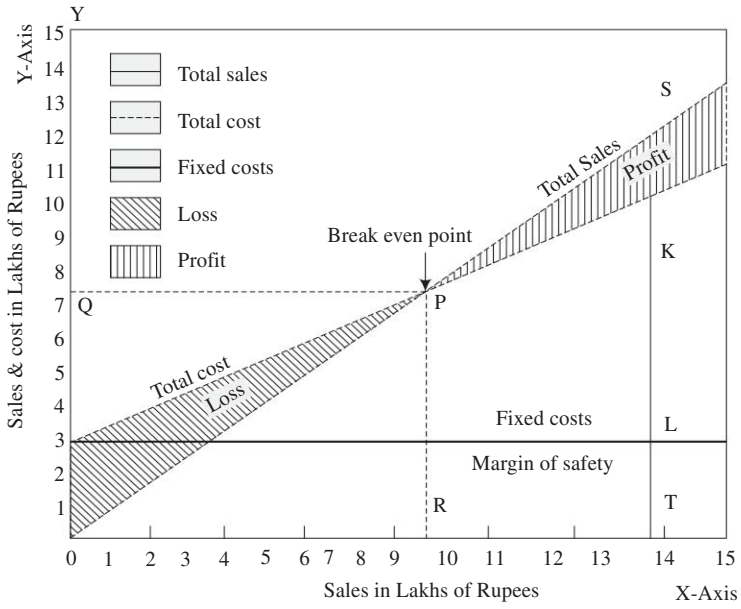


FIG. 15.8

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$$= \frac{12,50,000 \times 25,00,000}{6,00,000}$$

$$= 10,41,667.$$

In the above graphs, X-axis represents Sales Volume and Y-axis Cost and Sales both Lines of Total Cost and Total Sales Intersect at point P and a perpendicular from this points meets X-axis at R point and Y-axis at Q point. At OR Sales Volume. Sales and Costs are equal and there is no profit no loss. ST or OT shows present level of sales volume which is more than the Break-Even-Point. At this level, SK is the profit, KT is total cost (KL shown Variable Costs and LT Fixed costs) and RT shows 'Margin of Safety'. The greater is the volume of sales from the Break-Even-Point, the more is the Margin of Safety.

The Break-Even-Point in case of Product B comes at a much lower point than in case of Product A. It is obvious from the fact that fixed costs in case of B Product are much lower than in case of A Product. B Product is at an advantageous position in case of difficult sale period. But Product A will be in a better position in case boom conditions prevail. Once the fixed costs have been met, profit of Product A will come in a large measure than in case of Product B.

Illustration 17:

From the following, draw up a Break-Even-Point:

	Rs
Variable cost per unit	10
Fixed costs	1,00,000
Selling price per unit	20

What would be the selling price if the break-even-point is brought down to 8,000 units?

Solution

$$\text{Bread-Even-point or B.E.P.} = \frac{\text{Fixed Costs}}{\text{Contribution}} = \text{or F/C}$$

F or Fixed Costs = Rs.1,00,000

C or Contribution = Selling Price per unit-Variable expenses per unit

= Rs. 20 – 10 = Rs.10

B.E.P. = F/C + Rs. 1,00,000/10 = 10,000 units,

Contribution, if Break-Even-Point is brought down to 8,000 units

$$\text{C or Contribution} = \frac{\text{Fixed Costs}}{\text{New Break-Even-Point}} = \frac{\text{Rs.1,00,000}}{\text{Units 8,000}}$$

= Rs. 12.5 per unit

Selling Price = Variable expenses per unit + Contribution

or V + C = Rs. 10 + 12.5 = 22.5

Illustration 18: A company is considering the purchase of a new venture. It is estimated that maximum output will be 1,000 units which could be sold at Rs.80 each. The cost of Raw Materials, Direct labour and Variable Overheads is estimating at Rs.50 per unit and the fixed overheads are Rs.15,000 p.a. It is desired to ascertain graphically the Break-Even-Point and the net profit, if 90% of maximum output is achieved.

Solution

B.E.P. or Break-Even-Point = FC/C (Fixed Costs/Contribution)

C or Contribution = S-V (Selling price per unit – Variable Expenses per unit).

= Rs. 80 – 50 = Rs. 30.

B.E.P = FC/C or 15,000/30 = 500 Units

At B.E.P. Total Costs and Total Sales will be Rs.40,000 i.e. 500 units × selling price per unit Rs.80.

In the above graph, lines of total costs and total sales interest at point P, from here a perpendicular is drawn, which touches X-axis at point Q and Y-axis at point R. At Q output level cost and sales will be equal and there will no profit no loss. OD shows the resent level of output, which shows AD sales BD cost (BC Variable and CD Fixed) and AB profit. QD is the Margin of Safety.

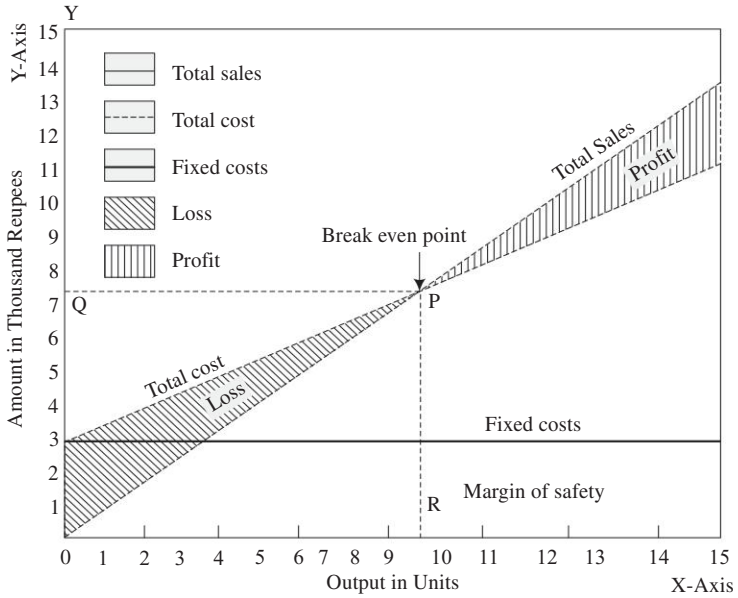


FIG. 15.9

Illustration 19: From the following data construct a break-even-chart:

	Rs.
Total costs	= 60,000
Fixed costs	= 30,000
Sales	= 1,00,000

Solution

$$\text{B.E.P} = \frac{\text{Fixed Costs} \times \text{Sales}}{\text{Sales} - \text{Variable Costs}}$$

$$= \frac{\text{Rs. } 30{,}000 \times 1{,}00{,}000}{1{,}00{,}000 - 30{,}000}$$

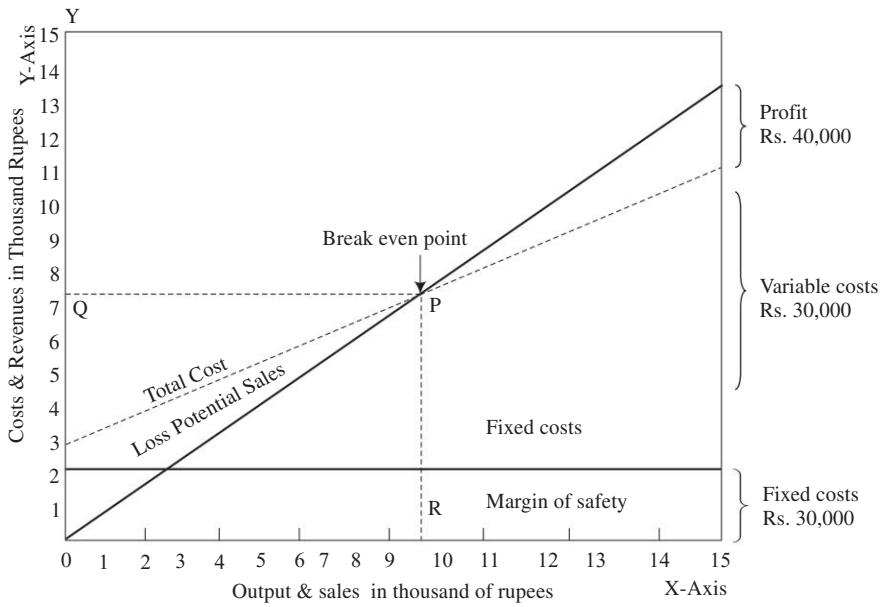


FIG. 15.10

$$= \frac{\text{Rs. } 30,000 \times 1,00,000}{70,000}$$

$$= \text{Rs. } 42,857.$$

Illustration 20: The fixed costs of X company are Rs. 25,000 p.a. Prime costs ae Rs. 5 per unit. Variable overheads are Rs. 1 per unit. Selling price is Rs.10 per unit Present sales are 10,000 units a year.

Calculate the break-even-Point.

Solution

$$\text{Sales at Break-Even-Point} = \frac{\text{Fixed Costs} \times \text{Sales}}{\text{Sales} - \text{Variable cost}}$$

$$\text{B.E.P} = F \times S/S - V$$

$$= \frac{\text{Rs.}25,000 \times 1,00,000}{1,00,000 - 60,000} = \frac{2,50,00,00,000}{40,000}$$

$$= \text{Rs. } 62,500.$$

Thus, when sales would be Rs.62,500, the company would neither earn a profit nor incur a loss.

Verification:

The above conclusion can be checked as this:	Rs.	Rs.
Sales: 6,250 units @ Rs. 10 each		62,500
Less Prime Cost: 6.250 units @ Rs. 5 per unit	31,250	
Variable Overheads: 6,250 units @ Re. 1 per unit	6,250	
Fixed Overheads	25,000	62,500
Profit or Loss		Nil

Illustration 21: A business expects to operate with fixed costs of Rs.20,000 and variable costs of 60% of sales. You are required to ascertain : (a) the present break-even-point of the business and (b) the new break-even-point when (i) the fixed costs are increased by Rs. 5,000 (ii) the variable costs are increased by 15% sales, (iii) sales price is decreased by 20% (iv) Fixed costs are decreased by Rs.5,000 (v) variable costs are decreased by 10% of sales (vi) sale price is increased by 20%.

Solution

a. Present break-even-point = Rs.20,000/40% = Rs.50,000.
b. The new break-even-points, in case:
   i. Rs.25,000/40% = Rs.62,500.
   ii. Rs.20,000/25% = Rs.62,500.
   iii. The decrease in sale price will not effect the amount of variable costs. Hence, the new ratio of variable costs to sales will be 60/80 × 100 or 75%. Therefore, the new break-even-point = Rs. 20,000/25% = Rs. 80.000.
   iv. Rs.15,000/40% = Rs.37,500.
   v. Rs.20,000/40% = Rs.40,500.
   vi. The increase in sale price will not affect the amount of variable costs. Hence, the new ratio of variable costs to sales will be 60/120 × 100 or 50%.

The new break-even-point = Rs.20,000/50% = Rs.40.000

Illustration1 22: Production costs for factory in an industrial complex are as follows:

	Level of Activity		
	60%	70%	80%
output (units)	1,200	1,400	1,600
Costs (In Rupees):			
Direct Materials	24,000	28,000	32,000
Direct Labour	7,200	8,400	9,600
Production Overheads	12,800	13,600	14,400
Production Cost	44,000	50,000	56,000

The factory is considering an increase of production to 90% level of activity. It is expected that there will be any increase in fixed overheads at this level.

The factory management required the following information:

a. The total prime cost of producing at this proposed level.
b. The average marginal cost per unit of producing the additional output.
c. The total marginal cost at this level of activity.
d. The total production cost at this level of activity

Solution

Marginal Cost Statement

Level of Activity	90%
Output (Units)	1,800
Total	Per Unit
Rs.	Rs.

Direct Labour	10,800	6
Direct Materials	36,000	20
Prime Cost	46,800	26
Variable Production Overhead	7,200	4
Marginal Production Cost	54,000	30
Fixed Production Overheads	8,000	4,44
Total Production Cost	62,000	34,44

The average marginal cost per unit of producting the additional output is Rs.4. This is so because production overheads increase by Rs.800 (13,600-12,800 or 14,400-13,600) for every 10% increase in the level of activity which in terms of units is 200, and the variable overheads per unit would be Rs.800/200 units, i.e., Rs.4 per units.

Working

i. Fixed Production Overheads = Production Overheads-Variable Production Overheads.
   ∴ At 12,800 – (1,200 units × Rs.4 per unit) = Rs. 4,800
   or Rs. 12,800 – Rs. 4,.800 = Rs.8,000.
ii. As variable production overheads are Rs.4 per unit of additional output, the amount of such overheads for 90% level of activity, or 1,800 units, would be Rs. 7,200 (1,800 units × Rs. 4 per unit).

Illustration 23: The following figures relate to one year's working at 100% capacity level in manufacturing business:

	Rs.
Fixed overheads	1,20,000
Variable overheads	2,00,000
Direct wages	1,50,000
Direct Materials	4,10,000
Sales	10,00,000

Represent the above figures on a Break-Event-Chart and determine from the chart the break-even-point:

Solution The total variable cost is Rs. 7,60,000 (Direct Meterials Rs. 4,10,000 + Direct wages Rs. 1,50,000 + Variable Overheads Rs. 2,00,000 = Rs.7,60,000). Variable Costs + Fixed Costs = Rs. 7,60,000 + Rs.1,20,000 = Rs. 8,80,000 is the total cost. The present profit is, Sales-Total Cost = Rs. 10,00,000-Rs. 8,80,000 = Rs. 1,20,000.

$$\text{B.E.P} = \frac{\text{Sales} \times \text{Fixed Costs}}{\text{Sales} - \text{Variable Costs}} = \frac{\text{Rs.}10,00,000 \times 1,20,000}{10,00,000 - 7,60,000}$$

$$= \frac{\text{Rs.}10,00,000 \times 1,20,000}{10,00,000 - 7,60,000}$$

$$= \frac{\text{Rs.}10,00,000 \times 1,20,000}{2,40,000}$$

$$= \text{Rs. } 5,00,000.$$

If sales volume is Rs.5,00,000/- the total cost will be also Rs.5,00,000/-. Sales Volume of Rs.5,00,000 will show B.E.P. which is represented in above graph.

F.C. shows Fixed Costs T.C. Total Costs and T.S. shows Total Sales. T.C. and T.S curves intersect each other at 'P' which is a B.E.P. From point 'P' a perpendicular is drawn which touches Sales Volume at Q pointand Cost Line at R point. PQ and OR are both equal i.e., Rs.5,00,000. It Total Sales is below Rs.5,00,000 there will be a loss, if Sales Volume exceeds Rs.5,00,000 there will be a profit. The present sales volume is Rs.10,00,000 which is represented in the graph by AD. At AD sales the profit is AB: Total Cost is BD which includes BC Variable Costs and CD Fixed Costs.

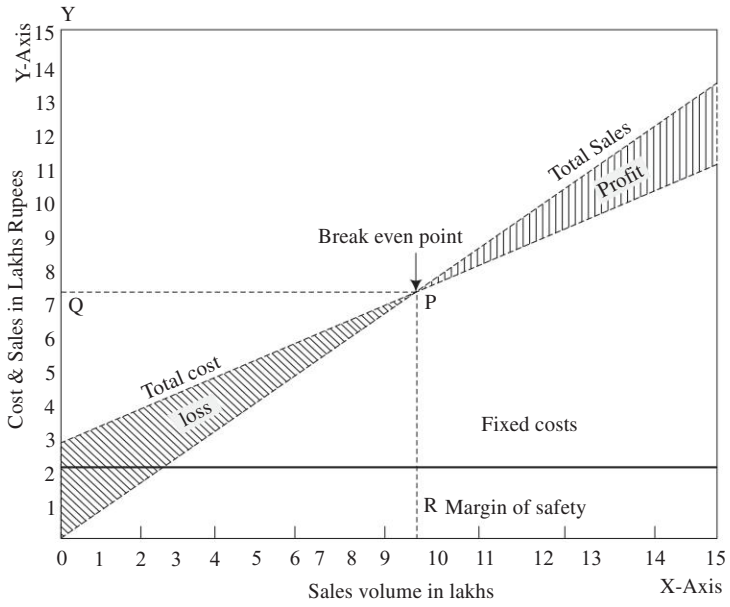


FIG. 15.11

Illustration 24: The total amount of sales of a business institution amounts to Rs.2,00,000. The cost per unit of variable expenses is 60% of sales and the fixed cost amount to Rs.40,000.

Ascertain the Break-Even-Point of the institution. Show it by means of a graph also.

Solution Variable Costs are 60% of sales. At present, sales are Rs.2,00,000 therefore, variable costs will be Rs.2,00,000 × 60/100 = Rs.1,20,000. Total Costs will be Rs.1,20,000 Variable Costs + Rs.40,000 Fixed Costs = Rs.1,60,000. Profit is Sales – Total Cost Rs.2,00,000 – 1,60,000 = Rs.40,000.

$$\text{B.E.P} = \frac{\text{Sales} \times \text{Fixed Costs}}{\text{Sales} - \text{Variable Costs}} = \frac{\text{Rs.2,00,000} \times 40{,}000}{2{,}00{,}000 \times 1{,}20{,}000}$$

$$= \frac{\text{Rs.2,00,000} \times 40{,}000}{80{,}000} = \text{Rs. } 1{,}00{,}000.$$

At Rs.1,00,000 sales volume total cost will also be Rs.1,00,000/-. If sales are below Rs.1,00,000, there will be loss and if sales exceed Rs.1,00,000, there will be Profit as represented in the graph above.

In the above chart, T.C. and T.S. curves interest each other at 'P' point which is B.E.P. The perpendicular drawn from this point gives PQ and PR which are both Rs .1,00,000. The present sales is shown by AD, at which Profit is AB, total cost BD (variable cost BC and Fixed cost CD) and the margin of safety is QD.

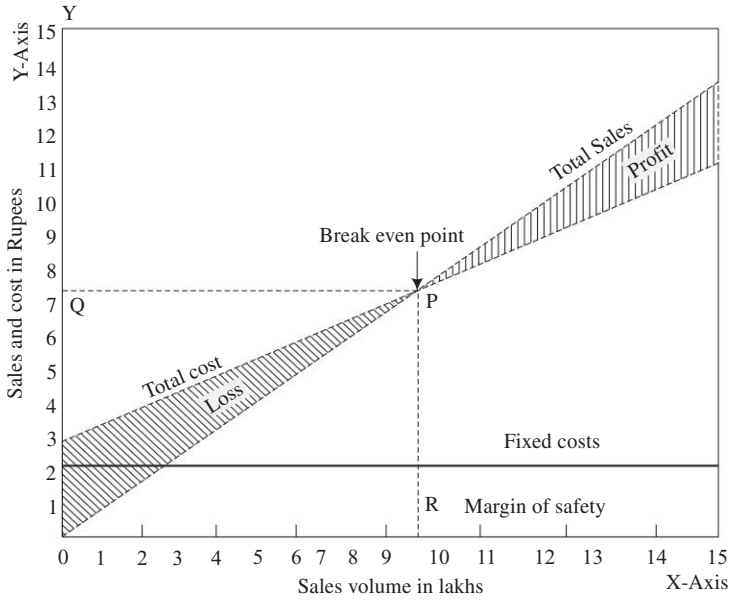


FIG. 15.12

Illustration 25: A manufacturing company produces and sells a single commodity. The selling price per unit is Rs.10 and variable costs are Rs.6 per unit. The fixed costs of the company are Rs.1,20,000 per annum. The installed capacity of the company is one lakh units per annum. Draw up a Break-Even – Chart showing the BEP and the profit expected at 80% capacity.

Solution

$$\text{B.E.P.} = \frac{\text{Fixed Costs}}{\text{S} - \text{V} = \text{C}}$$

$$= \frac{1{,}20{,}000}{10 - 6 = 4}$$

$$= 30{,}000 \text{ units.}$$

The selling price of 30,000 units will be 30,000 × 10 = Rs.3,00,000 so at BEP; T.C. and T.S. will be Rs.3,00,000. If the company produces less than 30,000 units, there will be a loss, if it produces more there will be a profit, as shown is in the graph given below:

The production capacity of the company is 1,00,000 units and the company is producing 80% of its capacity, therefore, the present output is 80,000 units and the margin of sales is 50,000 units which is presented by O.D. the present sales are A.D

(80,000 units × 10 = Rs.8,00,000/-) the present profit is Rs.2,00,000/-.

Illustration 26: A business expects to operate with fixed costs of Rs.20,000 and variable costs of 60% of sales. You are required to ascertain: (a) the break-even-point of the business; (b) the amount of sales which yield a profit of Rs.10,000, (c) the amount of net profit which may be expected on a sale of Rs.1,00,000.

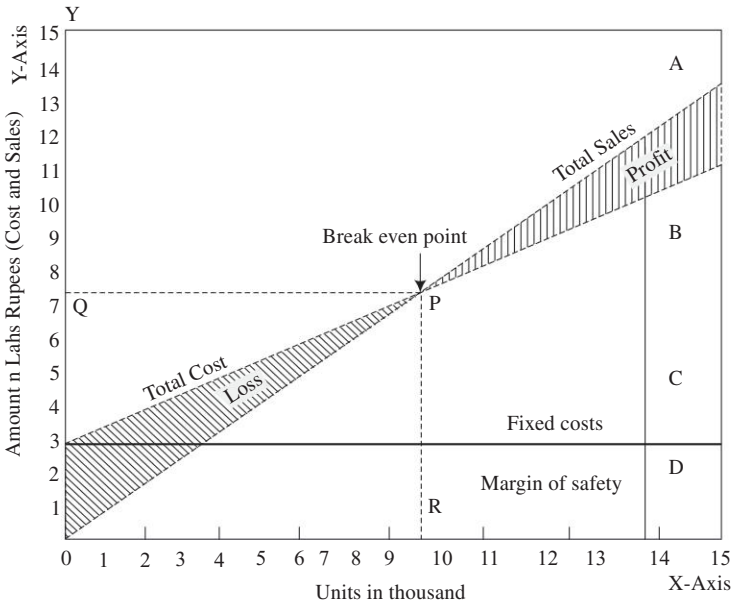


FIG. 15.13

Solution

(a) Break-even-point:
Fixed Cost/Contribution Margin = Rs.20,000/40% = Rs. 50,000.

(b) Amount of sales which will yield a profit of Rs.10,000.
(Fixed Cost + Profit)/Contribution Margin,
= Rs. 20,000 + Rs. 10,000/40% = Rs.1,00,000:
(Sales × Contribution Margin) – Fixed Costs or
(Rs.1,00,000 × 40%) – Rs.20,000 = Rs.20,000.

Illustration 27: A business expects to operate with fixed costs of Rs.20,000 and variable costs of 60% of sales and annual sales Rs.1,00,000. (a) Ascertain the expected profit when the break-even-point of the business is Rs.50,000; Rs.80,000; Rs.40,000- (b) What will be the profit if sales are increased by Rs.20,000 or (c) fixed costs are increased by Rs.5,000?

Solution

a. The amount of profit when the break-even-point is Rs.50,000 will be (Rs.1,00,000 – Rs.50,000) × 40% = Rs.20,000.

The amount of profit when the break-even-point is Rs.80,000. will be (Rs.1,00,000 – Rs.80,000) × 40% = Rs: 8,000.

The amount of profit when the break-even-point is Rs.80,000. will be (Rs.1,00,000 – Rs.40,000) × 40% = Rs: 24,000.

Present Break-Even-point = Rs.20,000/40% = Rs.50,000;

The amount of profit when the break-even-point is Rs.1,20,000. will be (Rs.1,20,000 – Rs.50,000) × 40% = Rs: 28,000.

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(b) The present profit = Rs.1,00,000 – Rs.50,000) × 40% = Rs.28,000.

When the fixed costs are increased by Rs.5,000, this profit will decline to (Rs.20,000 – Rs.5,000) or Rs.15,000.

Summary

- The performance of a firm is measured by the profit it makes.
- The Cost Volume Profit Analysis is a management tool to show the relationship between the various ingredients of profit planning.
  The above CVP analysis shows the relationship between costs, profits and sales volume. The break-even technique has many applicationsof CVP analysis.
- BEP can be determined by the following methods.
  I. Contribution margin approach
  II. Equation technique
  III. Graphic presentation
- Under algebraic method, the equation technique is particularly useful in a situation where unit price and variable costs are not clearly defined. The excess of actual sales over the BE sales in the margin of safety.

KEY CONCEPTS

- Absorption Costing
- Break-even Analysis
- Break–even Point
- Break-even Chart
- Cash Break-even Point
- Cost Break-even Point
- CVP Analysis
- Differential Costing
- Direct Costing
- Marginal Costing
- Profit Volume Ratio
- Variable Ratio
- Margin Of Safety
- Angle Of Incidence
- Fixed Cost
- Contribution
- Variable Cost
- Sales Mix
- Financial Decision
- Profit Planning

Review Questions

OBJECTIVE QUESTIONS

1. An example for a fixed cost that would be considered a direct cost is
   a. The cost of power when the cost objective is the internal audit department
   b. Board of Director's fees when the cost object is the marketing department
   c. A cost accountant's salary when the cost object is a unit of product
   d. A production supervisor's salary when the cost object is the production department
   e. The rental cost of a warehouse to store inventory when the cost object is the purchasing department.
2. The total of costs incurred in the operation of a business undertaking other than the cost of manufacturing and production is
   a. Out-of-pocket cost b. Programmed cost c. Conversion cost
   d. Commercial cost e. Imputed cost
3. The cost of obsolete inventory acquired several years ago, to be considered in a keep-versus disposal decision is an example of

a. Uncontrollable cost b. Opportunity cost c. Sunk cost
d. Avoidable cost e. Relevant cost

4. Which of the following is an administrative overhead cost
   a. Cost of fuel for machinery. b. Legal charges
   c. Salary of a sales manager. d. Rent of a showroom.
   e. Cost of printing price list.
5. The classification of costs as either direct or indirect depends upon
   a. The timing of the cash outlay for the cost
   b. Whether an expenditure is unavoidable because it cannot be changed regardless of any action taken
   c. The behavior of the cost in response to volume changes
   d. Whether the cost is expensed in the period in which it is incurred
   e. The cost object to which the cost is being related
6. Prime cost plus total manufacturing overhead is termed as:
   a. Conversion cost b. Marginal cost c. Manufacturing cost
   d. Period cost e. Imputed cost.
7. Break even sales is
   a. The sales required to earn a particular amount of profit
   b. The sales at which there is neither profit nor loss
   c. The sales equal to amount of fixed expenses incurred by the company
   d. The sales equal to amount of variable expenses incurred by the company
   e. The total sales of the company.
8. The break even point is that level of activity where
   a. Total revenue equals total cost
   b. Total revenue equals fixed cost
   c. Total revenue equals variable cost
   d. Total revenue equals product cost
   e. Both (c) and (d) above.
9. The break even point can be reduced by
   a. Increases and sales price remains unchanged
   b. Decreases and sales price remains unchanged
   c. Decrease in contribution sales ratio
   d. Increase in variable cost
   e. Increase in sales volume.
10. The break even point in units increases when unit cost
    a. Increases and sales price remains unchanged
    b. Decreases and sales price remains unchanged
    c. Remains unchanged and sales price increases
    d. Decrease and sales price increases
    e. Increases and sales price increases.
11. Which of the following will increase the break even point?
    a. A reduction in the variable cost per unit.
    b. A reduction in the fixed costs.
    c. An increase in the semi-variable cost per unit.
    d. A reduction in income tax rates.
    e. An increase in the contribution margin per unit
12. At break-even point, fixed cost is always

a. Equal to variable cost
b. Equal to contribution margin.
c. More than the variable cost
d. Less than the contribution margin
e. Equal to loss.

13. In CVP analysis, if quantity produced and sold is more than the break even quantity, the operating income is increased by
    a. Overhead costs per unit for each additional unit sold.
    b. Variable costs per unit for each additional unit sold
    c. Fixed costs per unit for each additional unit sold
    d. Gross profit margin per unit for each additional unit
    e. Contribution margin per unit for each additional unit sold.
14. Which of the following is **not** an assumption in break even analysis?
    a. Volume of production and volume of sales are equal
    b. All costs should be segregated into fixed and variable parts.
    c. Variable costs are not strictly variable with volume of output.
    d. Fixed costs remain constant at various levels of activity.
    e. Sales mix remains constant.
15. One of the major assumptions limiting the reliability of break even analysis is that
    a. Efficiency and productivity will continually increase
    b. Total variable costs will remain unchanged over the relevant range
    c. Total fixed costs will remain unchanged over the relevant range
    d. The cost of production factors varies with changes in technology
    e. The selling price of product will decrease as more units are produced and sold.
16. The margin of safety is defined as:
    a. The difference between sales and break even sales
    b. The difference between budgeted sales and budget.
    c. The difference between budgeted contributed margin and fixed costs
    d. The difference between budgeted sales and variable costs.
    e. The difference between the break even sales and cash break even
17. Margin of safety ratio can be calculated as:

    a. $\frac{\text{Actual sales} - \text{B.E.P. sales}}{\text{Actual sales}} \times 100$

    b. $\frac{\text{B.E.P. sales} - \text{Actual sales}}{\text{Actual sales}} \times 100$

    c. $\frac{\text{Actual sales} - \text{B.E.P. sales}}{\text{Actual sales}} \times 100$

    d. $\frac{\text{B.E.P. sales} - \text{Actual sales}}{\text{B.E.P. sales}} \times 100$

    e. $\frac{\text{B.E.P. sales}}{\text{Actual sales}} \times 100$

18. Cost-Volume-Profit (CVP) analysis is a key factor in many decisions, including choice of product lines, pricing of products, marketing strategy, and utilisation of productive facilities. A calculation used in a CVP analysis is the break even point. Once the break-even point has been reached, operating income will increase by the

a. Gross margin per unit for each additional unit sold
b. Contribution margin per unit for each additional unit sold
c. Fixed costs per unit for each additional unit sold
d. Variable costs per unit for each additional unit sold
e. Sales price per unit for each additional unit sold.

19. Margin of safety can be improved by
a. Increase of variable cost per unit b. Decrease of sale price per unit
c. Increase of fixed cost d. Decrease of sales volume
e. Decrease of variable cost per unit

20. For a profitable company, the amount by which sales can decline before losses occur is known as:
a. Sales volume variance b. Hurdle rate c. Marginal income rate
d. Variable cost to sales ratio e. Margin of safety.

21. Angle of incidence is the angle between the
a. Total cost line and the x-axis
b. Sales line and the y-axis
c. Sales line and the total cost line
d. Sales line and the per unit variable cost line
e. Sales line and the total variable cost line.

22. The rupee amount of sales needed to attain a desired profit is calculated by dividing ..... by the contribution margin ratio.
a. Fixed cost b. Desired profit
c. Desired profit plus fixed costs d. Desired profit less fixed costs e. Variable costs.

23. Which of the following statement is **true?**
a. Cost-volume-profit analysis assumes that sales volume does not change
b. Profit is the difference between sales and contribution
c. In a break even chart, angle of incidence is formed at the intersection of sales line and variable cost line.
d. Profit volume chart does not show profit or loss at various levels of sales.
e. At break even point, fixed cost is equal to contribution

24. Pricing is a
a. Control exercise b. Market plan c. Profit planning exercise
d. Both (b) and (c) above e. All of (a), (b) and (c) above.

25. Which of the following is **not** an external factor to the pricing policy?
a. Government price policy
b. Elasticity of demand
c. Consumer's tastes and preference
d. Purchasing power of the consumer
e. Maintenance costs.

26. Which of the following is/are the objective/s of pricing policy?
a. Price fluctuation b. Target rate of return on capital
c. Slow cost recovery d. Increasing competition
e. Both (b) and (d) above.

27. Which of the following represents the cost-based pricing formula?
a. Price = Cost + Mark-up%
b. Price = Mark-up% × Cost
c. Price = Cost + (Mark-up% × Cost)
d. Price = Cost/Mark-up%
e. Price = Cost + (Cost/Marl-up%)

28. Which of the following is **not** an issue when making a pricing decision?
    a. Legal issues like collection and price discrimination.
    b. Political consideration.
    c. Public image
    d. Environment regulation
    e. Competition
29. Which of the following is **not** pricing model?
    a. Fixed cost based pricing
    b. Full cost based pricing
    c. Return on investment pricing
    d. Marginal cost based pricing
    e. Differential cost based pricing.
30. Which one of the following ignores the fixed cost for pricing purpose?
    a. Mark-up percentage pricing
    b. Full cost pricing
    c. Differential cost pricing
    d. Return on investment based pricing
    e. Absorption cost based pricing
31. The major methods of price fixation is/are
    a. Cost plus pricing
    b. Opportunity cost pricing
    c. Added value method of pricing
    d. Pricing for target rate of return
    e. All of the above.
32. Full cost pricing is done.
    a. To recover variable cost plus profit
    b. As a short-term measure only
    c. To recover standard cost plus a mark-up for net income
    d. When the company does not have the basic idea of demand for the product
    e. To recover the fixed costs only.
33. Incremental cost is
    a. Built up from an assessment of the value of the cost elements
    b. The value of a benefit sacrificed in favor of an alternative course of action
    c. The increase in cost from one alternative to another
    d. A cost which can be economically identified with a specific saleable cost unit
    e. The cost that is already incurred.
34. The opportunity cost of making a component part in a factory with no excess capacity is the
    a. Variable manufacturing cost of the component
    b. Cost of the production given up in order to manufacture the component
    c. Net benefit given up from the best alternative use of the capacity
    d. Total manufacturing cost of the component
    e. Fixed manufacturing cost of the component
35. Which of the following is **not** a factor for determining the price of a product?
    a. Market capacity
    b. Feasibility study
    c. Competitors' pricing strategy

d. Competitors' profit margin
e. None of the above.

36. Sales of a company's product have suffered because of intense price competition. As a result, the company must lower the price of the product The lowest feasible short run price would just exceed the product's
    a. Fixed cost per unit
    b. Variable cost per unit
    c. Fixed cost per unit plus variable cost per unit
    d. Variable cost per unit minus fixed cost per unit
    e. Direct material cost per unit plus direct labor cost per unit
37. Which of the following will improve return on investment if their factors are constant?
    a. Reducing expenses
    b. Increasing selling prices
    c. Increasing sales volume while holding fixed expenses constant
    d. Increasing assets
    e. Only (a),(b) and c) above.
38. Which of the following is **not** considered as common economic performance measurement?
    a. Return on investment b. Residual income c. Return on sales
    d. Customer satisfaction e. Return on investment and residual income.
39. Full-cost price is defined as
    a. The price usually based on absorption-costing
    b. The price usually based on marginal costing
    c. The price in the open market
    d. The price representing the cash outflows of the supplying division plus the contribution to the supplying division from an outside sale.
    e. The price based on variable cost plus a lump sum.
40. Which of the following statements is **false** in respect of full cost pricing and contribution margin pricing?
    a. Both can be considered complementary to each other but not competing
    b. In both the methods, the selling prices proposed must be only tentative and they are always subject to adjustment
    c. Fixed costs are important in both the pricing models
    d. In both the methods, a normal mark-up on total costs is made and the volume of production is taken into consideration
    e. Both represent to a certain degree, cost plus pricing
41. Which of the following is **false** with regard to full-cost pricing?
    a. It is prone to distortion by accounting misapplications
    b. The normal mark-up is based on total cost.
    c. It is useful in case the company has full knowledge of the demand curve
    d. Sellers do not take advantage of the buyers when the latter's demand becomes acute.
    e. It ignores vital economic considerations.
42. Assuming that the mark-up-percentage and the quantity of production/sales remain constant, which of the following pricing method/methods will give more profit as the fixed cost of production increases?
    a. Return on investment pricing
    b. Full cost pricing
    c. Contribution margin approach to pricing
    d. Both (a) and (b) above
    e. Both (b) and (c) above.

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43. Which of the following transfer pricing methods will preserve the submit autonomy?
    a. Cost-based pricing b. Negotiated pricing c. Variable-cost pricing
    d. Full-cost pricing e. None of the above.
44. Which of the following **does not** lead to an increase in the return on investment?
    a. Increase in sales volume b. Increase in selling price
    c. Increase in operating assets d. Reduction in variable costs. e. Reduction in fixed costs
45. Which of the following statements is **false?**
    a. Under full-cost pricing, the normal mark-up is based on sales value.
    b. Full cost pricing is designed to recover both fixed and variable costs
    c. Under full-cost pricing, sellers cannot take advantage of buyers when the latter's demand becomes acute
    d. Pricing decisions may be influenced by internal factors such as cost and profit objectives.
    e. Contribution margin approach to pricing is a cost plus type of pricing.
46. A firm earning profits can increase its return on investment by
    a. Increasing sales revenue and operating expenses by the same rupee amount
    b. Decreasing sales revenues and operating expenses by the same percentage
    c. Increasing investment and operating expenses by the same rupee amount
    d. Increasing sales revenues and operating expenses by the same percentage
    e. Decreasing investment and sales by the same percentage.
47. The concept transfer pricing is used to determine the price of
    a. Final products b. Consumer products c. Intermediate products
    d. Capital goods e. Closing stock.
48. A transfer price is a selling price established for
    a. Inter-divisional transfers b. Intra-divisional transfers c. Inter-company sales
    d. Inter-firm comparison e. Intra-firm comparison.
49. Transfer pricing is applicable to the companies having
    a. Centralized organisational structure
    b. Decentralized organisational structure
    c. Line organisation structure
    d. Staff organisation structure
    e. Line and staff organisation structure.
50. Generally transfer prices are fixed by
    a. Chairman b. Vice-president c. Board of Directors
    d. Divisional managers e. Production manager.
51. The goods can be transferred internally when
    a. The opportunity cost of selling division is less than the opportunity cost of buying division
    b. The opportunity cost of selling division is equal to the opportunity cost of buying division
    c. The opportunity cost of selling division is greater than the opportunity cost of buying division
    d. Both (a) and (b) above
    e. None of the above.
52. In a competitive market, if the selling division has idle capacity, then the transfer price is based on
    a. Standard price b. Market price c. Marginal cost
    d. Cost plus margin e. Shadow price.
53. Consider the following statements about cost-based transfer prices.
    i. A transfer price set at standard variable cost plus a mark-up provides an incentive to the producing division to make the transfer.

ii. Full cost-based transfer prices are good for the company as a whole because all costs are considered
iii. Transfer prices should be based on standard costs rather than actual costs since the cost of inefficiency should not be passed on.

54. Which statement(s) is/are **true?**
   a. Only (i) above
   b. Both (i) and (ii) above
   c. Both (ii) and (iii) above
   d. All of (i), (ii) and (iii) above
   e. Both (i) and (iii) above.

55. Check your understanding

Please state whether the following statements are True or False

(1) CVP analysis helps the firm in understanding the impact of change in cost volume and price on the behavior of profit.
(2) Break-even analysis is fundamentally a static analyis.
(3) With the help of CVP analysis, it is possible to decide which product is most profitable and least profitable.
(4) Mathematically a linear relationship does not exist between a variable cost and volume of production.
(5) Contribution is also known as Gross Margin.
(6) At break-even point contribution, total fixed costs leaves a little towards profit.
(7) It is not possible to calculate break-even analysis of a firm which is engaged in producing and selling multiple products.
(8) In break-even analysis, fixed costs and variable costs do not behave in the same manner.
(9) In break-even analysis, unit variable cost decreases as and when the volume of production increases.
(10) A large margin of safety indicates that the business is sound and even if there is some fall in sales, there will be profit.
(11) Angle of incidence is the angle between the sales line and the total cost line formed at the break-even point.
(12) Margin of safety = $\frac{\text{Fixed expenses}}{\text{P/V Ratio}}$
(13) P/V Ratio can be used to calculate BEP and ascertain required sales to achieve a desired level of profit.

Answers

1. True	2. False	3. True	4. False	5. True
6. False	7. False	8. True	9. False	10. True
11. True	12. False	13. True		

56. Pick up the right answer

1. In the graphical presentation of break-even analysis, large the angle of incidence …….. is the break-even point
   (A) Lower (B) Higher (C) Similar
2. Angle of incidence is formed in break-even analysis when the intersection occurs between:
   (A) Fixed cost line and Sales line
   (B) Total cost line and Sales line
   (C) Fixed cost line and Total cost line
3. If Margin of safety is …….. the firm cannot withstand, if there is a large fall in sales.
   (A) Low (B) High (C) Does not exist
4. Margin of safety and break-even point are inter-connected

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(A) Yes (B) No (C) No relation exists

5. Contribution would occur early to a firm if fixed costs are ……..
   (A) High (B) Low (C) Not relevant
6. P/V Ratio can be improved by reducing fixed costs.
   (A) True (B) False (C) No change

Answers

1. (A) 2. (B) 3. (A) 4. (A) 5. (B) 6. (B).

DESCRIPTIVE QUESTIONS

(1) What do you understand by the term cost-volume-profit relationship? Why is this relationship important in financial decision making?
(2) What is CVP analysis? Explain its utility to management in decision making process?
(3) 'Profit volume analysis' is a technique of analyzing the relationship of cost and profit at various levels of volume? Explain how such analysis helps the management in decision making?
(4) Discuss the behavior of fixed and variable costs in relation to volume?
(5) 'Break-Even-Point is the point at which total cost and revenue are just equal-Discuss?
(6) What is meant by contribution? How it is calculated? Discuss its role in the profit – decision making?
(7) The break-even-point analysis is a useful device of profit planning "Do you agree? Discuss?
(8) What is break-even-point? How would you compute it?
(9) Business firms rarely operate at their break-even-points. Therefore, the break-even analysis is of very limited use to the management. Is it correct? Discuss?
(10) Discuss P/V Ratio and its features to assist management in break-even analysis and achieving the desired level of profit?
(11) Would it be really important for the cost-volume-profit interrelations to allocate fixed costs to individual product lines? Defend your answer?
(12) Discuss the assumptions and limitations of break-even analysis?
(13) Write short notes on:
   a. Margin of safety
   b. Angle of Incidence
   c. Cash break-even point
   d. Multi product break-even point

PROBLEMS

1. From the following data, calculate:
   (i) Break-even point expressing the sales in rupees.
   (ii) Number of units that must be sold to earn a profit of Rs. 60,000 per year.

Sale price	Rs. 20 per unit	Fixed factory overheads	Rs. 5,40,000 per year
Variable manufacturing costs	11 per unit	Fixed selling costs	5,52,000 per year
Variable selling cost	3 per unit		

   [Ans. (i) BEP Sales Rs. 26,40,000; (ii) 1,42,000 units get a profit of Rs.60,000]

2. The following figures are extracted from the books of a manufacturing concern for an year:

Direct materials	Rs. 2,05,000	Variable overheads	Rs. 1,00,000
Direct labour	75,000	Sales	5,00,000
Fixed overheads	60,000		

   Represent each of the above figures graphically on a break-even chart and determine from the chart the break-even point making necessary assumptions. Show in the graph the effect on break-even point of an increase of 10 per cent in both fixed expenses and variable expenses (overheads). Verify by calculation.

3. Sales of a product amounts to 200 units per month at Rs. 10 per unit. Fixed overhead is Rs. 400 per month and variable cost Rs. 6 per unit. There is a proposal to reduce prices by 10 per cent. Calculate the present and future P/V ratio and find by applying P/V ratio how many units must be sold to maintain total profit.

   [Ans: 267 units]

4. The following figures relate to a manufacturing company:

Annual Sales	Rs. 70,00,000	Fixed Overhead	Rs. 8,00,000
Direct materials	10,00,000	Fixed administrative and selling cost	4,00,000
Direct wages	15,00,000	Variable selling and distribution cost	10,00,000

   Apart from the cost described as fixed overhead, there is included in the semi-variable over-head figure, a fixed element amounting to Rs. 5,00,000. On a single graph, display the cost-volume relationship for each category of cost, and also for the total costs. Plot sales line on the graph. What is the break-even point?

5. There are two similar plants under the same management. The management desires to merge these two plants. The following particulars are available:

	Factory I	**Factory II**		**Factory I**	**Factory II**
Capital operation	100 per cent	60 per cent	Variable costs	Rs. 222 lakhs	Rs. 90 lakhs
Sales	Rs. 300 lakhs	Rs. 120 lakhs	Fixed costs	Rs. 40 laksh	Rs. 20 lakhs

   You are required to calculate: (a) what would be the capacity of the merged plant to be operated for the purpose of break-even; and (b) what would be the profitability on working 75 percent of the merged capacity.

   [Ans. (a) Rs. 229.10 lakhs if same sales mix is to be maintained; Rs. 225 lakhs if the products are completely indentical and Factory I will be used as it gives a greater contribution ratio.
   (b) Profit at 75% of merged capacity – Rs. 38.75 lakhs]

6. The trading results of Perfect Machine Tool Co.Ltd. for last two years have been:

Year	Sales	Profit
1969	Rs. 2,00,00,000	Rs. 10,00,000
1970	1,80.00.000	2,00,000

   (1) You are required to forecast the expected Profit or loss with sales of : (a) Rs. 1,50,00,000,and (b) Rs. 3,00,00,000.
   (2) Determine P/V ratio
   (3) Ascertain the break-even point.

   [Ans. At Rs. 1,50,00,000 sales loss = Rs. 10,00,000; at Rs. 3,00,00,000 sales profit = Rs. 50,00,000; P/V ratio = 40%: BEP = Rs. 1,75,00,000]

7. Two businesses AB Ltd. and CD Ltd. sell the same type of product in the same type of market. Their budgeted profit and loss accounts for the year ending 31st December, are as follows:

	AB Ltd.		**CD Ltd.**	
	Rs.	*Rs.*	*Rs.*	*Rs.*
Sales		1,50,000		1,50,000
Less: Variable cost	1,20,000		1,00,000	
Fixed costs	15,000	1,35,000	35,000	1,35,000
Net Profit budgeted	15,000			15,000

   You are required to: (a) Calculate the break-even point of each business: and (b) state which business is likely to earn greater profits in conditions of: (i) Heavy demand for the product. (ii) Low demand for the product. Give your reasons.

   [Ans. (a) Rs. 75,000 and Rs. 1,05,000. (b) Heavy demand CD Ltd. Is profitable as P/V ratio is higher. Low demand AB Ltd. Is profitable as BEP is at lower level]

8. The Steel Products Co. Ltd., manufactures two standard patented parts which are sold to pump manufacturers. The following figures are extracted from the budget for the year ending December 31:

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	Part A	Part B
Selling price per unit	Rs. 5	Rs. 12
Estimated production, units	20,000	Rs. 16,000
Estimated fixed costs	Rs. 10,000	Rs. 16,000
Estimated Variable costs	Rs.60,000	Rs. 1,28,000

(i) Prepare a separate break-even chart for each line and determine the break-even point in terms of units of production.

(ii) Prepare a break-even chart for the company's total forecast operations and determine the break-even point using rupee volume (Keeping the present mix).

(iii) If Part A is discontinued at the beginning of the budget year, how many units of Part B must be produced and sold to earn the same profit as determined in (ii), assuming that the total fixed costs are absorbed by the production of Part B?

(iv) Assuming that the number of units determined in (iii) can be sold during the budget year, would you still recommend that production of part A be continued?

[Ans. (i) A 3,086 units, B 5, 914 units; (ii) Rs. 84,778; (iii) 28,178 units; (iv) Yes]

9. In an industry where fixed cost remains constant, the results for two months are as follows:

	Sales	Costs
January	Rs. 1,00,000	Rs. 77,500
February	Rs. 1,10,000	Rs. 83,000

From the above information, you are required to: (a) Determine P/V ratio. (b) Forecast the expected profit or loss in the sales of Rs. 40,00, Rs. 1,50,000. (c) By using P/V ratio formula expected profit or loss in the sales of Rs. 40,000, Rs. 1,50,000. (c) By using P/V ratio formula, determine the break even point.

10. A company is making a loss of Rs. 40,000 in the month of December and the relevant figures are as follows. Sales Rs. 1,20,000; Variable cost Rs. 60,000; Fixed cost Rs. 1,00,000.

Loss can be made up by either increasing the selling price at the present sales level or by increasing the sales volume at the present selling price. What should be the sales value to break-even, if (a) the present sales level is maintained and the selling price is increased, and (b) the present selling price is maintained and the sales volume is increased.

[Ans. Sales value at BEP in both the cases is Rs. 2,00,000]

11. The following particulars are given: Current unit price Rs. 1,000; Unit variable cost Rs. 500; Fixed cost Rs. 30 lakhs.

The following two suggestions are under the consideration of the management of an industrial company: (a) Ten per cent reduction in price to yield an increase in sales volume from 6,600 to 7,900 units. (b) Ten per cent increase in price with decrease in volume of sale from 6,600 to 5,700 units.

Prepare a statement comparing gross revenue, profit contribution and P/V ratio of these two alternatives with present results. Which suggestion would you recommend?

[Ans. Suggestion (b) is recommended]

12. The sales director of your concern requires you to compute the sales volume necessary in order to: (i) Break even. (ii) Make a profit of Rs.4 per unit of the product. (iii) Make a profit of 30% on Sales. (iv) Maintain the present profits in rupees with an increase of Rs. 20,000 in fixed costs and a decrease of Rs. 2 per unit in the out-of-pocket costs. (v) Maintain the present profit with an increase of Rs.20,000/- in fixed costs and a decrease of Rs.2 per unit in the out-of-pocket costs. (vi) Maintain the present profit per unit of product with the revision in fixed costs and out-of-pocket costs as in (v). (vii) Maintain the present percentage of profit to sales with the revision in fixed costs and out-of-pocket costs as in (v)

In the covering note to the Director, you are required to explain lucidly how a single formula can be applied to compute these various levels of volume desired. The cost data of the firm as computed by the cost accountant is as below:

	Sales Rs. 1,00,000	at Rs. 10 per unit	Burden on Rs. 30,000	Rs. 3 per unit
Out-of-pocket costs	Rs. 50,000	Rs. 5 per unit	Profit Rs. 20,000	Rs. 2 per unit
	.....	.....	.....	.....

13. A company machines and drills two castings X and Y. The time required to machine and drill one casting including machine set up time is as follows:

Casting	Machine hours	Drilling hours
X	4	2
Y	2	5

There are two lathes and three drilling machines. The working week is of 40 hours; there is no lost time and overtime. Variable costs for both castings are Rs. 120 per unit whilst total fixed costs amount to Rs. 1,000 per week. The selling price of Casting X is Rs. 300 per unit and Y is Rs.360 per unit. There are no limitations on the number of X and Y castings that can be sold. The company wishes to maximize its profits. You are required to : (i) Formulate the complete linear programming model for the problem; (ii) Solve the problem graphically.

14. Your company operates within a large group of companies as a sub-contract machining, welding and fitting unit, taking free issue of material from the parent company and converting it to finished components. There are three particular products A, B and C, which from the viewpoint of their profitability, are occupying the attention of top management. These account for 60% of the sales of the company. Certain details of these three products are:

Per Unit:	Production time in standard hours			
Product	Machining	Welding	Fitting	Selling Price
A	1.2	0.6	0.8	Rs. 29
B	0.4	0.6	0.8	21
C	0.4	0.2	0.2	10

The departmental costs rates used within the company are based on budgets, details of which appear below:

TABLE 15.10

	Machine Shop	*Welding Shop*	*Fitting Shop*
Output in standard hours	1,200	600	800
Costs:	Rs.	Rs.	Rs.
Departmental variable:			
Direct labour	5,700	3,000	2,400
Tools and consumables	1,200	300	400
Process materials	-	1,200	200
Power	300	600	200
Indirect labour	1,800	900	800
Departmental fixed:			
Plant depreciation	1,300	600	100
Salaries	300	300	300
Building occupation	200	300	400
Proportion of general fixed:			
General services	1,200	600	200
Factory administration	3,000	1,200	1,000
	15,000	**9,000**	**6,000**

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(a) From the figures supplied, make an assessment of product profitability, adding any qualifications that you think are necessary.

Prepare a statement for presentation to top management together with any additional information you feel desirable to enable proper decisions to be made.

(b) The parent company has suggested that if the selling price of Product A were to be reduced to Rs.27, an additional volume of production would be required to meet an increased demand.

What is your reaction to this suggestion and how many additional units of Product A would be required before profitability of the company is improved when compared with the present?

[Hints: Work out the contribution per unit as well as per hour. Total variable and fixed costs separately and work out the rate per hour]

16. Gadgets Ltd. manufactures and sells one product only. The budgeted volume of production and sales is 70,000 units per month. The standard selling price is Rs.40 per unit. The standard costs are as follows:

Variable : Materials		Rs. 10.00
Labour		5.00
Fixed	: Overhead	22.00
	Total	**37.50**

The company carries a substantial stock of finished units at all times. The following statement has been prepared covering the first three month's trading of the current year:

	Month 1	Month 2	Month 3
Units produced	80,000 Units	50,000 units	80,000 units
Units sold	80,000	70,000	60,000
Sales	Rs. 32,00,000	Rs. 28,00,000	Rs. 24,00,000
Standard cost of Production	30,00,0000	18,75,000	30,00,000
Stock transfer	-	7,50,000	(7,50,000)
Standard cost of Sales	30,00,000	26,25,000	22,50,000
Standard profit	2,00,000	1,75,000	1,50,000

In the opinion of the Sales Director, sales are likely to continue for the rest of the year at an average rate of 60,000 units per month. The Managing Director, although somewhat disappointed at this figure, says that the company is not likely to suffer with a monthly profit of Rs. 1,50,000 and asks you to confirm his view.

You are required to write a brief memorandum to the Managing Director commenting on his view and setting out the position as you see it. (Ad. ICWA Final England)

[Ans: On sale of 60,000 units there will be a loss of Rs. 75,000.

CASE

1. Scarley Brickworks Ltd. is designed to produce 180 lakh bricks per month made up of the following types at the stated costs and selling prices:

Type of bricks	Standard production Per month (laksh)	Selling Price per lakh Rs.	Variable cost per lakh Rs.	Fixed cost per lakh Rs.
Common	90	1,800	1,000	600
Engineering	30	2,000	1,200	600
Sand faced	20	2,400	1,400	600
Rustic	20	3,000	1,600	600
Coloured	20	4,000	2,800	600

The plant is so arranged that common and engineering bricks must be produced together in the ratio of 3:1; and so that, without extra set-up cost, the facilities for making sand faced, rustic and coloured bricks can be interchanged to produce up to a maximum of 60 lakhs per month of any one of the three types. The company produces only against sales orders and, because wastage and handling charges are so high, puts no value on finished stocks arising from production in excess of sales. The directors have sought your advice because the demand for bricks currently and as foreseen for the six months to 31st March, following calls for only half the designed level of production and they are worried about profitability. They are also anxious for your view about shading selling prices for a large new sales contract which they are hoping to obtain and which will call for a stepping up of production from 1st April, from the 50% level to supply every month over the subsequent 6 months an additional 45 lakhs common, 10 lakhs engineering and 30 lakhs sand faced.

You are required to prepare for the directors' comparative operating forecasts for the six months to 31st March following and the six months to 30th September, thereafter assuming that the new contract is obtained at existing selling price.

2. The following data relate to the S.T. Manufacturing Co. Ltd:

(1) Standard cost of production — Rs. 900 Per unit
(2) Standard variable cost of production — Rs. 600 Per unit
(3) Standard fixed cost of production (total fixed expenses Rs. 9,00,000 per month) — Rs. 300 per unit
(4) Selling price — Rs. 1,000 per unit

The conventional profit and loss account on standard cost basis for two months shows the following position:

JANUARY, 2005

Units		Rs.	Units		Rs.
Variable cost of unit					
Produced	4,000	24,00,000	Sales at Rs. 1,000 Per unit	2000	20,00,000
Fixed cost		9,00,000	Stock at Rs. 900 Per unit	2,000	18,00,000
Profit		5,00,000			
	4,000	38,00,000		4,000	38,00,000

FEBRUARY, 2006

Units		Rs.	Units		Rs.
Opening Stock	2,000	18,00,000	Sales at Rs. 1,000 per unit	3,000	30,00,000
Variable cost of units			Loss		3,00,000
Produced	1,000	6,00,000			
Fixed cost		9,00,000		–	–
	3,000	**33,00,000**		**3,000**	**33,00,000**

You are required to prepare a profit statement for the two months on the "contribution method" and compute the following: (a) Contribution ratio (Per cent); (b) Break-even point (Rupee value of sales); (c) Margin of safety (Percentage of sales).

What is the relationship between the 'margin of safety' and the 'contribution ratio'? Indicate the advantage of preparing the profits statement on the 'contribution method'.

3. Demand for the output of a certain company is very elastic, and a modern plant recently installed is capable of greatly increased production. Output at present is 80,000 units per year, and half a million units annually are estimated to be within the capacity of the new plant. The present selling price per unit is Rs.150. The need for flexible budgeting is recognized and six alternative levels of output in addition to the present level are contemplated. Six equal increments in annual output level, up to a maximum of 5,00,000 units, would involve corresponding reductions of Rs. 10 each in unit price to Rs.90 per unit at the maximum output.

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The present variable costs amount to Rs. 40,00,000. Fixed costs which at present amount to Rs. 20,00,000 are not expected to increase for any of the six alternative output levels contemplated. Semi-fixed costs are expected to vary from the present annual figure of Rs.23,00,000 to Rs.32,00,000, the upward steps being Rs.26,00,000 at 220,000 units, Rs.28,00,000 at 360,000 units, and Rs. 32,00,000 at 500,000 units. The costs classified as variable at the six projected levels of output are calculated to be as follows: Rs. 75,00,000; Rs. 1,50,00,000; Rs. 1,75,000; Rs. 2,05,000; and Rs. 2,50,00,000.

(a) Tabulate the above data and show total costs, incremental costs, total and incremental sales income at the various output levels.
(b) Which volume should be set for budgeted output?
(c) What is the selling price at that volume?

4. The overhead expenses of a factory producing a single article at different operating levels are as follows:

Operating level capacity	Works overhead
60%	Rs. 33,000
80%	36,000
100%	40,000
120%	50,000

The factory is currently working at 60 per cent operating level and its annual sales amounted to Rs. 1,44,000. Selling prices have been based on 100 per cent capacity and have the following relationship with costs at this level:

Table 15.11

Factory Cost	66.67% of Sales Value
Prime Cost	75.00% of factory cost
Administrative and selling expenses (of which 75% is variable)	20.00% of Sales Value

The management receives an offer for carrying out some work for another company valued at Rs.33,000/- per annum which will take up 40% of capacity. The Prime Cost for the work is estimated at Rs.20,000/-. There will be an additional administrative expenses of Rs.1500/- per annum, in view of the variable administrative overhead. The sales manager estimates that the sales of the company's own product will increase to 80% of capacity by the time the new order materializes. Calculate the profit on current production. Give your views supported by figures on the advisability of taking up the new work.

5. Rappup Ltd. is engaged solely in coating other manufacturer's metal fabrications with a preservation. The fabrications are at no time the property of Rappup Ltd. and their value does not appear in that company's account. Rappup Ltd. Have prepared the following budget for the six months ending 31st December. 2003:

Budget:	Quantity	Value
Preservative	50,000 cans	Rs. 20,00,000
Direct labour	2,50,000 hours	5,00,000
Variable overhead		15,00,000
Factory cost		40,00,000
Fixed overhead		25,00,000
Total cost		65,00,000
Profit		13,00,000
Sales		78,00,000

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Variable overhead can be assumed to vary indirect proportion to direct labour hours. Early in May 2003, the company was asked to quote for coating for a new customer, the contract to be completed by 31st August. 2003. The technical director estimates that each fabrication unit will require one can of preservative and 7 direct labour hours to complete, and asks the accountant to calculate a selling price. The Board, however, are concerned because difficulty has always been experienced in obtaining regular supplies of preservative and labour is in short supply in the summer months because of the incidence of holidays.

You are required to: (a) Calculate on each of the following assumptions a price for the new contract below which it would not pay to sell: (i) assuming normal absorption costing principles with fixed overhead cost based on direct labour cost and a profit loading based on total cost; (ii) assuming direct material is the major factor limiting production; (iii) assuming direct labour is the major factor limiting production; (b) state which price you would recommend and why. Would you differ in your recommendation if delivery was requested in December 2003? Give reasons.

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CHAPTER 16

Standard Costing and Analysis of Variances

"The underlying idea of standard cost is to show what the cost of production ought to be under conditions of maximum efficiency at every stage of manufacture and to compare this with the actual cost as shown by the costing records".

—W. Stratchan

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Salting Standard Costing*
- *Types of Standards*
- *Standards Cost and Other Cost Systems*
- *Esssential for an Effective System of Costing*
- *Motivational Aspects of Standards*
- *Guidelines for Establishing a System of Standard Costing*
- *Advantage of Standard Costing*
- *Variance Analysis*
- *Classification of Variances*
- *Classification of Total Usage Variance*
- *Causes and Disposition of Variances*
- *Variances Based on Turnover*
- *Variances Based on Profits*
- *Flexible Budgets Under a System of Standard Costing*

INTRODUCTION

The management accountant has an important role to play in planning and control, not only in supplying pertinent data, but also in offering suggestions or predictions. Standard costing is an important technique in the area of cost control. In this chapter, the meaning of standard cost and standard costing, fixing standards for each element of cost, and variance analysis are discussed in detail.

Standard cost is a pre-determined cost. In other words, standard cost is a cost that should be attained under a given set of conditions. For the purpose of cost, control if we use standard costs, then it is termed as standard costing. The ICMA London defines standard cost and standard costing as follow:

"Standard costing is the preparation of standard costs and applying them to measure the variations from standard costs and analysing the causes of variations with a view to maintain maximum efficiency in production.

For example, in the case of materials, on the basis of technical estimate and within the frame work of the existing working conditions, standard quantity of material to be used for production can very well be determined. When actual production is over, the actual quantity of material used may be compared with the standard quantity already fixed to ascertain deviations (variances), if any. If there is a deviation, the causes for deviation may be analysed. After analysing the causes, effective and suitable steps can be taken for cost control. In brief, standard costing is a technique for cost control.

Setting Standard Costs

Establishing standard costs is a joint responsibility of a number of departments such as production, engineering, purchasing, personnel, costing and accounting departments.

Cost Centres

For the purpose of effective cost control, the whole business is to be divided into departments, each department performing some specific function. For example, production department, sales department, purchasing department and so on. For establishing standard costs, it may be desirable to divide the departments further into cost centres. The matching department for example, might be split up into three cost centres according to the type of equipment–light, medium and heavy.

A cost centre is a location, a person or item of equipment for which costs may be ascertained and used for the purpose of cost control. Creation of cost centres is the basic step in the establishment of standard costs.

Types of Standards

Next stage is the ascertainment of the type of standard to be fixed. Normally, the following are the types of standards:

(i) Current standard
(ii) Basic standard
(iii) Normal standard

(i) Current Standard

When a standard is related to current conditions, and fixed to be used for a short period of time, it can be termed as current standard. Current standard may be fixed on the basis of ideal standard or expected standard.

The ideal standard is a perfect standard in the sense that it demands complete perfection and does not allow any waste and inefficiency in any form. Ideal standard can be attained only when the expected favourable conditions prevail without any deviation. In practice, it is very difficult, though not impossible, to attain ideal standard.

The standard which is normally anticipated during the specified future period of time, is termed as expected standard. While fixing this type of standard, conditions prevailing in the particular industry to which the company belongs, is also taken into consideration. Moreover, a reasonable allowance is also given for unavoidable wastages. When compared with the ideal standard, expected standard seems to be more realistic and practically possible to attain.

(ii) Basic Standard

When standard are fixed and unaltered for use over a long period of time, we may call them as basic standard. This type of standard do not have much practical relevance. However, to study the trends in various types of costs over a period of time, basic standards are useful.

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(iii) Normal Standard

The average standard which is anticipated can be attained over a future period of time preferably long enough to cover one trade cycle. This type of standard is fixed by considering the expected average performance over a long future period to time.

It is to be pointed out that standards fixed should not be too high or too low. If high standards are fixed, then nobody will take interest in attaining these standards. But, at the same time, if low standards are fixed, no one will take active interest, because low standards can be achieved without much efforts. Therefore, standards should be such which are attainable with active involvement of the workers and others in the organisation.

Standards should be established for each element of cost.

Direct Material

In the case of material, standards are to be fixed for both quantity and price.

Standard quantity for each type of direct material is to be fixed by the engineering department. The engineering department has to consider the quality of material, technique of production and material specifications to fix the standard quantity of material required to produce one unit of a product. The purchasing department has to investigate the sources of supply which can provide the desired quality of material at reasonable price. The purchasing department has to fix the standard price per unit of material required. The standard material cost is then found by multiplying the standard quantities by standard prices.

Labour Standards

Labour standards are set after production has been broken down into several operations. For each operation, after time and motion study, time needed for each operation can be fixed. As far as labour is concerned, standard hours needed and standard wage rate are to be fixed. Standard labour cost is to be ascertained by multiplying the standard labour hours with standard labour rate.

The concept of control under managerial process involves investigation, planning and controlling. It means the process of ensuring the fulfillment of plans involves investigation, planning and controlling. It means the process of ensuring the fulfillment of plans that involves not only the actions needed to implement the plan, including the designation of responsibility centres for carrying out actual performance, but also the measurement of accomplishments in comparison with the specified plan or some other standard, and the communication of results to the responsibility centres and the inauguration of appropriate reactions.

Such a control over the destiny of a concern is got through standard cost accounting or simply standard costing, wherein according to the Institute of Cost and Works Accountants, London:

"Standard costs are prepared and used to clarify the final results of a business, specially by measurement of the variations of actual costs from standard costs and the analysis of the causes of variations for the purpose of maintaining efficiency by executive action."

Cost Accounting Systems in which standard costs are incorporated directly and formally into the manufacturing accounts are called 'Standard cost system'.

STANDARD COST AND OTHER COST SYSTEMS

Standard cost and Historical cost. Generally, cost figures may be said to be divided into two broad divisions.

(i) Historical costs, and (ii) Predetermined costs.

The Historical Cost is counted at or after the completion of production of goods so that cost figures have value only from a historical point of view. Though the figures got at the end of the production process

may have a definite value in correcting past practices if they are carefully analysed, the inefficiencies and errors in production are not brought out until after the damage has been done. Hence, a realisation has come up that, with a view to detecting waste and inefficiencies at their source, cost analysis needs the use of predetermined at their source cost estimates, made on a more or less scientific basis which results in 'standard cost' authoritatively defined by the London Institute of Cost and Works Accountants as:

"An estimated cost, prepared in advance of production or supply, correctly a technical specification of materials and labour to prices and wage rates estimated for a selected period of time, with an addition of the apportionment of overhead expenses estimated for the same period within a prescribed set of working conditions".

The predetermined standards embodied in a Standard Cost System are those for productive output and cost elements- materials, labour and overheads. They are not only averages and are set with due care after careful study and observation of production activities in the past and present.

Standard Cost and Estimated Cost. Standard Cost System is also different from Estimated Cost System. A fundamental difference between the two lies in the manner of predetermining the cost of production.

In a Standard Cost System, the standard costs recorded in accounts are based upon standard rates that are very carefully developed and set as scientifically as possible while, in an Estimated Cost System, the estimate costs are not standards based upon a predetermination of what the production should be, but are only expression of opinion based mainly upon past experience, as to what the production cost will be.

Standard cost and department or process cost. Standard cost approach is not confirmed to any particular cost system and standard cost principles can be incorporated in the cost system of almost any type of industrial concern. Besides, the number of different products made, or the number of jobs worked upon, and the number of labour or machine operations done, standard costing can be made operative whether the costing basis is a process or department as well as where specific order accounting is used. From this viewpoint, a standard cost system is not a system of a kind different from specific order or process cost, but represents one or other type of costing system with the added feature of cost analysis built into it.

Standard Cost and Actual Cost. Though standard costs are in contrast to actual costs, which are historical cost incurred in a past period, the Standard Cost System is not fully divorced from an Actual Cost System. Actually, the basic framework of the Standard Cost System is still the Actual Cost System and it is designed to operate in union with either the actual process cost system or an actual jobs cost system. For working the standard cost system, there must always be available the actual cost, against which to measure the standard costs to highlight cost variances. In effect, actual and standard costs are reflected in cost accounts.

Budgetary Control and Standard Costing. To understand the relation between the above two, we have the common objective of improving managerial control by establishment of predetermined targets measuring the actual performances and comparing them with the target for control purposes. In a way, both the systems are 'forward looking' in their essence and nature. Still, there is a fundamental difference between them insofar as budgetary control in department with comparison of estate and actual results of a department or company is concerned Standard Costing has reference to the comparison of estimated and actual results of manufacturing a product or rendering a service. With this view, both are valuable aids to management in controlling costs.

It is often stressed that Budgetary Control and Standard Costing cannot function independently as both methods involve estimate cost for a future period. Strictly speaking, this is not true, though it is a fact that each functions better in conjunction with the other. When standard costs have been determined, it

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is relatively easy to compute budgets for production costs and sales. On the other hand, in determining standards costs, it is necessary to ascertain the level of output for the period and this is much easier when budgeted level has been formulated.

It can, therefore, be said that budgeting must proceed the accurate and effective determination of price standard for materials, labour and overhead and that conversely a plan of budgetary control is more successfully installed in concerns having standardised prosy stems. This is solidified with evidence by the fact that in U.K.and U.S.A.most concerns that have a forward looking approach to Cost Accounting, do in fact use both the systems. In this way, they are an important adjunct to managerial planning.

Essentials for an effective system of standard costing

(i) Technical processes of operations must be susceptible to planning.
(ii) Standards must be designed to give cost of operation or process rather than of products, so that variances may be traced to their source without laborious investigation.
(iii) Management must take an interest in controlling costs and be aware of the advantages offered by standard costs and use of variance reports.
(iv) Standards must be properly set in order that both management and operating personnel must have confidence in the fairness of standards.
(v) Reports must be prepared keeping management at all levels informed of progress relative to standards.
(vi) The system of record keeping must be as simple as possible.

Motivational Aspect of Standards. Goals are essential for contractive human activities. The idea of pre-determined standards for comparison with results give a most fundamental kind of motivation – the desire to get some purpose- but it needs stress due to the natural human tendency to be satisfied with one's own achievements. Again, standards play the role of an instrument constantly recording progress of plans and highlighting obstacles to such progress. However, standards are like double-edged weapons so that unrealistic standards high-handedly set provoke resentment and degree performance while, those extremely restrictive of individual initiative, produce undesirable side-effect on the behaviour of personnel.

In this way, the problem of standard resolves itself into a problem of human relations, the implications of which cannot be easily overlooked. The policy of encouraging substantial participation by middle and top management in setting standards for performance and the practice of soliciting the participating of the individual worker in the decision and securing his acceptance of the same, is gaining more and more support in industry these days. As a matter of fact, the whole success of the system of control through the use of standards depends on the effect, the programme has on the attitude and motivation of the people.

Guidelines for Establishing a System of Standard Costing. A number of steps are involved in installing a system of Standard Costing. They are:

(a) Establishment of cost centre. According to the Institute of Cost and Works Accountants London:

"A cost centre is a location, person or item of equipment or group of these for which cost may be ascertained and used for the purposes of cost control." A centre that relates to persons is called a personal cost centre and one which relates to location or to equipment is called as an impersonal cost centre.

In establishing cost centre, it is necessary that no doubt should be left as to the persons responsible for each centre. In many instances, departments of functions will form natural cost centre but it is possible that there might be number of cost centres in a department, each of which may be classed as a cost centre.

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(b) Classification of accounts. Accounts are classified to meet a needed purpose, e.g. by function revenue item or asset item. Codes and symbols are used to facilitate speedy collection and analysis of accounts. In this way, a code for elements of example might be as follows:

007-299	Direct materials
300-400	Direct labour
401-490	Indirect materials
491-590	Indirect labour
591-600	Other expenses

(c) Type of Standard. Standards may be broadly classified as to the mode of their expression or the source from which they are derived.

So far as the former is related, standards may show a physical event or a quantitative description of that and are known as physical standards respectively. Physical standards are the basis of Standard Cost System and show unusually reliable engineering or physical estimates that are expressed in tons and gallons produced in operation method or minutes or hours of work. The multiplication of physical standards by proper price factors result in a standard that enable all standards in a company to be expressed in a common denominator, i.e. unit of money and certificate the building up of standard costs.

The basis of the deviation of standards may be different.

Firstly, it may be of an ideal type something to aim, it may show an end to be achieved, the end typifying something which, if achieved, should show sufficient credit on the organisation.

Secondly, standard may be one most likely to be attained and this, in itself, may neither reflect any credit on the organisation nor it may involve a concerted effort.

Thirdly, standard may be of basic type that may not be an ideal figure nor need it be an attainable figure; rather, it is a basis which is used as a measuring rod to compare all actual figures.

There are fundamental differences between standards evolved on these basis through the ideal and attainable and thus have many factors in common. Moreover, there are differences between the Cost Accounting Systems necessary to record these types of standards.

In this way, the types of standard may be described as follows:

(a) Ideal. They reflect a level of attainment that would result if ideal conditions, such as maximum output and sales, best possible prices for materials, most satisfactory rates for labour and overheads are obtained. As the ideal is obviously unrealistic, such standard is, at times, called 'bogey standard'. It does provide a target incentive for employees, but is usually so unattainable that they may feel psychologically depressed owing to persistent adverse variances. Hence, they are not in much use.

(i) Expected Actual. This shows the highest state of efficiency which may be hoped in the real conditions prevailing within a particular unit. Standards are set on a short-term basis calling for the frequent revisions.

(ii) Basic: This is the level fixed in relation to a base year. The principle used in setting the basic is similar to that used in statistics with an index number.

The difference between this and other standard is that, while the basic standard remains in force for a number of years, the other standards are normally revised once a year.

Apart from these three broad standards, sometimes normal meant to smooth out fluctuations caused by seasonal and cyclical changes.

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(b) Organisation for standard costing. It is necessary that the business unit be so organised that departments are clearly designated and lines of authority are cogently defined. Responsibility for setting standards should be given to a specific person or to a committee as the success of a system of standard costing depends upon the reliability of standards. The number of persons concerned with setting the standards will depend on the size and nature of the business but, in large concern, the following will normally be included.

(i) Production controller—He will give details of production requirements in terms of materials, labour and overheads

(ii) Purchase Manager—He will give schedules of prices and give details of market price trends.

(iii) Personnel Manager—He will make ready schedules of rates of pay on labour and possible forecasts of any changes in rates.

(iv) Time and study engineer—Calculation of standard times for many operations involved in the production process is his responsibility.

(v) Cost accountant—He will furnish all necessary cost figures such as overhead recovery rates. Still, his main duty will be to co-operate the activities of the committee so that the standards set will be as accurate as possible and to present the standards as well as standard cost statements in the most satisfactory manner.

Setting of Standard

(i) Direct Material

(a) Quantity. Material specifications will be prepared showing the standard quantity of each type of material needed. Before the ascertainment of standard cost on the basis of the quantity of material to be consumed, normal loss in the process has also to be taken into account.

(b) Price. A standard price will be estimated for each type of material.

(ii) Direct Labour

(a) Time. Standard times, based on the best way of performing each job involved in every operation, by each grade of labour, have to be computed.

(b) Rate. Wage rates for different types of work are set and, in doing so, future trends of wages rates have to be estimated.

(i) Fixed overheads. According to the Institute of Cost and Works Accountants.

"A cost which tends to be unaffected by variations in volume of output is called fixed overhead".

(a) Expenditure. The ascertainment of budgeted output in units or standard hours will be used to compute the overhead recovery rate.

(b) Variable overheads The Institute of Cost and Works Accountants defines :

"Variable overhead is a cost which tends to vary directly with the volume of output."

As it is assumed that the overhead rate per unit is constant irrespective of the quantity produced, it is necessary to calculate only a standard cost per unit per hour.

All these details are given in the standard cost that is made for each product or service. Specimen is given forthwith:

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TABLE 16.1 Specimen

Elements of cost	*Code*	*Quantity Hours*	*Price Rate* Rs.	*Department* A Rs.	B Rs.	C Rs.	D Rs.	*Total* Rs.	*Per unit* Rs.
1. Direct materials	XY 70	50	2.00	100					
	YZ 50	40	3.00			120			
	ZX 30	60	4.00				240	460	3.06
		150							
		50							
Normal loss		100							
2. Direct Labour	P 1	20	1.00	20	20		15	55	1.06
	Q 10	10	2.00						
	R 20	5	3.00						
3. Variable production overheads				10	5		5	15	0.50
4. Fixed Production overheads		200	1.00	200			12.50	262.50	0.45
		100	0.50						
		50	0.25						
								792.50	5.07

STANDARD COST CARD

Product : Cycles Date of Standard….....

Determination of Standard hour. In standard costing, the term 'standard hour' is very often used and it is of great importance. A standard hour has been defined by the Institute of Cost and Works Accountants, London as:

"A hypothetical hour representing the amount of work which should be performed in an hour under standard conditions"

In this way, in simple language 'standard hour' is the quantity of any product which should be produced within one clock hour.

Production is frequently expressed in terms of some physical unit-tons, gallons, pounds. Though this may be satisfactory in a number of cases, it is bound to prove inconvenient where production of commodities expressed in different units has to be aggregated as gases and liquids. To give an example, a factory produced 1,000 tons of sugar and raw sugar was to be produced in one clock hour.

Production measured in terms of standard hours would be:

STATEMENT OF PRODUCTION June….....

Trade name of sugar	Standard units per hour	Output in tons	Production in standard hours
A	100	1000	10
B	200	2000	10
		Total	20

(xii) Classification of accounts.

(xiii) Types of standard

(xiv) Ideal

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(xv) Expected Actual
(xvi) Basic
(xvii) Organization for standard costing
(xviii) Production Controller.
(xix) Purchase Manager
(xx) Personal Manager
(xxi) Time and Study Engineer
(xxii) Cost Accountant
(xxiiii) Setting of Standard
(xxiv) Quantity
(xxv) Price
(xxvi) Direct labour
(xxvii) Time
(xxviii) Rate
(xxix) Fixed overhead
(xxx) Expenditure
(xxxi) Volume
(xxxii) Variable overhead
(xxxiii) Determination of standard hour

ADVANTAGES OF STANDARD COSTING

(i) Planning: For an effective implementation of budgetary control, standard costs are useful. If the standards are fixed very carefully, it will disclose inefficiency in operations and suitable remedial action can be taken immediately.

(ii) Co-ordination: When standards are fixed for all activities, actually we are setting targets and communicating them to all so that every one can work towards the attainment of the overall objective of the firm.

(iii) Cost control: One of the important objectives of Cost Accounting is cost control. Standard Costing is an important tool in the hands of the management for cost control.

(iv) Fixing selling prices: The standard costs fixed can be used as a base for fixing the selling price.

(v) Elimination of the weakness of historical cost system: The use of pre-determined figures in cost account eliminates the historical aspect of cost. They are combined before production is begun, are readily available and are in themselves a valuable guide to arrangement.

(vi) Highlighting of Variances: The comparison between standards and actual reveals the variations so that management can at once take benefit of the principle and proceed according to plan. The fundamental principle underlying standard cost system is that management is not concerned with things which go right but concentrates upon things which go wrong.

(vii) Formulation of Production and Price Polices: In case standards are usefully compiled, they can be used in relation with the preparation of production and price policies in advance. There is much to be said for the view that standard costs are the best basis for establishing such policies inasmuch as such standards usually eliminate the effects of fluctuating volume and, again, avoid any cost increase due to waste or inefficiency. This is so because the very act of setting

standards, if carefully done, discloses avoidable waste and inefficiency before for some kind of incentives.

(viii) Basis of incentive schemes: Standard costs makes it possible give incentives to workmen and supervisors. The standard labour cost impacts incentive schemes. Standard relating to materials to be used may also be the basis for some kind of incentives.

(ix) Inexpensiveness of operations: Though there is frequently a large amount of work involved in the preparation of the standards, the operation of the Standard Cost System becomes relatively simple and cheap once the standard costs have been calculated. In this way, the cost of installation is more but the cost of subsequent operation is less.

(x) Faster reporting: Standard costing allows faster reporting of operating data that is important due to the fact that the value or any information declines as it relates to a period farther and farther in the past. Operations do not come a halt while reports are prepared and sooner they are made available, more corrective action can be taken.

(xi) Facilitating comparison: Providing a common denominator, standard costs give a ready basis for comparison between one period and another. This is particularly true of that Standard Cost System that uses as its basis an index figure comparing other figures with it.

(xii) Promoting efficiency: As setting of standards needs a continuous detailed study of manufacturing, administrative, selling and distribution function, the operation of the system is made more efficient. This brings about an improvement in production methods with resultant lower costs.

(xiii) Basis of stock valuation: The use of standards facilitates the completion of stock figures both in relation to the calculation of the amounts applicable to products and in arriving at final stock figures.

(xiv) Promoter of cost consciousness: Due to the stress of the Standard Cost System on cost variations, the whole organisation can be made cost conscious; foremen and workers can be made to realise the importance of efficient operations so that cost can be reduced by concerted efforts.

In brief, Standard Costing provides a framework for measuring performance, building useful budgets, guiding the process of pricing meaningful product costing and book-keeping economy. Hence, Standard Cost System is widely used presently as it serves as an effective tool for managerial control.

Standard costs have their importance for the analysis of variance. Variance could be defined as the difference between the actual and standard cost. Variance analysis is the process of analysing variances by sub-dividing the total variance in such a way that management can assign responsibility for off standard performance.

Managerial judgement is the typical basis for deciding whether a given variance deserves investigation.

The analysis of variance among companies ranges from very simple to a very complex one depending on such factors so the manufacturing processes, mature of Standard Cost System, the disposition of management or the degree of sophistification of the controller or Chief Cost Accountant.

VARIANCE ANALYSIS

The function of standards in cost control lies in revealing variances between standard costs which are fixed and actual costs which have been recorded.

The difference between the standard cost and the actual cost is known as variance. For example, when actual quantity of material used in production is more than the standard quantity, the result is unfavourable variance as far as material quantity used is concerned. When actual quantity is less than

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the standard quantity, the variance is a favourable one. Like this, for each element of cost, actuals are to be compared with the standards and the resultant variances are to be analysed.

In the case of materials, following are the different types of variances:

(a) Material price variance
(b) Material usage variance
(c) Material cost variance
(d) Material mix variance
(e) Material revised usage variance
(f) Material yield variance

Material Price Variance

The difference between the standard price of material and the actual price of material used for production is known as the material price variance.

Material price variance = (standard price – actual price) × actual quantity of material used.

The possible causes for material price variance may be due to changes in the market price of material, inefficient purchasing, change in the quantity of material used, change in the specification of materials, change in the amount of taxes and duties, etc.

Material usage Variance or Material Quantity Variance

The material usage variance is due to the difference between the standard quantity of material fixed for actual production and the actual quantity of material used.

Material usage variance

= (Standard quantity for actual production) – (actual quantity used) × standard price.

The possible causes for material usage variances may be due to excess wastage of material, careless handling of materials, wrong specification of materials, poor inspection of material etc.

Material Cost Variance

Price × quantity = cost. The total of material price variance and material quantity variance is material cost variance.

Illustration 1 From the following particulars, calculate material price variance, material usage variance and material cost variance.

Standard quantity of material required for one unit of product A is 2 kgs and the standard price is Rs.5 per kg. Actual production was 10 units of product A by using 18 kgs of material at Rs. 5.75 per unit.

Solution Material price variance

= (standard price – actual price) × actual quantity of material used.

= (5 – 5.75) × 18 = Rs.13.50 (adverse)

Material usage variance

= (Standard quantity for actual production) – (actual quantity used) × standard price.

= (20 – 18) × 5 = Rs.10 (favourable)

Material cost variance

Price × quantity = cost.

= (standard cost – actual cost)

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= (standard price × standard quantity) – (actual price × actual quantity)
= (5 × 10) – (5.75 × 18) = Rs.3.50 (adverse).

Material cost variance = material price variance + material usage variance
= 3.50 = – 13.50 + 10

Material Mix Variance

For the production of a product, more than one type of material may be used. The different types of materials may be mixed in a specified ratio. For the mixture of materials, standards are fixed. When there is a difference between the standard mix and actual mix, it is called as material mix variance.

Material mix variance = (revised standard mix of actual input – actual mix) × standard price.

Material Yield Variance

Material yield variance is that portion of material variance which is due to the differences between the standard yield and actual yield obtained. Yield variance occurs when the output of the final product does not correspond with the output that could have been obtained by using the actual inputs.

Yield variance = (standard yield – actual yield) × standard cost per unit
= (standard loss on actual input – actual loss) × standard cost per unit.

Illustration 2 The standard cost of a certain chemical mixture is

40% of material A at Rs.200 per tonne

60% of material B at Rs.300 per tonne

A standard loss of 10% is expected in production. During a period, materials used are 110 tonnes of materials A at a cost of Rs.180 per tonne; 110 tonnes of material B at the cost of Rs.340 per tonne.

The actual weight produced is 182 tonnes of good production.

Calculate:

(a) Material price variance
(b) Material usage variance
(c) Material cost variance
(d) Material mix variance
(e) Material yield variance

Solution:

MPV = (SP – AP) × AQ
Material A = (200 – 180) × 90 = Rs.1800(F)
Material B = (300 – 340) × 110 = Rs.4400 (A)

Total MPV – 1800 (F) + 4400 (A) = 2600(A)

Material usage variance:

(SQ for actual production) – AQ × S.P

SQ for actual; production = standard input of A & b = 40 + 60 = 100
Less expected loss = 10
Expected output = 90

i.e, For 90 standard output, standard input of A = 40
Actual output = 182 tonnes.
For 90 (std output) std input of A = 40

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If so, for 182 output, std input should be

(40/90) × 182 = 728/9

In the same way, For B = 364/3 (std input for actual output)

MUV = Material A (728/9) × 200 = 182 (A)

Material B = (364/3 – 110) × 300 = 3400(F)

Total MUV = Rs.1578 (F)

Material cost variance

MCV = MPV + MUV

MCV of material A = A = MPV + MUV

= 1800(F) + 1822(A)

= 22 (A).

MCV of material B = B = MPV + MUV

= 4400(F) + 3400(A)

= Rs.1000 (A).

Total MCV = 22(A) + 1000(A) = Rs.1022(A).

Material mix variance revised standard proportion – actual proportion) × std price

Material A (80 – 90) × 200 = 2000 (A)

Material B (120 – 110) × 300 = 3000 (F)

Total mix variance = 100

Material yield variance (std loss on actual input – actual loss) × average std price.

Average std price

A = 40 × Rs. 200 = Rs.8000

B = 60 × Rs. 300 = Rs.18,000

100 Rs.26,000

Less loss 10

Output 90

Average std price = Rs.26,000/90 = (20 – 18) × 2,600/9 = Rs.577.77 (F).

Labour Variances

When actual labour costs are different from standard labour costs, labour variances arise. The following are labour variances.

(1) Labour rate variance
(2) Labour efficiency variance
(3) Labour cost variance
(4) Labour mix variance
(5) Labour idle time variance

Labour Rate Variance

Labour rate variance = (std rate – actual rate) × actual labour hrs.

Labour Efficiency Variance

There may be difference between standard labour hours fixed for a job and actual labour hours taken for that job. This difference is termed as labour efficiency variance. The following are the possible causes of labour efficiency variance.

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(a) Time may be wasted due to defective machines
(b) Time taken may be more due to ineffective supervision
(c) Time taken may be more due to poor working conditions
(d) Standards fixed may not be more due to poor quality of materials

Labour efficiency variance = (std time-actual time) × std rate.

Labour Cost Variance

The difference between the standard cost of labour for actual output and actual cost of labour for actual output is known as labour cost variance.

Labour cost variance = (std rate × std hours) – (actual rate × actual hours)

Labour Mix Variance

A job or a product may require different grades of workers for production. It may be in the form of skilled, semi-skilled and unskilled labourers. For the combination of different grades of workers, standard proportion or ratio may be fixed. But, when there is difference between the standard mix and actual mix of labour, it is termed as mix variance.

Labour mix variance
= (revised standard proportion of actual hours – actual hours) × standard rate per hours.

Idle Time Variance

Idle time variance occurs when workers are not able to do the work due to certain reasons for which they are paid. This variance is computed to show the impact of normal causes affecting production like power failure, shortage of materials etc.

Idle time variance = abnormal idle time × standard rate

Illustration 3 Standard labour hours and rate for production of one unit of article X are given below:

	Hrs.	Rate/hour	Total
A Grade	5	Rs.1.50	R.7.50
B Grade	8	Rs.0.50	Rs.4.00
C Grade	4	Rs.75	Rs.3.00

Actual data

Articles produced 1000 units

	Rate/hours	Total
A grade 4,500 hrs	2.00	9,000
B grade 10,000 hrs	0.45	4,500
C grade 4,200 hrs	0.75	3,150
		16,650

Calculate labour cost variance, labour rate variance, labour efficiency variance and labour mix variance.

Solution

(A) Labour cost variance = (std hrs for actual production × std rate) – (actual hrs × actual rate)
Grade A (5000 × 1.50) – (4500 × 2) = 1500 (A).
Grade B (8000 × 0.50) – (10000 × 0.45) = 500 (A)

Grade C (4000 × 0.75) – (4200 × 0.75) = 150 (A).

(B) Labour Price variance = (std rate – actual rate) × actual hours

A grade (1.50 – 2) × 4500 = Rs.2250 (A)

B grade (.75-.75) × 4200 = Nil

C grade (0.50 – 0.45) × 1000 = 500 (F).

(C) Labour efficiency variance =

A grade (5000 – 5500) × 1.50 = 750 (A)

B grade (8000 – 8800) × 0.50 = 400 (A)

C grade (4000 – 4400) × 0.75 = 300 (A)

(D) Labour mix variance = (Rev std mix of actual hours worked) – actual mix) standard rate)

A grade (500 – 4500) × 1.50 = 1500(F)

B grade (1000 – 8800) × 0.50 = 600 (A)

C grade (4400 – 4200) × 0.75 = 150 (F)

Overhead variances

Computation and analysis of overhead variances are more complex than material and labour variances. Actually, there is no standardisation of methods or terms used for computing overhead variances. ICMA, UK has suggested the computation of the following overhead variances.

(i) Total overhead cost variance
(ii) Expenditure variance
(iii) Volume variance
(iv) Capacity usage variance
(v) Calendar variance
(vi) Volume efficiency variance

Total overhead cost variance

= (std hours for actual output × std rate of over head per hour) – actual overhead

or

(actual output × std overhead rate per unit) – Actual overhead incurred.

Expenditure Variance

(Difference between actual fixed overhead costs incurred and budgeted overhead costs)

Expenditure variance = (budgeted overhead cost – actual overhead costs)

Volume Variance

(The difference between budgeted and absorbed overhead costs)

Volume variance = (budgeted overheads – overheads absorbed)

where overheads absorbed = actual output × Std overhead rate.

Capacity Usage Variance

This indicates the effect of working above or below the capacity level.

Capacity usage variance = (budgeted hours – actual hours) × std overhead absorption rate.

Calendar Variance

A portion of volume variance due to the difference between the number of working days in the budget period and the number of actual working days in the period to budget is applicable.

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Volume Efficiency Variance

Volume efficiency variance

= (Actual hours worked – standard hours of the work finished) standard overhead absorption rate.

Sales Variances

In addition to cost variances, it is also necessary to analyse the sales variances. Sales variances is the difference between budgeted value of sales and the actual value of sales obtained during a given period.

Sales variances (profit method)

Total sales margin variance: The difference between the budgeted profit and actual profit is termed as sales margin variance

= (Actual quantity of sales × actual profits – budgeted quantity of sales × budgeted profit per unit)

The difference in sales margin (profit) may be due to difference in price and /or difference in volume of sales

Sales margin variance due to selling price

Actual quantity of sales × (actual selling price per unit – standard selling price per unit)

Sales margin variance due to volume

= Standard profit per unit × (actual quantity of sales – std quantity of sales)

Sales Variances (Value Basis)

(i) Sales value variance is the difference between the standard value of sales minus actual value of sales.

(ii) Sales price variance is that part of value variance due to the difference of value in actual price and std price. Actual quantity sold × (actual price – std price)

(iii) Sales volume variance is that part of value variance which is due to the difference between actual quantity and std quantity sales

(iv) Sales mix variance: when more than one product is sold, the difference between the proportion in which various products are sold and the std proportion is termed as sales mix variance.

Sales mix variance = std value of actual mix – std value of revised mix.

CLASSIFICATION OF VARIANCES

Variances show the extent to which a desired level of performance as defined by management, has been achieved. They may be separated by department, by cost and by elements for cost-price and quantity. Different industries stick to different variances. There may be large number of variances, but those which are frequently used in practice are as given hereunder:

I. Basic Variances

(a) Direct Labour Variance.

(b) Variable Overhead Variance

(c) Fixed Overhead Variance

(i) Based on units.

(ii) Based on standard hours.

There are two different types of variances:

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Price variance and Volume variance.

Price variance deals with price factor and relates to prices of materials, rates of labour expenditure on overheads or selling prices of products.

Volume variance has reference to quantity and is related to quantity of units in terms of raw materials consumed, number of hours worked, utilisation of plant or number of articles sold. In this way, price variance has the following branches

(i) Material Price Variance
(ii) Labour Rate Variance
(iii) Variable Overhead Expenditure Variance
(iv) Fixed Overhead Expenditure Variance
(v) Sale Price Variance

So, volume variance has the following divisions :

(i) Material usage Variance
(ii) Labour Efficiency Variance
(iii) Fixed Overhead Volume Variance
(iv) Sale Volume Variance

These price and volume variances get submerged in the cost variance. In the same, for sales there is a total variance known as value variance which is the total of price variance and volume variance.

Variable Overhead Cost Variance is shown by only one variance i.e.the expenditure variance as variable overhead costs differ directly with production so that only a change in expenditure can affect costs.

II. Advanced Variances

Basic variances though useful do not meet all the needs of the management. It is not sufficient to know that volume has changed. It is more important to know the cause of change. So, the simple variance analysis can be done in the following way:

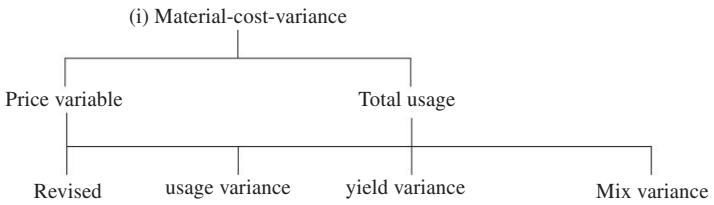


FIG. 16.1

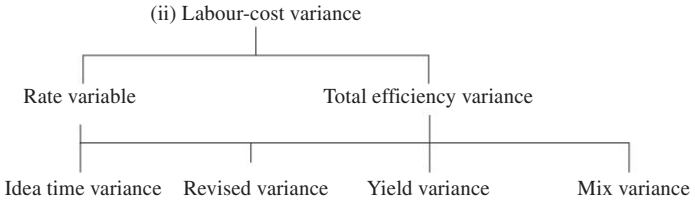


FIG. 16.2

(iii) Variable overhead-cost variance-Expenditure variance

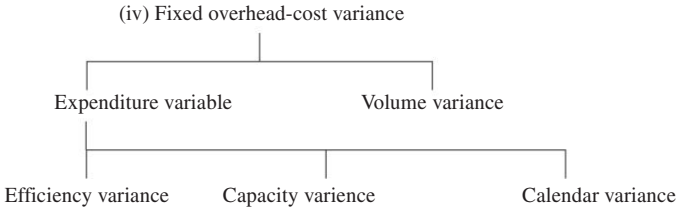


FIG. 16.3

Direct Material Variances

(I) Cost Variance. The difference between the standard cost of standard quantity of materials for actual output and the actual cost of material consumed, is called cost variance.

Cost variance – standard cost – Actual cost.

Standard cost and actual cost are known as:

Standard cost = Standard price per unit X Standard quantity.

Actual cost = Actual price per unit X Actual quantity consumed.

Standard quantity means the quantity of materials which ought to have been consumed according to the standard usage rate for producing the actual output (i.e. Actual output X Standard quantity of material per unit of output). A favourable variance would result if standard cost is more than actual cost and vice versa.

(i) Material Price Variance. Effectiveness of purchasing from the point of management is measured by comparing the amount paid for a certain quantity of materials against the amount that would have been paid had materials purchased been available at standard price. Material price variance has been available at standard price. Material price variance has been designed for such a comparison.

Price variance is calculated by combination of factors including changes in prices, uneconomical size of purchase orders, poor purchasing procedures, excessive freight charges and failure to avail of discounts allowed.

Actual quantity consumed (standard unit price-actual unit price) or AQ(SP – AP)

It is also expressed as:

Actual Quantity at Actual – Actual at standard price.

A favourable variance arises if the actual price is less than standard price and vice versa.

(ii) Total Usage or Quantity Variance. The variance due to non-standard usage is based on the deviation of actual quantity consumed in production from standard that should have been used for actual output.

The pricing factor will be the standard price.

It may be noted that by calculating the price variance, variation in cost due to difference in standard and actual prices for actual quantity of material consumed, has been separated. Hence, in the computation of all other variances of materials, standard price only will be used.

In this way, 'material usage variance is calculated by multiplying the standard unit price of materials with the difference between the actual quantity of materials used and the standard price only will be used.

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In this way, 'material usage variance is calculated by multiplying the standard unit price of materials with the difference between the actual quantity of materials used and the standard quantity.

Standard Unit Price (Standard Quantity – Actual Quantity) or
SP(SQ – AQ)
Actual Quantity at standard Price – Standard Quantity at Standard Price

Classification of Total usage Variance

Where more than one type of material is used for producing the finished products, total usage variance may be subdivided into Material Mix Variance and Material Yield Variance or Material Revised usage Variance.

(a) Material Mix Variance

It is defined as:

"That portion of the direct Material total usage variance which is due to difference between the standard and actual composition of a mixture."

So, material mix variance comes only when there is a mixture of quantities issued to production differ from the standard quantities, it leads first to the emergence of 'material total usage variance' but, if part of the total usage variances is due to the change in the composition of the mixture, that part is taken apart as 'material mix variance'.

Mix variance is got by multiplying the standard price per unit of materials with the difference between actual proportions of different types of materials in the actual total quantity used and the standard proportions of those materials in actual quantity used. In the terminology of standard costing, standard proportions of materials in actual total quantity used are referred to as 'Revised Standard Quantity'

Standard unit price (Revised Standard Quantity – Actual Quantity)
Or SP (RQ – AQ) or

Standard Cost of Revised Standard Mix (Standard proportions of Actual quantities used) – Standard cost of Actual mix.

Or SC of RSM – SC of AM
Revised Standard quantities will be calculated:
Standard Quantity of any one material
Total of Standard Quantities of all types of materials
Total of Actual quantities of all materials.

(b) Material Revised usage Variance

It is the residue left after separating material mix variance. In this way, it is that portion of material total usage variance that is attributed to reasons other than the difference between standard and actual proportion of actual quantity used.

Standard Unit Price (Standard Quantity – Revised standard Quantity) or SP(SQ – RSQ)

(c) Material Yield Variance

In process industries, loss in production may be normal or abnormal. Normal loss is taken into account while setting the standard for normal expected yield or output. But, very often actual differs from standard output due to abnormal process and this difference is separately expressed as yield variance.

In this way, Yield variance shows that portion of Material Total Usage variance which is due to the difference between the standard yield and the actual yield obtained. Standard yield is the output that should have resulted from actual input of materials according to the standard expectation.

There is one difference between yield variance and other Material Variances (i.e. price usage and mixture variances), in that yield variance is an output variance while others are input variances.

Standard Material Cost per unit of output (Standard yield (output) – Actual yield)

or

Standard Material Cost per unit of output (SY – AY)

Standard Material Cost per unit of output can be given as:

Standard Cost of Standard Mix in Rs.

Total Net Standard Output in units

Or

Standard Material Quantity per unit of output X Standard Price per unit of Material

Where several types of raw materials are used, Revised usage variance and Yield variances imply the same thing, although calculated by different formulae. Both reveal the effect on cost of the difference between the actual usage of rate of materials and the standard usage rate. In numerical problems, hence, both these variances will work out to the same figure.

In case where only one type of material is used, total usage variance and yield variance will show the same numerical result.

Diagrammatic Representation of Material Variances

(i) Where one type of material is used:

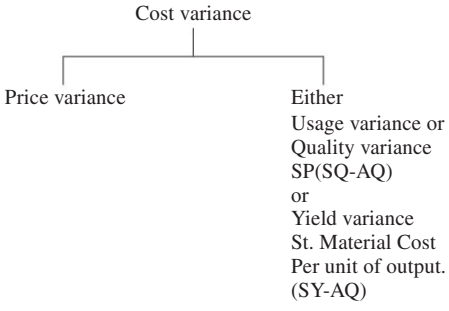


FIG. 16.4

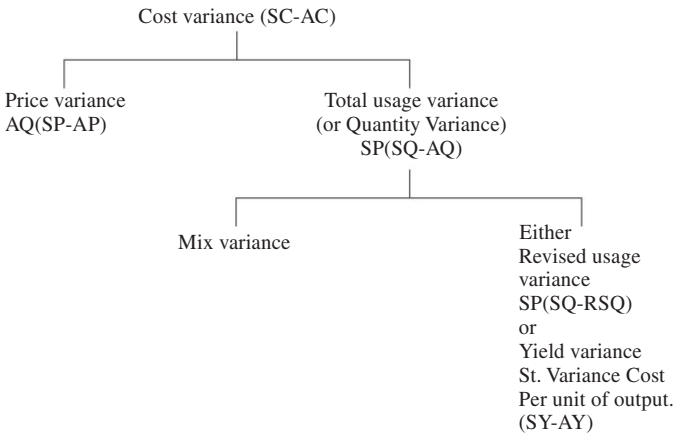


FIG. 16.5

(ii) Where more than one type of material is used:

Cost variance = Price variance + Mix variance + either

Revised usage Variance or yield variance

Example : Cost variance

Standard Cost – Actual cost

Or SC – AC

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/ Rs.1,000 – Rs.1,500
/ Rs.500 unfavourable

(i) Standard Rate = Standard Cost per ton = Rs.40
Standard output per ton 100 units

(ii) Standard Cost = Actual Production × Standard Rate
= 10,000 × 40 P. = Rs.4,000

(iii) Actual Cost = Quantity purchased × Actual purchase price per unit
= 100 tons × Rs.40.50
= Rs.4,050.

Direct Labour Variances

Cost Variance. Labour Cost Variance or direct wages variance is the difference between the direct wages calculated according to the standard specified for the activity achieved and actual direct wages paid. In this way, it shows total deviation of actual labour cost from the standard labour cost.

Labour cost variance = standard cost – Actual cost or SC – AC

Or

(Standard hours × Standard Rate) – (Actual hours × Actual Rate)

Like the material cost variance, labour cost variance have two basic variances:

(i) Rate Variance
(ii) Total Efficiency Variance

Rate Variance. It is that portion of labour cost variance which is due to the difference between labour specified in the standard for the activity achieved (for actual output) and the actual labour hours paid for. This is comparable with material total usage variance.

Actual Hours (Standard Rate – Actual Rate) or AH (SR – AR)

Total Efficiency Variance (or labour Time Variance). It is that portion of labour cost variance which is due to the difference between labour hours specified in the standard for the activity achieved (for actual output) and the actual labour hours paid for. This is comparable with material total usage variance.

Standard Rate (Standard hours for actual output – Actual hours)

Or

SR(SH – AH)

Classification of Total Efficiency Variance

Where abnormal idle time occurs, Total Efficiency Variance can be divided into two sub-variances.

(i) Idle Time Variance
(ii) Revised Efficiency Variance

In cases where the composition of the Standard gang and Actual gang differs and abnormal idle time has been paid for, total efficiency variance may be divided into three sub-variances.

(i) Idle Time Variance
(ii) Mix Variance
(iii) Revised Efficiency Variance

Idle Time Variance. The standard cost of actual hours any employee remains idle due to circumstances, like strikes, lock-outs, power failure is idle time variance. Even though standards are set as carefully as possible, idle time will still happen due to unforeseen factors. This abnormal idle time must be shown

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separately and not concealed in the efficiency variance; otherwise employees may be controlled for inefficiency when the time loss may have been beyond their control–a breakdown of power supply. This variance is always adverse and necessitates investigation to discover the cause of abnormal idle time.

Idle Hours X Standard Rate

This variance is always unfavourable.

Mix Variance (or Gang Composition Variance). At times, the composition of Actual Gang of Labour may differ from that of the standard gang due to shortage of a particular grade of labour or some other reason. Labour mix variance is calculated to show to the management how much of the Total Efficiency to variance is due to the change in the composition of labour force. This variance is like the materials Mix Variance.

Standard Rate (Revised standard hours X Actual hours)

Revised Standard Hour means actual labour divided into the ratio of standard hours. If a separate efficiency variance is not to be computed, labour mix variance can be calculated as follows:

Standard Cost of Standard mix-Statement Cost of Actual Mix

The mix variance worked out with the help of above formula, would, in fact combine both Mix Efficiency Variances in one variance.

Revised Efficiency Variance. It is the residue total, efficiency variance left after separating the reform, both labour mix variance and idle time variance. It shows the variation in labour cost due to actual hours being more or less than the number of hours according to standard shown for output.

Standard Rate (standard hours – revised Revised hours).

Labour Yield Variance. Just like the materials yield variance, some accountants calculate a labour yield variance also. This variance shows the effect on labour cost of actual yield or output being more or less than the yield or output expected (according to standard specified) by use of actual hours. It is a variance of output but numerically is equal to revised efficiency (i.e after separating Mix Variance and Idle Times Variance from Total Efficiency Variance). If the actual yield is more, the variance is called favourable and vice versa. It can be reckoned by the following formula:

(i) Standard Labour Cost of one Standard Gang hour (Standard Yield expressed in standard Gang hours-Actual Yield Expressed in standard gang hours).

or

(ii) Standard Labour Cost of one unit output (Standard Yield in units of output-Actual yield in units of output).

Standard yield in either formula means expected output by use of actual hours, according to standard specified.

Labour Revision Variance. At times, wages rated have to be revised subsequent to the setting of the original standard on account of an Award or Agreement with trade unions. If the management wants the effect of revision of wage rate to be shown, a separate Revision Variance may be calculated thus:

Wage Revision variance. (Standard labour Cost of Actual production at original Standard rate-Standard Labour Cost of Actual production at Revised Standard Rate.)

This variance is usually unfavourable as revised Standard Wage Rate is ordinarily higher than the original Standard Wage rate:

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Where a separate Wage Revision Variance is computed, labour cost variance will be calculated on the basis of original standard wage rate, while the rest of labour variances is calculated on the basis of the revised wage rate.

Wage Revision Variance

(2,000 standard hours × Rs.3) – (2,000 standard hours × Rs.4)

= 6,000 – 8,000 = Rs.2,000 (Unfavourable)

Diagramatic Representation of Labour Variance.

(i) Where one type labour is used

Standard Labour Cost per unit of Output (Standard yield in variance would be sub-divided into two variances.

or

Yield variance

Standard Labour Cost per unit of output (SY – AY)

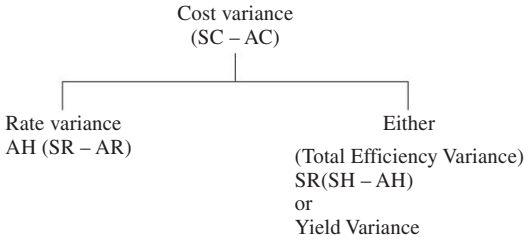


FIG. 16.6

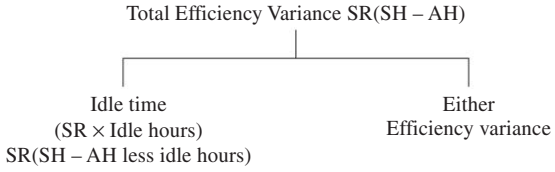


FIG. 16.7

(ii) Where different grades of labour are used

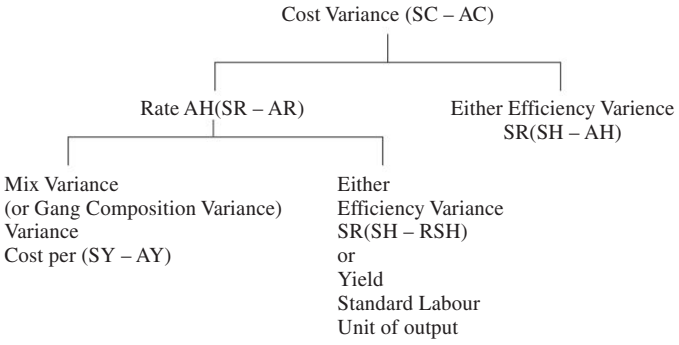
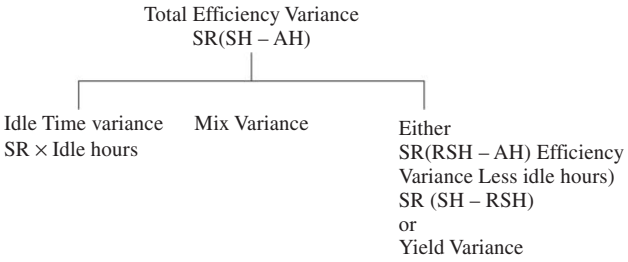


FIG. 16.8



Standard labour per unit of output (SY – AY)
Example: Cost – Actual Cost
Rs.7,200 – 5,200
Rs.2,000 favourable

Variable Overhead Variance. The variance is probably the most simple. As variable overheads tend to move in step with the output, the standard cost per unit will remain the same irrespective of the level of output achieved. In this way, the volume does not affect the cost per unit and the only factor leading to difference is price, with the result that only price variance, known as variable overhead expenditure variance is calculated in the same manner as fixed overhead variances. Still, for the purpose of these variances, it is assumed that variable overhead do move directly with output.

Example,

(i) Expenditure Variance
Standard Cost – Actual Cost
Or SC – AC
/Rs.6,000 – 7,000
/Rs.1,000 unfavourable

Sometimes, a little refinement is introduced in the calculation of variable overhead variance and, hence the computation follows as:
Variable Overhead Expenditure Variance
Actual cost – Standard Overheads on hours worked
/Rs.8,000 – Rs.5.000
/Rs.3,000 unfavourable.

(ii) Variable Overhead Efficiency Variance
Standard Variable on hours worked –
Standard Variable overhead on Actual output
/Rs.5,000 – Rs.1,000
/Rs.6,000

(iii) Variable Overhead Total Variance
Expenditure Variance + Efficiency Variance
/Rs.1,500 unfavourable + Rs.500 favourable
/Rs.1,000 unfavourable.

Fixed Overhead Variance. Currently, overheads have become an interestingly vital element in the cost of production due to repaid steps of mechanisation of production processes. In many lines of highly mechanised business, they are the largest single element of cost. This does not necessarily imply any inefficiency. In view of the fact that fixed overheads have assumed, and are assuming great importance, it became necessary for the management to keep itself informed of the Standard Costs of fixed overheads as well as significant variances in connection with them.

As fixed overheads are to be charged to production on some indirect basis, the most important problems regarding fixed overhead variances is that which depends on two fundamental factors-output during a period, or output expressed in standard hours and overhead expenses during the corresponding period.

By way of interplay of these factors, the standard fixed overhead cost per unit is reached at by dividing the budgeted output for a period into the budgeted fixed overheads during the same period. In the context

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of fixed overhead cost per unit, the standard cost of production is evaluated, so that a deviation of this figure from the budget would show an over-recovery or under-recovery in respect of fixed overheads. Deviation might be the result of either a change in overhead costs or a change in output.

Hence, fixed overhead variances may be computed either on the ground of units of output from the basis of standard hours. Though both the methods are used, stress is usually on the first method.

Salient terms

(i) **Budgeted cost.** This is got by multiplying the quantity budgeted for production with standard cost per unit.

(ii) **Standard output.** This shows the quantity which should have been produced during the actual hours worked.

(iii) **Actual output.** This is the actual quantity produced at actual cost per unit.

(iv) **Budgeted output** This shows the quantity to be produced during the budget period with the number of hours budgeted to be worked.

Based on units of output,

I. Cost Variance. It is the difference between the standard cost and actual cost relating to fixed overheads. The variance may be shown as

Standard cost – Actual cost or SC – AC

Under this, standard cost can be obtained by multiplying actual output by standard rate and the latter is calculated by dividing the budgeted output into budgeted fixed overheads.

II. Volume Variance. This shows the variation in overhead recovery due to the budgeted quantity of products being greater or less than actual production. It shows that the quantity that is obtained has deviated from that budget. This may be the outcome of the interplay of a number of factors, two most important being a change in efficiency, and capacity used. As a result, volume variance is analysed into efficiency variance and capacity variance that are its sub-variances. At times, Calendar variance arises due to the actual number of days worked being variance. The formulation for volume variance is standard rate (Actual Quantity – Budgeted Quantity)

SR (AQ – BQ)

III. Efficiency Variance. The variance is closely connected to labour efficiency variance, as if the workers have been efficient, the production will be above standard with consequence that overheads would be over-recovered. The variance shows the deviation of standard from the quantity produced.

The formula is

Standard Rate (Actual Quantity – Budgeted Quantity) or SR (AQ – BQ)

Standard Quantity is the product of actual hours and standard quantity per hour.

IV. Capacity Variance. It shows the over-utilisation or underutilisation of plant and equipment. The formula is as given below:

Standard Rate (Standard Quantity – Budgeted Quantity) or SR – (SQ – BQ)

V. Expenditure Variance. This shows the deviation between the budgeted expenditure and actual expenditure. In symbols, the variance is

Budgeted Cost – Actual cost or BC – AC

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VI Calendar variance. The variance arises due to the actual number of days worked being different from the number of days budgeted for work. This may be the result of unexpected public holiday being declared so that the work is stopped. It is usual to show the impact of such a change as it affects the firm's capacity.

In this way, it is also a sub-variance of volume variance. The formulation for the variance taken is as follows:

Standard Rate (Revised Budgeted Quantity – Budgeted Quantity) or SR (RBQ – BQ)

The inter-relationship of the various fixed overhead variances can be detailed as follows:

Volume Variance + Expenditure Variance = Cost Variance
Or (SC – BC) + (BC – AC)
Or SC – BC + BC – AC
Or SC – AC

Efficiency Variance + Capacity Variance = Volume Variance
or (AQ – SQ) + (SQ – BQ)
or AQ – SQ+ SQ – BQ
or AQ – BQ

Efficiency Variance + Capacity Variance + Calendar Variance = Volume Variance
or (AQ – SQ) + (SQ – RBQ) + (RBQ – BQ)
or AQ – SQ + SQ – RBQ + RBQ – BQ
or AQ – BQ

Example,

Cost Variance
Standard Cost – Actual Cost
Rs. 1,10,000 – Rs. 1,20,000
Rs.10,000 unfavourable.

Based on standard hours, sometimes variance are calculated on the basis of standard hours and despite the change in the method of calculation, the ultimate results would be the same. In this way, the variance calculated shows both the methods are bound to be similar. As a matter of fact, they are two different ways of looking at the same thing.

(i) Cost Variance. It is the difference between standard cost and actual cost. Standard cost is the product of standard hours and standard rate per hour while standard hours are the quotient got by dividing standard output per hour into actual units produced, standard rate is the result of budgeted overheads, being divided by budgeted hours. The symbolical representation of the variance will be:

Standard Cost – Actual Cost Or SC – AC

(ii) Expenditure Variance. This is the amount by which actual cost deviated from budgeted cost, and is hence expressed by

Budgeted Cost – Actual Cost Or BC – AC

(iii) Volume Variance. It is got by multiplying standard rate per hour with the difference between standard hours and budgeted hours. The algebraic expression for variance is:

Standard Rate (Standard hours – Budgeted hours) Or SR(SH – BH)

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(iv) Efficiency Variance. The variance is the product of the difference between standard hours and actual hours as well as the standard rate and the formula will be:

Standard Rate (Standard hours – Actual hours) Or SR (SH – AH)

(v) Capacity Variance. It is the difference between actual hours and budgeted hours expressed in standard rate.

Standard Rate (Actual hours – Budgeted hours) Or SR(AH – BH)

Example,

Cost Variance:

Standard Cost – Actual Cost

Rs. 1,10,000 – Rs.1,15,000

Rs. 10,000 unfavourable

Expenditure Variance:

Budgeted Cost – Actual cost

Rs. 1,10,000 – Rs.1,15,000

Rs. 10,000 unfavourable

Sales Variance

Standard Costing Systems are so planned as to present different types of cost variances like material labour and overhead variances. These affect the profit, no doubt, and hence, are of great importance to management. Cost variance do not project a form idea of change in profit as the determination of profit depends much on sales as on the cost production.

From this view point, a Standard Costing System is thought over as incomplete unless sales variance are considered with it as a part of comprehensive information presented to management. Despite this importance of sales variances, they are the most difficult as regards their computation.

Sales variance can be presented in two different ways and while the two separate approaches to the calculation of fixed overhead variance based on units of output and standard hours yield the same results, different results emerge under two methods of calculating sales variance. Though the final results under the two methods are not similar, both of them are useful for a complete system of Standard Costing. The two approaches to the calculation of sales variance are the turnover methods and the profit method bringing out the effect of changes in sales on turnover and profits respectively.

Changes in price and changes in sales volume give rise to sales variances. A change in volume may in its own turn, be the result of either a change in quantity or a change in the mix of sales. In this way, the total change is the cumulative effect of change in price change, in volume change, in quantity and change in mix.

Besides the two methods of calculation of sales variance, there are two techniques that can be used for the purpose and these are:

(a) **The Quantity Technique.** The basis of calculation according to this technique is the quantity of sales.

(b) **The Value Technique.** This is concerned with the value of sales as the basis of calculation.

A very important point in connection with the two techniques is the condition under which they are to be used, irrespective of the fact whether sales variances are to be calculated from the point of view of the effect on profits, or on the sales themselves as quantity and value will surely not deviate from the budget in the same proportion.

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Quantity should be used as a measure of variance only where there is a similarity between the articles that result in the total of individual quantities being a useful and informative figure. In case quantity does not yield a meaningful figure owing to the individual articles composing the quantity being of an entirely divergent type, the quantity alone cannot give a common reference criterion and hence, value expressed in money valued alone gives the basis for the calculation of variance.

Causes and Disposition of Variances

To make variance analysis of some use, it must serve as a control instrument. This needs that the causes of variance should be determined and reported to management for initiating action to rectify an unfavourable variance or to sustain and support a favourable one.

Uniformity of views regarding the disposition of variances is lacking. Still, some broad general rules can be enumerated. In case it is desired to maintain the same standard in future, all variances must be written off to profit and loss account.

According to strict principle, the amount of variances resulting from incorrect standards or conditions beyond control like material price changes, wage rate increases due to fair wages legislation, are apportioned to inventories and cost of goods sold in proportion to number of units or value of period's production constituting inventories and denoting goods sold during the period, other than those in specifications.

(i) Material Price Variance. This variance comes from emergency purchases increase or decrease in market price or delivery costs, seeking of credit and loss of discount incorrect or inadequate shipping instructions, purchases of materials other than those in specifications.

Where the whole or a portion of price variance is caused due to inefficiency or from efficient purchasing, the amount is transferred to Profit and Loss account; in case the variance is the outcome of change in market price or the use of incorrect standards, the amount is adjusted to inventories and cost of goods sold in proportion to the material value or material quantity purchased during the period which remains in each inventory stage and which is denoted by cost of goods sold.

(ii) Material Usage Variance. Sub-standard quality of materials, indifferent handling of materials, incorrect setting of standards, change in material mix and use of different products or production methods are some of the causes of material usage variance. So far as the amount of usage variance results from inefficiency in handling and processing materials, it is transferred to Profit and Loss Account, but usage variance as the resultant of incorrect standards is spread over work in progress, finished goods and cost of goods sold.

(iii) Wage Ratio Variance. The factor responsible for wage rate variance are the payment of wages above or below the standard rates. Upward revision of wages by executive, flat the use of labour other than that in specification and abnormal overtime.

That part of wage rate variance which is the result of inefficiency and is subject to control is transferred to Profit and Loss Account but the amount of variance arising out of the use of faulty standard or from uncontrollable conditions is apportioned to work in progress, finished goods and cost of goods sold on the basis of time or wages.

(iv) Labour Efficiency Variance. This comes due to enforced idle time resulting from unusual conditions like power breakdown, non-co-operative attitude of labour, indifferent supervision, poor working conditions, inefficiency of service departments, use of sub-standard quality of materials and employment of workers below the standard.

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The quantum of variance thrown up by different forms of controllable inefficiencies is transferred to Profit and Loss Account, while the value of variance, which results from unsatisfactory standard and from uncontrollable conditions is adjusted to finished goods, cost of goods sold and work-in-progress.

(v) Overhead Expenditure Variance. The non-availability of specified service, inefficiency in the case of service, under or overutilisation of service and seasonal conditions bring about overhead expenditure variance.

The amount of variance attributable to controllable factors is transferred to Profit and Loss account, while the quantum arising from uncontrollable conditions and unsatisfactory standard is adjusted to work-in-progress finished goods and cost of goods sold. Still, variance as a result of seasonal conditions is treated as a deferred term.

(vi) Overhead Capacity Variance. The variance is the result of seasonal conditions, shortage of labour enforced, idle time like power breakdowns or strikes, customers demand being more or less than anticipated.

While the amount of variance resulting from seasonal factors is treated as a deferred item, and the one due to inefficient operations arising from controllable conditions is transferred to Profit and Loss Account, the quantum of Variance resulting from abnormal idle time beyond the control of management is transferred to Profit and Loss Account.

Illustration

TABLE 16.2

Article	*Quantity*	*Rate*	*Sale Proceeds Rs.*	*Qty*	*Rate*	*Sale Proceeds Rs.*
A	2,000	50	1,00,000	1,500	50	75,000
B	5,000	20	1,00,000	2,500	20	50,000
C	8,000	10	80,000	4,000	10	40,000
	15,000		2,80,000	8,000		1,65,000

If, in the above example A, B and C are different editions on a book on art-deluxe, cloth bound and plastic back editions respectively, the figure of 15,000 for budgeted quantity and 8,000 for actual quantity of sales of the book are homogeneous figures, at the same time real and useful.

However, if A, B and C denote widely divergent goods sold by C departmental store-watches woolen clothes and handkerchiefs respectively-the total of these heterogeneous items would hardly give a common denominator in terms of which variance may be calculated.

The noteworthy fact emerging from the above table is that while sales have fallen by 50% in terms of quantity, the reduction in terms of value has been more than 40%. The difference in percentage reduction is accounted for by a comparatively small reduction in sales of A, the most expensive item.

Variances based on Turnover

(i) Value Variance. It is the difference between budgeted sales and actual sales. Showing the total variance made up of volume and price variances, sales variances are the responsibility of sales manager.

The symbol representation of the variance is:

Budgeted Sales – Actual Sales

Or BS – AS

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280,000 – 1,65,000 = Rs. 1,15,000

(ii) Volume Variance. The Variance shows the amount by which standard sales deviate from budgeted sales. It shows the effect of a change in volume on total sales.

Budgeted Sales – Standard Sales

Or BS – SS

(iii) Price Variance. The amount by which actual sales deviate from standard sales constitutes price variance. It reveals to the management the effect of change in prices or turnover.

It is represented in symbols as:

Standard Sales – Actual Sales

Or SS – AS

(iv) Quantity Variance When revised standard sales differ from budgeted sales, it is called Quantity Variance. This variance shows the position of actual quantity of sales as distinct from the mix of sales in comparison with budgeted or expected sales.

The formula for the variance is:

Budgeted Sales – Revised Standard Sales

Or BS – RSS

(v) Mix Variance. The variance consists of the deviation between revised standard sales and standard sales. It highlights the fact that the actual mix of sales has not been in the same ratio as budgeted. The variance is shown in symbols as:

Revised Standard Sales – Standard Sales

Or RSS – SS

The variances can be diagrammatically shown as thus:

Value Variance = Volume Variance + Price Variance
= (BS – SS) + (SS – AS)
= BS – SS + SS – AS
= BS – AS

Volume Variance = Quantity Variance + Mix Variance
= (BS – RSS) + (RSS – SS)
= (BS – RSS + RSS – SS)
= BS-SS

Variances Based on Profits

(i) Value Variance. The difference between budgeted profits and actual programme institutes value variance. The algebraic representation for the balance will be:

Budgeted Profits – Actual Profits

(ii) Price Variance. It is the difference between standard profit and actual profit. This variance would exactly be the same as price variance and calculated according to the turnover method owing to the fact that a price change would affect turnover and profit equally. In symbols, the variance would be

Standard Profits – Actual Profits

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(iii) Volume Variance. It is the amount by which standard profit differs from budgeted profit. There is an obvious inter-relationship between this variance and the volume variance according to the turnover method in such as it would equal the percentage of profit on the volume variance calculated under the turnover method. The formula for variance is

Budgeted Profits – Standard Profits

(iv) Quantity Variance. The amount by which revised standard profit deviates from budgeted profit is called Quantity variance. This is also converted to the quantity variance under the turnover method as it is equal to the percentage of profit on the latter. The formula for the variance is

Budgeted Profits – Revised standard Profits

(v) Mix Variance. The difference between the revised standard profit and standard profit is the mix variance. It can be shown symbolically

Revised Standard Profits – Standard Profits

The inter-relationship of various sales variances based on profits may be given as follows:

Value Variance = Volume Variance + Price Variance
Value Variance = Quantity Variance + Mix Variance
Value Variance = Price Variance + Quantity Variance + Mix Variance

Example Value Variance

Budgeted Profit – Actual Profit

P Rs. 40,000 – Rs.10,000 = Rs. 30,000 unfavourable
Q Rs. 10,000 – Rs.35,000 = Rs. 25,000 favourable
Total Rs. 50,000 – Rs. 45,000 = Rs. 5,000 unfavourable

Price Variance

Standard Profit – Actual Profit

P Rs. 30,000 – Rs.10,000 = Rs. 20,000 unfavourable
Q Rs. 20,000 – Rs.30,000 = Rs. 10,000 favourable
Total Rs. 50,000 – Rs. 40,000 = Rs. 10,000 unfavourable

Statement of Budgeted Sales, Cost and Profits
For December, 2007

TABLE 16.3

Copies	*Quantity*	*Sales Rate*	*Amount*	*Rate*	*Cost Amount*	*Rate*	*Profit Amount*
			Budget				
	Units	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*
P	800	40	32,000	50	45,000	10	8,000
Q	600	50	30,000	60	25,000	10	6,000
R	900	60	54,000	50	75,000	10	9,000
	2,300		1,16,000		1,45,000		23,000

TABLE 16.4

			Actual				
P	900	50	45,000	40	40,000	10	20,000
Q	800	70	56,000	60	60,000	10	8,000
R	1,200	60	72,000	50	70,000	10	12,000
	1,900		1,73,000		1,70,000		40,000

On the basis of the above statement, standard sales and revised standard sales would be:

TABLE 16.5

Copies	*Sales Qty.*	*Price*	*Amount*	*Price*	*Cost Amount*	*Price*	*Profit Amount*
	Units	*Rs.*	*Rs.*	*Rs*	*Rs.*	*RS.*	*Rs.*
P	900	50	45,000	50	45,000	10	-
Q	800	70	56,000	60	48,000	10	8,000
R	1,200	60	72,000	70	60,000	10	12,000
	2,900		1,73,000		1,53,000		20,000

	Revised Standard Sales	Profit
	Rs.	Rs.
P	50,000	930
Q	47,000	7,330
R	66,000	1,100
	1,63,000	9,360

Flexible Budgets under a System of Standard Costing

It is quite common for flexible budgets to be detailed with the system of Standard Costing so that the former can be made more effective. Where such integration takes place and actual level of activity achieved does not correspond with that of fixed under the flexible budgets, a technique has been developed which is a useful guide for management in measuring the results for a budget centre. This technique is based on what is known as "flexible budget allowance".

"Flexible budget allowance is the expense which should be allowed for the level of activity attained "It is allowance that is regarded as synonymous with flexible budgets, and involves somewhat complicated calculations. Under one method, allowance is calculated according to a formula based on standard hours, while the other method introduces ratios, which enables management to have meaningful standards of performance as guides together with the presentation of variances.

The flexible budget allowance gives more flexibility to the system of flexible budgetary control. To furnish with an example, if a concern has a flexible budget for levels of activity of 10,000, 30,000 and 50,000 hours and an actual activity of 40,000, the allowance for 40,000 hours would be determined at some point between 40,000 hours and 50,000 hours.

Standard Hour Method

The flexible budget allowance according to standard hour method is calculated by the following formula-

Flexible Budget Cost = [Budgeted + (Standard hours – Actual hours)] × Standard Rate.

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For the sake of clarity, the formula can be further analysed as thus-

Budgeted Cost = Budgeted hours × Standard rate per hour

Efficiency Variance = [Standard hours – Actual hours] × Standard rate

Hence, it is clear that the flexible budget allowance for a period under this method is sought to be determined by the application of efficiency variance to the budgeted cost of the corresponding period.

An important factor of the method is that apart from other variances calculated under any Standard Costing System, controllable variance is also calculated. The importance of this variance lies in the fact that it presents the responsibility for expenditure – whether it is matched with the budgetary provision or it has exceeded the provision or it has left the provision unutilised – that devolves on a person under budgetary control system. With efficiency variance and expenditure variance as its components, controllable variance is very much the concern of departmental head who is accountable in respect of both the elements of the variance:

The different variances under the method may be in short represented as given under:

(i) Cost Variance
Standard Cost – Actual Cost

(ii) Expenditure Variance
Budget Cost – Actual Cost

(iii) Volume Variance
Standard Cost – Budget Cost

(iv) Capacity Variance
Standard Cost – Flexible Budget Cost

(v) Efficiency Variance
Flexible Budget Cost – Budget Cost

(vi) Controllable Variance
Flexible Budget Cost – Actual Cost

These can be verified as such:

Cost variance = Volume Variance + Expenditure Variance

Volume Variance = Efficiency Variance + Capacity Variance

Controllable Variance = Efficiency Variance + Expenditure Variance.

Hence,

Cost Variance = Capacity Variance + Controllable Variance + Capacity Variance.

Example Flexible Budget Cost = [Budgeted hours + (Standard hours Actual hours)] × Standard rate
= [25,000 + (15,000 – 10,000)] × 50p.
=]25,000 + 5,000] × 50p.
= 30,000 + 50
= Rs. 15,000

Calculation of Standard Rate $\frac{\text{Budgeted Fixed Overheads}}{\text{Budgeted Machine hours}}$

$= \frac{\text{Rs.12,000}}{60,000}$

= 50p. approximately.

Flexible budget cost is also called flexible budget allowance.

Ratio Method. This is another method for ascertaining the flexible budget allowance or flexible budget cost. The name itself conveys that it needs the computation of certain ratios designed to throw light on certain aspects of the working of a business. These ratios are besides the fixed overhead variance usually calculated.

The flexible budget allowance can be formulated as:

Budgeted fixed overhead – [Budgeted fixed overhead (Standard Capacity Ratio – Level of Activity Ratio)]

BRO BFO (SCR – LAR)].

An important point to note is that as in the case of other aspects of standard costing, various formulae with different connotations of their components are in use for calculating flexible budgetary allowance though they mean the same thing.

The ratios calculated mostly by this method are as follows:

(i) Standard Capacity Ratio. This is also known as Actual usage of budgeted capacity ratio. It is described by the Institute of Costs and Works Accountants, London as given in its one of the publications:

"The relationship between the budgeted number of working hours and the actual number of hours worked in a budgeted period.

In formula, it can be put:

$$\frac{\text{Actual hours worked}}{\text{Budgeted hours}} \times 100$$

Actual hours worked may either be machine hours worked or direct labour hours worked. The former may not be the same as the latter, as a machine is not in actual work for the exact number of direct labour hours due to time needed in setting up the machine and cleansing the same.

(ii) Level of Activity Ratio. In short, this is called Activity ratio. According to the Institute of Cost and Works Accountants London:

"The ratio represents the number of standard hours equivalent to the work produced and expressed as a percentage of the budgeted standard hours". In formula, it can be put as:

$$\frac{\text{Actual production in standard hours}}{\text{Budgeted standard hours}} \times 100$$

(iii) Efficiency Ratio. As the Institute of Cost and Works Accountants London says:

"Efficiency Ratio is the standard hours equivalent to the work produced expressed as percentage of the actual hours spent in producing that work". In symbols, the ratio could be put as:

$$\frac{\text{Actual production in standard hours}}{\text{Actual hours worked}} \times 100$$

(Or)

$$\frac{\text{Actual Ratio}}{\text{Actual usage of budgeted capacity ratio}}$$

(Or)

$$\frac{\text{Level of activity ratio}}{\text{Standard capacity ratio}}$$

Any one of the formulae stated above constitutes a check on the veracity of the three ratios, (i) Standard Capacity Ratio (ii) Level of activity Ratio (iii) Efficiency Ratio.

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Example

(i) Standard Capacity Ratio

$$\frac{\text{Actual hours worked}}{\text{Budgeted hours}} \times 100$$

$$\frac{1{,}25{,}000 \text{ Hours}}{1{,}50{,}000 \text{ Hours}} = 83\%.$$

Summary

Standard Costing is the preparation of standard costs and applying them to measure the variations from standard costs and analysing the causes of variations with a view to maintain maximum efficiency in production.

The ideal standard is a perfect standard in the sense that it demands complete perfection and does not allow any waste and inefficiency in any form. Ideal standard can be attained only when the expected favourable conditions prevail without any deviation. In practice, it is very difficult though not impossible to attain ideal standard

Labour standards are set after production has been broken down into several operations. For each operation, after time and motion study, time needed for each operation can be fixed. As far as labour is concerned, standard hours needed and standard wage rate are to be fixed. Standard labour cost is to be ascertained by multiplying the standard labour hours with standard labour rate.

The function of standards in cost control lies in revealing variances between standard costs which are fixed and actual costs which have been recorded.

The difference between the standard cost and the actual cost is known as variance. Material price variance, Material usage variance, Material cost variance, Material mix variance and Material yield variance are the various types of variances.

KEY CONCEPTS

- Direct Labor Cost Variance
- Direct Labor Efficiency Variance
- Direct Labor Rate Variance
- Direct Material Cost Variance
- Direct Materials Mix Variance
- Direct Material Price Variance
- Direct Material Usage Variance
- Direct Material Yield Variance
- Revision Variance
- Variance
- Variance Analysis
- Classification of Variances
- Material Variances
- Labour Variances
- Variable overhead variance
- Fixed overhead Variance
- Flexible budgets under a system of standard costing

Review Questions

OBJECTIVE QUESTIONS

1. When the by-products are consumed by the organisation itself as a raw material, the by-products can be priced using
   a. Opportunity cost method
   b. Standard cost method
   c. Joint cost production
   d. Reverse cost method
   e. Survey method.
2. If a company manufactures two products from a common process, which of the following factors determines whether the output consists of joint products or, one principal product and a by-product?

a. Management Policy b. Potential Marketability for each product
c. Commercial value. d. Both (a) and (c) above e. Both (b) and (c) above.

3. Small pieces of metal sheet left in the manufacture of utensils in an organisation. These are sold to an organisation, which used these pieces for making small boxes. In utensil manufacturing organisation, these pieces are treated as:
   a. By-product b. Joint product c. Scrap
   d. Waste e. Spoilage.
4. Which of the following statements is **true?**
   a. Management may treat a by-product as a joint product.
   b. The meaning of the joint product and co-product is the same
   c. There is no realisable value for by-products.
   d. Scrap value is always more than the value of by-product.
   e. Raw material is always a part of joint cost and there is no material cost after separation
5. Which one of the following is an example of Non-Cost Method?
   a. Replacement or opportunity cost.
   b. Standard cost.
   c. Joint cost proration.
   d. Reverse cost method.
   e. None of the above.
6. Service costing is an another name for
   a. Unit costing b. Operating costing c. Job costing
   d. Batch costing e. Contract costing.
7. The method of costing used where the services are provided instead of manufacturing products is:
   a. Batch costing. b. Contract costing c. Process costing
   d. Operating costing e. Unit costing
8. Service costing is applicable to:
   a. Transport service
   b. Supply services like – Gas supply, Electricity and Water supply
   c. Welfare supplies like – Hospitals, canteen and libraries
   d. Municipal services like street lighting, Road maintenance etc.
   e. All of the above.
9. In Transport costing, insurance cost is treated as:
   a. Standing or fixed charges b. Maintenance charges c. Operating charges
   d. Running charges e. Others.
10. In Transport costing, repairs and painting cost is treated as:
    a. Standing or fixed charges b. Maintenance charges c. Operating charges
    d. Running charges e. Others.
11. Which one of the following is a cost unit for transportation of goods?
    a. Ton-kilometer b. Passenger-Kilometer c. Room day
    d. Kilowatt-hours e. Patient day
12. Which of the following denotes a target cost?
    a. Market price – Desired profit margin
    b. Standard selling price – Standard profit margin
    c. Standard selling price – Target profit margin
    d. Desired selling price – Desired profit margin
    e. Market price – Return of investment

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13. If the budget of the company is reviewed and updated at regular intervals, it is known as
    a. Capital budget b. Rolling budget c. Flexible budget
    d. Fixed budget e. Zero-based budget
14. The budget that describes the long-term position goals and objectives of an entity within its environment is known as
    a. Capital budget b. Operating budget
    c. Cash management budget d. Strategic budget e. Financial budget
15. In the process of preparing normal budget, which of the following schedules is prepared last?
    a. Sales budget b. Cash budget c. Direct labor budget
    d. Cost of goods sold budget e. Manufacturing overhead budget
16. Top management requires information on
    a. Inventory position of stores b. Overtime payment c. Working capital
    d. Order booking
    e. Technological advances and new product development
17. Which of the following statement is false in respect of full cost pricing and contribution margin pricing?
    a. Both can be considered complementary to each other but not competing
    b. In both the methods, the selling prices proposed must be only tentative and they are always subject to adjustments.
    c. Fixed costs are important in both the pricing models.
    d. In both the methods, a normal mark-up on total costs is made and the volume of production is taken into consideration.
    e. Both represent to a certain degree cost plus pricing.
18. The debit balance of materials usage variance indicates that
    a. Standard quantities of materials exceed actual quantities
    b. Actual quantities of materials exceed Standard quantities
    c. Standard rates of standard quantities exceed actual cost
    d. Standard rates of actual quantities exceed actual rate of actual quantities
    e. Standard rates of standard quantities exceed actual rate of actual quantities
19. The price that one division of a company charges another division for goods and services provided is called
    a. Market price b. Transfer price c. Outlay price
    d. Distress price e. Captive price
20. In evaluating an investment center, top management should concentrate on
    a. Rupee sales b. Net income c. Profit percentage
    d. Return of investment e. Cost incurred
21. Fixed overhead cost variance is the difference between
    a. Actual fixed cost and budgeted fixed cost
    b. Actual fixed cost and Standard fixed cost
    c. Actual fixed cost and Applied fixed cost
    d. Budgeted fixed cost and Applied fixed cost
    e. Standard fixed cost and Applied fixed cost
22. Which of the following department has the primary responsibility for an unfavorable material yield variance?
    a. Purchasing department b. Production department c. Stores department
    d. Engineering department e. Inspection department
23. Which is the following statement is false in respect of activity-based costing?

a. It does not segregate variable and fixed costs
b. It tends to be more costly than traditional methods of costing
c. It is based on historical costs
d. It highlights the causes of costs
e. It deals with the direct costs only

24. If the activity level is reduced from 80% to 70%, the fixed cost
    a. Will decrease by 10% b. Will increase by 10% c. Per unit will decrease
    d. Per unit will increase e. Per unit will remain the same
25. Standard cost is developed
    a. By adjusting price level changes in the prices of materials, etc.
    b. By interpolating the market price with the expected profit
    c. By adding the profit margin to actual price
    d. By incorporating price level changes in market price
    e. Both (b) and (c) above

DESCRIPTIVE QUESTIONS

1. What is the concept of standard costing?
2. What are the standard cost and other cost systems?
3. How will you differentiate standard cost from historical cost?
4. Differentiate
   (a) Standard cost and estimated cost
   (b) Standard cost and departmental or process cost.
   (c) Standard cost and actual cost.
5. What do you know about budgetary control and standard costing?
6. What are the essentials for an effective system and Standard Costing?
7. What are the motivational aspects of standards?
8. What are the guidelines for establishing a system of Standard Costing?
9. What are the types of standards?
10. How are the setting of standards achieved?
11. In what way standard hour is determined?
12. What do you know about Variance analysis?
13. What are the classification of Variances?
14. What are the material Variances?
15. What are the labour Variances?
16. What are those termed as Variable overhead Variances?
17. What are fixed overhead Variances?
18. What are flexible budgets under a system of Standard Costing?
19. What are the causes of Variances that need to be determined?
20. What are the dispositions of Variances that management ought to be reported?
21. What are the causes and disposition of Variances?
22. What are the gains of standard costing?
22. Write notes on:
    (a) Highlighting of variances
    (b) Faster reporting
    (c) Promoting efficiency
    (d) Basis of stock valuation

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23. Define Standard Cost and Standard Costing. What are the advantages of standard costing?
24. Describe briefly how standard costs are set for a) materials and b) labour.
25. Variance analysis is an integral part of std costing. Explain.
26. Briefly explain the meaning of material price variance and material mix variance
27. Briefly explain the meaning of labour cost variance and labour efficiency variance.

PROBLEMS

(1) From the following data, calculate activity ratio and efficiency ratio:

A factory manufactured two Products A and B. Standard time to manufacture Product A is 2 hours and Product B is 10 hours. The budgeted and actual production in December, 2005 was as follows:

	Budgeted Production	Actual Production
Product A	125 units	100 units,
Product B	30 units	24 units

Total actual hours worked were 660 hours

[Ans: activity ratio 80% Efficiency Ratio 66.67%]

(2) (a) The efficiency ratio in a factory is 120% and the capacity utilization ratio is 80%. What is the level of activity ratio?

(b) The fixed overheads cost variance in a factory for a period was Rs. 12,800 (A). Expenditure variance amounted to Rs. 15,000 (A). Work out the volume variance.

[Ans: (a) 96% (b) Rs. 2,200(F)]

(3) From the following particulars for January 2003, prepare a note on the materials, labour and overheads variance for information of management:

	Standard	Actual
Materials used-kg	500	550
Price per kg	Rs. 30	Rs. 28
Labour used-hours	8,000	8,500
Rate per hours	Rs. 2	Rs. 1.90

Overheads : (i) Budget- Rs.12,000 + Rs. 1.50 per labour hours (ii) standard recovery rate – Rs. 3 per hours. (iii) Actuals for the month – Rs. 26,000.

[Ans: Materials price variance Rs. 1,100 (F); Materials quantity variance Rs. 1,500 (A); Labour rate variance Rs. 850 (F); Labour time variance

Rs. 1,000(A); Overheads Expenditure Variance Rs. 2,000 (A); Overheads volume variance Rs. 500 (F)].

(4) Figure out the overheads budget, volume and efficiency variance from the following data given:

Standard hours allowed for production	4,000
Actual hours taken for production	4,130
Budgeted overheads for 4,000 hours	Rs. 4,000
Overheads recovered on the standard hour's basis	Rs. 4,065
Actual overheads incurred	Rs. 4,022
Standards overhead rate per hour	Re. 1.00

(5) From the following information, compute (a) Mix, (b) Price, and (c) Usage variances:

	Standard			Actual		
	Quantity (Kilos)	Unit price Rs	Total Rs	Quantity (Kilos)	Unit price Rs	Total Rs
Materials A	4	1.00	4.00	2	3.50	7.00
Materials B	2	2.00	4.00	1	2.00	2.00
Materials C	2	4.00	8.00	3	3.00	9.00
Total	8	2.00	16.00	6	3.00	18.00

[Ans: Materials price variance = Rs.2 (A); Materials mix variance = Rs. 4 (A); Materials usage Variance 4 (F)]

(6) From the following basic data, calculate

(a) Overhead volume variance; (b) Overhead capacity variance;

(c) Overhead efficiency variance; (d) Overhead calendar variance;

Item	Budget	Actual
Number of working days	20	22
Standard man-hours per day	8,000	8,400
Output per man- hour in units	1.00	1.2
Total unit output	1,60,000	2,21,760
Standard overhead rate per hour	Re.1	

If the expenditure variance is Rs. 2,000 (A), find out: (1) the actual expenditure; and (2) Total overheads cost variance

[Ans: Actual expenditure Rs.1,62,000: Overhead cost variance Rs.59,760 (F); Overhead volume variance Rs.61,760 (F); Overhead efficiency variance Rs.36,960 (F); Overhead capacity variance Rs.24,800 (F); Overhead calendar variance Rs.16,000 (F)]

(7) A contract job is scheduled to be completed in 30 weeks with a labor complement of 100 skilled operatives, 40 semi-skilled operatives, and 60 unskilled operatives. The standard weekly wages of each type of operatives are – skilled Rs. 60, semi-skilled Rs. 36 and unskilled Rs 24. the work is actually completed in 32 weeks with a labour forces of 80 skilled, 50 semi- skilled and 70 unskilled operatives and the actual weekly wage rates average Rs 65 for skilled, Rs.40 for semi-skilled and Rs. 20 for unskilled labour. Analyse the variance in the labour cost due to various reasons.

(8) The following are the budgeted and actual resulted, in respect of fixed overheads of a factory for a year, which is adopting the standard costing system. The factory has facilities to produce 3 dissimilar products 'Luxury', 'Comfort' and 'Necessity':

	Budget	Actual
Fixed overheads	Rs.6,20,000	Rs.6,35,000
Production (in units):		
Luxury	30,000	24,000
Comfort	25,000	18,000
Necessity	20,000	18,000
Standard time for producing (in hours):		
Luxury	5	6
Comfort	4	4½
Necessity	3	4
Total working time	3,10,000(Hrs)	97,000(Hrs)
No. of days	310	290

The fixed overheads were planned to be recovered on standard hours basis. Work out the variances.

(9) The General Electronic Company used a standard costing system for one of its products. The standard is based on budgeted monthly production of 100 units per day for the usual 22 working days per month. Standard cost per unit for direct labour is 16 hours at Rs.1.50 per hour. Standard cost for overheads was set as follows:

Fixed overhead per month	Rs.29,040
Variable overhead per month	Rs.39,600
Total budgeted overheads	Rs.68,640
Expected direct Labour cost	Rs.52,800
Overhead rate per rupee of labour	Rs.1.30
Standard overhead per unit	Rs.31.20

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During the month of May 2008, the plant operated only 20 days. Costs for 2,080 units produced were:

Direct labour 32,860 hours @ Rs.1.52	Rs.49,947.20
Fixed overhead	Rs.29,300.00
Variable overhead	Rs.39,065.00

Compute the variance as regards labour and overhead costs

(10) The French Company Limited which produces a single product operates a standard cost system. The variable cost per unit are:

Materials 5 pieces	Rs. 2
Labour 2 hours	Rs. 3
Factory expenses	Rs. 2
Total	7

Fixed factory expenses are budgeted at Rs.3,000 per month and production is budgeted at 10,000 units per month. Actual production in April was 8,000 units. Materials prices and wages rates were up by 10%. The variable factory expenses spent were 90% of the budgeted expenditure for the month. The factory fixed expenses were up by Rs. 500. The materials used were 5% more than standard allowed. Labour lost its efficiency by 5%. Calculate the variances.

(11) The following statistics related to a recent week's working in a machine shop at Biobso Ltd, a company engaged in manufacturing car components:

	Process A	Process B	Total
Hours–Output expected in standard hours	440	720	
Normal working hours	400	900	
Actual hours worked on production	360	810	
Idle hours	40	90	
Total hours paid for	400	900	
Wages-Standard cost per unit	Rs.20	Rs.10	
Actual wages paid	Rs.8,000	Rs.8,800	
Variable expenses-Standards cost per hour	Rs. 5	Rs.10	
Actual expenses	—	—	Rs.12,100
Fixed expenses-standard cost per hour	Rs.15	Rs.10	
Actual expenses	—	—	Rs.13,500

You are required to prepare a statement showing the capacity, efficiency and activity (or volume) ratios for the two processes and a full variance analysis of wages variable and fixed expenses for both processes and the machine shop as a whole.

(12) A factory specialises in the production of a single component for imported equipment. The accounts for February 2007, showed:

Materials used 1,000 units Rs 5.20	Rs. 5,200
Labour for 1,000 hours @ Rs.3.00	3,000
Overheads for 1,000 hours @ Rs.2.00 per hour	2,000
	10,200

The output at the close of the month was 900 units of the components (completed), and 100 units for which materials were drawn fully, but only 50% completed with reference to labour and overheads. Find out the average cost of completed units under each element of cost and in total.

Material (single item)	Rs.5
Labour 1hours @ Rs.3 per hour	3
Overheads for 1hour @ Rs. 2 per hour	2
	10

Calculate the (1) Materials price variance; and (2) Labour efficiency variances.

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15. The standard specification per 10 lb of product P are as follows for direct materials:

Material A 2 lb at Rs.4 per lb	Rs. 8
Material b 4 lb at Rs.3 per lb	Rs. 12
Material C 6 lb at Rs.1 per lb	Rs. 6
	Rs. 26

Quantity of product P produced during the month is 1,000 lb. Actual quantities of materials used and prices are given below:

Material A used 300 lb at Rs.3 per lb	Rs. 900
Material B used 400 lb at Rs.3 per lb	Rs. 1,200
Material C used 800 lb at Rs.2 per lb	Rs. 1,600
	Rs. 3,700

Compute direct materials

i. Price variance
ii. Mix variance and
iii. Yield variance.

16. The standard cost of Product X as established for 2005 is as follows:

3 units of direct material Y at Rs.2 per unit	Rs. 6
4 hours direct labour at Rs.2.50 per hour	10
Variable indirect cost Rs.1.50 per machine hour	3
Fixed indirect cost at 50 paise per direct man-hour	2
	21

As on 1st January 2005, there were no inventories on hand of stores, work in progress or finished goods. The budget called for 16,000 direct man hours (4,000 units of product) for the month of January. The normal expectation is monthly activity of 18,000 direct man hours and 9,000 machine hours. During January, 4,200 units were produced. There was no work in progress at the end of January and 2,800 units were sold. Operation data for January is as follows:

1. 17,200 units of direct materials were purchased at Rs.2.05 per unit
2. 16,500 direct man hours of labour were employed at a cost Rs.42,900
3. Variable indirect costs amounted to Rs.12,900
4. Materials consumed in production – 12,900 units
5. Fixed indirect cost – Rs.9,000
6. Total machine hours – 8,000.

On the basis of the above information, you are required to compute the following variances :

1. Direct material purchased price variance
2. Direct materials usage variance
3. Direct labour wage rate variance
4. Direct labour efficiency time variance
5. Variable indirect cost spending variance
6. Variable indirect cost efficiency variance
7. Budget variance for fixed indirect cost
8. Capacity or volume variance.

Designate the variance as favourable or unfavourable by using F or U. Making suitable assumptions, state briefly the reasons for variances (as are likely to be given by the departmental head of cost centre) and give your view and observations to assist the management in taking remedial action wherever called for.

17. Standard Equipment Company Ltd., operates on Standard Costing System. The budgeted overheads for the year ended 31st March 2005, were fixed at Rs.4,200 with a pre-determined overhead recovery rate of

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Rs.7.00 per direct labour hour. The actual direct labours hours for the year amounted to 61,000 against which only 60,500 hours should have been spent for the production completed during the year. The actual overhead rate worked out to Rs.6.75 per direct labour hour.

You are required to compute the following variances:

a. Total overhead cost variance
b. Overhead budget variance
c. Overhead efficiency variance
d. Overhead capacity variance

18. The standard Metal Co., Ltd., manufactures a single product, the standard mix of which is: Material X 60% at Rs.20 : Material Y 40% at Rs.10.

Normal loss in production is 20% of input. Due to shortage of material X, the standard mix was changed. Actual results for the month of June were:

Material X	210 kgs at Rs.20	4,200
Material Y	190 kgs at Rs.9	1,710
Input	400 kg	5,910
Loss	70 kg	-
Output	330 kg	5,910

Calculate material price, mix and yield variance.

19. The following information is taken from the budget of a company for the year ended 31st March 2006:

Production	*Units*	*Budgeted Production (per hour)*
A	8,000	2
B	48,000	6
C	60,000	5
	1,16,000	

Fixed overheads are Rs. 1,20,000 accruing evenly over the year. The following information is obtained for the budget period covering the month of January 2006:

Normal hours in January 2006	2,100
Hours paid for (120 hours overtime being worked)	2,220
Hours lost through idle time	150
Actual production	Units
A	720
B	4,200
C	5,250
	10,170

Actual fixed expenses – Rs.9,750

Compute the following variances for January 2006 :

a. Expenditure variance
b. Calendar variance
c. Capacity variance
d. Idle time variance
e. Efficiency variance.

20. The standard unit costs and standard yield ratios of three joint products are as follows:

Product	*Standard yield ratio*	*Standard cost per kg*
A	30%	Rs.2
B	45%	3
C	25%	5

The total weight of product output is expected, under normal conditions, to equal the weight of the material processed. Processing costs vary as a function of the weight of the materials processed. During June, 5,000 kg of materials were processed. Output for the month totalled 1,600 kg of A, 2,000 kg of B, and 950 kg of Product C. Fifty kg of materials were lost in processing. Actual incurred amounted to Rs.17,300. Calculate

a. the yield variance
b. the mix variance.

The rest of the difference may be treated due to materials' price variance.

21. From the following data, calculate activity ratio and efficiency ratio:

A factory manufactured two Products A and B. Standard time to manufacture Product A is 2 hours and Product B 10 hours. The budgeted and actual production in December, 1965 was as follows:

	Budgeted Production	Actual Production
Product A	125 units	100 units,
Product B	30 units	24 units

Total actual hours worked were 660 hours

[Ans: activity ratio 80% Efficiency Ratio 66.67%]

22. (a) The efficiency ratio in a factory is 120% and the capacity utilization ratio is 80%. What is the level of activity ratio?
(b) the fixed overheads cost variance in a factory for a period was Rs. 12,800 (A). Expenditure variance amounted to Rs. 15,000 (A). Work out the volume variance.

[Ans. (a) 96% (b) Rs. 2,200(F)]

23. From the following particulars for January, 2008 prepare a note on the materials, labour and overheads variance for information of management:

	Standard	Actual
Materials used-kg	500	550
Price per kg	Rs.30	Rs.28
Labour used-hours	8,000	8,500
Rate per hours	Rs.2	Rs.1.90

Overheads: (i) Budget- Rs.12,000 + Rs. 1.50 per labour hours (ii) standard recovery rate – Rs. 3 per hours. (iii) Actuals for the month – Rs. 26,000.

[Ans. Materials price variance Rs. 1,100 (F); Materials quantity variance Rs. 1,500 (A); Labour rate variance Rs. 850 (F); Labour time variance Rs. 1,000(A); Overheads Expenditure Variance Rs. 2,000 (A); Overheads volume variance Rs. 500 (F)].

24. Figure out the overheads budget, volume and efficiency variance from the following data given:

Standard hours allowed for production	4,000
Actual hours taken for production	4,130
Budgeted overheads for 4,000 hours	Rs.4,000
Overheads recovered on the standard hour's basis	Rs.4,065
Actual overheads incurred	Rs.4,022
Standards overhead rate per hour	Re. 1.00

25. From the following information compute (a) Mix, (b) Price, and (c) Usage variances:

	Standard			Actual		
	Quantity (Kilos)	Unit price Rs	Total Rs	Quantity (Kilos)	Unit price Rs	Total Rs
Materials A	4	1.00	4.00	2	3.50	7.00
Materials B	2	2.00	4.00	1	2.00	2.00

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Materials C	2	4.00	8.00	3	3.00	9.00
Total	8	2.00	16.00	6	3.00	18.00

[Ans: Materials price variance = Rs.2 (A); Materials mix variance = Rs. 4 (A); Materials usage Variance 4 (F)]

(26) From the following basic data, calculate

(a) Overhead volume variance; (b) Overhead capacity variance;

(c) Overhead efficiency variance; (d) Overhead calendar variance;

Item	Budget	Actual
Number of working days	20	22
Standard man-hours per day	8,000	8,400
Output per man- hour in units	1.00	1.2
Total unit output	1,60,000	2,21,760
Standard overhead rate per hour	Re.1	

If the expenditure variance is Rs. 2,000 (A), find out: (1) the actual expenditure; and (2) Total overheads cost variance

[Ans: Actual expenditure Rs.1,62,000: Overhead cost variance Rs.59,760 (F); Overhead volume variance Rs.61,760 (F); Overhead efficiency variance Rs.36,960 (F); Overhead capacity variance Rs.24,800 (F); Overhead calendar variance Rs.16,000 (F)]

(27) A contract job is scheduled to be completed in 30 weeks with a labor complement of 100 skilled operatives, 40 semi-skilled operatives, and 60 unskilled operatives. The standard weekly wages of each type of operatives are – skilled Rs. 60, semi-skilled Rs. 36 and unskilled Rs 24. The work is actually completed in 32 weeks with a labour forces of 80 skilled, 50 semi- skilled and 70 unskilled operatives and the actual weekly wage rates average Rs 65 for skilled, Rs.40 for semi-skilled and Rs. 20 for unskilled labour. Analyse the variance in the labour cost due to various reasons.

(28) The following are the budgeted and actual resulted, in respect of fixed overheads of a factory for a year, which is adopting the standard costing system. The factory has facilities to produce 3 dissimilar products 'Luxury', 'Comfort' and 'Necessity':

	Budget	Actual
Fixed overheads	Rs.6,20,000	Rs.6,35,000
Production (in units):		
Luxury	30,000	24,000
Comfort	25,000	18,000
Necessity	20,000	18,000
Standard time for producing (in hours):		
Luxury	5	6
Comfort	4	4½
Necessity	3	4
Total working time	3,10,000(Hrs)	97,000(Hrs)
No. of days	310	290

The fixed overheads were planned to be recovered on standard hours basis. Work out the variances.

(29) The General Electronic Company used a standard costing system for one of its products. The standard is based on budgeted monthly production of 100 units per day for the usual 22 working days per month. Standard cost per unit for direct labour is 16 hours at Rs.1.50 per hour. Standard cost for overheads was set as follows:

Fixed overhead per month	Rs.29,040
Variable overhead per month	Rs.39,600
Total budgeted overheads	Rs.68,640

Expected direct Labour cost	Rs.52,800
Overhead rate per rupee of labour	Rs.1.30
Standard overhead per unit	Rs.31.20

During the month of May 2008, the plant operated only 20 days. Costs for 2,080 units produced were:

Direct labour 32,860 hours @ Rs.1.52	Rs.49,947.20
Fixed overhead	Rs.29,300.00
Variable overhead	Rs.39,065.00

Compute the variance as regards labour and overhead costs

(30) The French Company Limited which produces a single product operates a standard cost system. The variable cost per unit are:

Materials 5 pieces	Rs. 2
Labour 2 hours	Rs. 3
Factory expenses	Rs. 2
Total	7

Fixed factory expenses are budgeted at Rs.3,000 per month and production is budgeted at 10,000 units per month. Actual production in April was 8,000 units. Materials prices and wages rates were up by 10%. The variable factory expenses spent were 90% of the budgeted expenditure for the month. The factory fixed expenses were up by Rs. 500. The materials used were 5% more than standard allowed. Labour lost its efficiency by 5%. Calculate the variances.

31. Y Ltd. which operates the system of overhead costing, manufactures a metal product which passes through four operations, viz., turning drilling, hardening and grinding:

The standard cost of the product is as follows:

Materials (a bar of metal)	Rs.5.00
Turning	2.00
Drilling	0.50
Hardening	1.00
Grinding	3.50
	12.00

The standard weekly production for operation and the standard number expected to be rejected as faulty in each week are as follows:

	Input	Rejects
Turning	1,150	23
Drilling	1,100	11
Hardening	1,050	42
Grinding	1,000	30

In the week ended November 23, the actual production from each operation was as follows:-

	Passed as good	Rejected
Turning	1,370	30
Drilling	994	6
Hardening	1,180	70
Grinding	1,060	40

All rejected parts are sold as scrap materials at the standard price of Re1 each irrespective of the stage of manufactured reached.

You are required to show in a tabular from: (1) The standard and actual rejects for each process and the rejects variance. (2) The gross normal cost of each operation on the basis of actual input. Also indicate the actual gross cost of each process.

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32. The following statistics related to a recent week's working in a machine shop at Biobso Ltd, a company engaged in manufacturing car components:

	Process A	Process B	Total
Hours–Output expected in standard hours	440	720	
Normal working hours	400	900	
Actual hours worked on production	360	810	
Idle hours	40	90	
Total hours paid for	400	900	
Wages-Standard cost per unit	Rs.20	Rs.10	
Actual wages paid	Rs.8,000	Rs.8,800	
Variable expenses-Standards cost per hour	Rs.5	Rs.10	
Actual expenses	—	—	Rs.12,100
Fixed expenses-standard cost per hour	Rs.15	Rs.10	
Actual expenses	—	—	Rs.13,500

You are required to prepare a statement showing the capacity, efficiency and activity (or volume) ratios for the two processes and a full variance analysis of wages variable and fixed expenses for both processes and the machine shop as a whole.

33. A factory specialises in the production of a single component for imported equipment. The accounts for February, 1967 showed:

Materials used 1,000 units Rs 5.20	Rs. 5,200
Labour for 1,000 hours @ Rs.3.00	3,000
Overheads for 1,000 hours @ Rs.2.00 per hour	2,000
	10,200

The output at the close of the month was 900 units of the components (completed) and 100 units for which materials were drawn fully but only 50% completed with reference to labour and overheads. Find out the average cost of completed units under each element of cost and in total.

Material (single item)	Rs.5
Labour 1hours @ Rs.3 per hour	3
Overheads for 1hours @ Rs.2 per hour	2
	10

Calculate the (1) Materials price variance; and (2) Labour efficiency variances.

34. From the information given below, construct a reconciliation statement showing standard and actual profit for the fourth period of a year, showing all your supporting calculations. The factory unit of the company sells its manufactures of products A and B to its own selling organization. It sells at standard selling prices of Products A Rs. 30 and Products B Rs. 60. A system of standard costing is in operation and standard manufacturing costs for the two products are currently as followed:

Standard cost		Product A		Product B	
		Kg	Cost Rs	Kg	Cost Rs
Materials costs: Price per kg					
A	Rs. 1.75	5	8.75	5	8.75
B	Rs. 1.25	1	1.25	5	6.25
			10.00		15.00
Labour: Rate per hour		Hours		Hours	
Operation:	Rs.				
1	5.00	0.30	1.50	0.60	3.00
2	3.00	0.50	1.50	1.33	4.00

3	4.00	0.50	2.00	0.75	3.00
			5.00		10.00
Works overhead:					
Variable operation:					
1	7.50	0.30	2.25	0.60	4.50
2	6.00	0.50	3.00	1.33	8.00
3	3.00	0.50	1.50	0.75	2.25
			6.75		14.75
Fixed operation:					
1	2.50	0.30	0.75	0.60	1.50
2	6.00	0.50	3.00	1.33	8.00
3	2.00	0.50	1.00	0.75	1.50
			4.75		50.70
			26.50		50.75

The standard costs are based on a budgeted four-week period activity for each operation as follows: Operation: 1–6,600 hours; 2–13,000 hours; 3–9,500 hours.

In the fourth four-week period of the year under review, the sales to the selling organisation were: Product A 9,000 and Product B 7,000. Actual costs incurred in manufacture during the period were:

		Kg.	Rs.	Rs.
Materials:	X	82,500	1,40,780	
	Y	45,000	58,220	
			1,99,000	
		Hours	Rs.	
Labour operations:	1		7,800	37,500
	2	15,200	45,600	
	3	9,800	40,900	1,24,000
Variable works overhead				1,81,000
Fixed works overhead				1,28,000
				6,32,000

Work-in-progress was taken at the beginning and end of the period. This expressed in terms of standard material and labour quantities was as follows:

		Beginning	End Kg
Materials:	X	8,000	9,000
	Y	4,000	5,600
		Hours	Hours
Labour Operation:	1	1,000	1,100
	2	1,100	900
	3	300	100

35. The standard specification per 10 lb of product P are as follows for direct materials:

Material A 2 lb at Rs.4 per lb	Rs.8
Material b 4 lb at Rs.3 per lb	Rs.12
Material C 6 lb at Rs.1 per lb	Rs.6
	Rs.26

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Quantity of product P produced during the month is 1,000 lb. Actual quantities of materials used and prices are given below:

Material A used 300 lb at Rs.3 per lb	Rs.900
Material B used 400 lb at Rs.3 per lb	Rs.1,200
Material C used 800 lb at Rs.2 per lb	Rs.1,600
	Rs.3,700

Compute direct materials

i. Price variance
ii. Mix variance and
iii. Yield variance.

36. Standard Equipment Company Ltd., operates on standard costing system. The budgeted overheads for the year ended 31st March 2005 were fixed at Rs.4,200 with a pre-determined overhead recovery rate of Rs.7.00 per direct labour hour. The actual direct labours hours for the year amounted to 61,000 against which only 60,5000 hours should have been spent for the production completed during the year. The actual overhead rate worked out Rs.6.75 per direct labour hour.

You are required to compute the following variances:

a. Total overhead cost variance
b. Overhead budget variance
c. Overhead efficiency variance
d. Overhead capacity variance

CASE

1. Y Ltd. which operates the system of overhead costing, manufactures a metal product which passes through four operations, viz., turning drilling, hardening and grinding:

The standard cost of the product is as follows:

Materials (a bar of metal)	Rs.5.00
Turning	2.00
Drilling	0.50
Hardening	1.00
Grinding	3.50
	12.00

The standard weekly production for operation and the standard number expected to be rejected as faulty in each week are as follows:

	Input	Rejects
Turning	1,150	23
Drilling	1,100	11
Hardening	1,050	42
Grinding	1,000	30

In the week ended November 23, the actual production from each operation was as followed

	Passed as good	Rejected
Turning	1,370	30
Drilling	994	6
Hardening	1,180	70
Grinding	1,060	40

All rejected parts are sold as scrap materials at the standard price of Re1 each irrespective of the stage of manufactured reached.

You are required to show in a tabular from: (1) The standard and actual rejects for each process and the rejects variance. (2) The gross normal cost of each operation on the basis of actual input. Also indicate the actual gross cost of each process.

2. From the information given below, construct a reconciliation statement showing standard and actual profit for the fourth period of a year, showing all your supporting calculations. The factory unit of the company sells its manufactures of products A and B to its own selling organization. It sells at standard selling prices of Products A Rs. 30 and Products B Rs. 60. A system of standard costing is in operation and standard manufacturing costs for the two products are currently as follows:

Standard cost		Product A		Product B	
		Kg	Cost Rs	Kg	Cost Rs
Materials costs: Price per kg					
A	Rs. 1.75	5	8.75		8.75
B	Rs. 1.25	1	1.25	5	6.25
			10.00		15.00
Labour: Rate per hour		Hours		Hours	
Operation:	Rs.				
1	5.00	0.30	1.50	0.60	3.00
2	3.00	0.50	1.50	1.33	4.00
3	4.00	0.50	2.00	0.75	3.00
			5.00		10.00
Works overhead:					
Variable operation:					
1	7.50	0.30	2.25	0.60	4.50
2	6.00	0.50	3.00	1.33	8.00
3	3.00	0.50	1.50	0.75	2.25
			6.75		14.75
Fixed operation:					
1	2.50	0.30	0.75	0.60	1.50
2	6.00	0.50	3.00	1.33	8.00
3	2.00	0.50	1.00	0.75	1.50
			4.75		11.00
			26.50		50.75

The standard costs are based on a budgeted four-week period activity for each operation as follows: Operation: 1-6,600 hours; 2-13,000 hours; 3-9,500 hours.

In the fourth four-week period of the year under review the sales to the selling organization were: Product A 9,000 and Product B 7,000. Actual costs incurred in manufacture during the period were:

		Kg.	Rs.	Rs.
Materials:	X	82,500	1,40,780	
	Y	45,000	58,220	1,99,000
		Hours	Rs.	
Labour operations:	1	7,800	37,500	
	2	15,200	45,600	
	3	9,800	40,900	1,24,000

Variable works overhead	1,81,000
Fixed works overhead	1,28,000
	6,32,000

Work-in-progress was taken at the beginning and end of the period. This expressed in terms of standard material and labour quantities was as follows:

		Beginning	End Kg
Materials:	X	8,000	9,000
	Y	4,000	5,600
		Hours	Hours
Labour Operation:	1	1,000	1,100
	2	1,100	900
	3	300	100

3. The standard cost of Product X as established for 2005 is as follows:

3 units of direct material Y at Rs.2 per unit	Rs.6
4 hours direct labour at Rs.2.50 per hour	10
Variable indirect cost Rs.1.50 per machine hour	3
Fixed indirect cost at 50 paise per direct man-hour	2
	21

As on 1st January 2005 there were no inventories on hand of stores, work in progress or finished goods. The budget called for 16,000 direct man hours (4,000 units of product) for the month of January. The normal expectation is monthly activity of 18,000 direct man hours and 9,000 machine hours. During January, 4,200 units were produced. There was no work in progress at the end of January and 2,800 units were sold. Operation data for January is as follows:

(i) 17,200 units of direct materials were purchased at Rs.2.05 per unit
(ii) 16,500 direct man hours of labour were employed at a cost Rs.42,900
(iii) Variable indirect costs amounted to Rs.12,900
(iv) Materials consumed in production – 12,900 units
(v) Fixed indirect cost – Rs.9,000
(vi) Total machine hours – 8,000.

On the basis of the above information, you are required to compute the following variances:

(i) Direct material purchased price variance
(ii) Direct materials usage variance
(iii) Direct labour wage rate variance
(iv) Direct labour efficiency time variance
(v) Variable indirect cost spending variance
(vi) Variable indirect cost efficiency variance
(vii) Budget variance for fixed indirect cost
(viii) Capacity or volume variance.

Designate the variance as favourable or unfavourable by using F or U. Making suitable assumptions, state briefly reasons for variances (as are likely to be given by the departmental head of cost centre) and give your view and observations to assist the management in taking remedial action wherever called for.

4. The standard Metal Co., Ltd., manufactures a single product, the standard mix of which is: Material X 60% at Rs.20 : Material Y 40% at Rs.10.

Normal loss in production is 20% of input. Due to shortage of material X, the standard mix was changed. Actual results for the month of June were:

Material X	210 kgs at Rs.20	4,200
Material Y	190 kgs at Rs.9	1,710
Input	400 kg	5,910
Loss	70 kg	-
Output	330 kg	5,910

Calculate material price, mix and yield variance.

(i) The following information is taken from the budget of a company for the year ended 31st March 2006:

Production	*Units*	*Budgeted Production (per hour)*
A	8,000	2
B	48,000	6
C	60,000	5
	1,16,000	

Fixed overheads are Rs.1,20,000 accruing evenly over the year. The following information is obtained for the budget period covering the month of January 2006:

Normal hours in January 2006	2,100
Hours paid for (120 hours overtime being worked)	2,220
Hours lost through idle time	150
Actual production	Units
A	720
B	4,200
C	5,250
	10,170

Actual fixed expenses – Rs.9,750

Compute the following variances for January 2006:

a. Expenditure variance
b. Calendar variance
c. Capacity variance
d. Idle time variance
e. Efficiency variance

(ii) The standard unit costs and standard yield ratios of three joint products are as follows:

Product	*Standard yield ratio*	*Standard cost per kg*
A	30%	Rs.2
B	45%	3
C	25%	5

The total weight of product output is expected, under normal conditions, to equal the weight of the material processed. Processing costs vary as a function of the weight of the materials processed. During June, 5,000 kg of materials were processed. Output for the month totalled 1,600 kg of A, 2,000 kg of B, and 950 kg of Product C. Fifty kg of materials were lost in processing. Actual incurred amounted to Rs.17,300. Calculate

a. the yield variance
b. the mix variance.

The rest of the difference may be treated due to materials' price variance.

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SECTION

Management Accounting

3

Chapters

17. Management Accounting: Perspectives
18. Planning for Liquidity-I: Statement of Sources and Application of Funds
19. Planning for Liquidity-II: Cash Flow Statement
20. Profit Planning-III: Budget and System of Budgetary Control
21. Understanding Financial Statements
22. Performance Measurement and Control
23. Financial Statements Analysis: Accounting Ratios
24. Management Reporting Systems

CHAPTER

17

Management Accounting: Perspectives

Management accounting is, "the application of professional knowledge and skill in the preparation of the accounting information in such a way as to assist the management in the formulation of policies and in the planning and control of the operations of the undertaking".

—The Institute of Cost Management Accountants, London

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Functions of Management Accounting*
- *Difference between Management Accounting & Financial Accounting*
- *Role of Management Accountant*
- *Functions of Management Accountant*
- *Role of Management Accounting*
- *Utility and Limitations of Management Accounting, as a Managerial Tool*
- *Various tools of Management Accounting*
- *Limitations of Management Accounting*

INTRODUCTION

Accounting can broadly be classified into two categories:
(i) Financial Accounting, and (ii) Management Accounting.

Financial Accounting is mainly concerned with recording, classifying and summarising the financial transactions. In the initial stages, accounting was developed mainly as a technique for recording, classifying and summarising the financial transactions, i.e. on the line of Financial Accounting. However, in recent times the role of accounting as an instrument to guide and control the operations of a business enterprise, has gained considerable significance. Management Accounting is a direct result of such changed role.

Management Accounting refers to accounting for the management i.e. accounting which provides necessary information to the management for discharging its functions. The functions of the management are: planning, organising, directing and controlling. Management Accounting provides the required information to the management for effective and efficient performance of these functions.

According to the Institute of Cost Management Accountants, London, management accounting is, "the application of professional knowledge and skill in the preparation of the accounting information in such a way as to assist the management in the formulation of policies and in the planning and control of the operations of the undertaking. The definition given by the Management Accounting Team of the Anglo American Council of Productivity is more precise. It defines management accounting as, "the presentation of accounting information in such a way as to assist the management in the creation of policies and day-to-day operations of an undertaking. Let us see in this chapter how the Management Accounting supplies data in a way that the Management can judge not only its present performance but also plan for future.

FUNCTIONS OF MANAGEMENT ACCOUNTING

The following are the basic functions of management accounting :

(i) **Provides data.** It provides valuable data to management for formulation of future policies and plans.

(ii) **Modifies data.** It properly compiles and classifies the accounting data for managerial decision-making.

(iii) **Analyses and interprets data.** It analyses and interprets the accounting data for effective planning and decision-making. The data is presented in a comparative form with ratios for predicting the likely trends.

(iv) **Serves as a means of communication.** It keeps all parties informed about the management plans and also the management about others' performance.

(v) **Facilities control.** It helps in achieving goals of the enterprise within the time period through the techniques of budgetary control, standard costing etc.

(vi) **Uses qualitative information.** Qualitative information means information not measurable in monetary terms. Such information is collected by means of special surveys, statistical compilation, engineering records etc. Management accounting provides qualitative information to management to take decisions in the right perspective.

DIFFERENCE BETWEEN MANAGEMENT ACCOUNTING & FINANCIAL ACCOUNTING

Both management accounting and financial accounting are two branches of accounting and hence they are closely inter-related. As a matter of fact, management accounting is to a large extent, a rearrangement of the data provided by financial accounting. However, there are certain points of differences between the two. These are as follows:

(i) **Objectives:** Financial accounting is designed in a way to supply information to external parties like shareholders, creditors, banks, investors etc. Management accounting is designed principally for providing information for internal uses by the management.

(ii) **Analysing performance:** Financial accounting portrays the position of the business as a whole. The income statement and the balance sheet prepared under financial accounting, gives picture about the overall performance and the financial position of business. Management accounting on the other hand, provides detailed information about the different divisions, departments etc, of the business. Thus, it gives more intensive information.

(iii) **Data used:** Financial accounting records past transactions. It is thus historical. Management accounting is accounting for the future. It supplies data in a way that the management can judge not only its present performance, but also plan for the future.

(iv) **Monetary events:** Financial accounting considers only transactions and events capable of being expressed in monetary terms. Management is also interested in non-monetary economic events.

Hence, management accounting takes such events into consideration. For example, while effecting an insurance policy on assets, the management will also take into account besides its present cost, the likely change in its value on account of constant erosion in the value of the rupee.

(v) **Periodicity of reporting:** The period of reporting is much longer in financial accounting as compared to management accounting. The income statement and balance sheet are usually prepared in case of financial accounting at the end of a year. However, management requires information about sales, cost of production, material wastage etc. at regular and short intervals. Management accounting provides such information.

(vi) **Legal compulsion:** Every business is required to have a proper system of financial accounting on account of legal provisions of one or the other act. However, installation of the system of management accounting lies at the discretion of the management.

ROLE OF MANAGEMENT ACCOUNTANT

Management accounting provides significant economic and financial data to the management and the management accountant is the major channel through whom this information efficiently and effectively flows to the management. The management accountant enjoys a unique position with respect to information about the firm. Apart from top management, no one in the organisation perhaps knows more about the functions of the organisation than him. He gathers information from every functional area and level of the company. He breaks it down, sifts it out and organises it into meaningful categories. He separates relevant and irrelevant information according to its degree of importance to the management. He reports relevant information in an intelligible form to the management, and sometimes also to those persons who are interested in this information outside the company. He also compares the actual performance with the planned one and reports and interprets results of operations to all levels of management as well as to the owners of the business. Mr. P.L. Tandon has explained beautifully the role of management accountant in the following words:

"The management accountant is exactly like the spokes in a wheel connecting the rim of the wheel and the hub receiving the information. He processes the information and then returns the processed information back to where it came from".

Functions of Management Accountant The functions of the management accountant (or the Controller as popularly called in U.S.A) can be summarised as follows:

(i) **Planning:** He establishes, co-ordinates and administers, as an integral part of management an adequate plan for controlling the operations of the firm. Such a plan includes profit planning, capital budgeting, sales forecasting, expenses budgeting and determination of cost standards.

(ii) **Controlling:** He compares actual performance with the standard performance. He reports and interprets results of operations to all levels of management and to the owners of the business. This is done through compilation of suitable accounting and statistical records and reports.

(iii) **Co-ordinating:** He consults all segments of management responsible for policy or action. Such consultation might concern any phase of the operation of the business, directly or indirectly connected with attainment of objectives and the effectiveness of organisation structure and policies.

(iv) **Other functions:**

(a) He administers tax policies and procedures.

(b) He supervises and co-ordinates preparation of reports to government agencies.

(c) He ensures fiscal protection for the assets of the business through adequate internal control and proper insurance coverage.

(d) He carries out continuous appraisal of economic and social forces and the government policies and interprets their effect on the business.

The functions of a management accountant are more valuable and important than that of a "staff official". Besides serving top management with information concerning the company as a whole, he supplies detailed information to the line officers regarding alternative plans and their profitability which help them in decision-making.

Management accounting is thus helpful to the management in every field of activity. This is the reason why management accountant is considered not only a service arm to management but also a part of management

ROLE OF MANAGEMENT ACCOUNTING

In view of the aforesaid, it can be said that a banker can now no longer remain contended with the information provided by ordinary financial accounts prepared according to the orthodox principles of accounting. He has to use increasingly the different tools or techniques of management accounting for efficiently discharging his duties both to himself as well as to the borrowers. Small enterprises often manage to survive with a mixture or intuition, lock; brado and prayer according to the temperament of the individual entrepreneur. However, successful larger enterprises require planning, coordination, delegation and control which demand (among other things) establishment of a viable accounting system, which can give management as well as the banker the required information for effective and efficient functioning. The banker can considerably improve the performance of his borrowers by laying emphasis on this aspect. For example, if the banks impose, as a normal condition, for the grant of a overdraft to a firm, the production of regular cash flow statements or the employment of adequate estimating and budgeting systems, such techniques shall come to be recognised as being helpful in obtaining bank finance. This will result in considerably improving the efficiency of the borrower which will be beneficial both to him as well as to the banker.

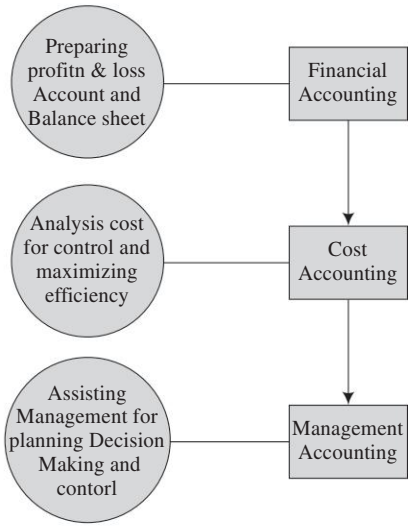


FIG 17.1 Relationship of Financial, Cost and Management Accounting

THE UTILITY AND LIMITATIONS OF MANAGEMENT ACCOUNTING AS A MANAGERIAL TOOL

Management accounting provides invaluable services to the management. The basic functions of management are i) Planning, ii) Controlling, iii) Co-ordinating, iv) Organising, c) Motivating and vi) Communicating. Management accounting helps management in performance of each of these functions, as explained below:

(i) **Planning.** It involves formulation of policies, setting up of goals, and initiating necessary programmes for achieving such goals. Management Accounting makes an important contribution in performance of this function. It makes available the relevant data after pruning and analysing them suitably for effective planning and decision-making.

(ii) **Controlling.** It involves evaluation of performance keeping in view that the actual performance coincides with the planned one, and remedial measures are taken in the event of variation between

the two. The techniques of budgetary control, standard costing and departmental operating statements greatly help in performing this function. As a matter of fact, the entire system of control is designed and operated by the Management Accountant designated as Controller.

(iii) **Coordinating.** It involves interlinking of different divisions of the business enterprise in such a way so as to achieve the objectives of the organisation as a whole. Thus, perfect coordination is required among production, purchase, finance, personnel, sales etc., departments. Effective coordination is achieved through departmental budgets and reports which form the nucleus of management accounting.

(iv) **Organising.** It involves grouping of operative action in a way so as to identify the authority and responsibility within the organisation. Management accounting here also plays a prominent role. The whole organisation is divided into suitable profit or cost centers. A sound system of internal control and internal audit for each of the cost or profit centers helps in organising and establishing a sound business structure.

(v) **Motivating.** It involves maintenance of a high degree of morale in the organisation. Conditions should be such that each person gives his best to realise the goals of the enterprise. The superiors should be in a position to find out whom to demote or promote or to reward or penalise. Periodical department profit and loss accounts, budgets and reports go a long way in achieving this objective.

(vi) **Communicating.** It involves transmission of data, results, etc, both to the insiders as well as outsiders. The orders of the superiors should be communicated to the subordinates while the results achieved by the subordinates should be reported to the superiors. Moreover, the management owes a duty to the creditors, prospective investors, share-holders etc., to communicate to them about the progress, financial position etc., of the enterprise. Management accounting helps the management in performance of this function by developing a suitable system of reporting which emphasises and highlights the relevant facts.

THE VARIOUS TOOLS OF MANAGEMENT ACCOUNTING

Management accounting uses the following tools or techniques to faithfully discharge its duty towards management:

(i) Financial Statement Analysis
(ii) Funds Flow Analysis
(iii) Cash flow Analysis
(iv) Costing Techniques including Marginal, Differential, Standard and Opportunity Costing.
(v) Budgetary Control
(vi) Management Reporting.

According to the Banking Regulation Act, 1949, a banker is one who does banking business. Banking includes accepting of deposits from the public for lending or investment. A banker thus lends or invests money belonging to other persons. It has a difficult role to perform since he has to keep both the security as well as the profitability into consideration while lending or investing. In the present times, the job of banker has become all the more difficult on account of the follow reasons :

(i) **Shrinkage in the size of funds available for profitable investment.** The size of the funds available with the banker are constantly shrinking. According to the present statutory requirements, a banker has to keep about 53.5 % of its sources in liquid form (15 % as cash reserve with the Reserve Bank and 38.5 % as statutory liquidity ratio). Moreover, he has to provide liberal credit

to priority sectors and weaker sections of the society at concessional rates. The operational costs have also increased to a great extent. Thus, a banker has to see that he invests the free funds available at his disposal in a way that he is compensated for non-profitable investments required under government policies.

(ii) **Lower emphasis on security.** Lending of money involves risk. This risk has considerably increased in recent times on account of change in the credit policy of the lending banks. The traditional security-oriented lending has now been replaced by modern performance-oriented lending. In some cases, keeping in view their social obligations, the bankers have to ignore the security aspect altogether. This is particularly true in case of granting of advances to weaker and neglected sectors of the economy.

(iii) **Providing banking facilities in rural areas.** Under the new banking policy, greater emphasis is being given on improving banking facilities in rural areas. It was aimed to achieve a coverage of one bank office on average for a population of 17,000 in the rural and semi-urban areas on the basis of 1981 census, by the end of March, 1985. This target has been achieved. At present, it is reported to have declined to 13,000 per branch. Most of the branches opened in these areas had remained unprofitable for a number of years, besides being unsafe. The modern banker has to keep these consequences also in view while planning its investment portfolio.

(iv) **Term lending.** Commercial banks have also recently entered the arena of term lending which used to be otherwise considered unsafe for them on account of their resources being of a short-term nature. This has definitely increased their risk as well as responsibilities.

(v) **Consumption loans.** Till recently the commercial banks were expected to provide loans only for productive purposes. However, keeping in view the difficulties of the weaker sections of the society, the banks are now expected to give them consumption loans too. The recovery of such loans is going to be a difficult job for the banks.

(vi) **Restrictions on advances to large borrowers.** On account of the recommendations of the Tondan Committee and Chore Committee, certain restrictions have been imposed in respect of granting advances to large borrowers. The banks have to keep these restrictions in mind besides obtaining regular information from these borrowers for their own purpose as well as forwarding it to the Reserve Bank. All this has considerably increased the work of the borrowers as well as that of the banks.

For all the above said purposes of a Banker, the various tools of Management Accounting is very useful to take timely actions and decisions.

LIMITATIONS OF MANAGEMENT ACCOUNTING

Management accounting being comparatively a new discipline, it suffers from certain limitations which limits its effectiveness. These limitations are as follows:

(1) **Limitations of basic records.** Management accounting derives its information from financial accounting, cost accounting and other records. The strength and weakness of the management accounting, therefore, depends upon the strength and weakness of these basic records. In other words, their limitations are also the limitations of management accounting.

(2) **Persistent efforts.** The conclusions drawn by the management accountant are not executed automatically. He has to convince people at all levels. In other words, he must be an efficient sales man in selling his ideas.

(3) **Management accounting is only a tool.** Management accounting cannot replace the management. Management Accounting is only an adviser to the management. The decision regarding implementing his advice are to be taken by the management. There is always a temptation to

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take an easy course of arriving at decision by intuition rather than going by the advice of the management accountant.

(4) **Wide scope.** Management accounting has a very wide scope incorporating many disciplines. It considers both monetary as well as non-monetary factors. All this brings inexactness subjectivity in the conclusions obtained through it.

(5) **Top-heavy structure.** The installation of management accounting system requires heavy costs on account of an elaborate organisation and numerous rules and regulations. It can, therefore, be adopted only by big concerns.

(6) **Opposition to change.** Management accounting demands a breakway from traditional accounting practices. It calls for a rearrangement of the personnel and their activities which is generally not liked by the people involved.

(7) **Evolutionary stage.** Management accounting is still in its initial stage. It has, therefore, the same impediments as a new discipline will have, e.g. fluidity of concepts, raw techniques and imperfect analytical tools. All this creates doubt about the very utility of Management accounting.

Summary

Management accounting refers to accounting for the management i.e. accounting which provides necessary information to the management for discharging its functions. Management accounting provides significant economic and financial data to the management and the management accountant is the major channel through whom this information efficiently and effectively flows to the management. Management accounting is designed principally for providing information for internal uses by the management. Management accounting provides detailed information about the different divisions, departments etc, of the business. Thus, it gives more intensive information. It supplies data in a way that the management can judge not only its present performance but also plan for the future. Management accounting derives its information from financial accounting, cost accounting and other records. Management accounting uses the tools such as, Financial Statement Analysis, Funds Flow Analysis, Cash flow Analysis, Costing Techniques including Marginal, Differential, Standard and Opportunity Costing, Budgetary Control and Management Reporting techniques to faithfully discharge its duty towards management.

KEY CONCEPTS

- Accounting
- Cost Accounting
- Cost Accountant
- Financial Accounting
- Financial Management
- Management Accountant
- Management Accounting
- Management Accounting Tools

Review Questions

OBJECTIVE QUESTIONS

1. The scope of Management Accounting includes:
   a. Financial Accounting
   b. Cost Accounting
   c. Budgeting and Forecasting
   d. Inventory Control and Tax Accounting
   e. All of the above.

2. The establishment of budgets, standard costs and actual costs of operations, processes, activities or products; and analysis of variances, profitability or the social use of funds is known as;
   a. Cost Accounting b. Financial Accounting c. Tax Accounting
   d. Internal Audit e. Statutory Audit
3. The classification of an entity's transactions in monetary terms, in accordance with established concepts, principles, accounting standards and legal requirements and presentation of true and false views of overall position is known as:
   a. Cost Accounting b. Financial Accounting c. Tax Accounting
   d. Internal Audit e. Statutory Audit
4. Management Accounting reports are meant for the use of:
   a. Creditors b. Investors
   c. Board of Directors/Managers d. Government e. Financial Institutions.
5. A management accountant is mainly not responsible for:
   a. Collection of data b. Clarification of decision problem
   c. Selection of an alternative d. Choice of decision model
   e. Identification of the alternatives
6. Which of the following statements is true, in respect of Financial and Management Accounting?
   a. Both are useful in providing information for external users
   b. Both are governed by GAAP.
   c. Both draw upon data from an organization's basic accounting system.
   d. Both are solely concerned with historical transactions.
   e. Both are similar methods of reporting financial statements.
7. Which of the following is not a valid difference between Financial Accounting and Management Accounting?
   a. Financial accounting provides data for external users like shareholders whereas Management accounting provides data for internal users like managers.
   b. Financial accounting is usually a summary of past costs whereas Management accounting is useful for decision-making that considers the future scenario also.
   c. Financial accounting relies heavily on the concept of responsibility whereas Management accounting does not rely on the concept of responsibility.
   d. Financial accounting statements must be prepared in accordance with Generally Accepted Accounting Principles (GAAP) whereas Management accounting s not governed by GAAP.
   e. Financial accounting is mandatory for business organisations whereas Management accounting is not mandatory.
8. Financial accounting provides information
   a. For maintenance of efficient control over assets and liabilities
   b. To management to enable it to fix prices
   c. For assessing the financial position and profitability of the firm
   d. Both (a) and (b) above
   e. Both (b) and (c) above.
9. Which of the following is least likely to be an objective of Cost Accounting System?
   a. Product costing
   b. Optimum sales mix determination
   c. Maximisation of profit.
   d. Inventory valuation
   e. Sales commission determination.
10. In a broader sense, the objective of Cost Accounting is/are

a. Internal reporting to plan and control routine operations
b. Internal and external reporting for making non-routine decisions and developing plans and policies
c. Internal reporting for use in management planning and control and external reporting to the extent its product-costing function satisfies external reporting requirements
d. External reporting to plan and control non-routing operations
e. Both (b) and (d) above.

11. In which of the following areas, Management Accounting Information is used?
a. Operational Control. b. Product and Customer Costing c. Management Control
d. Strategic Control. e. All of the above.
12. Top level or higher level management requires Management Accounting information
a. For knowing the events occurring at different levels in the organisation
b. For decision-making
c. For diagnostic purpose
d. Only (a) and (b) of the above
e. All of (a), (b) and (c) of the above.
13. Which of the following is not a technique used in Management Accounting?
a. Budgetary Control. b. Marginal Costing. c. Process Costing.
d. Standard Costing. e. Inventory control Techniques.
14. Which of the following is not a limitation of Management Accounting?
a. Management Accounting does not use the data provided by the Accounting System.
b. Management Accounting requires the knowledge of number of subjects.
c. It is not an alternative to administration.
d. No uniformity in Management Accounting reports.
e. Installation of Management Accounting system requires basic change in the organisation structure.

DESCRIPTIVE QUESTIONS

1. Define Management Accounting. Explain its objectives.
2. What are the functions of Management Accounting?
3. Discuss briefly the role of Management Accountant in a modern organisation.
4. Discuss Management Accounting as an effective tool of financial control.
5. What is the scope of Management Accounting?
6. What is the relation of Management Accounting with Financial Accounting?
7. *"A modern banker has more onerous responsibilities to perform as compared to traditional banker".* Do you agree? To what extent Management Accounting can help him in efficiently discharging this role?
8. *"There is an intimate relationship between Management Accounting and Finance Function"* Explain.

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CHAPTER

18

Planning for Liquidity-I: Statement of Sources and Application of Funds

"Fund flow analysis is an objective evidence of management decisions to dilute ownership rights by issuing more shares trade on equity by increasing long-term debt expand or modernise the plant or accumulate funds for better investment opportunities expected in the future."

—WW Pyle and JJ White

LEARNING OBJECTIVES

After reading this text, you will be able to understand:

- *Concept of Fund*
- *Fund Flow Statement*
- *Advantages of Fund Flow Statement*
- *Techniques of preparing a Fund Flow Statement*
- *Analysis of Flow of Funds*
- *Meaning of Fund Flow Statement*
- *Construction of Fund Flow Statement*
- *Determination of Funds from Trading Operation*
- *Analysis of Items of Outflow*
- *International Accounting Standards*
- *Steps in Preparation of Fund Flow Statement*
- *Uses of Fund Flow Statement*
- *Difference between Fund Flow and Cash Flow Statements*

INTRODUCTION

Often, the nature of balance sheet is criticised as merely a statement of the assets and liabilities as on a particular day, really stated on estimated basis. The balance sheet may depict the effect of various transactions in a particular period and show the resources position after all transactions in a period. One has to draw inferences from the balance sheets about the major transactions during the period by comparing the balance sheets of two periods. The balance sheet does not sharply focus major financial transactions having an ultimate effect on the financial position. For instance, if a loan was obtained during the year and was repaid during the year itself, there will be no effect on the balance sheet. However, the

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shareholders are better informed if the fact of having raised a loan and repaid it is shown in a separate statement. Similarly, if capital is raised to the extent of Rs. 2,00,000, and with that cash Rs. 2,00,000 worth of fixed assets were purchased, the balance sheet will show a higher capital figure and higher fixed asset figure. By comparing with the previous year's balance sheet, one has to draw an inference that Rs. 2,00,000 was raised as capital and fixed assets were acquired.

The criticism against the balance sheet is that it is static. It does not show the movement of funds. It must be remembered all the time that ultimately success or failure will depend on availability and better utilisation of funds, given a particular situation. In order to get over this criticism, a statement of movement of 'funds' is presented. This statement is variously known as 'funds flow statement, and 'statement of sources and application of funds; 'where got where gone statement', etc.

Such a statement is becoming more and more popular and is being increasingly published as part of the annual accounts, though as yet there is no legal requirement to do so.

CONCEPT OF FUNDS

All transactions whether capital or revenue have an effect on cash. Some transactions increase the cash balance and some decrease it. To the extent of total receipts of cash, there are items of payments and balance left unspent. A statement showing these can be designated as a cash flow statement, but it is wrong to designate it as "a funds flow statement". However, "Some define 'funds' as cash and concern themselves only with the movements in the cash account." The meaning of the word 'funds' is different from 'cash'; 'fund' is a broader term than 'cash'.

On the other end, there are those who "look upon funds in a broader sense such as economic values or investment and claims… Flows in the cash account are only a part of the wider funds movements under the definition and many of these movements do not involve cash such as purchase of merchandise or credit on the sale of an asset on account".[2]

Another interpretation of 'funds' is that it is the sum of cash and marketable securities; another one is quick assets usually defined as cash plus marketable securities plus accounts receivable minus current liabilities. For most of the business firms, however, funds are interpreted as working capital, i.e., the excess of current assets over current liabilities.

"The fact that funds analysis has not made much headway may be attributable to the absence of definition of 'fund' which is generally accepted. There is, in fact, a variety of definitions ranging over the whole of liquidity from cash at one extreme to total resources at the other with compromise like working capital somewhere in between."[1].

FUND FLOW STATEMENT

It is generally accepted that funds = current assets—current liabilities or working capital; cash balance is only a part of it. Some people exclude inventories from the definition of funds. If current assets are to include inventories which are the result of valuations, there is bound to be an element of human approximation which would influence the measurement of the flow of funds. For instance, if inventory is undervalued at the close of a year, as compared to that at the beginning of the year, to that extent, working funds would appear to have been withdrawn. But actually no funds have been withdrawn. It is just a matter of valuation. It can, however, be said that as long as the method of valuation is consistent at both the ends of a trading period, the impact of valuation of funds flow can be taken to be nil. Thus, for us, 'funds' would be stated to be the working capital; i.e., current assets less current liabilities. All flows of funds pass through working capital; every transaction has its effect on the working capital. If a loan is raised the cash balance goes up and hence the working capital; when fixed assets are purchased out of it, working capital is reduced. If the loan raised is used immediately for fixed assets, both the positive and negative effects on working capital cancel each other resulting in the working capital remaining the same.

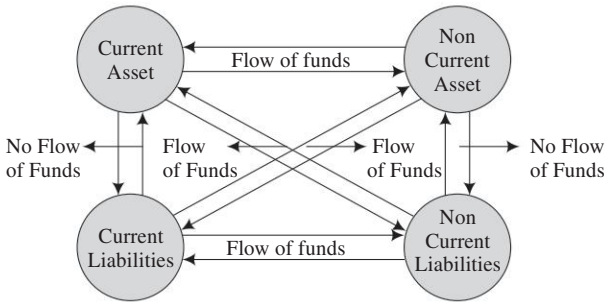


FIG. 18.1 Flow of fund

Still, the fact remains that there was an inflow into, and an equivalent outflow from the working capital. It is useful to consider funds as meaning anything by which a firm can settle its financial obligations.

The concept of 'funds' and the manner in which it is affected by transaction can be illustrated. The following is the balance sheet of a company as on 1st January, 2006.

Table 18.1

Liabilities	*Rs*	*Assets*		*Rs*
Share Capital	10,00,000	Fixed assets	10,00,000	
Reserve and surplus	4,00,000	Less: Depreciation	2,00,000	8,00,000
Secured loans (long-term)	4,00,000	Investment (at cost)		3,00,000
Unsecured loan (long-term)	2,00,000			
Current liabilities:		*Current assets:*		
Sundry creditors for supplies	7,00,000	Inventories (At cost)		10,00,000
Sundry creditors for expenses	20,000	Book debts		4,00,000
		Bank and cash		2,20,000
	Rs.27,20,000			Rs. 27,20,000

In the above balance sheet, the italicised items in the marked area relate to working capital. The working capital on the balance sheet date (i.e., 1st January 2006) is:

Current assets – Current liabilities = Working capital

i.e., Rs.16,20,000 – Rs. 7,20,000 = Rs. 9,00,000

Assuming that after the balance sheet date, the following transactions take place:

(1) Obtained a further unsecured loan of Rs. 1,00,000 in cash.
(2) Sold Rs.2,00,000 worth of inventories (at cost) for a price of Rs.3,00,000 on credit.
(3) Sold investments costing Rs. 1,00,000 for Rs. 1,20,000.
(4) Purchased fixed assets for Rs.1,00,000. The amount being payable after 10 years—the loan is secured by the property.
(5) Collected Rs. 2,00,000 from book debts.

Each transaction has a double effect. Out of the above, some transactions have one effect on working capital item and some have both the effects on working capital items. Some items have no effect on working capital. We tabulate the transactions and their effect on working capital.

Table 18.2

No	*Transaction*	*Working capital affected*			*Working capital not affected*		
		Item	*Increase Rs.*	*Decrease Rs.*	*Item*	*Increase Rs.*	*Decrease Rs.*
1.	Unsecured Loan Obtained	Bank	1,00,000		Unsecured loan	1,00,000	
2.	Saleof inventories	Book debts	3,00,000	2,00,000	Accumulated	1,00,000	
		Inventory			Profit		
3.	Sale of Investments	Bank	1,20,000		Investment		1,00,000
4.	Purchase of fixed assets thrqus loan	Not Affected			Capital profit	20,000	
5.	Collection of money from debtors	Bank Book debts	2,00,000	2,00,000	Fixed assets	1,00,000	
			7,20,000	4,00,000	Secured loan		1,00,000

Net increase Rs. 3,20,000

Our focus is on working capital. A study of the above statement would show that some transactions have affected working capital both ways; some transactions, though affect the working capital, the impact is a counterbalancing one (No.5). There is also one transaction which is completely outside the area of working capital (No.4). The net effect of these transaction is a net increase of Rs.3,20,000 in the working capital. We could appreciate this if we prepare a balance sheet after these five transactions:

Table 18.3 Balance Sheet as on 31st March 2006.

	Rs.			*Rs.*
Share capital	10,00,000	Fixed assets	11,00,000	
Reserve and surplus	5,20,000	*Less*: Depreciation	2,00,000	
Secured loan (long-term)	5,00,000			9,00,000
Unsecured loan (long-term)	3,00,000	Investments (at cost)		2,00,000
Current liabilities:		*Current assets:*		
Sundry creditors for supplies	7,00,000	Inventories (at cost)		8,00,000
Sundry creditors for expenses	20,000	Book debts		5,00,000
		Book (Cash balance)		6,40,000
	30,40,000			30,40,000

Working capital = Current assets – Current liabilities
= 19,40,000 – Rs. 7,20,000 Rs. 12,20,000.

∴ Increase in working capital = Rs. 12,20,000 – Rs. 9,00,000 = Rs. 3,20,000.

Thus, the two categories of transactions which affect the working capital position are:

(a) Transactions which have one impact outside the working capital and one in the working capital.

(b) Transactions which have both the impacts in the working capital but also leads to an increase or decrease in working capital. This refers to transactions as in No.2 above which has both the impacts in working capital but it results in enriching the working capital by Rs.1,00,000. This is because of profit earned.

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Funds flow statements essentially study the movements to and from working capital area. But we cannot account for each transaction's impact and hence we do only on a summary basis. Thus at the end of a year we can measure:

(i) The inflows into working capital for the whole year as a consequence of: (a) Raising of capital, (b) Raising of loans, (c) Sale of fixed assets, (d) Sale of investments, and (e) Operational inflow, i.e., due to profits.

(ii) Outflows from working capital as a consequence of: (a) Repayment of capital, (b) Repayment of loans, (c) Purchase of fixed assets, (d) Purchase of investments, and (e) Operational outflow, i.e., due to losses.

ADVANTAGES OF FUNDS FLOW STATEMENT

Funds flow study is essentially a tool of financial management. The utility of funds flow analysis is identifiable with the finance manager's job.

(i) Financial resource is the basis for business operations, big and small. The funds flow statement brings out in bold relief, the total stream that flows in and the utilisation made thereof, and thus shows whether the resources have been properly used during the year concerned.

(ii) Prepared for the next period on an estimated basis, it will show the requirements of funds that may have to be raised in addition to the normal flows or the surplus that will be there, pointing to the need for either making arrangements for additional resources or for planning an investment of funds.

(iii) The statement compared with the budget concerned will show to what extent the resources of the firm were used according to plan and to what extent the utilisation was unplanned.

(iv) The statement is based on the effect on the resources position resulting from trading operations. This figure is much more reliable and consistent, being subject to much less manipulation than the figure of profit which is dependent upon the management's decision in respect of depreciation. Depreciation can be computed in various ways and may result in different figures of profit. This vitiates the view of trading results in the short period.

However, it must be noted that the funds flow statement cannot take the place for the final statements of account-the balance sheet and the profit and loss account. It is a useful supplementary statement. It should also be noted that a cash flow statement is different from a funds flow statement. Cash means money in hand or at bank; funds means all the resources, including cash, with which a firm is able to deal with outsiders for transactions, big or small.

THE TECHNIQUE OF PREPARING A FUNDS FLOW STATEMENT

Funds flow analysis is essentially a financial statement analysis. Hence, the funds flow statement is prepared while scanning through the balance sheet. An intelligent comparison of two balance sheets itself would bring about the funds flow statement.

The balance sheet at the end of the very first year of operations of a business is more or less the funds flow statement. Suppose the balance sheet at the end of the first year of a business is as follows:

Table 18.4

Liabilities	*Rs.*	*Assets*	*Rs.*
Share capital	8,00,000	Fixed assets	12,00,000
Profit and Loss Account	3,00,000	Sundry debtors	2,00,000
8% Debentures	3,00,000	Stock	2,00,000
Sundry creditors	2,00,000	Cash	1,00,000
Bills payable	1,00,000		
	17,00,000		17,00,000

As the company has started from scratch, whatever closing position is, is the result of flows during the year.

The funds flow statement for the above company for the year is as follows:

Table 18.5

Sources	*Rs*	*Application*	*Rs.*
Share capital	8,00,000	Fixed assets purchased	12,00,000
8% Debentures	3,00,000	Working capital	2,00,000
Fund flow from profit:			
P&L as per balance sheet	3,00,000		
	14,00,000		14,00,000

Working capital:		
Current assets	Rs.	5,00,000
Less: Current liabilities		3,00,000
		2,00,000

Working capital to start with was nil.

The presentation of the funds flow statement can be made more meaningful by the following method:

Sources of funds:		
Share capital	Rs.	8,00,000
8% Debentures		3,00,000
Flow from operations		3,00,000
		14,00,000
Which were applied for:		
Fixed assets	Rs.	12,00,000
Leaving a balance as working capital		2,00,000
		14,00,000

The funds flow statement contains the details of funds raised during a period and spent during that period. The sources stated on one side of the funds statement can be (1) funds obtained from normal operations, and (2) other funds, such as money obtained by sale of fixed assets, investments, issuing shares or debentures, etc. In Category (1) only the funds obtained by normal operations should be taken. The profit as disclosed in the profit and loss account forms the basis for computation of funds obtained from normal operations.

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Funds can be applied mainly on (1) Purchase of fixed assets; (2) Purchase of investments, (3) Payment of dividend; and (4) Redemption of shares or any long-term liability. Operational outflow (i.e., loss) leads to depletion of funds. The balance, after all applications are made, will be added to the working capital. Conversely, if extra funds are required for these purposes over and above the total inflow, the working capital would get depleted.

The statement can be presented either in the 'T' form, i.e., left-hand side for sources and the right-hand side for application or in single column form-sources first and then the application. An analytical study of the inflows and outflows follows.

ANALYSIS OF FLOW OF FUNDS

Operational flow

The normal operations of a business consist of buying or manufacturing goods or operating service and selling such goods or services. In this process, the business earns profit (or suffers loss also). When profit is earned, current assets increase, i.e., debtors or bank may increase more than the cost of the goods sold. Cost of goods consists of two categories of cost, viz., present cost and past cost. The former refers to materials, labour and overheads spent or committed. Past cost refers to depreciation which is only a transfer of the expired cost of fixed assets. Thus, if the total cost of a product is Rs. 100 including depreciation of Rs. 10, the present cost is only Rs. 90. As a consequence, if the selling price is Rs. 120, the funds flow from this sale is Rs. 30 though the profit is only Rs. 20. This is because depreciation does not result in outflow of cash. The outflow being Rs.90, the net inflow is Rs.30 from operations.

It is said that depreciation is a source of funds. This is not true. If this is true then if a company charges more depreciation there will be more inflow from operation. If depreciation charged is more the resultant profit will shrink. But the quantum of profit before depreciation will remain constant. Hence depreciation is not a source of fund but while reckoning the operational inflow or outflow it has to be adjusted as it is an item of cost which does not involve outflow of fund. But depreciation is a source of fund is partially true. This is because depreciation is taken as an element of cost and hence goes into inventory value. One of the items of current assets being inventory any addition to the current asset from outside the working capital area adds to the working capital.

Different depreciation methods can have their impact if the taxation on profit is after allowing for any method of depreciation. But since in this country income-tax law has prescribed the depreciation method for taxation, different depreciation methods will have no impact on taxation. Hence operational flow is unaffected by different methods of depreciation.

Operational flow is reckoned not only by offsetting depreciation effect for which there is no outflow, but also after setting off other similar write-offs which do not involve outflow of funds. The best example is write-off of preliminary expenses, share issue expenses, etc. As these do not involve any outflow of funds from operational flow, their impact on profit is nullified while measuring the operational flow.

Operational flow connotes two things: (1) Net operational flow, and (2) Gross operational flow. This classification is to distinguish the two stages of reckoning operational flow. The profits of a period are subject to tax liabilities. The net earnings actually add to the working capital. Hence, the post-tax profit can constitute the base from which we can determine the operational flow by readjusting depreciation write-offs etc. This would result in net operational flow. If we take the net operational flow, it is not necessary to show the actual payment of tax. If payment of tax is not made it will be included in the current liabilities, thus automatically reducing the working capital. Payment or proposal of dividend has to be treated as an application. So the net operational flow should be before dividend.

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If, however, we would like to know the flow before appropriating for tax, it would constitute gross operational flow. This could be shown as inflow of funds. If gross operational flow is shown as inflow, then it is usual to show the actual payment of tax as application of fund. *In this case the provision for taxation should be treated as non-fund item*. In conformity with this rule, in the absence of specific information it is proper to treat the previous period provision as paid during the current period.

In this book, basically the gross operational flow approach is adopted as it leads to more detailed information to the management.

In calculating the operational flow, essentially the approach is to proceed from reported profit/loss and readjust any non-fund item like depreciation write-offs, etc. Before doing this, it should also be ensured that the profit/loss is not clouded by any change in accounting method. For example, the change in the method of valuation of closing stock may result in variation of profit/loss which is not having any impact on flow of funds. In such cases, the profit-loss figure should be readjusted first for the change in method of accounting. Similar is the treatment if a shift is made from cash basis to accrual basis of accounting. Otherwise the operational flow will be distorted. Needless to say, the adjustments in the nature of appropriation of profit have to be offset and the real inflow from operations has to be worked out. The technique of ascertaining the operational flow is not rigid. It can take different shapes. The following are the usual methods.

(i) *Adjustment of working result* - Taking the net profit/loss for the period, readjusting the same for non-fund items and appropriation, provisions for taxation, etc.

(ii) *Adjustment of profit and loss account balance* - This involves proceeding from closing balance of profit and loss account and adjusting non-fund items, appropriations, provisions for taxation and then deducting the opening balance of the profit and loss account.

(iii) *Preparation of profit and loss account* - Under this method, we prepare the profit and loss account once again and fit in the debt and credit items at the appropriate places. This would result in a balancing figure which would be treated as the operational inflow.

Meaning of Fund Flow Statement

A fund flow statement is a statement which reflects movement of funds. The statement is called "Statement of Sources and Application of funds". "Statement of Derivation and Disposition of the Means of Operation" "Where Got, Where Gone Statement", "Movement of Working Capital Statement", Movement of Funds Statement" or Funds Statement" other self explanatory names may also be used for the statement.

The statement, as its name indicates, shows the ebb and flow of funds into (i.e. sources) and out of (i.e. application) business. Obviously, the statement will have two aspects 1. Sources of funds 2. Their application. Before we know about the Sources and Application of Funds (i.e. contents of the statement) let us understand the word funds.

Funds

The word Funds should not be construed as cash only. They are understood as working capital. That is why the items which do not affect the working capital are not reflected in the statement. For example, conversion of debentures into shares, dividend paid through the issue of bonus shares and such other items are not included in the statement. In other words, the statement does not contain (or reflect) the transfers, amortisations, and accruals – i.e. internal transactions. Thus, we may say that sources consist of the transactions that increase the net working capital and their application.

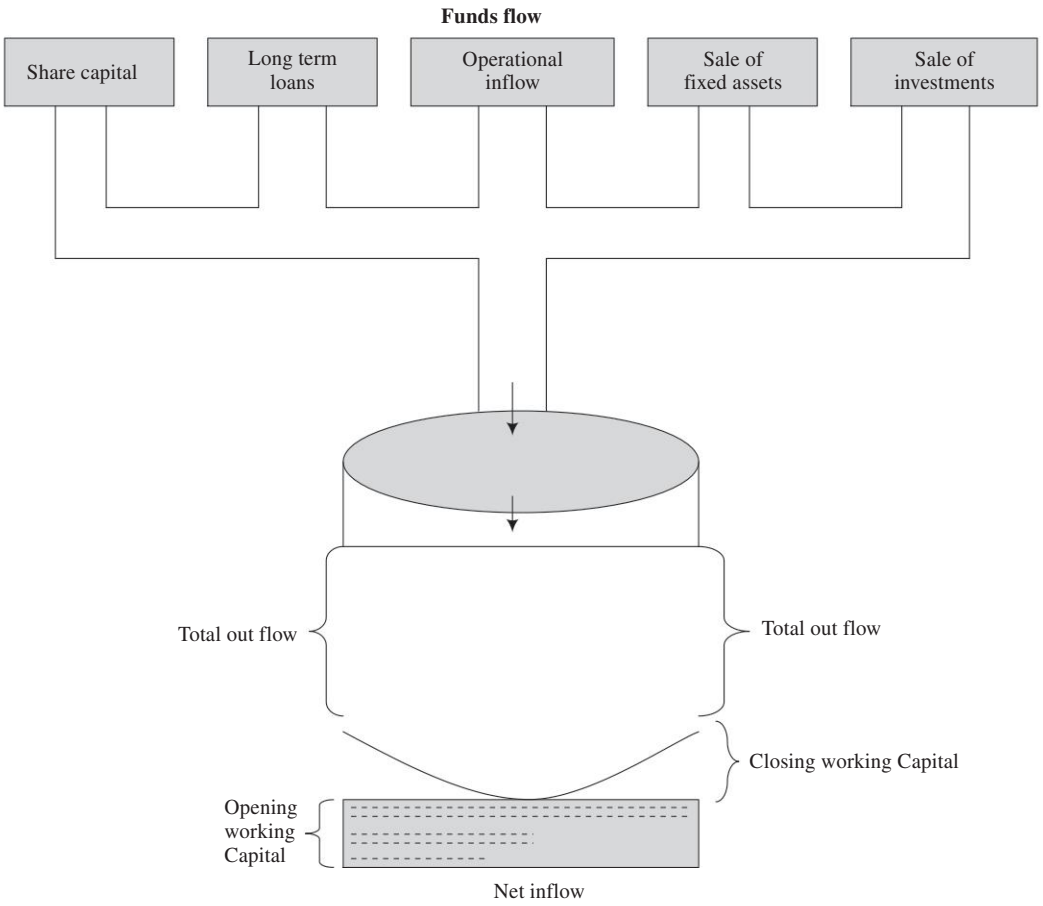


FIG 18.2 Funds Flow

Figure 18.2 consists of the transactions that decrease the net working capital. To illustrate, suppose a dividend of Rs.5, 000 has been paid in cash. This transaction, no doubt, reduced the cash (which is a part of working capital). Hence, it will be included in the statement as application of funds. On the other hand, if the dividend of Rs.5, 000 is paid in form of bonus shares, it would not form part of the fund flow statement because the transaction has neither reduced nor increased the working capital. After studying the concept of funds, let us consider the sources and application of funds.

Sources of Funds

Funds may derive from:

1. Issue of Share Capital
2. Borrowings
3. Sale of Fixed assets and Investments
4. Income from Investments
5. Income from Trading Operations (i.e. Profit).

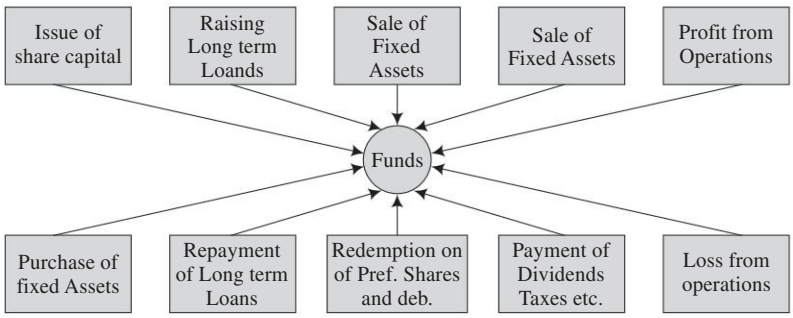


FIG 18.3 Sources and Application of funds

6. Decrease in Working Capital
7. Non-trading operations like dividend received, gifts etc.

Application of Funds

Funds may be applied as follows:

1. Repayment of Debentures, Loans and Redeemable Shares.
2. Purchase of Investments and other Fixed Assets
3. Payment of dividends
4. Increase in Working capital
5. Loss on account of Trading Operations
6. Non-trading expenses.

Note: Above mentioned is the general list of sources and application of funds.

Specimen: The statement obviously would contain the sources and application of funds. The specimen is given below:

Specimen No. (1):

TABLE 18.6 Statement of Sources and Application of Funds for the Year ended...

Sources	*Amount*	*Application*	*Amount*
1. Issue of Capital (including Premium on Issue Preference Shares)	-	1. Redemption of Redeemable Preference Shares (Including Premium on Redemption of Preference Shares)	-
2. Trading Profit for the year	-	2. Repayment of Loans	-
3. Sale of Machinery	-	3. Purchase of Fixed Assets	-
4. Sale of Investment	-	Purchase of Fixed Assets	-
5. Long Term Loans	-	4. Equity Dividend Paid	-
6. Issue of Debentures	-		
7. Decrease in Working capital (as per separate schedule)			
Rs. Total		Rs. Total	

Alternatively, it may also be prepared in the following form.

Specimen No. (1):

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TABLE 18.7 Statement of Source and Application of Funds for the Year ended .....

Sources	*Rs.*
1. Issue of Capital (Including Premium on issue of Preference Shares) 2. Trading profit for the year 3. Sale of Machinery 4. Sale of Investment 5. Long Term Loans 6. Issue of Debentures	
Total	
Applications 1. Redemption of Redeemable Pref. shares (Including Premium on Redemption Pref. Shares) 2. Repayment of Loans 3. Purchase of plant and Transaction properties 4. Equity Dividend paid 5. Purchase of Land	
Total	

Decrease in Working Capital [(1) – (2)] (as per separate schedule)

Construction of a Fund Flow Statement

Construction of the fund flow statement involves the following three important stages:

(i) Determination of working capital and ascertainment of increase or decrease in working capital over a period of time.

(ii) Determination of funds generated business operations.

(iii) Accounting for the changes in non-current accounts i.e. fixed assets and fixed liabilities.

Let us consider the above three stages in detail.

Working capital and its increase or decrease over a period:

This step involves two aspects namely,

1. Determination of working capital at the commencement and at the end of the period covered by the fund flow statement, and
2. Ascertainment of increase or decrease in working capital.

Working capital is ascertained usually (i.e by deducting the total of current liabilities from the total of current assets). The concept of working capital (also called circulating capital) has already been explained earlier in this book. In short,

Working Capital = Current Assets – Current Liabilities.

For example, for current assets and current liabilities, see the specimen of schedule of changes in working capital.

Increase or decrease in working capital over a period is ascertained by preparing schedule of changes in working capital.

Given below is a specimen of the schedule.

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TABLE 18.8 Schedule of changes in Working Capital for the period ended ...

	Balances as on		*Changes in Working Capital*	
	Previous Year Rs.	*Current Year Rs.*	*Increase Rs.*	*Decrease Rs.*
Current Assets				
Stock-in-trade				
Debtors				
Prepaid Expenses				
Bills Receivable				
Cash at Bank				
Cash-in-hand				
(A)				
Current Liabilities:				
Trade Creditors				
Bills Payable				
Bank Overdraft				
Outstanding expenses				
(B)				
Working Capital				
(A) (B)				
Increase/Decrease in				
Working Capital				

Following are the important points to be remembered at this stage.

1. Provision against current assets such as provision for Bad and Doubtful Debts may be deducted from the balance of corresponding current asset. Alternatively, instead of deducting the provision from the corresponding balance of asset, the provision may be treated separately i.e. as current liability. Obviously, the effect on working capital will remain the same.
2. Provision for Taxation may be treated as a current liability.
3. Proposed Dividend (already declared in the General Meeting) should be taken as current liability.
4. The tax deducted at source should be taken as current liability.
5. The Dividend Receivable should be taken as current asset.
6. Bank Overdraft may be shown as current liability.
7. Unlike trade investments (which are fixed assets) temporary investments (i.e those which represent surplus funds invested in marketable securities) should be shown as current assets.
8. As regards ascertainment of increase or decrease in working capital, increase in current liabilities would amount to increase in working capital. On the other hand, decrease in current asset and increase in current liabilities would amount to decrease in working capital.

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Determination of Funds from Trading Operations

Funds generated from business operations (to be shown under sources) or the funds lost in business operations (to be shown under Applications) should be ascertained by deducting from or adding back as the case may be, to the figure of Net profit of those items which do not affect any current asset or current liability. Moreover, items which are not in form of a trading charge should also be added back to Net profit. On the other hand, the items which are not in form of normal business income or profit should be deducted from Net profit. Moreover, those items which do not result in a change in any current liability or asset should be deducted from Net Profit. Examples of the items requiring adjustments are mentioned below.

Funds generated from business operations (or funds lost in business operations), may be arrived at in either of the following two ways:

Closing balance of P & L (Appropriation) A/c	
Add: Items to be added Back:	.....
(i) Depreciation written off	.....
(ii) Preliminary Expenses written off	.....
(iii) Goodwill written off	.....
(iv) Discount on issue of shares or Debentures written off	.....
(v)Transfer to General Reserve	.....
(vi)Transfer to Sinking Fund	.....
(i) Transfer to dividend Equalisation Reserve	.....
(ii) Loss on sale of fixed assets or investments (other than temporary investments)	.....
Less: Items to be Deducted:	
(i) Dividend received on investment (other than temporary investments) credited to Profit & Loss Account	.....
(ii) Excess provision for taxation written back	.....
(iii) Profit on sale of fixed assets or investments (other than temporary investments)	.....
Opening balance of P & L (Appropriation) A/c Funds generated from business operations (or funds lost in business operations)	.....

Alternatively, instead of considering opening and closing balances of P & L (Appropriation) A/c, we take into account "Net Profit for the year" and make additions and deductions there. However, in this case additions and deductions will not be required for items normally appearing in appropriation section of P & L A/c such as transfer to general reserve, proposed dividend, excess provision for taxation written back, etc.

Trading profit or loss may also be ascertained by preparing an adjusted profit and loss account. The opening balance of P/L Appropriation A/c will be credited to this account and the closing balance of P/L Appropriation A/c will be debited to this account. The items to be added back, as mentioned above, will be debited to the account and those to be deducted, as mentioned below, will be credited to the account. The balancing figure of the account would represent the funds lost in business operations if it is on the debit side.

Proforma of Adjusted profit and loss account is shown below:

TABLE 18.9 Adjusted Profit and Loss Account

Particulars	*Rs.*	*Particulars*	*Rs.*
To Depreciation written off	…..	By Opening Balance of Profit and Loss Appropriation A/c.	…..
To Preliminary Expenses written off		By Dividend already credited to P & L A/c.	…..
To Discount on Issue of shares of Debentures written off	…..	By Excess provision of taxation written back	…..
To Transfer to General Reserve	….	By Profit on sale of fixed assets or investments (Other than temporary investments)	….
Sinking fund Dividend Equalization Reserve	….	By trading Profit or funds from operations i.e (Balancing figure)	….
To Loss on sale of fixed assets or investments (other than temporary investments) written off	….		
To Closing Balance of Profit and Loss Appropriation Account	….		
Total	….	Total	….

We have seen that provision against current assets and provision for taxation may be treated as current liabilities. But one may treat these two items like an internal reserve. If so treated, separate accounts should be prepared and the respective balancing figures thereof should be transferred to the adjusted profit and loss account or in other words, added back to or deducted from the net profit for the purpose of arriving at funds generated from business operations (or funds lost in business operations).

Also note that a proposed dividend becomes current liability only if it is declared in general meeting or in other words, if the accounts are passed in general meeting. Hence the proposed dividend before its declaration in the general meeting, is only a surplus and should be treated as an appropriation of profit (like internal reserve). A separate account should be prepared and the balancing figure should be shown on the debit side of the adjusted profit and loss account or in other words, added back to the figure of net profit for the purpose of arriving at funds generated in business operations (or funds lost in business operations).

It should be noted that profit or loss on sale of a fixed assets should be deducted from or added back (respectively as the case may be), as already mentioned, only if the same has been transferred to the Profit and Loss account. On the contrary, if it has been transferred to some reserve or has been standing on the liability side or on the asset side of the balance sheet (respectively – as the case may be), the same should not be considered for the purpose of arriving at trading profit or loss for the most obvious reasons.

Accounting for the changes in Fixed Assets and Fixed Liabilities (i.e Non-current assets & Liabilities)

The changes in Fixed Assets and Fixed Liabilities during the period which elapses between the dates of two Balance Sheets are ascertained by preparing a separate account for each Fixed Asset and Fixed Liability. Only the sale proceeds of the asset sold should be shown under sources. The depreciation on the asset, a loss on its sale, should be added back as already mentioned. If there is a profit on its sale, the same should be deducted (in case the profit or loss on sale of an asset has been transferred to the profit and loss account). Collections on account of shares, debentures should be shown under sources at the actual figures (i.e face value + Premium (or less discount).

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Notes: We have seen that construction of a fund flow statement involves three aspects namely:-

1. Determination of working capital and increase or decrease therein over a period
2. Determination of trading profits or loss and
3. Accounting for the changes in non-current assets and liabilities.

All practical problems on each of the above three aspects are given separately for practice, and then the problems combining all the three aspects (i.e involving construction of Fund Flow Statement) are given.

Problem on Determination of Working Capital and Increase or Decrease Therein Over a Period.

Illustration 1: Given below are the details forming part of the Summarised Balance sheets of X Ltd. as at 31st March 2006 and 31st March 2007:

TABLE 18.10

	2006 Rs.	*2007 Rs.*
Fixed and Current Assets:		
Cash in hand	1,000	2,000
Bank Balance	15,000	-
Sundry Debtors	1,36,000	1,87,000
Plant & Machinery	2,76,000	3,29,200
Prepaid Expenses	3,200	3,600
Stock	2,04,800	2,47,600
Good will	50,000	-
Bills Receivable	4,000	36,000
Debenture Discount	5,000	4,000
Investments (of Temporary cash surplus)	20,000	-
Fixed and Current Liabilities:		
8% Debentures	1,20,000	1,08,000
Provision for Depreciation on Plant & Machinery	91,600	1,29,400
Provision for Bad Debts	5,200	5,600
Bank Overdraft	-	7,800
Sundry creditors	84,800	78,400
Long term Debt due with in one year	6,400	8,800

Prepare statement showing the change in working capital

TABLE 18.11 Statement Showing the Changes in Working capital

	Balances as on		*Changes in Working Capital*	
	2006 Rs.	*2007 Rs.*	*Increase Rs.*	*Decrease Rs.*
Current Assets				
Cash in hand	1,000	2,000	1,000	
Bank Balance	15,000	-		15,000
Sundry Debtors	1,36,000	1,87,000	51,000	
Prepaid Expenses	3,200	3,600	400	
Stock	2,04,800	2,47,600	42,800	

Bills Receivable	44,000	36,000		8,000
Temporary Investments	20,000	-		20,000
(A)	4,24,600	4,76,800		
Current Liabilities				
Provision for Bad Debts	5,200	5,600		400
Bank Overdraft	-	7,800		7,800
Sundry creditors	84,800	78,400	6,400	
Long term Debt due with in one year	6,400	8,800		2,400
(B)	96,400	1,00,600		
Working Capital				
(A) – (B)	3,28,200	3,76,200		
Increase in Working Capital	48,000			48,000
Rs.	3,76,200	3,76,200	1,01,600	1,01,600

Note: Increase of Rs.48, 000 in working capital would be shown under the Application in the funds flow statement.

Problems on Determination of Funds Generated From Business Operations

Illustration 2: You are required to determine the amount of funds generated from trading operations for the purpose of its inclusion in the fund Flow statement.

Necessary details are given below:

1. Opening balance of profit & loss (Appropriation) Account Rs.60, 000.
2. Closing balance of profit & loss (appropriation) account Rs.96, 000.
3. Depreciation of Rs.20, 000 has been provided for during the year.
4. Dividend of Rs.6, 000 has been received on Trade Investments. Out of this, Rs. 2, 000 being from Pre-acquisition profit has been credited to Investments S/c. The balance has been credited to P/L account.
5. Loss on sale of Machinery is Rs. 4,000 which has been transferred to capital reserve account.
6. Preliminary expenses are written-off to the extent of Rs.10, 000.
7. An interim dividend of Rs. 40,000 has been paid during the year. A transfer of Rs. 1,00,000 has been made to proposed Dividend Account.
8. A transfer of Rs.40, 000 has been made to General Reserve.

Ans. Determination of Funds generated from business operations:

TABLE 18.12

	Rs.	*Rs.*
Closing Balance of P & L A/c.		96,000
Add: Items to be added back		
Depreciation	20,000	
Preliminary Expenses written off	10,000	
Interim Dividend	40,000	
Transfer to proposed Dividend A	1,00,000	
Transfer to General Reserve	40,000	2,10,000
		3,06,000
Less: Items to be deducted:		
Dividend on Trade investments		4,000
		3,02,000
Less: Opening Balance		60,000
Funds generated from business operations		2,42,000

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Notes:

1. Loss on sale of Machinery (amounting to Rs. 4,000) has been transferred to Capital Reserve Account. Hence, no adjustment is required to be made in the figure of net profit.
2. Similarly, dividend on Trade Investments from reacquisition profit has been credited to Investment Account. Hence, only the balancing figure which has been credited to the P/L Account, Rs.4,000 has been deducted.
3. Funds generated from business operations may also be arrived at by preparing Adjusted Profit and Loss Account as below:

TABLE 18.13 Adjusted Profit and Loss Account

	Rs.		*Rs.*
To Depreciation	20,000	By Opening Balance	60,000
To Preliminary Expenses w/o	10,000	By Dividend on Trade investments	4,000
To Interim Dividend	40,000	from post acquisition profits	
To transfer to Proposed Dividend	1,00,000	By funds generated from business	2,42,000
To Transfer to General Reserve	40,000	operations	
To Closing Balance	96,000		
Total Rs.	3,06,000	Total Rs.	3,06,000

Illustration 3: You are required to determine funds generated by trading operations from the following information:

Information forming part of the financial statements of Natraj & Products Limited as at 31st March 2006 and 31st March 2007.

TABLE 18.14

Items	*31-3-07 2006*	*31-3-07 2007*
Balance of P/L Account from previous year	74,000	30,000
Net profit for the year	99,250	44,000
Depreciation provision	90,000	80,000

Further Information: During the year 2006, Machinery costing Rs.10, 000 which was one-half depreciated was discarded and written off.

Investments costing Rs. 2, 500 were sold during the year 2006 for Rs.2, 400.

Ans. Funds Generated From Business Operations:

TABLE 18.15

	Rs.	*Rs.*
Net profit for the year		99,250
Add : Items to be added back		
Provision for Depreciation	15,000	
Loss on Machine Discarded	5,000	
Loss on sale of Investments	100	20,100
Fund Generated from Business Operations		1,19,350

Working Notes: Provision for Depreciation has been arrived at as below (Though the problem indicates the same)

TABLE 18.16

	Rs.
Opening Balance of Depreciation Provision	80,000
Less: Provision in respect of Machinery Discarded	5,000
	75,000
Closing Balance of Depreciation Provision	90,000
Transfer from Profit & Loss Account	15,000
Loss on Machine Discarded	Rs.
Cost of the Machinery	10,000
Less: Depreciation	5,000
Written Down Value Rs.	5,000

The above value has been written-off. Hence, the loss on machine discarded would amount to Rs. 5,000.

TABLE 18.17 Loss on Sale Investments

Cost of Investments	2,500
Selling price	2,400
Loss on sale	100

Illustration 4: You are required to determine funds generated by trading operations from the following summarised P/L Account prepaid from the books of M/s. Smita Products, Nagpur.

TABLE 18.18 Profit and Loss Account for the year ended 31st December 2006

Dr. Cr.

Rs.	*Rs.*		*Rs.*
To Depreciation		By Gross Profit b/d	93,000
On machinery 30,000		By Dividends Received on Trade Investments	3,000
On Furniture 4,500	34,500		
To Debenture Interest	3,000		
To Preliminary Expenses	750		
To Income Tax paid	18,750		
To Profit c/f	39,000		
	96,000		96,000
To Provision for Taxation	3,650	By Balance b/f from last year	18,000
To Transfer to General Reserve	4,500	By profit b/f (for the year)	39,000
To transfer to Dividend Equalization Reserve	6,000	By excess Income Tax Provision written back	750
To proposed Dividend	22,500		
To Balance c/f	21,000		
	57,750		57,750

Note: Opening and closing balances of provision for Taxation A/c are Rs.21, 750 and Rs.25, 500 respectively.

Ans. Funds from trading operations for their inclusion in the fund flow statement would be determined as below:

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TABLE 18.19 Adjusted Profit and Loss Account

	Rs.		*Rs.*
To Depreciation		By Gross Profit b/d	93,000
To Provision for Income Tax	4,500	By Opening Balance	18,000
To Income Tax paid A/c	18,750	By Excess Provision for Income tax	750
To provision for Depreciation on:		By Dividend on Trade Investments	3,000
Machinery 30,000		By Funds generator from business operations	90,750
Furniture 4,500	34,500		
To general Reserve	4,500		
To Dividend Equalisation Reserve	6,000		
To Preliminary Expenses	750		
To proposed Dividend	22,500		
To Closing Balance	21,000		
	1,12,500		1,12,500

Provision for Income Tax:

TABLE 18.20 Income Tax Account

To adjusted P/L A/c.	750	By Opening Balance	21,750
To Closing Balance	25,500	By adjusted P/L A/c.	4,500
	26,250		26,250

Income Tax paid Rs.18, 750 will be shown separately as application of funds in Fund Flow Statement.

Problems on Movement of Funds on Account of Changes in Non-Current Assets and Liabilities

Illustration 5: How would you include the following changes in capital and Assets of M/s. ABC Limited in the fund flow statement for the year ended 31st December 2006.

TABLE 18.21 Part of Balance Sheets of M/s. ABC Limited

Assets:	*31-12-2006*	*31-12-2005*
Fixed Assets less Depreciation	12,00,000	7,20,000
Investments	20,000	22,500
Liabilities		
Capital	4,60,000	3,94,000
(Ordinary shares of Rs.100 each)		

Additional Information:

On 31st December 2006, the accumulated depreciation on fixed assets was Rs.3,60,000 and on 31st December 2005, Rs.3,20,000. Machinery costing Rs.40,000 with written down value of Rs.20,000 was discarded and written off in 2006.

Investments costing Rs.10,000 were sold during the year 2006 for Rs.9,600 and Government Securities of the face value of Rs.8,000 were purchased during the year for Rs.7,500.

TABLE 18.22

	31-12-2005 Rs.	*31-12-2006 Rs.*
Redeemable preference share capital	1,00,000	85,000
4% Mortgage Debentures	82,000	68,500
Building and Machinery	1,72,778	2,07,782
Trade Investments	1,17,500	90,000

Further Information:

1. 150 Redeemable Preference shares were redeemed during the year at Rs.111 per share. Subsequent to the redemption, a ten per cent cash dividend was paid.
2. Machinery was purchased for Rs.31, 365 and machinery costing Rs.32, 625 was scrapped. The scrap was sold for Rs.1, 000, which was credited against the profit and loss on scrapping of the asset. The remaining increase in fixed assets resulted from construction of a building.
3. The debentures mature at the rate of Rs.5, 000 per year. In addition to the redemption of Rs.5, 000 debentures due in 2006, the company purchased and redeemed Rs.8, 500 of the debentures at Rs.103.

Ans. Transactions in question will appear in the Fund flow Statement for the year ended 31st Dec.2006, as follows:

TABLE 18.23

Sources	*Rs.*	*Applications*	*Rs.*
Sale of Machinery	1,000	Redemption of Redeemable	
Sale of Trade Investments	27,000	Preference shares	16,650
		Payment of dividend	8,500
		Purchase of Machinery	31,365
		Cost of construction of building	36,264
		Redemption of Debentures	13,755

Redemption of Redeemable Preference Shares:

150 shares × 111 per share

= Rs.16,650. (See that face value plus premium has been shown as application)

Payment of Dividend: 10% of Rs.85,000 = Rs.8,500

Cost of Construction of Building:

Ans. Changes in the assets and capital would appear in the Fund Flow statement as below:

TABLE 18.24

Sources	*Rs.*	*Applications*	*Rs.*
Ordinary share Capital raised	66,000	Purchase of Government Securities	
Sale of Investment	9,600	Purchase of fixed assets	5,60,000

Notes: Purchase of fixed assets:

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TABLE 18.25

Opening balance (written down value)	7,20,000
Add: Accumulated Depreciation	3,20,000
Cost Rs.	10,40,000
Less: Machinery Discarded (cost)	40,000
	10,00,000
Less: Closing Balance (WDV) 12,00,000	
Add: Accumulated Depreciation 3,60,000	15,60,000
Fixed Assets purchased	5,60,000
Alternatively: WDV as on 31-12-2005	7,20,000
Less: WDV of Machinery discarded	20,000
	7,00,000
Less: Depreciation during the year	60,000
Closing Balance (WDV)	6,40,000
Fixed Assets purchased	12,00,000
	5,60,000
Depreciation during the year:	
Accumulated Depreciation as on 31-12-2005	3,20,000
Less: Depreciation on Machinery Discarded	20,000
	3,00,000
Accumulated Depreciation as on 31-12-2006	3,60,000
Depreciation during the year	60,000

Illustration 6: Following information has been derived from the Balance Sheets of Natraj Products Limited as on 31-12-2005 and as on 31-12-2006.

TABLE 18.26

Opening Balance of Building & Machinery A/c (cost)	1,72,778
Add: Cost of machine purchased	31,365
	2,04,143
Less: Cost of Machinery Scrapped	32,625
	1,71,518
Closing Balance of Building & Machinery A/c	2,07,782
Cost of construction Rs.	36,264
Redemption of Debentures:	
Maturity of Debentures in ordinary course of business	5,000
Purchase and Redemption of Debentures at	8,755
Rs.103 = 85 Debentures × 103 =	13,755

Note: We have already studied the independent problems on three major stages of construction of Fund flow statement namely,

1. Determination of working capital and increase or decrease therein
2. Determination of Trading profit and
3. Accounting for the changes in non-current assets & liabilities, let us study the problem.
4. On the preparation of the Funds Statement.

General Problems on Preparation of Fund Flow Statement

Illustration 7: Balance Sheet of M/s. Ram and Sam as on 1st January, 2006 and 31st December 2006 were as follows:

TABLE 18.27 Balance Sheet

	1.1.2006 Rs.	*31.12.2006 Rs.*		*1.1.2006 Rs.*	*31.12.2006 Rs.*
Liabilities:			Assets:		
Creditors	40,000	44,000	Cash	10,000	7,000
Mrs. Ram's loan	25,000	-	Debtors	30,000	50,000
Loan from P.N. Bank	40,000	50,000	Stock	35,000	25,000
Capital	1,25,000	1,53,000	Machinery	80,000	55,000
			Land	40,000	50,000
			Building	35,000	60,000
	2,30,000	2,47,000		2,30,000	2,47,000

During the year, a machine costing Rs.10,000 (accumulated depreciation Rs.3,000) was sold for Rs. 5,000. The provision for depreciation against machinery as on 1st January 2006 was Rs. 25,000, and on 31st December 2006, Rs. 40,000. Net profit for the year 2006 amounted to Rs. 45,000.

You are required to prepare Fund (working capital) Flow statement.

Ans. Messrs. Ram & Sam

TABLE 18.28 Fund Flow Statement for the year ended 31at December 2006

Sources	*Rs.*	*Applications*	*Rs.*
Fund from Business Operations	65,000	Purchase of Buildings	25,000
Additional loan from P.N. Bank	10,000	Purchase of Land	10,000
Sale of Machine	5,000	Repayment of Mrs. Ram's Loan	25,000
		Drawings by Partners	17,000
		Increase in Working Capital (As per Statement of changes in working capital)	3,000
	80,000		80,000

Messrs Ram & Sam

TABLE 18.29 Statement of Changes in Working Capital

	Balances as on		*Changes in Working Capital*	
	1-1-2006 Rs.	*31-12-2006 Rs.*	*Increase Rs.*	*Decrease Rs.*
Current Assets:				
Cash	10,000	7,000	-	3,000
Debtors	30,000	50,000	20,000	-
Stock	35,000	25,000	-	10,000
(A)	75,000	82,000		
Current Liabilities:				

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Creditors (B)	40,000	44,000	-	4,000
Working Capital	35,000	38,000		
(A) – (B)		-	-	
Increase in Working Capital	3,000	-	-	3,000
	38,000	38,000	20,000	20,000

Working Notes:

TABLE 18.30 Machinery Account

Dr. Cr.

	Rs.		*Rs.*
To Balance b/d (at cost) (1.1.06) (w.s.v. Rs.80,000 depreciation Rs.25,000)	1,05,000	By sale of Machine A/c (cost of machine sold transferred)	10,000
		By Balance c/d (at cost) (31.12.06) (w.d.v Rs. 55,000+depreciation Rs.40,000)	95,000
	1,05,000		1,05,000

TABLE 18.31 Provision for Depreciation Account

Dr. Cr.

	Rs.		*Rs.*
To sale of Machine A/c (Transfer of depreciation pertaining to machine sold)	3,000	By Balance b/d (1.106)	25,000
To Balance A/c 31.12.06	40,000	By Profit & Loss A/c (Depreciation w/o for the year 2006)	18,000
	43,000		43,000

TABLE 18.32 Sale of Machine Account

	Rs.		*Rs.*
To Machinery Account	10,000	By Provision for depreciation A/c	3,000
		By Bank A/c (Sale proceeds)	5,000
		By Profit & Loss A/c	2,000
	10,000		10,000

Funds generated from operations are calculated as follows:

TABLE 18.33

Net profit for 2006		45,000
Add: Non-Cash Items:		
Loss on sale of Machine	2,000	
Depreciation provided during the year	18,000	20,000
Fund from operations		65,000

Assuming that depreciation is not charged on land and building, the purchase of land and building during 2006 has been calculated as follows:

TABLE 18.34

	Land	*Building*
Cost as on 31.12.2006	50,000	60,000
Less: Cost as on 1.1.2006	40,000	35,000
	10,000	25,000

TABLE 18.35 Capital Account

Dr. Cr.

Rs.			*Rs.*
To Bank A/c (Drawings)	17,000	By Balance b/d (1.1.2006)	1,25,000
To Balance c/d (31.12.2006)	1,53,000	By Profit & Loss A/c (Net profit for the year)	45,000
	1,70,000		1,70,000

Illustration 8: Excelsior Company Limited had balance of Rs.2,00,000 and Rs.6,40,000 in its profit and loss account as on 1st January and 31st December 2006 respectively. During the year 2006 the profit earned was Rs.6,40,000 after adjusting the following:

Depreciation on assets	Rs. 1,80,000	Proposed dividend	Rs. 1,20,000
Preliminary expenses written off	20,000	Provision for doubtful debts	40,000
Patents written-off	30,000	Profit on sale of fixed assets	10,000
Provision for taxation	3,20,000	Loss on sale of investments	5,000

In addition, the profit was overstated by Rs.20,000 due to change in the method of valuation of closing stock. There was also a transfer of Rs. 2,00,000 to Reserve out of Rs.6,40,000. Work out the operational flow.

Solution: (1) Adjustment of working result

Working result (Profit)		Rs. 6,40,000
Add: Depreciation	1,80,000	
Preliminary expenses	20,000	
Patents written off	30,000	
Loss on sale of investment	5,000	
Proposed dividend	1,20,000	3,55,000
		9,95,000
Less: Profit on sale of fixed assets	10,000	
Gain due to change in accounting	20,000	30,000
Net operational flow		9,65,000
Add: Provision for taxation		3,20,000
Gross operational flow		12,85,000

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(2) Adjustment of profit and loss account balance:

Profit and loss account on 31-12-2006		Rs. 6,40,000
Add: Depreciation	1,80,000	
Preliminary expenses written off	20,000	
Patents written off	30,000	
Loss on sales of investment	5,000	
Transfer to reserve	2,00,000	
Proposed dividend	1,20,000	5,55,000
		11,95,000
Less: Profit on sale of fixed assets	10,000	
Gain due to change in accounting	20,000	30,000
		11,65,000
Less: Profit and Loss on1-1-2006		2,00,000
Net operational flow		9,65,000
Add: Provision for taxation		3,20,000
Gross operational flow		12,85,000

(3) Preparation of profit and loss account:

TABLE 18.36 Profit And Loss Account For 2006

	Rs.		*Rs.*
Depreciation	1,80,000	Balance b/d	2,00,000
Preliminary expenses	20,000	Profit on sale of fixed asset	10,000
Patents written off	30,000	Profit due to change of method	20,000
Loss on sale of investment	5,000	Operational flow	12,85,000
Transfer to reserve	2,00,000	(Balancing figure)	
Provision for taxation	3,20,000		
Proposed dividend	1,20,000		
Balance c/d	6,40,000		
	15,15,000		15,15,000

It can be understood that all the three methods lead to the same result. It is only a matter of presentation. Certain special points, however, could be noted:

(a) Loss on sale of investments. This loss has already been reduced from profit but we add it back because there is no outflow of funds. On the other hand, inflow due to sale proceeds shall be taken as an addition to working capital but only to the extent of cost less loss, i.e., actual sale proceeds.

(b) Profit on sale of fixed assets. This profit does not lead to any additional inflow of funds. The actual sale proceeds (including the profit thereon, however, will be recognized as inflow (See succeeding pages regarding fixed assets).

(c) No adjustment has been done for provision for doubtful debts, for, to the extent of doubtful debts working capital declines and hence, it is proper to take off that much from operational inflow.

(d) It may be noted that under method (1) above, we have not added back the appropriation to reserve. Whereas under methods (2) and (3), these have been added back. This is because under method

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(1) the profit figure was taken before the appropriation to reserve and hence there was no necessity to add it back.

(e) It may also be noted that Provision for taxation has been added back to profit to arrive at the gross operational flow. In this case, any payment of tax during the year has to be shown as outflow. If, however, the net operational flow, is considered as the operational flow then payment of tax should not be shown as outflow. But, the provision will constitute current liabilities in determining the working capital.

Other items of inflow

(1) Capital raised whether in the form of preference or equity capital would constitute inflow of funds. The inflow would be to the full extent of the money collected on issue of shares. This means if the shares are issued at a premium or discount, the actual amount received should be considered as inflow. However, the following are not treated as inflow:
   (i) Issue of shares out of reserves in the form of bonus shares.
   (ii) Issue of shares for consideration other than those which go into working capital. For example, issue of shares for supply of machinery, technical know-how, underwriting, preliminary expenses, etc.
   (iii) Issue of shares in exchange for loan debentures, etc. Share Premium shall also be treated at par with share capital.

(2) Loans raised either in the form of secured loans, unsecured loans, debentures, etc., will constitute inflow of funds. The inflow will be to the full extent of consideration, i.e., including premium or net of discount. Loans in the form of supplies or services of a non-current nature will not constitute inflow of funds.

(3) Sale proceeds of fixed assets and investments (long-term) would be inflow to the actual extent. This means any profit on sales is also included in the inflow and hence, there is no necessity to include the same in the profit figure again. If it is included, already it must be excluded from profit. This is true of loss on sale of asset or investment also. This adjustment should be made whether the working result is a profit or loss. The question of exclusion from profit/loss does not arise if the profit/loss on sale is not already included in the working result.

It should be noted that investments which are in the nature of current assets should not be treated on the above lines. Such sale should be treated just like sale of goods and their profit should be legitimately included in the profit/losses.

Analysis of Items of Outflow

1. Operational Outflow If a business is operating at a loss, then, to that extent the working capital will be reduced. But, what is the extent of outflow? It will be only to the extent of: net loss—depreciation and other write – offs. For example, the net after charging depreciation and other write-offs is Rs. 2,00,000, depreciation amounts to Rs. 3,00,000 and other write – off Rs. 50,000, then the operational flow amounts to an inflow of Rs.1,50,000, i.e., – Rs.2,00,000-(Rs.3,00,000 + Rs. 50,000). If depreciation and other write – off amount in all amounts to Rs. 1,50,000 only, then the operational outflow would be Rs. 50,000. The method of preparing the operational flow statement remains valid as already discussed.

2. Repayment of Capital In case of a limited liability, company capital cannot be returned. But, a company can redeem redeemable preference shares under the Companies Act. Equity shares can also be paid back as per procedure laid down under the Companies Act. Preference shares may be redeemed at

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a premium also. Such premium would also be treated as outflow. But, if the premium is adjusted from the profit and loss account, it should be readjusted in the operational flow. If premium is adjusted against existing share premium account, this fact should be kept in mind in measuring the change in the share premium account. While paying back the preference capital, arrears of dividend may also be paid. This fact should be kept in mind on redemption.

Repayment of loans and redemption of debentures would result in outflow of funds. On redemption of debentures also, premium could be paid. Payment of premium should also be treated as outflow of funds. Such premium could be charged off against profit and loss account. It could also be charged off against share Premium account. If the premium is charged against the profit and loss account, it should be readjusted in arriving at the operational flow.

3. Acquisition of Fixed Assets Another major outflow is the acquisition of fixed assets. If all the data are clearly discernible from the financial statements, acquisition of fixed asset (Provided it is not acquired by issue of shares, debentures, etc.), should be treated as outflow. At the same time, there may be disposal of fixed assets too which might have resulted in inflow. Hence, the balance in the fixed assets is the net result of acquisition, disposals, depreciation charged, etc. Hence, the two Balance Sheet figures of fixed assets could be arranged properly to sort out the acquisition, disposals, depreciation, etc. This could be done by framing. 'T' shape accounts for 'fixed assets' accumulated depreciation, and scrapped assets. If original cost of fixed assets is not available then fixed assets account could be prepared at written down value. By putting the figures in the appropriate places in the "T" account, the figures of fixed assets acquired, sale proceeds of scrapped assets, profit/loss on sale and depreciation during the period, could all be found.

Illustration 9: The following transactions in the fixed assets section of the balance sheet of a company took place in 2006.

Sold for Rs. 25,000, assets originally acquired at Rs. 1,00,000. Accumulated depreciation on these assets was Rs. 60,000. (The loss was charged against profit of the year).

The accumulated depreciation account increased by Rs. 14,500 from 2005 to 2006 i.e., from Rs.4,28,000 to Rs.4,42,500. The fixed assets at cost amounted to Rs. 9,63,400 on 1st January, 2006 and Rs. 10,11,200 on 31st December, 2006.

What was the amount of new investment in fixed assets to be shown in the funds flow statement? What other items shown above should appear in the statement?

Solution: To answer the questions, it is better to prepare the necessary accounts in "T" shape.

Table 18.37

Fixed Assets Account				*Accumulated Depreciation*			
	Rs.		*Rs.*		*Rs.*		*Rs.*
Balance b/d	9,63,400	Scrapped Assets (Cost)	1,00,000	Scrapped Assets (Depn.)	60,000	Balance b/d	4,28,000
Fixed assets (acquired) (1) (balancing figure)	1,47,800	Balance b/d	10,11,200	Balance c/d	4,42,500	Depreciation (balancing figure)	74,500
	11,11,200		11,11,200		5,02,500		5,02,500

	Rs.		Rs.
To Cost of asset	1,00,000	Depn. accumulated	60,000
		Sale proceeds (3)	25,000
		Loss on sale (4) (balancing figure)	15,000
	1,00,000		**1,00,000**

(1) Purchase of fixed assets Rs. 1,47,800 will constitute outflow.
(2) Depreciation of Rs. 74,500 charged in profit and loss account will be added back to arrive at operational flow.
(3) Sale proceeds Rs. 25,000 will be shown as inflow funds.
(4) Loss on sale Rs. 15,000 set off already against profit/loss shall be excluded from profit/loss.

In the above illustration, fixed assets were shown at original cost and we were able to identify the accumulated depreciation separately. But, if fixed assets are available at written down values and assuming that original cost figures are not available, still the above approach is valid with a slight modification.

Illustration 10: The following information is available regarding fixed assets for the year 2006.

Fixed assets WDV on 1st January 2006	Rs.15,20,000
Depreciation charged during the year	2,80,000
WDV of asset sold during the year	40,000
Sale proceeds of scrapped assets	30,000
Fixed assets at WDV on 31st December 2006	14,40,000

Work out the figures of (1) fixed assets acquired, and (2) the items to be shown in the fund flow statement.

Solution. In this case, the fixed asset account at WDV will serve the whole purpose.

Table 18.38 Fixed Assets Account

	Rs.		*Rs.*
Balance b/d	15,20,000	Depreciation (2)	2,80,000
Fixed assets acquired (1) (balancing figure)	2,40,000	Sale proceeds (3)	30,000
		Loss on sale (4)	10,000
		Balance c/d	14,40,000
	17,60,000		**17,60,000**

(1) Fixed assets acquired to be shown as outflow of funds Rs. 2,40,000.
(2) Depreciation to be adjusted in operational flow Rs. 2,80,000
(3) Sale proceeds of fixed assets to be excluded from profit/loss in calculating the operational flow of Rs. 10,000.

It may be kept in mind that any acquisition of fixed asset which does not involve any outflow of funds has to be excluded, e.g., purchase of fixed assets against issue of shares or debentures etc.

4. Acquisition of Investments Any purchase of investments (long-term) which involve outflow of funds should be similarly taken as outflow. If there is a sale of investment as well as a purchase, the inflow from sale has to be segregated from the outflow due to purchase. In case the identification becomes difficult, preparation of 'T' shape accounts will facilitate convenient sorting.

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5. Other Outflows Outflow of funds may also take place due to payment of taxes or dividends. In this connection, our gross operational flow approach should be kept in mind. As operational flow is taken as the flow before making provision for tax or dividend, the actual payment of tax and dividend should be taken as outflow. As the provision are not taken cognizance of, they should not be taken note of in counting current liability. However, preparation of 'T' shape account for (Provision for taxation) and dividend would help in ascertaining the actual payment of tax and dividend. As a matter of convention, in the absence of any other information to the contrary, the provision of the previous year may be taken as paid off during the current period.

As we now have a total view of the inflows and outflows of funds, it can be observed that the inflows less the outflows will result in net inflow of funds which will enrich the working capital. If the outflows are more than the inflows, the net result will be a depletion in the working capital. The following diagram attempts to illustrate the situation of net inflow:

International Accounting Standards

The following are the Accounting Standards on Funds Flow Analysis as approved by the International Accounting Standards Committee:

Introduction

1. This Statement deals with the Presentation of a statement which summarises for the period the resources are made available to finance, the activities of an enterprise and the uses to which such resources have been put. The title 'Statement of Changes in Financial Position' is descriptive of a statement with that objective.

Explanation

2. A Statement of changes in financial position is often presented with the Balance sheet and the Income Statement as an integral part of the financial statements. The inclusion of such a statement is useful to improve the understanding of the operations and activities of an enterprise for the reporting period.

3. The statement of changes in financial position is prepared from financial data generally identifiable in the income statement, Balance Sheet and related notes. However, the statement of changes in financial position presents information which may not be readily available in a usable form in the other two statements. Sufficient information is generally given to enable the reconciliation of the amounts in the statement of changes in financial position to the related amounts in the other statements.

4. For purposes of this Statement, the term 'funds' refers generally to cash, and cash equivalents, or to working capital. In a statement of changes in financial position, the particular use of the term is made clear.

Funds Provided From or Used in Operations

5. Funds provided from or used in the operations of an enterprise are normally shown separately in the statement of changes in financial position. This information indicates the extent to which an enterprise has generated funds from or used funds in its operation.

6. Items which do not relate to the ordinary activities of an enterprise are often presented in the income statement separately from income from the ordinary activities. This practice improves the usefulness of the financial statements. For similar reasons, such items are presented separately in the statement of changes in financial position either individually or as a single amount. For the purpose of this statement, these items are referred to as 'unusual items'.

7. Different forms of presentation can be used to present the amount of funds provided from or used in the operations of an enterprise. A method commonly used is to show the net income (or loss) and to make adjustment for those revenues or expenses that do not involve a movement of funds in the current period (for example, depreciation). An alternative method is to begin with revenues that provided funds during the period and deduct the costs and expenses that involve a movement of funds. The resulting amount is described as funds from operations.

8. When unusual items are presented separately in a statement of changes in financial position, they also are adjusted to the extent that they do not involve a movement of funds in the current period.

Other Sources and Use of Funds

9. Other sources and uses of funds are stated separately from the funds provided from or used in the operations. These include, for example:

(a) Proceeds from the sales of long-term assets:
(b) Outlays for the purchase or long-term assets:
(c) Dividends in cash or in other assets;

The title "Statement of changes in Financial Position" is used throughout this Statement; in some countries 'Statement of Source and Application of Funds', or a similar title, is used.

(d) raising of long-term debts;
(e) redemption and repayment of long-term debts;
(f) issue of shares for cash or other assets;
(g) redemption or repurchase of shares for cash or other assets.

10. Some financing transactions of an enterprise involve the exchange of one form of security or another. When such changes are equivalent to the issue of one security and the redemption of the other, these transactions are part of the financing and investing activities of an enterprise, and are disclosed in the statement of changes in financial position. An example of such a transaction is the conversion of long-term debt to common or ordinary shares.

11. To achieve the objective of the statement of changes in financial position, it may be necessary to disclose separately the investment and financial aspects of each type of transaction. For example, the proceeds on disposal of long-term assets are presented separately from the outlay for acquisition of long-term assets and, when an asset is acquired through the issue of long-term debt or equity, the issue of debt or equity and acquisition of the asset are separately disclosed.

Consolidated Statement of Changes in Financial Position

12. If a consolidated balance sheet and a consolidated income statement are presented, a statement of changes in financial position may be presented only on consolidated basis. Under some circumstances, it may also be appropriate to present a statement of changes in financial position with respect to the financial statement of the parent company.

Investments Accounted for Using the Equity Method

13. In the statement of changes in financial position, there are two methods of dealing with income from an investee company accounted for using the equity method of accounting.

14. The amounts included in funds provided from or used in the operations as a result of such an investment may be restricted to the dividends received or currently receivable. This method is based on the view that the unremitted earnings of such an investee company do not represent current resources available to the investor. Under this method, the adjustments described in Paragraph 7 include the portion of the income from the investee company that does not involve a movement of funds.

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15. Alternatively, the investor's entire share of investee earnings can be included in funds provided from or used in operations and no adjustment is required in determining funds provided from or used in the operations. Under this method, the unremitted portion of the income from the investee company is shown separately as a use of funds.

Acquisition or Disposal of Subsidiaries

16. The acquisition or disposal of subsidiaries may be presented in the statement of changes in financial position as a single amount. Alternatively, the amounts or the individual assets and liabilities acquired or disposed of may be included with the separate sources and uses of funds of each assets and liability dealt with, in the statement.

17. Under both methods of presenting the acquition or disposal of subsidiaries, the following supplementary information is presented either in the statement of changes in financial position or by way of:

(a) the total purchase or disposal price of the subsidiary,
(b) the portion of the purchase or disposal price discharged by cash and cash equivalents.
(c) the amount of cash and other working capital items in the subsidiary acquired or disposed of and not applicable to business combinations described as merges or interest.
(d) the amounts of the other assets and liabilities in the subsidiary acquired or disposed of, summarised by each major category.

Presentation

18. Several forms of presentation are used for the statement of changes in financial position. For example, the statement may show the sources of funds as equal to the use of funds. Another form of presentation is to show a difference between the sources and the uses of funds which represents the net increase or decrease either in cash and cash equivalent or in working capital. No particular form of presentation is preferable for all enterprises, but the enterprise selects the form of presentation considered most informative in the circumstances.

19. When a net change in working capital is presented as a single amount in the statement of changes in financial position, additional disclosure regarding changes in individual working capital items is often presented.

20. A statement of changes in financial position should be included as an integral part of the financial statements. The statement of changes in financial position should be presented for each period for which the income statement is presented.

21. Funds provided from or used in the operations of an enterprise should be presented in the statement of changes in financial position separately from other sources or uses of funds. Unusual items which are not part of the ordinary activities of the enterprise should be separately disclosed in the statement.

22. Each enterprise or group of enterprises should adopt the form of presentation for the statement of changes in financial position which is most informative in the circumstances.

Effective Date

23. This International Accounting Standard becomes operative for financial statements covering reporting periods beginning on or after January 1, 1979.

Steps in Preparation of Funds Flow Statement

The steps for preparing a funds flow statement are the following:

(1) The major and routine item in a funds flow statement is the operational flow for ascertaining this figure prepare a separate statement. Start this statement with the closing balance of the profit and

loss account or, as the case may be, the closing balance of reserves and surplus can be taken. It can also be prepared in the other two methods as has already been described in this chapter.

(2) Leaving the operational funds flow statement open, start studying the balance from top to bottom in the non-fund area; for instance, start with the fixed assets. Relate the change in fixed assets with the information available. Supposing there are some adjustments in respect of assets purchased or sold, it is better to prepare a fixed assets account, accumulated depreciation account and a scrapped assets account. It is better to prepare the fixed assets account at cost. If the written down values of the fixed assets at two ends are available, depreciation so far written-off (till the respective dates which companies must show under the Companies Act), is added, and the cost of the fixed assets is established. Transfer original cost of any assets sold to scrapped assets account; also transfer accumulated depreciation in respect of the scrapped assets to the credit side of the scrapped assets account; credit this account with the sale proceeds of scrap, if any; the account will then show profit or loss which must have been written-off. From this process the following figures can be obtained.

(i) from the fixed assets account the cost of assets purchased;

(ii) from the accumulated depreciation, the depreciation charged in the current year; and

(iii) from the scrapped asset account (a) the sale proceeds of scrap, and (b) profit or loss on sale of scrap

Take No. (i) to application side of funds flow statement.

Take No. (ii) to operational funds flow statement for adding back/deducting as case may be.

Take No. (iii) (a) as source in the funds flow statement

Take No. (iii) (b) as adjustment to be made in the operational funds flow statement, i.e., add if it is a loss and deduct if it is profit.

(3) Compare investment figures. If investments have been purchased, show them as application. If investments are sold, find out for how much they were sold. The change in book value of investments plus profit or loss is the proceeds; show the proceeds as source of funds. See whether the profit or loss has already been adjusted in the profit and loss account. If it is, then 'undo' the adjustment.

(4) See if there are any figures wrongly mixed up in current assets like advances to subsidiaries, advances for purchase of machinery, etc. These, if they are new items, should be shown as application in the funds flow statement. In case these items previously existed, the increase, if any, is application of funds. A decrease means that so much of the advances have been received back; hence a source. If there is a transfer from loans and advances to fixed assets account, the outlay on fixed assets in respect of actual purchases made would be reduced. The item concerned should not be counted as current assets in any case.

(5) If there is any decrease in 'miscellaneous expenses', it would have been written off against the profit and loss account; it has to be added to the profit. If they were written-off against any capital reserve, etc., no adjustment is necessary as regards the funds flow statement. If there is an increase in miscellaneous expenses, it is an application of funds; in certain cases, however, it may be shown as a deduction from the relevant item of source. For example, an increase in the discount on issue of debentures means that some discount has been allowed on debentures issued during the period. Rather than showing the 'discount' as application, the inflow from debentures may be reduced by the amount of the discount.

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(6) Consider the liabilities side items one by one. Increase in capital is a source; but if the increase is due to issue of bonus shares, then it is not a source because there is no movement of funds from outside. Decrease in capital may be normally due only to redemption of redeemable preference shares; it is application.

(7) Take next reserves and surplus. If share premium is received on a fresh issue, it shall be stated as a source, but only along with issue of shares. The increase in general reserve from profit and loss account shall be determined after reducing the reserve for any use made for bonus share issued, etc.

(8) Change in debentures or long-term loans may be due to further loans raised or paid off (see page 160)

(9) The next item to be considered is provisions. Any provision in the nature of a liability should be included in current liabilities. Regarding provisions which are in the nature of appropriations of profits, like dividends, they have to be added back. Provision for taxation shall also be added back as we recommend 'Gross Operational Flow' approach.

(10) After these steps, go through the supplementary information to consider if any other details have been left unconsidered. For instance, dividend declared and paid during the year. Add back the dividend in the operational flow statement and also show it as application. Any loan raised and repaid during the year may be shown both as source and application.

Uses of Funds Flow Statement

The funds flow statement is widely used by the financial analysts and banks in the performance of their jobs. It is an important tool in their analytical kit. The uses of a funds flow statement can be summarised as follows.

(i) It explains the financial consequences of business operations. It answers so many conflicting questions:
  (a) How was it possible to distribute dividends in excess of current earnings or in the presence of a net loss for the period?
  (b) Where have the profits gone?
  (c) Why the liquid position of the business is becoming more and more unbalanced in spite of fact that the business is making more and more profits?

(ii) It answers intricate queries. Some of the queries are as follows :
  (a) In what way the management has utilised the funds in the past and how they are going to utilise it in the future?
  (b) What is the credit worthiness of the enterprise?
  (c) From which sources loans will be repaid?

(iii) It is an instrument for allocation of resources. A projected funds flow statement helps the management in allocating the scarce resources for meeting the productive requirements of the business. It helps in utilising the funds of the business for most profitable activities.

(iv) It is a test as to effective or otherwise use of a working capital. It tells the financial analyst about the effective or otherwise use of working capital by the management, during a particular period. A projected funds flow statement explains whether the business would have adequate working capital during a particular period.

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Difference between a Cash Flow Statement and a Funds Flow Statement

The following are the points of distinction between a cash flow statement and a funds flow statement :

(i) A cash flow statement depicts changes in the cash position while a funds flow statement depicts changes in the working capital position of a business from one period to another. As a matter of fact, cash is only one of the constituents of working capital.

(ii) A cash flow statement simply records receipts and payments of cash. It does not take into consideration changes in the other current assets and the liabilities of the business, while a funds flow statement records changes in the total working capital of the business.

(iii) A cash flow statement is a useful tool of financial analysis in short periods as compared to a funds flow statement. As a matter of fact, the shorter the period covered, the greater is the utility of a cash flow statement. Since cash is one of the constituents of working capital, an improvement in cash position will definitely result in improvement in the working capital position of the business. However, the reverse is not true. In other words, improvement in cash resources of a business improves its working capital position but improvement in working capital position does not necessarily result in improvement of the cash position of the business.

(iv) An increase in current assets (other than cash) or decrease in current liabilities decreases the cash available with the business and vice-versa. But, an increase in current assets or decrease in current liabilities increases the working capital available with the business and vice-versa.

Sometimes, the term funds is taken synonymous to cash. In such a case, there will be no difference between a funds flow statement and a cash flow statement.

Utility and Limitations of a Cash Flow Statement

Utility of cash flow statement

A cash flow statement is a useful managerial tool for analysing the sources of cash and the purposes for which the cash has been utilised. Such a statement enables the management not only in reviewing their decisions regarding raising and utilisation of cash resources, but also helps them in projecting the future cash funds. Such projections help them in maintaining cash balances at desirable levels. The utility of a cash flow statement can be judged from its following advantages:

(i) It helps in efficient management of cash. Since cash is the basis for all operations of the business, the cash flow statement enables the management to properly plan and coordinate its financial operations.

(ii) It helps the management in internal financial management by providing information regarding possible repayment of long-term loans, dividend payment, replacement of plant and machinery etc.

(iii) It discloses the complete story of cash movement. It thus answers many intricate questions such as, why the cash position is bad in spite of heavy operating profits? or How could the firm have a heavy cash balance in spite low sales etc?.

(iv) It helps in determining the extent to which the cash planning has been successful. This can be done by comparing the actual cash movement with the projected cash movement. Remedial measures can also be taken in time.

Limitations of cash flow statement

A cash flow statement is an important tool of financial analysis. However, it suffers from the following limitations:

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(i) A cash flow statement may not represent the real liquid position of the business. A firm can have a heavy cash balance at the end of a period by postponing purchases and other payments. This fact is not revealed by a cash flow statement.

(ii) A cash flow statement is not a substitute for an income statement or for a funds flow statement. Each of them has separate functions to perform and therefore, has to be prepared.

Thus, a cash flow statement is a useful supplementary instrument of financial analysis. In case it is used in conjunction with the technique of ratio analysis, it can really prove to be an effective barometer for measuring the profitability and the financial position of a business.

Summary

- Balance Sheet is a statement of company's assets liability and equity on a financial year ending date. Assets are economic resources that help in generating revenues. Liabilities are the firm's obligation to creditors. Equity is the investment made by owners in the firms.
- Balance sheet and profit &loss account does not explore the changes in assets, liabilities and owners equity. The statement of changes in financial position is prepared to show these changes. These are fund flow statement and the cash flow statement.
- 'Fund' can be defined as "cash" "working capital" or "financial resources. "The fund flow statement provides an analysis of changes in the company's working capital position.
- The main sources of funds–working capital or cash in the firms operation. Fund from operations are calculated by adjusting the figure of net profit for non-fund or non-cash items such as depreciation.
- Funds flow statement is important management tool for financial analysis. A projected fund flow statement guides the company to plan the matching of inflow and outflow of funds or cash.

KEY CONCEPTS

- Assets
- Balance Sheet
- Current Assets
- Current Liabilities
- Equity
- Financial Resources
- Fixed Assets
- Fund Flow
- Fund Flow Statement
- Fund From Operation
- Liabilities
- Profit and Loss Statement
- Redeemable Preference Shares
- Statement of Changes in Financial Position
- Working Capital Flow
- Working Capital from Operation

Review Questions

OBJECTIVE QUESTIONS

(A) State whether the following statement are true or false.

1. The term 'fund' in a fund flow statement refers to working capital.
2. Loss on sale of machine should be added to net profit for calculating funds from operations.
3. Statement of change in financial position can be either funds flow statement or cash flow statement.
4. Income statement need not be prepared but funds flow statements are required to be compulsorily prepared.
5. Basic financial statements (profit and loss account and balance sheet) fail to show the movement and causes of changes in assets and liabilities during the year.

6. Statement of change in financial position identifies changes in assets liabilities and the shareholders' funds over a given period.
7. Funds flow statement points out the sources from which additional funds have been received during the year and the uses to which these funds have been applied.
8. In funds flow statement, if both the affected accounts relate to working capital only they appear.
9. As per existing legal requirement in case of a limited company it is not required to publish statement of changes in financial position along with other financial statements.
10. Flow of funds takes place from transactions, when one account is current and the other is non-current.
11. A company's funds flow statement shows diversion of working capital for purchase of fixes assets.

Answers

1. True	2. True	3. True	4. False	5. True
6. True	7. True	8. False	9. False	10. True
11. True.				

(B) Pickup the correct answer:

1. Stock at the end results in the
   a. Application of fund. b. Source of funds. c. No flow of funds.
2. Sale of investments indicate
   a. Source of funds b. Application of fund c. None of the above.
3. Tax paid is
   a. Application of fund. b. Source of funds. c. No flow of funds
4. Which of the following will result in flow of funds:
   a. Purchase of furniture on credit. b. Writing of goodwill. c. Depreciation of assets.
   d. Appreciation in Building.
5. Net profit earned plus non-working capital expenses is equal to
   a. Funds provided by operations. b. Use of funds. c. Sinking fund.
6. Depreciation is a source of funds
   a. Yes b. No c. Both Yes and NO.
7. An increase in the share premium account is
   a. Application of funds. b. A source of funds. c. No flow of funds.
8. Increase in a fixed asset due to issue of shares is
   a. Source of funds. b. Use of funds. c. None.
9. By preparing provision for taxation A/c, we can find out the missing figure of
   a. Taxes paid during the year. b. Taxes provided during the year.
   c. Either of a. & b. above. d. Neither of a. & b. above.
10. A company engaged in financial activities receives interest. Such Interest is .....
    a. Operating income b. Non-operating income c. Loss from operation
    d. Non-operational charge.
11. ..... is not a current asset.
    a. Book debts. b. Short-term investment c. Long-term investment
    d. Book debts.
12. ..... is not a current liability.
    a. Sundry Creditors. b. Bank overdraft. c. Outstanding expenses.
    d. Long-term loan
13. X Ltd has sales revenue of Rs. 2,000. Depreciation for the period is Rs. 3000. Other operating expenses are Rs. 900. Net loss for the period is Rs. 500.
    What is the amount of funds generated from operations during the period by X Ltd?

1. 2,500 2. 1,500 3. 3,500
4. 1,400

Answers

1. (b)	2. (a)	3. (a)	4. (a)	5. (a)	6. (c)
7. (b)	8. (c)	9. (c)	10. (a)	11. (c)	12. (d)
13. (a)					

(c) Pick up the most appropriate answer:

1. If depreciation on furniture is in the additional information, it will be posted
   a. At the debit side of adjusted profit and loss A/c.
   b. At the credit side of plant A/c.
   c. Neither of a. & b. above.
   d. At both a. & b. above
2. Current liabilities are equal to
   a. Working capital + Current assets.
   b. Work-capital-Current assets.
   c. Current assets-Working capital
   d. Current assets + Working capital.
3. Inflow of funds does not take place due to
   a. Funds from operation
   b. Increase in capital.
   c. Increase in working capital.
   d. Sale of fixed assets
4. Increase in working capital is
   a. Source of funds.
   b. Application of funds.
   c. Funds from operation.
   d. Loss from operation
5. Vehicle sold for credit for a vehicle dealer result in .....
   a. Increases working capital
   b. Decreases working capital
   c. Does not change working capital
6. Cash realization from debtors increases working capital
   a. Yes
   b. No
   c. None of the above answers

Answers

1. (d).	2. (c)	3. (c)	4. (b)	5. (c)	6. (c)

(D) Fill in blanks:

1, Any gain on sale of non-current assets should be ..... from the net profit for determining funds from operations.
2. Difference between Current Assets and Current Liabilities is Known as.....
3. Funds flow refers to changes in .....
4. Depreciation is sometimes treated as funds.
5. Goods purchased on credit in flow of funds.
6. Salary outstanding is of funds.

7. Vehicle sold on credit is of funds.
8. Furniture sold for cash funds flow.

Answers

1. Deducted. 2. Working Capital 3. Working capital 4. A source.
5. Does not result. 6. An application 7. A source 8. Increases

DESCRIPTIVE QUESTIONS

(1) Explain the meaning, importance and objectives of Funds Flow statement
(2) Describe the significance of Funds Flow statement to the different users?
(3) Describe the need and limitations of funds flow statement?
(4) What are the different source and Application in a Fund Flow statement ?
(5) "Depreciation can be taken as a source of limited sense" . Illustrate with a suitable example?
(6) "Depreciation is an indirect source of funds under certain circumstances - Explain?
(7) Explain briefly the procedure and steps to be followed for preparing funds flow statement ?
(8) Differentiate between:
  (a) Funds Flow Statement and Income Statement
  (b) Funds Flow Statement and Balance Sheet

PROBLEMS

Problem 1: From the following balance sheets of Alpha Ltd make out 1. Statement of changes in the working capital 2) Funds flow statement

Table 18.39 Balance Sheets Of Alpha Limited

	2005	*2006*		*2005*	*2006*
Liabilities	*Rs.*		*Assets*	*Rs.*	
Equity share capital	3,00,000	4,00,000	Goodwill	1,00,000	80,000
8% Redeemable pref. Share capital	1,50,000	1,00,000	Land & buildings	2,00,000	1,70,000
Capital reserves	-	20,000	Plant	80,000	2,00,000
General reserves	40,000	50,000	Investment	20,000	30,000
Profit and loss a/c	30,000	48,000	Sundry debtors	1,40,000	1,70,000
Proposed dividend	42,000	50,000			
Sundry creditors	25,000	47,000	Stock	77,000	1,09,000
Bills payable	20,000	16,000	Bills receivable	20,000	30,000
Liability for expenses	30,000	35,000	Cash in hand	15,000	10,000
Provision for taxation	40,000	50,000		10,000	8,000
			Preliminary expenses	15,000	10,000
	6,77,000	8,17,000		6,77,000	8,17,000

Notes:

1. A piece of land had been sold out in 2006 and the profit on sale has been credited to capital reserve.
2. A machine has been sold for Rs.10,000. The written down value of the machine was Rs.12,000. Depreciation of Rs.10,000 is charged on plant account in 2006.
3. The investments are trade investments Rs.3,000 by way of dividend is received including Rs.1,000 from pre-acquisition profit which has been credited to investment account.
4. An interim dividend of Rs.20,000 has been paid in 2006.

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Problem 2: The following are the summaries of the balance sheets of Trade and Time Limited as at 31st December 2005 and 31st December 2006:

Table 18.40

	2005	*2006*		*2005*	*2006*
Liabilities	*Rs.*		*Assets*	*Rs.*	
Equity share capital	2,00,000	2,60,000	Goodwill	-	20,000
Reserves	50,000	50,000	Land & buildings	1,48,000	1,44,250
Profit and loss a/c	39,690	41,220	Plant	1,12,950	1,16,200
Bank Overdrafts	59,510	-	Stock	1,11,040	97,360
Sundry creditors	73,280	52,660	Sundry debtors	85,175	72,625
Provision for taxation	40,000	50,000	Cash	2,500	2,700
			Sundry advances	2,315	735
	4,62,480	4,53,880		4,62,480	4,53,880

The following additional information is obtained from the accounts :

1. During the year ended 31st December 2005, an interim dividend of Rs. 26,000 was paid.
2. The assets of another company were purchased for Rs. 60,000 payable in fully paid shares of the company. These assets consisted of stock Rs. 21,640, machinery Rs.18,630 and goodwill Rs.20,000. In addition, sundry purchases of plant were made totalling Rs.5,650.
3. Income tax paid during the year amounted to Rs.25,000.
4. The net profit for the year before tax was Rs.62,530.

You are required to prepare a statement showing the sources and application of funds for the year 2005 and a schedule setting out changes in working capital.

Problem 3: The following is the balance sheet of Bharat Industries Limited as at 31st December, 2005 with the corresponding figures of the previous year:

Table 18.41

	2005	*Previous year*		*2005*	*Previous year*
Liabilities	*Rs.*		*Assets*	*Rs.*	
Issued share capital			Fixed assets		
3,500 Equity shares of Rs.100 each	3,50,000	3,50,000	Land & buildings	3,70,000	3,94,600
Reserves and Surplus – General reserve	1,74,000	1,10,000	Plant & machinery	50,000	29,680
Surplus in profit and loss a/c	80,000	70,000	Current assets, loans and advances		
Secured loans from banks	16,000	-	Stock in trade	2,20,000	1,52,000
Current liabilities – Sundry creditors	1,90,000	1,87,280	Sundry debtors	1,66,000	1,56,000
Bills payable	60,000	46,000	Bills receivable	34,000	18,500
			Advance payment to contractors	10,000	2,000
			Cash with bank	20,000	10,000
	8,70,000	7,63,280		8,70,000	7,63,280

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You are required to prepare a schedule showing the following:

a. Item-wise changes in working capital
b. Liquid and proprietary ratios.

CASE

During 2006, the company: (i) sold one machine for Rs.25,000, the cost of the machine was Rs. 50,000 and the depreciation provided on it amounted to Rs.21,000; (ii) provided Rs. 95,000 depreciation; (iii) redeemed 30% of the debentures @ 103; (iv) sold some trade investments at a profit credited to capital reserve; and (v) decided to value the stock at cost whereas previously the practice was to value stock at cost less 10%. The stock according to books on 31-12-2006 was Rs.54,000; the stock on 31-12-2007, Rs.75,000 was correctly valued at cost. You are required to prepare the statement of sources and application of funds during 2007.

Special points in this illustration:

(1) Sale of investments at a profit and crediting the profit to a separate capital reserve should mean that no adjustment in this regard is necessary in the operational flow statement. The sale proceeds can be ascertained from the capital reserve figures.

(2) Change in method of valuation of stock has resulted in increasing the profit by Rs.6,000 which does not involve any inflow of funds. Hence, this profit is not really additional fund flow. It is, therefore, adjusted back.

(3) A difference in the method of ascertaining the operational flow is adopted just to illustrate to the student other methods of presentation. Note that the net operational flow method is adopted here.

(4) As depreciation charged during the year is available the balancing figure in the depreciation account could be taken to be the accumulated depreciation on any asset assumed to be scrapped. Hence corresponding adjustment has to be done in the fixed asset account also. Alternatively, the amount could be taken to be the excess depreciation of previous periods written back as excess. In that case the operational flow will be Rs.1,71,800 and purchase of fixed assets will be Rs.2,00,000.

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CHAPTER 19

Planning for Liquidity-II: Cash Flow Statement

"Cash flow statement is a useful management tool for analysing the sources of cash and the purposes for which the cash has been utilised. Such a statement enables the management not only in reviewing their decisions regarding raising about utilisation of cash resources, but also helps in projecting their future cash funds."

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Concept of Funds*
- *Cash Actual and National Concept of Funds*
- *Constructing the Cash Flow Statement*
- *Advantages of Cash Flow Statement*
- *Uses of Cash Flow Analysis*

INTRODUCTION

Cash flow statement is a statement showing estimated receipts and payments of cash. It is based on the operating budget and the statement of financial position at the beginning of the forecast period.

The period covered by the cash forecast may be a year, to be analysed in months or even shorter periods than months. In actual practice, cash forecast is generally prepared on monthly basis.

The Income Statement and the Balance Sheet exhibit the effects of business activity. These statements clearly establish that business activity produces movement.

In resources, the movement of funds and assets brings about changes. These changes constitute most significant facts which the traditional statements viz. Profit and Loss Account and Balance Sheet fail to stress and reflect in a meaningful manner. Hence, additional statements referred to as Funds Flow Statements are prepaid to highlight the changes that have taken place in the financial structure of the business since the last reporting date.

CONCEPT OF FUNDS

In accounting and financial usage, the term 'fund' has various meanings. With reference to 'funds statement', it means from all financial resources to cash but commonly it is defined as working capital. The broadest concept of all financial resources needs that the funds statement embodies the financial aspects of all significant transactions between the enterprise and outsiders regardless of whether they affect working capital or cash Issue of shares in exchange for either non-current assets or non-current liabilities provides an example of transactions of this type.

According to the intermediate concept of working capital, the funds statement should be so designed as to impart information about all significant fluctuations in working capital. The excess of current assets of an enterprise over its total current liabilities is called working capital or net current assets.

Cash-Actual and Notional-Concept of Funds

When cash is employed as the concept of funds, the analysis relates to the movement of cash rather than to the inflow of working capital. According to this concept, the sources of fund include:

(i) Increase in Existing Liability or Creation of a New Liability

Cash flows into the business if there is either an increase in an existing liability or a new liability is created. The liability may be either fixed liability to shareholders, long-term creditors or current liability to short-term creditors. Cash generated may either be actual or 'notional'. Usually long-term liabilities generate actual cash and current liabilities produce notional cash. For example, when shares or debentures are issued for cash, actual cash flows into the business. But, when raw materials are purchased on credit, the suppliers may be thought of as giving a loan of cash which is utilised in buying raw materials or when a fixed assets, say, machinery is bought on credit, the supplier is assumed to have given a loan of cash which has been used for acquiring the fixed asset.

(ii) Reduction in or Disposal of Assets

Whenever a reduction in or sale of assets-fixed or current-takes place cash –actual or notional flows into the business. As for example, when a building is sold, either actual or notional cash is generated. If the sale is for cash, it will result in an inflow of actual cash. In case of credit sale notional cash is generated. In the same way when stock-in trade is sold or debtors are realised, either actual or notional cash is generated.

(iii) Trading/Operating Profit

Cash trading profits as a result of the operations during the year gives a very important internal source of cash flow. Application of cash includes:

(i) Reduction in or discharge of a liability If an increase in or purchase of assets-fixed or current-takes place, it would mean outflow of actual or notional cash. As for example, if a fixed asset is got for cash, actual cash will flow out of business. In case of credit purchase, outflow of notional cash (presumed to have been provided by supplier), would take place. In the same way, an increase in debtors would be thought of as an advance of notional cash to them.

(ii) Reduction in or discharge of a liability Payment of a liability (long-term or short-term) results in outflow of equivalent cash-actual or notional. As for example, if the debentures are redeemed by cash, actual cash will flow out of the business. But, when the debentures are converted into shares it would be a case of outflow of notional cash.

(iii) Trading/Operating loss Should the net result of the operations of the year be cash trading loss, it would mean loss (or application) of equivalent fund (cash concept) of an account of trading.

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It may be noted that according to 'notional cash' concept of fund, all transactions affecting notional cash result in outflow and inflow thereof simultaneously. Also, inflows and outflows of notional cash would be shown in the statement of cash flow only when the true character of the transactions is not known.

How to determine inflow or outflow or outflow of cash on account of trading operation. In the ultimate analysis, all business activities either result in net profit or net loss. In general speaking, net profit results in inflow of cash and net loss shown by the income statement of an enterprise is ordinarily not identical with amount of cash inflow or cash outflow respectively, resulting from trading operations. In other words, inflow of cash may be more or less than net income and similarly outflow of cash may be more or less than the net loss. Even an enterprise with negative net income (loss) might well have a positive cash flow from operations. Such a situation may arise when certain 'non-cash' or 'non-trading charges have been debited to and non-cash incomes or non-cash receipts have been credited to profit and loss account and the aggregate of non-cash or non-trading charges exceeds the total of non-cash incomes or non-cash receipts by more than the amount of net loss shown by profit and loss account. In order to ascertain the correct inflow of cash from trading operations during the year, the net profit or net loss is recomputed after dealing both non-cash or non-trading charges and such receipts from the profit and loss account.

At times, the practice is to combine such items as cash sales receipts from debtors on account of cash purchases payments to creditors on account payment for expenses into the single category of cash from business operations.

CONSTRUCTING THE CASH FLOW STATEMENT

There are various variations in the form and terminology used in statements of cash flow. The format of a funds statement based on the cash concept may be quite similar to the form shown in the previous chapter for funds statement based on the working capital concept. Cash flow statement may be divided into two principal sections – sources of cash and applications of cash. The difference between the totals of sources and applications of cash represents net increase or decrease, as the case may be, in the cash balance. This, when added to or deducted from the opening balance of cash, would be equal to the closing cash balance. A variant is to begin the statement with the beginning cash balance, add the total of source, subtract the total of applications, and conclude with the cash balance at the end of the period.

The data for the preparation of the cash flow statement are obtained from the two comparative Balance Sheets (one at the beginning and the other at the end of the period for which the statement is being prepared) supplemented by such other details which could be developed either from analysis of the receipts and disbursements recorded in the cash account, or from the statement of income and retained earnings. Some of the relevant data might be obtained from accounts in the ledger or from the initial entries in the journals.

Receipts and Payments Method of Cash Forecast

(1) It commences with the opening balance of cash in hand and at bank.
(2) Estimated receipts from sales and debtors and other receipts like dividend, calls on shares, interest, etc. are added to the opening balance of cash and total should be put on the cash forecast.
(3) Against this total are noted the estimated revenue and capital payments like wages, expenses, dividend paid, purchases of building, vehicle, Income Tax, Bank Charges etc. Total of the estimated payments are put on the forecast.
(4) The total of the estimated payments (arrived at as above) should be deducted from the total estimated receipts (arrived at as shown in NO.2). This will result in the bank balance which may

be in form of debit balance or overdraft (i.e credit balance). The above method of Cash forecast is known as "The Receipts and Payments Method".

(5) The cash forecast may also be prepared on the basis of the method known as the Adjusted profit and loss method (Illustration No. 8(1) and also on the basis of the Balance Sheet method". These two methods, are generally employed for long-term forecasts.

Advantages of Cash Flow Statement

Following are the advantages of cash statement:

(1) It points out the shortage of cash. This helps the concern in investing the surplus funds (i.e excess cash) in or outside the business (on a responsible basis)

(2) It ensures the availability of cash as and when required.

(3) It helps in taking the advantage of cash discounts.

(4) It reveals the cash position at certain points of time selected for the budget.

(5) Long-term cash forecasts helps in the consideration of adoption or curtailment of capital expenditure projects.

Note: Now let us certain typical illustrations on the cash forecast to be prepared on the basis of the "Receipts And Payments Method".

Illustrations 1: Make out cash forecast from the following details for October to December, 2006.

(1) Cash and Bank Balance on 1st October 2006 Rs. 30,000.

(2) Sales (actual and estimated)

TABLE 19.1

	Actual Rs.		*Estimated Rs.*
July, 2006	1,00,000	October, 2006	1,00,000
August, 2006	1,10,000	November 2006	1,20,000
September, 2006	90,000	December 2006	90,000

(3) Purchases (actual estimated).

TABLE 19.2

	Actual Rs.		*Estimated Rs.*
July, 2006	50,000	October, 2006	50,000
August, 2006	60,000	November 2006	70,000
September, 2006	50,000	December 2006	50,000

Wages and Expenses (actual estimated).

TABLE 19.3

	Actual Rs.			*Estimated Rs.*	
July, 2006	Wages	Expenses		Wages	Expenses
August, 2006	16,000	8,000	October, 2006	15,000	9,000
September, 2006	12,000	9,000	November 2006	18,000	10,000
			December 2006	12,000	10,000

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(4) Machine to be purchased in October 2006, Rs. 35,000
(5) Income Tax to be paid in November 2006, Rs.30,000
(6) Rs.500 rent payable every month in addition to expenses.
(7) 80 % of purchases and sales are on credit terms. i.e. 20% are on cash terms.
(8) Time – Lag – credit sales 2 months. Credit purchases one month.

Wages ½ month, Expenses ¼ month.

TABLE 19.4 Cast Forecast for 3 months, From October to December

Receipts:	*Oct. Rs.*	*Nov. Rs.*	*Dec. Rs.*
Opening Balance b/f	30,000	30,000	15,250
Cash sales	20,000	24,000	18,000
Collection from Debtors	88,000	72,000	80,000
Total Rs.	1,38,000	1,26,000	1,13,250
Payments :			
Cash purchases	10,000	14,000	10,000
Payment to creditors	40,000	40,000	56,000
Wages	13,500	16,500	15,000
Expenses	9,000	9,750	10,000
Rent	500	500	500
Advance Income Tax	-	30,000	-
Machinery	35,000	-	-
Closing Balance	30,000	15,250	21,750
Total Rs.	1,38,000	1,26,000	1,13,250

Notes: (1) Amount of wages and Expenses included in Budget are calculated as follows.

TABLE 19.5

	Month	*Previous month*	*Current month*	*Total*
Wages	October	6,000	7,500	13,500
	November	7,500	9,000	16,500
	December	9,000	6,000	15,000
Expenses	October	2,250	6,750	9,000
	November	2,250	7,500	9,750
	December	2,500	7,500	10,000

(2) Cash sales are 20% of total sales (of current months). Thus, 20% of 1,00,000 i.e Rs.20,000 in October, and so on.
(3) Credit sales, will therefore be 80% of total sales, Time lag is 2 months. Hence, the amount of credit sale of August, i.e. 80% of Rs. 1,10,000 – Sale in August) Rs.88,000 will be received in October, the amount of credit sale in September will be received in November (i.e Rs. 72,000) and so on.
(4) Cash purchases are 20% of total purchases (of current months). Thus, 20% of Rs.50,000 i.e. Rs.10,000 in October and so on.

(5) Credit purchases, will therefore, be 80% of total purchases, Time lag is 1 month. Hence, the amount of credit purchases, of September i.e. 80% of Rs.50,000) Rs.40,000 will be paid in October, amount of credit purchases of October will be paid in November (i.e. 80% of 40,000) and so on.

Note: Students should note that similar treatment relating to the time lag in receipts and payments should be given in other similar problems.

Illustration 2: Prepare Cash Forecast (on the basis and Payments Method) for the period from 1st January to 30th June 2006, from the following information.

TABLE 19.6

Months	*Credit Sales*	*Credit Purchases*	*Wages*	*Production overhead*	*Administration overhead*	*Selling Exp.*	*Disribution Exp.*	*Research & Develop-ment Exp.*
							Rs.	*Rs.*
October	20,000	10,000	2,500	1,600	850	1,250	750	250
November	15,000	7,500	2,250	2,000	825	1,125	625	250
December	10,000	5,000	2,000	2,875	875	750	500	250
January	12,500	10,000	2,250	2,000	925	1,100	600	300
February	15,000	12,500	2,500	2,125	975	1,200	650	300
March	20,000	15,000	2,250	2,250	900	1,300	725	300
April	17,500	12,500	2,250	2,000	875	1,250	650	375
May	15,000	7,500	2,000	1,875	925	1,200	625	375
June	12,500	10,000	2,250	2,000	975	1,125	600	375

(1) Period of credit allowed by suppliers in 2 months.
(2) Period of credit allowed to customers in 3 months.
(3) Lag in payments of overheads to be 1 month and that of wages 1/8 month.
(4) The cash balance of 1st January is expected to be Rs. 25,000
(5) Plant and Machinery to be installed in April at a cost of Rs. 30,000, which will be paid in monthly instalments of Rs.5,000 each commencing from 1st May.
(6) A sales commission of 10 percent on sales is to be paid within the month following actual sales.
(7) Cash sales of Rs.1,250 per month are expected. (No commission is payable to them).
(8) The company has a hire purchase agreement under which Rs.1,250 a month is being paid for plant purchased before the budget period. The last payment will be in the month of March.
(9) Preference share dividend of 8% on capital of Rs. 5 lakhs to be paid on 1st April.
(10) Tax of Rs.25,000 is due on 1st April.
(11) Dividends from investments amounting to Rs.17,500 are expected on 1st May.
(12) Calls of 25p. on Equity Share Capital of Rs.50,000 are due on 1st January, 1st March and 1st June.

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TABLE 19.7 Cash Forecast for the period from 1st January to 30th June, 2006.

Particulars	*Jan. Rs.*	*Feb. Rs.*	*Mar. Rs.*	*Ap. Rs.*	*May Rs.*	*Ju. Rs.*
Receipts						
Opening Balance b/f	25,000	42,531	43,887	46,918	–26,619	–21,800
Debtors	20,000	15,000	10,000	12,500	15,000	20,000
Cash Sales	1,250	1,250	1,250	1,250	1,250	1,250
Dividends	-	-	-	-	-	-
Capital	12,500	-	12,500	-	17,500	12,500
Total Rs.	58,750	58,791	67,637	60,668	7,131	11,950
Payments						
Purchases	7,500	5,000	10,000	12,500	15,000	12,500
Wages	2,219	2,469	2,719	2,313	2,031	2,219
Production overhead	1,875	2,000	2,125	2,250	2,000	1,875
Administration overhead	875	925	975	900	875	925
Selling expenses	750	1,100	1200	1,300	1,250	1,200
Distribution expenses	700	600	650	725	650	625
Research & Development exp.	250	300	300	300	375	375
Commission	1000	1,250	1,500	2,000	1,750	1,500
Income tax	-	-	-	25,000	-	-
Dividends	-	-	-	40,000	-	-
Capital exp.	1,250	1,250	1,250	-	5,000	5,000
Total Rs.	16,219	14,894	20,719	88	28,931	26,219
Closing balance	42,531	43,887	46,918	–26,691	–21,800	–14,269

Note: At the end of April, there is a shortage of Cash by Rs. 26,619. Similarly in May and June it amounts to Rs.21,800 and Rs.14,269.

Other methods of preparation of Cash Forecast:

(1) The Adjusted Profit and Loss method.

(2) The Balance sheet method

(1) The Adjusted Profit and Loss Method

This method of preparation of Cash Forecast is more complicated than the Receipt and Payments Method. Receipts and Payments method is a straightforward method. On the other hand, this method involves many complications.

This method is nothing but the construction of cash flow statement from the Budgeted Profits and Loss Account and the balance sheet.

This method assumes that, subject to certain adjustments in the amount of profit, the profits of business are equal to cash. In other words, the adjusted profits are quite equal to cash.

Let us see what are these adjustments which do not make the unadjusted profits equal to cash. These are

(i) Credit transaction that do not give us our profit in cash,

(ii) Capital transactions

(iii) Accruals

(iv) Provisions
(v) Stock fluctuations
(vi) Profit appropriation etc.

All these are non-cash items affecting profit (either increasing or decreasing) shown by the Profit and Loss Account. If the effect of these items is removed from the amount of profit shown by the Profit and Loss Account, the profit figure will, no doubt, represent cash figure. Such a removal of non-cash items, from the Profit and Loss Account is called adjustment and the profit or loss arrived at after such adjustment is called Adjusted profit or loss.

Preparation of Cash Forecast on this basis becomes easy if one has a budgeted profit and loss account and a budgeted Balance Sheet for cash forecast period.

Considering the above, the preparation of the cash budget on the basis of this method involves the following steps:

(1) Commence with expected opening balance of cash for the budget period. (This balance is to be found out from the forecast Balance Sheet of the current year).
(2) Adding there to the ADJUSTED PROFIT, i.e. this step involves the addition of the amount of profit shown by the Forecast Profit and Loss account for the budget period and further addition to the amounts of non-cash items like Depreciation, Accrued Expenses etc. and deduction of the amounts of non-cash items like accrued income etc.
(3) Then comes the deduction from the figure so arrived at the items like capital expenditure etc. (if any) (or additions of capital receipts (if any) etc. to be found out from the Forecast Balance Sheet for the Budget period.

The procedure has been practically made clear in Illustration 5.

This method is particularly useful for long-term cash forecast.

For short-term cash forecasting, the receipts and payments methods is the best method.

The Balance Sheet Method

This method in nature resembles to the Adjusted Profit and Loss Method, because this method implies the same principles related in the adjusted profit and loss method. The method involves the preparation of the following:

(i) Forecast Profit and Loss Account for forecast period
(ii) Forecast Balance Sheet (Excluding cash balance).

The forecast balance sheet can be completed if the cash balance is included. The cash balance can be derived, under this method, by finding out the difference between two sides of the balance sheet. Thus, cash balance represents the balancing figure of the forecast balance sheet.

If the asset side of the Forecast Balance Sheet is larger than the liability, the balancing figure represents "Bank Overdraft'. On the contrary if the liability side is larger than the assets side, the balancing figure represents (the debit) bank balance.

Illustration 3: You are required to prepare the cash forecast (on the basis of Adjusted Profit and Loss Method) for the budget period from 1st January, 2006 to 31st December 2006 from the following information.

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TABLE 19.7 Forecast Balance Sheet as at 31st Dec. 2006.

	Rs.		*Rs.*	
Share capital	17,50,000	Freehold buildings	8,75,000	
Capital Reserve	1,75,000	Depreciation	87,500	
Profit & Loss App. A/c	2,80,000	Machinery	14,00,000	7,87,500
Creditors	1,05,000	Depreciation	2,80,000	11,20,000
Proposed Dividend		Motor vehicles	2,80,000	
Accrued expenses	14,000	Depreciation	70,000	2,10,000
5% Debentures	1,75,000	Stocks		
		Raw materials	87,500	
		Work in progress	52,500	
		Finished goods	35,000	1,75,000
		Debtor		1,57,500
		Bank Balance		1,19,000
Total Rs.	25,69,000	Total Rs.		25,69,000

TABLE 19.8 Forecast profit and Loss Account for the year ended 31st Dec. 2006

Dr. *Cr.*

	Rs.	*Rs.*		*Rs.*
Office Salaries		1,11,825	Gross Profit b/d	7,52,500
Rent and Taxes		8,785	Interest received	4,340
Selling expenses			Discount received	25,410
Salaries	43,470			
Expenses	19,880			
Cash expenses	25,340			
Advertising	70,000			
Carriage	16,100	1,74,790		
Depreciation		2,27,500		
Debenture Interest		8,750		
Audit Fees		7,000		
Discount allowed		17,500		
Net profit		2,26,100		
		7,82,250		7,82,250
Dividend		70,000	Balance b/d	2,80,000
Balance c/d		4,36,100	Net profit	2,26,100
	Rs.	5,06,100	Rs.	5,06,100

TABLE 19.9 Forecast Balance Sheet as on 31st Dec. 2006

	Rs.		*Rs.*	
Share capital	19,25,000	Freehold buildings	8,75,000	
Capital Reserve	1,75,000	Depreciation	1,05,000	
Profit & Loss App. A/c	4,36,100	Motor vehicles	3,50,000	7,70,000
5% Debentures	2,62,500	Depreciation	1,40,000	2,10,000

Creditors	1,22,500			
Proposed Dividend	70,000	Stocks		
Accrued expenses	15,750	Raw materials	77,000	
		Work in progress	63,000	
		Finished goods	49,000	1,89,000
		Debtors		1,40,000
		Bank Balance		3,67,850
Total Rs.	30,06,850	Total Rs.		30,06,850

TABLE 19.10 Cash Forecast for the period 1st Jan. to 31st Dec, 2006

	Rs.	*Rs.*	*Rs.*
Cash Balance as on 1-1-2006			1,19,000
Addition to cash:		2,26,100	
Depreciation:			
Freehold Building	17,500		
Machinery	1,40,000		
Motor Vehicles	70,000	2,27,500	
Accrued expenses		1,750	
Reduction in stock of Raw materials		10,500	
Reduction in Debtors		17,500	
Increase in creditors		17,500	
Issue of capital		1,75,000	
Debentures		87,500	
			7,63,350
Reduction for cash			
Dividend		70,000	
Purchase of Machinery		3,50,000	
Purchase of motor vehicles		70,000	
Work in progress	10,500		
Finished goods	14,000	24,500	
			5,14,500
			3,67,850

Note: Proposed Dividend of 2006 (see the forecast balance sheet relating to that year and the item, on liability side, of proposed dividend therein) amounting to Rs.70,000, has been paid in 2006. Had this not been paid, the budgeted balance sheet (relating to the year 2007) would have shown Rs.1,40,000 (i.e. Rs.70,000 for the year 2006 and further Rs.70,000 for the year 2006 are provided for in the budgeted profit and loss account) as proposed dividend. Instead, the budgeted balance sheet only shows Rs.70,000. Hence, the cash forecast should include the payment of Rs.70,000 as dividend.

Illustration 4: You are required to prepare:

(1) Estimated profit and loss account for the year ended 31st Dec.2006.

(2) Cash budget for 6 months ending on 31st Dec.2006 on monthly basis and

(3) Estimated balance sheet as at 31st December 2006 from the following information.

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(1) Balance Sheet as at 30th June, 2006

TABLE 19.11

	Rs.		*Rs.*
Share Capital:		Freehold land	3,50,000
Subscribed:		Building and	
1,01,000 shares of Rs.10 each fully paid	10,10,000	Improvements	5,10,000
1,000 shares of Rs.10 each Rs.5 paid up	45,000	Plant & Machinery	3,00,000
General Reserve	5,00,000	Motor Vehicles	75,000
Profit & Loss a/c	1,90,000	Shares in subsidiary company	2,00,000
Bank overdraft	1,55,000	Stock	4,50,000
Sundry Creditors	1,46,000	Sundry debtors	2,10,000
Provision for income tax	49,000		
Rs.	20,95,000	Total Rs.	20,95,000

(2) Additional Details (See page 19.12):

(i) Directors propose to pay an interim dividend of 8% on 31st Oct.2006.

(ii) The amount of Income Tax which is exactly equal to the provision for income tax, to be paid on 31st Aug 2006.

(iii) All creditors will be paid strictly on a net 30-day basis at the end of each month.

(iv) Debtors accounts are consistently paid as for 90% thereof in 30 days, the remaining 10% in 60 days. No bad debts are expected. There are no cash sales.

(v) Directors have signed a contract for Rs.65,000 for the erection of a new building-completion and payment on 15th Nov. 2006.

(3) Estimated Balance Sheet as at 31st Dec. 2006

TABLE 19.11 B

Liability	*Rs.*	*Rs.*	*Assets*	*Rs.*	*Rs.*
Share capital:			Fixed Assets		
Issued & Subscribed 1,10,000			Land		3,50,000
Shares of Rs. 10 each fully paid		11,00,000	Building	5,10,000	
Reserves and surplus			Additional	65,000	
General reserve		5,00,000			5,75,000
Profit & loss a/c			Plant & Machinery		3,00,000
Balance b/f	1,90,000		Vehicles	75,000	
Profit for year	1,28,300	3,18,300	Addition	10,500	85,500
Secured loans :			Investments		2,00,000
Bank overdraft		1,30,200	Current assets		
Current Liabilities and Provisions			Stock	4,05,000	
Sundry creditors		1,45,000	Debtors	2,78,000	6,83,000
		21,93,500	Total Rs.		21,93,500

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TABLE 19.11A

Cash Forecast for the Six Month Ending 31st December 2006 (Monthly Basis)

Month	Opening Bank Balance (A)	Receipts for Debtors	Dividend Received	Call on Shares	Total Receipts (B)	Balance (C) A-B	Purchases	Wages	Expenses	Dividend Paid	Building	Vehicle	Income Tax	Bank Charges	Total (D)	Closing Balance E [D-C]
July	1,55,000 (over draft)	1,92,000			1,92,000	37,000	1,46,000	25,000	7,500						1,78,500	1,41,500 over draft
August	1,41,500 (over draft)	2,25,000		22,500	2,47,500	1,06,000	1,50,000	40,000	9,000			10,500	49,000		2,58,500	1,52,500 over draft
Sept.	1,52,500 (over draft)	2,48,000			2,48,000	95,500	1,70,000	45,000	11,500					10,500	2,37,000	1,41,500 over draft
Oct.	1,41,500 (over draft)	2,54,500	56,000		3,09,500	1,68,000	2,50,000	50,000	20,000	86,200					3,96,300	2,28,200 over draft
Nov.	2,28,200	2,86,500		22,500	3,09,000	80,800	1,60,000	40,000	8,500		65,000				2,73,500	1,92,900 over draft
Dec.	19,27,000 over draft	2,81,000			2,81,000	88,300	1,70,000	40,000	8,500						2,18,500	2,30,200 over draft
Total		10,37,000	56,000	45,000	15,87,000		10,46,000	2,40,000	55,000	86,200	65,000	10,500	49,000	10,500	15,62,200	

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Working notes: Cash Budget

1) Summary: Total Receipts	15,87,000
Less: Total payments	15,62,200
Excess of Receipts over payments	24,800
Less: Opening Bank Balance (Which is overdraft)	1,55,000
Closing Bank balance i.e overdraft	1,30,200
Sundry Creditors:	
Balance on 1.7.2006	2,10,000
Add : Sales	15,55,000
	17,65,000
Less : Cash received	14,87,000
Balance on 31-12-2006	2,78,000
Receipt from Debtors during July	
Balance of May sales:	30,000
Add : 90% of June sales	1,62,000
	1,92,000

Balance of Sundry Debtors as on 31st Dec.2006 has been represented by:

1. 10% of November sales	28,000
2. December sales	2,50,000
	2,78,000

Note: 10% of November sales would be received in the month of January 2006, and 90% of December sales would also be received in the month of January 2006, while the balance 10% of December sales (Rs.25,000) would be received in the month of February 2006. Hence, the balance of sundry debtors as on 31st December 2006 would naturally consist of 10% of November sales and the whole of the December sales.

Illustration 5: You are required to prepare:

(A) A cash forecast on monthly basis for the 4 months ending 31st December 2006 and

(B) A Forecast trading and profit and loss account for the 4 months from Sep to Dec. 2006 and

(C) Forecast Balance Sheet on 31st Dec. 2006

You are supplied with the following details.

1. A Forecast Balance Sheet as at 31st August 2006
2. Additional information necessary for the preparation of the above statements.

1. Forecast Balance sheet as at 31st Aug. 2006.

TABLE 19.12

Liabilities	*Rs.*	*Assets*	*Rs.*
Share capital		Plant & Machinery at cost	17,00,000
Issued and paid up (Rs.) 10 shares	20,00,000	Less: Depreciation	4,99,000
General Reserve	8,00,000		12,01,000
Profit & Loss a/c	1,76,000	Stock:	
Sundry Creditors	3,00,000	Raw materials	4,00,000
Outstanding expenses		Work in progress &	
Rent 30,000		Finished goods	10,00,000
Other expenses 21,000		Sundry Creditors	6,00,000
	51,000	Cash at bank	1,26,000
Total Rs.	33,27,000	Total Rs.	33,27,000

2. Additional information:

(i) Additional plant costing Rs.6,00,000 will be delivered and paid for in Sep.2006.

(ii) Stock of Raw materials, to be consumed, Sep Rs. 3,00,000, Oct to Dec. Rs.4,00,000 per month.

(iii) Stock of Raw materials to be increased to Rs. 5,00,000, at the end of Sep and will be maintained at that level.

(iv) Particulars of cost of production.

TABLE 19.13

Items	*September*	*Oct to Dec. (Per month)*
Direct wages	40,000	48,000
Indirect wages	32,000	36,000
Factory expenses	12,000	16,000

Lag in payment: 1/4th month.

(v) Sundry Creditors represent purchase of raw materials in Aug.2006.

(vi) Sundry debtors represents Aug.sales

(vii) Rent of the factory at Rs.15,000 per month is to be paid quartely in arrears on 30th sep and 31st dec.

(viii) Depreciation on plant is to be provided throughout at the rate of Rs.18,000 per month.

(ix) Salaries, Office Expenses will be paid in the month in which they arise.

These expenses would be as follows :

TABLE 19.14

Items	*September*	*Oct to Dec. (Per month)*
	Rs.	*Rs.*
Salaries	40,000	50,000
Office Expenses	10,000	14,000

(x) Forecast sales : Total Rs.38,00,000 as below:

September	October	November
Rs.	Rs.	Rs.
8,00,000	10,00,000	12,00,000

(xi) Work in progress and finished stock are to be increased to Rs.11,00,000 at the end of Oct and Rs.12,00,000 at the end of Nov.

(xii) Period of credit allowed by suppliers will be one month.

(xiii) Overdraft is arranged with a bank which will advance monthly the necessary sums.

Prepare the statements as required.

(A) Cash Forecast Statement (Monthly Basis) for the months ending 31st Dec. 2006.

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TABLE 19.15

Particulars	*September Rs.*	*October Rs.*	*November Rs.*	*December Rs.*
Opening Bank Balance	1,26,000	–3,53,000	1,13,000	1,23,000
Receipts from Debtors	6,00,000	8,00,000	8,00,000	10,00,000
Total Receipts	7,26,000	4,47,000	6,86,000	11,23,000
Payments :				
Additional plant	6,00,000			
Creditors	3,00,000	4,00,000	4,00,000	40,00,000
Rent	45,000			45,000
Direct wages	40,000	46,000	48,000	48,000
Indirect wages	32,000	35,000	36,000	36,000
Factory expenses	12,000	15,000	16,000	16,000
Salaries	40,000	50,000	50,000	50,000
Other expenses	10,000	14,000	14,000	14,000
Total payments	10,79,000	–56,000	5,64,000	6,09,000
Closing bank balance	–3,53,000	–1,13,000	1,23,000	5,14,000

(B) Forecast Trading and Profit and Loss account for the 4 months from Sep to Dec 2006.

TABLE 19.16

Particulars	*September Rs.*	*October Rs.*	*November Rs.*	*December Rs.*	*Total Rs.*
Raw Materials consumed	3,00,000	4,00,000	4,00,000	4,00,000	15,00,000
Direct wages	40,000	48,000	48,000	48,000	1,84,000
Indirect wages	32,000	36,000	36,000	36,000	1,40,000
Factory expenses	12,000	16,000	16,000	16,000	60,000
Depreciation	18,000	18,000	18,000	18,000	72,000
Factory rent	15,000	15,000	15,000	15,000	60,000
	4,17,000	5,33,000	5,33,000	5,33,000	20,16,000
Increase in work in progress					
Finished stocks		1,00,000	1,00,000		2,00,000
Total factory expenses	4,17,000	4,33,000	4,33,000	5,33,000	18,16,000
Sale (B)	8,00,000	8,00,000	10,00,000	12,00,000	38,00,000
Gross Profit (c) [B-A]	3,38,000	3,67,000	4,33,000	5,33,000	19,84,000
To salaries	40,000	50,000	50,000	50,000	1,90,000
To office expenses	10,000	14,000	14,000	14,000	52,000
Total other expenses	50,000	64,000	66,000	64,000	2,42,000
Net Profit	3,33,000	3,03,000	5,03,000	6,03,000	17,42,000

TABLE 19.17 Forecast Balance Sheet as at 31st Dec.2006

Liability	*Rs.*	*Rs.*	*Assets*	*Rs.*	*Rs.*
Share capital:			Fixed Assets at cost		17,00,000
Issued & paid up 2,00,000 equity			Additions		6,00,000
Shares of Rs.10 each		20,00,000			23,00,000
Reserves and surplus			Less: Depreciation		5,71,000

General reserve	8,00,000				
Profit & loss a/c	1,76,000		Current Assets:		17,29,000
Add : Profit	17,42,000		Stock:		
		27,18,000	Raw materials	5,00,000	
					85,500
Current Liabilities			Work in Progress Finished goods	13,00,000	17,00,000
Sundry creditors	4,00,000		Sundry Debtors		12,00,000
Outstanding expenses	25,000	4,25,000	Bank Balance		5,14,000
Total Rs.		51,43,000	Total Rs.		51,43,000

Working Notes:

(1) Sundry Debtors

TABLE 19.18

	Rs.		*Rs.*
Opening Balance	6,00,000	Cash Received	32,00,000
Sales	38,00,000	Closing Balance	12,00,000
Rs.	44,00,000	Rs.	44,00,000

(2) Sundry Creditors

TABLE 19.18A

	Rs.		*Rs.*
Cash (Paid)	15,00,000	Opening Balance	3,00,000
Closing Balance	4,00,000	Purchases	16,00,000
Rs.	19,00,000	Rs.	19,00,000

(3) Expenses outstanding on 31st Dec.2006

		Rs.
Direct wages:	1/4th of Rs.48,000	= 12,000
Indirect wages:	1/4th of Rs.36,000	= 9,000
Factory Expenses:	1/4th of Rs.16,000	= 4,000
	Thus Total	= 25,000

(4) Work in Progress and Finished stock

Balance on 31st August	= 10,00,000
Balance on 30th September	= 10,00,000
Balance on 31st October	= 11,00,000
Balance on 30th November	= 12,00,000
Balance on 31st December	= 12,00,000

(5) Purchase of Raw materials:

Raw materials consumption in Sep	3,00,000
Stock as on 30/9/06	5,00,000
	8,00,000
Less : stock on 31/8/06	4,00,000
September purchases paid in Oct	4,00,000

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(6) There is one-fourth month's time lag in payment of Direct wages, Indirect wages and Factory expenses. Hence, one-fourth of these expenses incurred in August would be paid in September. August expenses are not directly shown in the problem. But, we may assume the expenses shown under the head, 'other expenses' in the liability side of the Balance sheet as at 31st August, 2006, given in the problem as outstanding expenses for the month of August (Forming one-fourth part of the total of these expenses incurred in August) as other expenses like salaries, office expenses are paid in the month in which they arise. Hence, no problem of this outstanding arises.

Ratio of direct wages, Indirect wages and Factory expenses in the month of September is 10:83 respectively (i.e. Expenses Rs.40,000, Rs.32,000 and Rs.12,000 respectively). Assuming the same ratio in the month of August, the outstanding expenses of Rs.31,000 of the month of August would be:

(1) Direct wages: (21,000/1) × 10/21 = Rs.10,000
(2) Indirect wages: (21,000/1) × 8/21 = Rs.8,000
(3) Factory expenses: (21,000/1) × 3/21 = Rs.3,000

Payment of Direct wages:

(1) September:	1/4th of August wages	10,000	
	3/4th of September wages	30,000	
			40,000
(2) In October:	1/4th of August wages	10,000	
	3/4th of September wages	36,000	
			46,000

Payment of Indirect wages:

(1) September	:1/4th of August wages	8,000	
	3/4th of September wages	24,000	
			32,000
(2) In October:	1/4th of August wages	8,000	
	3/4th of September wages	27,000	
			35,000

Payment of Factory Expenses:

(1) September:	1/4th of August wages	3,000	
	3/4th of September wages	9,000	
			12,000
(2) In October:	1/4th of August wages	3,000	
	3/4th of September wages	12,000	
			15,000

Illustration 6: Prepare Cash Flow Statement from the following Balance Sheets of XL Engineering Ltd:

TABLE 19.19

Liabilities	*2005 Rs.*	*2006 Rs.*	*Assets*	*2005 Rs.*	*2006 Rs.*
Share Capital	17,00,000	18,35,000	Buildings	8,00,000	10,00,000
Reserves	40,000	83,700	Plant & Machinery	2,50,000	3,70,000
Profit & Loss Appropriation a/c	70,000	50,000	Cash Debtors	1,00,000	45,700

Creditors	1,00,000	95,000	Accounts		
Bank Overdraft	8,000	18,000	Receivables	8,000	9,000
Bills payable	14,000	13,000	Stock	4,00,000	3,43,700
Loan on Mortgage	10,000	70,000	Prepaid Expenses	3,000	3,100
			Investment	1,64,000	1,70,000
			Goodwill	3,00,000	3,43,700
			Prelimanary Expenses	10,000	2,000
	20,42,000	22,94,700		20,42,000	22,94,700

(a) Depreciation is charged on building at 3 percent of cost Rs.9,00,000. On plant and Machinery at 8 percent of cost Rs.4,00,000. On fixtures and fittings at 5 percent Rs.8,000.

(b) Investments were purchased and interest received Rs.3,000 was used in writing down the book value of investments.

(c) The declared dividend for 2006 was paid and the interim dividend of Rs.20,000 paid out of the Profit and Loss Appropriation Account.

XL Engineering Ltd.

TABLE 19.20 Cash flow statement for the year ended 31st Dec.2006.

	Rs.	*Rs.*
Cash Balance as on 1-1-2006		2,000
1. Cash Inflows from		
a. Business operations	2,71,600	
b. Issue of shares	1,35,000	
c. Loan raised	60,000	
d. Bank overdraft increased	10,000	
e. Interest received on investment	3,000	
		4,79,600
		4,81,600
2. Cash Outflows for		
a. Purchase of Building	2,27,000	
b. Purchase of Plant & Machinery	1,52,000	
c. Purchase of Fixtures & Fittings	1,400	
d. Purchase of Investments	9,000	
e. Payment of previous year's dividend	70,000	
f. Payment of interim dividend	20,000	
		4,79,400
Cash balance as on 31-12-06		2,200

Working notes:

1. Cash Generated from business operations:

	Rs.	Rs.
Closing P & L A/c. balance		1,30,000
Add : Interim dividend paid	20,000	
Dividend Proposed		50,000
Preliminary expenses written off	8,000	

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Depreciation w/o on:		
Building	27,000	
Plant & Machinery	32,000	
Fixtures & Fittings	400	
		1,37,400
		2,67,400
Less: Opening P & L A/c. Balance	1,00,000	1,67,400
Opening Profit before depreciation & amortisation		
Add: Decrease indebtors	55,000	
Decrease in stock	56,300	
		1,11,300
		2,78,700
Less: Increase in Accounts Receivable	1,000	
Increase in Prepaid Expenses	100	
Decrease in Creditors	5,000	
Decrease in Bills Payable	1,000	
		7,100
		2,71,600

Building A/c

TABLE 19.21

Dr. *Cr.*

	Rs.		*Rs.*
To Balance b/d (1-1-06)	8,00,000	By Depreciation A/c	27,000
To Cash	2,27,000	By Balance c/d (31-12-06)	10,00,000
Balancing figure	10,27,000		10,27,000

2. Plant and Machinery A/c

TABLE 19.22

Dr. *Cr.*

	Rs.		*Rs.*
To Balance b/d (1-1-06)	2,50,000	By Depreciation A/c	32,000
To Cash	1,52,000	By Balance c/d (31-12-06)	3,70,000
	4,02,000		4,02,000

3. Fixtures Fittings A/c

TABLE 19.23

Dr. *Cr.*

	Rs.		*Rs.*
To Balance b/d (1-1-06)	5,000	By Depreciation A/c	400
To Cash	1,400	By Balance c/d (31-12-06)	6,000
Balancing figure	6,400		6,400

4. Investments A/c

TABLE 19.24

Dr. *Cr.*

	Rs.		*Rs.*
To Balance b/d (1-1-06)	1,64,000	By Cash	3,000
To Cash	9,000	By Balance c/d (31-12-06)	1,70,000
Balancing figure	1,73,000		1,73,000

Uses of Cash Flow Analysis The chief advantages of the Cash Flow statement are the following:

(i) Although the two concepts of funds-all financial resources and working capital concept discussed earlier are more commonly used the cash concept is useful in evaluating financial policies and current cash position. Since cash is the basis for carrying out operations, the cash flow statement prepared on an estimated basis for the next Accounting Period will enable the management to plan and co-ordinate the financial operations properly. The management will know how much funds are needed and as to how such funds can be generated internally and for how much it should arrange from outside. Thus, it is especially useful to management in preparing cash budgets.

(ii) As it gives the amount of cash inflow from operations, and not income inflow from operations, it may be useful to internal financial management in considering the possibility of retiring long-term debt in planning replacement of plant facilities and in formulating dividend policies.

(iii) A comparison of the cash flow statement for the previous year with the budget prepared before the year commenced for that year, would indicate to what extent the resources of the enterprise were raised and applied according to the plan. In other words, the comparison of original forecast with actual result may highlight trend of movement that might otherwise go undetected.

(iv) It enables the financial manager to account for a situation when the business has made a profit and yet run out of money or when it has suffered a loss and still has plenty of money at the bank.

(v) As the daily transactions of a business are carried on with cash that part of funds (working capital concept) flow analysis that related to cash is of greater value to the management. The importance of cash flow analysis; as a tool of financial management distinct from funds flow analysis is dependent upon the time period involved in the decision.

Shorter the period covered by the analysis, greater is the importance of cash flow analysis. Suppose the issue under–consideration is whether the firm can meet its obligations maturing after years from now-a good indication of the concern's long-term debt paying ability, can be had by observing changes in working capital which are the result of operations; still, if the problem before us is to forecast the ability of the firm to discharge a liability maturing after a month, the realistic approach would be to consider the projected change in the cash balance which is far more important and meaningful than an expected change of either working capital or net assets as a result of business operations.

To make the point clear, still further if the firm makes a large sale at a profit, both working capital and net assets will increase. The terms of sales whether cash or credit are relatively less important if the financial problems under consideration involves a long period. Still, if the liability will mature within a short period, the period of credit allowed to customers is very important because the sale will increase working capital and income, but may not augment the cash balance in time to enable the business to meet its obligation within a short time.

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Though the Statement of Cash Flow serves a number of objectives of Financial Management, it is necessary to take certain precautions while making use of this analytical tool. Misleading implications can result from isolated report of 'cash flow' which are not placed in proper perspective to net income figures and to a complete analysis of sources and applications of funds. Some of the noteworthy limitations on the usefulness of Cash Flow Statement as a tool of financial analysis are:

(a) As the concern shifts from strictly cash basis, enters into credit transactions as well and takes into account prepaid and accrued items, the net income no doubt, would generally represent an increase in working capital, yet equating net income to cash flow, for such enterprise would be inaccurate and misleading since a number of non-cash items would affect the net income of the concern.

(b) Most of their businesses have, besides current assets, a number of fixed assets. Their assets involve cash payments in years past and charges against operating income of current years, via depreciation entries. In this way, net income moves even further away from being a net cash flow. In fact, there is little relationship, if any, between them.

(c) The cash balance is too easily influenced by postponing purchases and other payments. The foregoing discussion makes it clear that cash flow is a part of funds (Working capital concept) flow while income flow is one of the various sources of funds flow. The cash flow statement cannot replace the final statements of account, viz. balance sheet and income Statement, but it is certainly a very useful supplementary and the speed at which it flows determines the amount of capital tied up in any segment of the business at any given time. In its turn, the magnitude of capital tied up, and the rate at which it is turned over, has a direct bearing on the return obtained on the investment

In this way, any change in the speed at which cash is flowing through the different parts of the business may have an important bearing on the profitability of the business. Cash flow analysis, used in conjunction with ratio analysis provides a barometer for measuring the above change and makes financing problems of the business much more manageable.

TABLE 19.25 Statement of Cash Flow (year ending 31-12-2007)

	Rs.		*Rs*
Cash balance on 1-1-1977	50,000	Cash outflows	
Add cash inflows		1. Addition to stock	10,000
1. Decease in debtors	5,000	2. Decrease in accounts payable	15,000
		3. Funds lost in trading operations	5,000
			30,000
		Cash balance on 13-12-1977	25,000
	55,000		55,000

SUMMARY

A statement of changes in financial position on cash basis commonly known as the cash flow statement, summarises the causes of changes in cash position between dates of the two balance sheets. It indicates the sources and uses of cash. An analysis of cash flow is useful for short run planning. A firm needs sufficient cash to pay debts maturing in the near future to pay interest and other expenses and to pay dividends to shareholders. The firm can make projections of cash inflows and outflows for the near future to determine the availability of cash. This cash balance can be matched with the firm's need for cash

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during the period and accordingly arrangements can be made to meet the deficit or invest the surplus cash temporarily. A historical analysis of cash flow provides insight to preface reliable cash flow projections for the immediate future. The Fund Flow statement provides an analysis of changes in the firms working capital position. The cash flow statement is prepared to analyse changes in the firms cash position. Both these statements can be recast to incorporate additional financial information that does not affect cash or working capital but influences the financing and asset mix of the firms.

KEY CONCEPTS

- Assets
- Cash
- Cash Flow Analysis
- Cash Flow Statement
- Equity
- Financial Resources
- Fixed Assets
- Profit and Loss Statement
- Retained Earnings

REVIEW QUESTIONS

OBJECTIVE TYPE QUESTIONS

I. State whether each of the following statement is true or false

1. Cash flow statement reveals the effect of transaction involving movement of cash
2. The term funds mean current asset in case of a cash flow analysis
3. A cash flow statement can very well be equated with an income statement
4. A company should keep a large balance of cash in hand so it can meet all contingency
5. Increase in provision for doubtful debts should be added back in order to find out cash from operations
6. Fund flow statement and cash flow statement are one and the same

[Ans. 1-true; 2-false; 3-false; 4-false; 5-true; 6-false

II. Choose the right answer:

1. Cash from operations is equal to
   (a) Net Profit + Increase in outstanding expenses
   (b) Net Profit + Increase in debtors
   (c) Net Profit + Increase in stock
2. Increase in the amount of debtor results in
   (a) Increase in Cash
   (b) Decrease in Cash
   (c) No change in Cash
3. Increase in the amount of bills payable results in
   (a) Increase in Cash
   (b) Decrease in Cash
   (c) No change in Cash

[Ans. 1-a, 2-a, 3-a]

DESCRIPTIVE QUESTIONS

1. What are the concept of funds?
2. What do you know about the cash-actual and notional – concept of funds?
3. What do you understand by increase in existing liability or creation of a net liability?
4. What are the deduction in or disposal of assets?
5. What do you mean by trading or operating profit?

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6. What is the significance of purchase or increase in assets under cash flow analysis?
7. What do you mean by deduction in or discharge of a liability?
8. What is trading or operating loss?
9. How will you determine inflow or outflow of cash on account of trading operations?
10. How the cash flow statement is constructed?
11. What are the possible uses of cash flow analysis? Discuss.

PROBLEMS

1. We Ltd. Has the following figures as on 1st January, 2005:

	Rs.		*Rs.*
Current liabilities	1,00,000	Fixed assets-Cost	5,00,000
Capital (shares of Rs. 100 each)	3,00,000	Less: Depreciation	2,10,000
			3,90,000
		Bank balance	35,000
		Current assets, other than Bank balances	2,50,000

The company made the following estimates for 2005: (i) The profit would be Rs. 55,000 after depreciation of Rs. 60,000. (ii) The company will acquire fixed assets costing Rs. 1,00,000 after selling one machine for Rs. 20,000 costing Rs. 50,000 and on which depreciation provided amounted to Rs. 35,000. (iii) Current assets and current liabilities, other than bank balance, at the end of 2005 are expected to be Rs. 2,95,000 and Rs. 1,30,000 respectively. (iv) The company will pay a fee of tax dividend of 10%, the rate of tax being 25%.

Ascertain the bank balance(or overdraft) of Wee Ltd., at the end of 2005.

2. The abridged profit and loss account for the year ended 30th June2005 and 30th June, 2006 and the balance sheet as on those dates of Beeches Ltd. Were:

	2005			*2006*
	Rs.		*Rs.*	*Rs.*
Trading profit Profit	4,50,000			7,00,000
on sale of investments	—			20,000
	4,50,000			7,20,000
Taxation on profits of the year	2,77,000			4,50,000
	1,73,000			2,70,000
Brought forward from previous Year	1,50,000		1,73,000	
Income tax overprovided in Previous year.	—		40,000	2,13,000
	3,23,000			4,83,000
Propose dividend	1,50,000		1,50,000	
Transfer to general reserves	—		1,00,000	2,50,000
Balance at undistributed profit.	1,73,000			2,33,000
Fixed assets:				
Cost	5,00,000		6,00,000	
Additions during the year	1,00,000	6,00,000	80,000	6,80,000
		2,00,000		3,20,000
Depreciation		4,00,000		3,60,000
Current assets:				
Investments	1,20,000		—	
Stocks at cost	17,80,000		20,00,000	

Debtors	13,00,000		21,85,000	
	32,00,000		21,85,000	
Current liabilities:				
Bank overdraft	11,50,000		14,00,000	
Trade creditors	7,00,000		9,00,000	
Expenses creditors	80,000		92,000	
Current taxation	1,97,000		3,00,000	
Proposed dividend	1,50,000		1,50,000	
	22,77,000		28,42,000	
		9,23,000		13,43,000
Total		13,23,000		17,03,000
Ordinary share capital		7,00,000		8,00,000
General reserve		2,50,000		3,50,000
Profit and loss account		1,73,000		2,33,000
Future taxation		2,00,000		3,20,000
		13,23,000		17,03,000

For the year ended 30th June, trade purchases totaled Rs. 65,00,000 and sales Rs. 80,00,000; the trading profit was arrived at after charging depreciation Rs. 1,20,000. You are required to prepare; (a) a summarised cash flow statement of Beeches Ltd. For the year ended 30th June, 2005; and (b) a statement showing the sources of additional working capital that has become available during the year and the manner of its utilisation.

[Adapted from C.A. (Final), Eng.

3. The balances sheets of Trinkets Ltd. As on 30th June, Year A and Year B are as follows:

	(Rs. In Lakhs)			*(Rs. In Lakhs)*	
	Year A	*Year B*		*Year A*	*Year B*
Equity share capital	2,000	2,000	Freehold property(at cost)	1,500	1,600
Reserves	1,500	1,600	Plant and machinery at cost	900	1,100
6% Debentures	900	1,100	(less depreciation)		
Mortage on freehold Property	180	95	Investments-Associated	1,000	1,000
(secured on one of the freehold			companies (unquoted)		
properties, Cost Rs. 1,00,00,000)			Other companies (unquoted)*	750	750
Creditors	300	300	*(Market value year-A Rs. 1,000		
Proposed dividend(gross)	150	155	lakhs and Year B-Rs. 800 lakhs)		
Taxation provision	140	250			
Overdraft(secured by a Floating	100	550	Stock	350	500
charge on assets)			Debtors	300	500
			Bank	70	—
	4,870	5,450		4,870	5,450

In view of the credit squeeze, the Managing Director has been approached by the company's bank manager with a request to reduce the overdraft substantially-if possible, by 50% within six months.

You are requird to: (a) comment on the financial position revealed by the balance sheets, attaching to your commentary any schedule or statement which you think would assist; and (b) state, with brief reasons, what a additional information you would advise the bank manager to ask for which would help him to decide whether his request was reasonable.

4. The summarised Balance Sheets of a company for two successive years are as follows:

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	(Rs. In Lakhs)			*(Rs. In Lakhs)*	
	Year A	*Year B*		*Year A*	*Year B*
Source of funds:			Current Assets:		
Equity share capital	1,760	1,760	Stocks	2,294	2,287
Share premium account	207	207	Debtors	1,879	1,974
Capital reserves	440	440	Cash & bank Balances	46	186
Revenue reserves	2,192	2,434			
Taxation reserves	618	622			
	5,217	5,463		4,219	4,447
			Less: Current liabilities:		
			Creditors	1,069	1,118
Employment of funds:			Provision for taxation	394	358
Land & buildings	1,388	1,354	Bank overdraft	282	109
Plant, equipment and Vehicles	1,243	1,161	Proposed dividend (gross)	202	255
	2,631	2,515		1,947	1.840
Goodwill and patents	314	314	Net current assets(B)	2,272	2,607
Fixed assets(A)	2,945	2,856	Total(A+B)	5,217	5,463

Notes on the accounts show that:

(1) Depreciation has been charged for year 2 as follows: Land and buildings Rs. 3,50,000; Plant,equipment and vehicles Rs. 24,00,000; and Goodwill and patents Rs. 90,000.

(2) Plant sold during year 2 realised Rs. 1,60,000. It was included at cost in the balance sheet for year 1 at Rs. 6,10,000 with depreciation accumulated of Rs. 5,30,000. The difference between realization and written down value was credited to profit and loss account.

(3) The balance of profit for year 2 after taxation charge and dividend appropriation has been transferred to revenue reserve.

Further enquiries reveal that during year 2 the company made cash payments for total dividends including tax thereon, amounting to Rs. 37,10,000 and other taxation amounting to Rs. 45,20,000. You are required to prepare a statement which explains the improvement in the net cash and bank balances during year 2.

5. The directors of Precision Tools Ltd., are worried at the deteriorating financial position of the company. The company has utilised full overdraft facility from bank and still it is not able to pay its creditors on due dates, although the profits earned are statisfactory.

The following are the Balance Sheets as at 31st December 2005 and 2006:

		31st December 2005		*31st December 2006.*
Share capital: Shares of Rs. 10 each fully paid		Rs. 10,00,000		Rs. 10,00,000
Profit and loss account		60,000		80,000
Overdraft from bank		1,60,000		6,00,000
Sundry creditors		2,00,000		6,00,000
		14,20,000		22,80,000
Land and buildings		Rs. 3,00,000		Rs. 5,00,000
Plant and machinery	Rs. 5,00,000		Rs. 6,00,000	
Less: Depreciation	1,20,000		1,80,000	4,20,000
Vehicles	1,16,000	3,80,000	1,24,000	
Less: Depreciation	26,000		84,000	40,000

	60,000	
Stock	2,20,000	7,20,000
Debtors	4,60,000	6,00,000
	14,20,000	22,80,000

During the year a dividend of 10% was distributed to the shareholders. On 1st January 2006 a motor car which originally cost Rs. 20,000 and showing book value of Rs. 10,000 was sod for Rs. 16,000. You are required to prepare a statement which will show as to what has happened to the money which has come into the business during the year.(Give detailed working.)

6. Narain &Co. Ltd. Gives you its Balance Sheet as at 31st December, 2003, and its projected Profit and Loss account (summarised) for 2004.

BALANCE SHEET

Share capital:			
(Fully paid shares of Rs. 100 each)		Plant and equipment Rs.	10,50,000
7% Redeemable preference	Rs. 3,00,000	Less: Depreciation	2,70,000
Equity	5,00,000		----------
Share premium	50,000		7,80,000
General reserve	1,30,000	Goodwill	1,50,000
6% Debentures	2,50,000	Patents	50,000
Creditors for goods	1,20,000	Stock	2,70,000
Outstanding expenses	20,000	Book depts.	2,50,000
Provision for taxation	1,55,000	Cash	90,000
Proposed dividend(equity)	80,000	Underwriting commission	15,000
	16,05,000		16,05,000

PROFIT AND LOSS ACCOUNT

Opening stock	Rs. 2,70,000	Sales-Cash	Rs. 3,50,000
Purchases	15,00,000	/" -Credit	21,00,000
Wages	1,70,000		
Manufacturing expenses	1,30,000		24,50,000
Depreciation	1,05,000	Stock	2,90,000
Selling and distribution expenses	1,10,000	Miscellaneous Income	10,000
Office and adm. Expenses	95,000	Profit on sale of machinery	6,000
Interest	15,000		
Goodwill	20,000		
Patents	10,000		
Provision for taxation	1,70,000		
Pref. dividend	21,000		
Proposed dividend(equity)	75,000		
Balance of Profit	65,000		
	27,56,000		27,56,000

Both the preference shares and debentures are due for redemption on 31st December, 2003. Half the debenture holders in value will accept new 9% redeemable preference shares; also the company proposes to issue equity capital with a normal value of Rs. 2,00,000 at a premium of 20%.

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Fixed assets will be acquired for Rs. 1,60,000. The cost of the asset to be sold in 2003 is Rs. 60,000 with a depreciation provision of Rs. 35,000. It is expected that(i) Tax liability up to 31-12-2002 will be settled for Rs. 1,40,000; (ii) Book debts will be 10% more than that warranted by the credit period of 1½ months; and (iii) Creditors for goods will continue to extend one month's credit and expenses outstanding and prepaid as at the end of 2003 will be Rs. 25,000 and Rs. 2,000 respectively.

You are required to (i) Prepare the statement showing sources and application of funds during 2003; and (ii) Draft the company's projected balance sheet as at December 31, 2003.

7. From the following estimated balance sheet as at 31-12-2006 prepare a funds flow statement;

	1-1-2006	*31-12-2006*
Equity share capital	*Rs. 20,00,000*	*Rs. 25,00,000*
Share premium account	—	1,00,000
Profit on sale of leasehold property	—	25,000
Profit on redemption of debentures	—	4,000
Proft and loss account balance b/f	4,50,000	4,50,000
4% Debentures	—	4,85,000
Creditors	6,40,000	5,90,000
Reserve for income tax	3,10,000	31,200
Proposed dividend(net)	1,00,000	—
	40,00,000	45,85,200
Freehold property at cost	14,50,000	18,50,000
Leasehold property at cost	50,000	—
Plant and machinery at cost	18,00,000	21,00,000
Less: Depreciation	7,20,000 10,80,000	9,30,000 11,70,000
Investment	1,60,000	2,24,000
Work-in-progress	1,70,000	1,50,000
Stock-in-trade	2,70,000	3,60,000
Debtors	6,20,000	6,47,200
Bank balance	2,00,000	1,84,000
	40,00,000	45,85,000

During 2006, it was anticipated that plan costing Rs. 1,30,000 (depreciation Rs. 90,000) will be sold for Rs. 30,000. This transaction has been allowed for preparing the estimated balance sheet as at 31-12-2006, the loss on sale having been charged against profit for the year.

8. Wee Ltd has the following figures as on 1st January 2001:

TABLE 19.26

Current liabilities	1,00,000	Fixed assets – Cost	5,00,000
Capital (Shares of Rs.100 each)	3,00,000	Less: Depreciation	2,10,000
			3,90,000
		Bank balance	35,000
		Current assets, other than bank balance	2,50,000

The company made the following estimates for 2001:

i. The profit would be Rs.55,000 after depreciation of Rs.60,000
ii. The company will acquire fixed assets costing Rs.1,00,000 after selling one machine for Rs.20,000 costing Rs.50,000 and on which depreciation provided amounted to Rs.35,000.

iii. Current assets and current liabilities, other than bank balance at the end of 1970 are expected to be Rs.2,95,000 and Rs.1,30,000 respectively.

iv. The company will pay a fee of tax dividend of 10% the rate of tax being 25%.

Ascertain the bank balance (or overdraft) of Wee Ltd at the end of 2001.

9. The abridged profit and loss account for the year ended 30th June, 2003 and 30th June, 2004, and the balance sheet as on those dates of Beeches Ltd were:

TABLE 19.27

	2003	*Rs.*	*2004*
Trading profit	4,50,000		7,00,000
Profit on sale on investments	-		20,000
	4,50,000		7,20,000
Taxation on profits of the year	2,77,000		4,50,000
	1,73,000		2,70,000
Brought forward from previous year	1,50,000	1,73,000	
Income tax over provided in previous years	-	40,000	2,13,000
	3,23,000		4,83,000
Proposed dividend	1,50,000	1,50,000	
Transfer to general reserves	-	1,00,000	2,50,000
Balance at undistributed profit	1,73,000		2,33,000
Fixed assets:			
Cost 5,00,000		6,00,000	
Additions during the year 1,00,000	6,00,000	80,000	6,80,000
Depreciation	2,00,000		3,20,000
	4,00,000		3,60,000
Current assets:			
Investments 1,20,000		-	
Stocks at cost 17,80,000		20,00,000	
Debtors 13,00,000		21,85,000	
	32,00,000	21,85,000	

TABLE 19.28

Current liabilities	11,50,000		14,00,000	
Trade creditors	7,00,000		9,00,000	
Expenses creditors	80,000		92,000	
Current taxation	1,97,000		3,00,000	
Proposed dividend	1,50,000		1,50,000	
	22,77,000		28,42,000	
		9,23,000		13,43,000
Total		13,23,000		17,03,000
Ordinary share capital		7,00,000		8,00,000
General reserve		2,50,000		3,50,000
Profit and loss account		1,73,000		2,33,000
Future taxation		2,00,000		3,20,000
	13,23,000		17,03,000	

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For the year ended 30th June, 2004, trade purchases totalled Rs.65,00,000 and sales Rs. 80,00,000, the trading profit was arrived at after charging depreciation Rs.1,20,000. You are required to prepare:

a. a summarised cash flow statement of Beeches Ltd for the year ended 30th June 2004 and
b. a statement showing the sources of additional working capital that has become available during the year and the manner of its utilisation.

10. The balance sheets of Trinkets Ltd. as on 30th June, Year A and Year B are as follows:

TABLE 19.29

Equity share capital	2,000	2,000	Freehold property (at cost)	1,500	1,600
Reserves	1,500	1,600	Plant and machinery at costs	900	1,100
6% debentures (unsecured)	500	500	Investments Associated companies (unquoted)	1,000	1,000
Mortgage on freehold property	180	95	Other companies (unquoted)	750	750
Creditors	300	300	Stock	350	500
Proposed dividend (Gross)	150	155	Debtors	300	500
Overdraft (secured by a floating charge on assets)	100	550	Bank	70	-
	4,870	5,450		4,870	5,450

In view of the credit squeeze, the managing directors has been approached by the company's bank manager with a request of the overdraft substantially – if possible by 50% with in six months.

You are required to

a. Comment on the financial position revealed by the balance sheets, attaching to your commentary any schedule or statement which you think would assist.
b. State with brief reasons, what additional information you would advise the bank manager to ask for which would help him to decide whether his request was reasonable.
c. The summarised Balance Sheets of a company for two successive years are as follows:

TABLE 19.30

	Year 1	*Year 2*		*Year 1*	*Year 2*
Source of funds:	(Rs. In lakhs)		Current assets:	(Rs. In lakhs)	
Equity share capital	1,760	1,760	Stocks	2,294	2,287
Share premium account	207	207	Debtors	1,879	1,974
Capital reserves	440	440	Cash & bank balances	46	186
Revenue reserves	2,192	2,432		4,219	4,447
Taxation reserves	618	622			
	5,217	5,463	Less: Current liabilities		
Employment funds:			Creditors	1,069	1,118
Land & buildings	1,388	1,354	Bank overdraft	282	109
Plant equipment & vehicles	1,243	1,161	Provision for taxation	394	358
	2,631	2,515	Proposed dividend	202	255
Goodwill and patents	314	341		1,947	1,840
Fixed assets (A)	2,945	2,856	Net current assets (B)	2,272	2,607
			Total (A+B)	5,217	5,463

Notes on the accounts show that:

1. Depreciation has been charged for year 2 as follows: Land and buildings Rs.3,50,00; Plant, equipment and vehicles Rs.24,00,000 and Goodwill and patents Rs.90,000.
2. Plant sold during year 2 realised Rs.1,60,000. It was included at cost in the balance sheet for year 1 at Rs.6,10,000 with depreciation accumulated of Rs.5,30,000. The difference between realisation and written down value was credited to profit and loss account.
3. The balance of profit for year 2 after taxation charge and dividend appropriation has been transferred to revenue reserve.

Further enquires reveal that during year 2, company made cash payments for total dividends including tax thereon, amounting to Rs.37,10,000 and other taxation amounting to Rs.45,20,000. You are required to prepare a statement which explains the improvements in the net cash and bank balances during year 2.

11. The directors of Precision Tools Ltd., are worried at the deteriorating financial position of the company. The company has utilised full overdraft facility from bank and still it is not able to pay its creditors on due dates, although the profits earned are statisfactory.

TABLE 19.31 The following are the balance sheets as at 31st December 2006 and 2007:

		31st December 2006		*31st December 2007*
Share capital: Shares of Rs.10 each fully paid		10,00,000		10,00,000
Profit and loss account		60,000		80,000
Overdraft from bank		1,60,000		6,00,000
Sundry creditors		2,00,000		6,00,000
	14,20,000		22,80,000	
Land and buildings		3,00,000		5,00,000
Plant and machinery	5,00,000		6,00,000	
Less: Depreciation	1,20,000		1,80,000	4,20,000
Vehicles	1,16,000	3,80,000	1,24,000	
Less: Depreciation	56,000	60,000	84,000	40,000
Stock		2,20,000		7,20,000
Debtors		4,60,000		6,00,000
	14,20,000		22,80,000	

During the year, a dividend of 10% was distributed to the shareholders. On 1st January 2007, a motor car which originally cost Rs.20,000 and showing book value of Rs.10,000 was sold for Rs.16,000. You are required to prepare a statement which will show as to what has happened to the money which has come into the business during the year. (Give detailed working).

CASE

The directors of a trading company are reviewing the company's financial requirements for the calendar year 2007. The summarized balance sheet of the company as at 31st December 2006 is as follows:

Liabilities	*Rs.*	*Assets*		*Rs.*
Equity share capital	40,00,000	Goodwill		6,00,000
Reserve and profit and loss	36,20,000	Freehold warehouse		26,00,000
Account balance		Fittings & equipment	20,00,000	

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Trade creditors	19,80,000	Less: Depreciation	8,50,000	11,50,000
Bank Overdraft	3,00,000	Stock-in-trade		23,00,000
		Trade debtors 32,50,000		
	99,00,000			99,00,000

The company's plans are based on the following expectations for the year 2007. Issue for cash of 1,00,000 equity shares of Rs. 10 each at a premium of Rs. 5 per share in February 2007. New equipment will be purchased for Rs. 7,00,000 each on 1st January 2007. Goodwill will be written down by Rs. 3,00,000. Stock in trade at the end of the year will be Rs. 29,00,000.

The following financial transactions will occur at an even rate throughout the year: Sales Rs. 2,40,00,000; Purchases Rs. 1,86,00,000; General expenses Rs. 36,00,000; and Directors remuneration Rs. 8,00,000.

The period of credit allowed to customers will be two calendar months and the period of credit taken from suppliers will be one and a half calendar months. All amounts(including debtors and creditors as on 31st December 2006) will be paid in full at the end of the credit periods. No amounts for general expenses or directors' remuneration will be outstanding at the end of the year. Depreciation on all equipments held at the end of the year will be provided at the rate of 10 per cent per annum.

Prepare: (i) A statement of the sources and application of funds(funds flow statement) of the company for the year 2007. (ii) A statement showing how the following alternative assumptions would affect the cash available to the company at 31st December 2007compared with the previously estimated position: (a) Freehold warehouse revalued in accounts at Rs. 34,00,000. (b) Period of credit allowed to customers reduced to one and a half months. (c) Period of credit taken from suppliers reduced to one month. (d) Depreciation rate increased to 15 per cent on cost of equipment. (a) Goodwill completely written off)

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CHAPTER

20

Profit Planning-III: Budget and System of Budgetary Control

"Budget furnishes a device for correlated planning and a means whereby authority maybe broadly delegated without loss of control"

—Koontz & O'Donell

LEARNING OBJECTIVES

After reading this chapter, you will be able to understand

- *Objective of Budgetary Control System*
- *Procedure to be followed in Designing and Operating Budgetary Control System*
- *Essentials of Good Budgetary Control System*
- *Meaning of Fixed Budget and Flexible Budget*
- *Various kinds of Functional Budget*
- *Limitations of Budgeting Control Systems*
- *Planning and Budget*
- *Concept of Budget and Budgeting Control*
- *Nature of Budget and Budgeting Control*
- *Objectives of Budget and Budgeting Control*
- *Advantages of Budget and Budgeting Control*
- *Classification of Budgets*
- *Limitations of Budget and Budgeting Control*
- *Essentials of Effective Budgeting*

INTRODUCTION

A budget is defined as a quantitative and/or financial statement prepared prior to a defined period of time reflecting the policy to be pursued during that period for the purpose of attaining a given objective.

Budgetary control is the establishment of budgets relating to the responsibilities of the executives to the requirements of a policy and the continuous comparison of actual with budgeted result, either to secure by individual action the objectives of that policy or to provide a basis of its revision.

Budget is thus, the plan of operations in form of statement in financial terms. Budgeting involves the preparation of budgets. Budgeting should be departmentalized in order to attract personal interest of the

departmental heads. To illustrate, the production department should prepare production budget while sales department should prepare sales budget.

OBJECTIVE OF BUDGETARY CONTROL SYSTEM

Following are the main objectives of a budgetary control system:

1. To forecast operating activities. It provides definite targets for income and expenditure of each department.
2. To provide co-ordination of the various activities of the business. Various divisions of a business like production, sales, etc., are co-ordinated by co-ordinating the activities of different functional heads. The system, thus provides valuable service to the co-ordination function of the management.
3. To serve as an ideal means of communication.
4. To serve as a measure of performance. The system sets down plans of integration of departmental performances.
5. To serve as a means of control.

The system thus contributes very much in the co-ordination, communication and control functions of the management.

Procedures to be Followed in Designing and Operating Budgetary Control System

Before mentioning the procedures to be followed for the design and operation of the Budgetary Control System, let us clear the following two matters:

(i) Procedures vary from one business to another. Undermentioned are merely the general procedures to be followed.

(ii) The commencement of procedures presupposes the existence of positive backing by directors and managers with active participation of all key personnel in computing forecast and budgets.

Procedures to be Followed

A. To make Forecasts for the following

1. Sales of product or services
2. Production
3. Stock
4. Production cost, Selling and Distribution cost, Administration cost and Development cost
5. Cash
6. Credit – Debtors and Creditors
7. Purchasing
8. Capital Expenditure
9. Profit and Loss Forecast
10. Balance Sheet Forecast

B. To compare Alternative Combination of Forecast

This involves,

1. The consideration of principal budget factor (if any) and limiting factors (key factors)
2. The actions needed to overcome them
3. Cost of such actions
4. Selection of the optimum combination of forecasts

Under this step, it would not be out of place to mention some of the principle budget factors (also known as limiting or governing factors)

I. Materials:
   1. Availability of supply
   2. Restriction imposed by license, Quota etc.

II. Labour:
   i. General shortage
   ii. Shortage in Key processes

III. Sales:
   i. Low market Demand
   ii. Shortage of experienced salesmen
   iii. Insufficient advertising

IV. Capacity of plant:
   i. Lack of capital
   ii. Lack of place
   iii. Lack of markets

V. Management:
   i. Lack of capital
   ii. Lack of know-how
   iii. Insufficient executive etc

C. To prepare Budgets

This step can be taken only after aforementioned steps have been taken. Following points should be noted in this connection:

i. They should be prepared with as much accuracy as possible.
ii. They should be departmentalised.
iii. They should be prepared on the basis of reliable estimates of the past and present factors.
iv. They should be prepared either on a flexible or on a fixed basis.

D. To set up Organisation for Budgetary Control

The proper operation of the Budgetary Control system generally involves the following matters:

1. Establishment of budget centres: alternatively cost centres. A budget related to a particular budget centre is referred to a departmental budget. There should be a departmental budget for each department.
2. Preparation of an organisation chart defining functional responsibility of each member of management. Such a chart depends upon the nature and size of the business undertaking.
3. Establishment of a Budget Committee to formulate a programme for preparing budgets and to exercise overall control.
4. Introduction of appropriate accounting system. Accounts should be suitably classified. There should be a chart of accounts corresponding with the budget centres. There should be a mechanism for various analysis and reporting thereon. Moreover, there should be regular and continuous comparisons of budgeted and actual figures.
5. Preparation of Budget Manual setting out :
   1. The responsibilities of the persons concerned
   2. Form and reports.
6. Determination of the key factor for priorities in functional budgets.

Note: Budget Committee, Budget manual and key factor are explained in this chapter.

7. Establishment of normal level of activity. After considering key factor and the net probability, the management decides and lays down the normal level of activity which is important for production planning.
8. Determination of Budget period. Before the budgets are actually prepared, the length of period for which they are to be prepared should be determined.

ESSENTIALS OF GOOD BUDGETARY CONTROL SYSTEM

There should be effective budgetary control system. Following are the essential requirements of an effective system.

1. Plan of operation should be well-defined.
2. There should be adequate system of Financial and Cost Accounting. The system should be accurate.
3. Budgets should be prepared in the light of what is called business policy. Both the Planning and Budgeting should be made within the frame world afforded by policy.
4. Budgeting should be supported by Top Management. As mentioned earlier, the budgets should have positive backing by directors and managers. There should be active participation of all key personnel.
5. All these persons who are concerned with the operation of the system should be properly and continuously instructed with all the techniques of the system.
6. Budgets should be responsible executive.
7. There should be adequate provisions for the comparison of budgeted and actual figures. In other words, the actual expenses and actual output, should be constantly compared with pre-determined costs.
8. There should be complete co-ordination between all levels of management.
9. Procedures for the design and operation of the system should be properly established (keeping in view the nature of business, organisation etc) and followed.
10. The system should be flexible, it should provide for all possible unforeseen circumstances.

Budget Centre

Budget centres (or Cost centres) are the areas selected for the purpose of controlling the costs at the point at which they are incurred.

Following points should be noted while selecting the budget centre:

1. Areas to be selected should be suitable for the purpose. In case of production cost, control point lies at supervisor and operator level.
2. Budget or cost centres should not be too large.
3. Areas to be selected should comply with the natural responsibilities of supervisors and executives.
4. Budget should be prepared for each budget centre. Such a budget is referred to as a departmental budget.

Budget Committee

It is generally established in case of large companies where personal touch is impossible without co-ordination. It is the budget committee that maintains the necessary co-ordination.

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The committee consists of the Chief Executive (may be Chairman, the Budget Controller or Budget Officer or the Committee Secretary).

The Committee consists of the Chief Executive (may be Chairman, General Manager, etc) of the Company, the Budget Controller (or Budget Officer or the Committee Secretary) and heads of each functional division of the business (i.e Sales Manager, Production Manager etc)

The Chief Executive of the company guides on the matter and delegates the responsibility for operating the system to the Budget Officer.

The Committee should be of reasonable size. A very large committee may become unproductive.

Functions of the Committee are as follows:

1. To put the policy determined by the Board of Directors into practical terms.
2. To ensure the achievement of the objectives.
3. To plan, operate, co-ordinate and control the activities.
4. To receive forecasts and budgets and to discuss them
5. To discuss the periodic results for the budgets
6. To consider special problems (for example, fall in sales, increase in cost etc).
7. To advise and also act upon the capital expenditure projects.

The main functions of budget officer (who in Budget Committee, stands next to the Chief Executive of a Company) are as follows:

1. To prepare schedules of estimates, revised budget schedules and budget report and also to review the periodic budget report.
2. To arrange for meeting of the Budget Committee and the preliminary programme for the compilation of the budgets.
3. To co-ordinate the budget data of all the divisions and departments.
4. To confer with the executives of functional divisions as to the results shown in periodic budget reports.
5. To deliberate with the chief executive or Board of Directors as regards the policies to be pursued after review and interpretation of the budget reports.

Budget Manual

It has been defined as a document which sets out the responsibilities of persons engaged in the routine of and the forms and records required, for budgetary control.

Budget manual may be in the form of a document, schedule or booklet. It shows, in written form, the budgeting organisation and procedures. Following are the requirements of a good budget manual.

1. It should be well-written
2. It should be indexed for quick and easy location on information
3. It should be divided into distinct sections to facilitate the issue of appropriate section to the executives of functional divisions or departments.
4. It should be on loose leaf form to facilitate.
   i. Alterations to be made as and when required
   ii. Division into distinct sections
   iii. Distribution to the persons effected.

Budget manual includes the information on the following matters: (List of only most important matters is given below).

1. Explanation of the principles of the budgetary control system.
2. Description of the objectives of the Budgetary Control Systems and the benefits to be derived from its use.
3. Procedure to be adopted for the operation of the budgetary control system.
4. Definition of the responsibilities of functional and departmental budget centres.
5. Statement of the authority given to each manager.
6. Time tables for all stages of budgeting.
7. Forms, number, copies and the purposes of the Reports and Statements to be employed.
8. Definition of the budget periods and control periods.
9. The accounts code and classification to be employed.

Considering the above, we may say that the Budget Manual renders valuable services to the management in budgeting. It is an invaluable document in the Budgetary Control System.

Budget Period

Budget period is a period covered by Budget. We may not form rigid rules on the length of period to be covered by budgets, as we may not be sure about the stability of the business. Selection of budget period depends upon many factors, like external economic conditions, internal circumstances, nature of the plan to be made, etc. However, we may generally write on budget periods as follows

1. Some forecasts like capital expenditure may be made for a long period i.e upto 10 years or more. Hence it is obvious that long-term budget period is necessary for them. However, in actual practice the budget period is restricted to a year in such cases also. And this step, is no doubt advisable. It does not mean that long-term forecasts are in this connection restricted to relatively short-term but the process of budgeting them is carried out annually.
2. Viewing from the standing point of certainty which may be the limiting factor for the budget period, the budget period should be short in case of the uncertainty. It should be noted that greater the uncertainty, the shorter should be the length of the budget period. Longer period of the budget may not give the reliable results (except in the case where fluctuations are averaged out in long period this sometimes happens). Instead shorter the period, the more reliable will be the figures obtained.
3. Selection of the budget period also depends upon the accounting year of a concern (which is usually a year). That is why the budgets are generally prepared for a period which is either a year or a multiple of a year.
4. Under the static budgets plan, the budget period is usually a year, similarly, in case of flexible budgets, (explained in this chapter), the budget period is generally a year.

Budgets may be classified in the light of the budget period such as long-term budget (budget period of 5 to 10 years), short-term budget (a year or two) and current budget (less than a year i.e in months).

Control Periods

After selection of budget period, say a year, the division of budget into quarters is done and in turn, each quarter is sub-divided into its respective three separate months.

The division of the budget period into shorter periods is made for the purpose of achieving control. Such shorter periods are known as control period. In case of budgets prepared for every quarter, the control periods may be one month which may, in turn be sub-divided into four respective separate weeks. Again here also, there are no rigid rules in this connection. For more accuracy (i.e to avoid the effect

of holidays, etc.), some accountants determine the length of control period by dividing the net working days in a year by twelve (instead of using one calendar month as a monthly control period). This again requires the calculation of calendar variances to adjust the differences in the number of working days from one period to another period.

To conclude, the Control Period may be a quarter, a week, a day or even in hours. In actual practice, a combination of periods of different lengths is used after consideration of the nature of costs from the viewpoint of control. For example, direct labour, materials etc. may often be matched daily, while overhead costs may be controlled each four-weekly period.

Key Factor Net Probability

Key factor, also called principal budget factor, is of great importance in the process of budgeting. Budgets should be prepared after considering all the key factors. For example, in the case of materials, availability of supply or restrictions imposed by licences, quotas etc. may act as limiting factor. Similarly, advertisement capacity, demand of goods in market are the limiting factors to be considered while preparing sales budget. Examples of key factors under each aspect (i.e Material labour etc.), have already been mentioned. Sales demand is the most important key factor to be considered in budgeting. The extents of the influence of this factor must first be assessed.

Net Probability

Net probability is the number of products that can be produced or sold after considering the extent of influence of the limiting factor. This is why the word probability is joined with the adjective Net.

For example, Net Probability for the following two products (A&B) will be 4,000 units and 10,000 units respectively:

TABLE 20.1

Product A	*Product B*
Sales 4,000 units with customer limiting factor. Production 16,000 units with plant capacity as limiting factor.	Sales 12,000 units with customer demand as limiting factor. Production 10,000 with Plant capacity as limiting factor.
Net Probability	Net Probability
4,000 units as, in simple words, the maximum units that may be sold are 4,000 units. This restricts the production to 4,000 units only	10,000 units as in simple words, the maximum production possible is 10,000 units. This restricts the sales to 10,000 units only.

MEANING OF FIXED BUDGET AND FLEXIBLE BUDGET

Budgets may be classified in the light of the flexibility as Fixed Budget and Flexible Budget.

Fixed Budget is based on rigidly fixed targets. Such budget is designed to remain unchanged irrespective of the level of activity attained. It shows only one volume of output and related costs. Such budgets are prepared in advance (1 to 3 months advance) of the budget period covered by them. In case of uncertainty, fixed budgets may not enable costs to be controlled effectively as the volume ascertained in the budget may not remain the same in practice. Fixed budget is also known as Static Budget.

Flexible Budget is a budget which is designed to change in accordance with the level of activity attained. It is also known as variable budget or sliding scale budget. It takes into account, the probable levels of activities. For example, possible output at 60 per cent level of activity, at 80 per cent level of

activity and so on. In case of uncertainty, flexible budget is prepared as it is the only type of budget which can enable costs to be controlled effectively.

Technique of flexible budget requires the classification of the related expenses into fixed, variable and semi-variable. In case, there are semi-variable expenses, these would be separated into fixed expenses and variable expenses, by adopting various methods e.g least squares regression or scatter graph chart.

In practice, it is advisable to use both type of budges. Fixed budgets are prepared in case the sales of the concern can be most accurately forecast. In case of uncertainty, flexible budgets are preferred. For the purpose of control, the flexible budget is the only way a concern or a firm, may also, at first, prepare fixed budgets only and then may split them up into short-term flexible budgets.

VARIOUS KINDS OF FUNCTIONAL BUDGET

Following are the commonly used functional budgets:

1. Sales Budget: It shows total anticipated sales (in quantities and in value). Classified according to groups of products, salesmen of geographical locations.

2. Selling and Distribution Cost Budget: It shows the estimated cost of selling and distribution of goods.

3. Manufacturing Budget: This budget may be sub-divided into the following budgets:

(a) Production Budget
(b) Purchase Budget
(c) Personnel Budget
(d) Factory overhead Budget
(e) Research Budget
(f) Office and Administration Budget
(g) Capital Budget
(h) Plant Utilisation Budget

These are described as below:

1. Production Budget It is a forecast of production based on sales, productive capacity, inventories etc.

2. Purchase Budget It shows the purchases required for the anticipated sales and production. Purchases include both direct and indirect materials.

3. Personnel Budget This shows the estimates of remuneration payable to workers both direct and indirect.

4. Factory overhead Budget It covers all factory overheads. It classifies factory overheads into Fixed, Variable and semi-Variable factory overheads.

5. Research Budget It includes research costs incurred in developing and proving the products.

6. Office and Administration Budget It covers all administrative expenses such as staff salaries, lighting etc.

7. Capital Budget This is generally a long-term budget and covers capital expenditure on replacement of obsolescent plant, acquisition of new machinery etc.

8. Plant Utilisation Budget This budgets shows the requirements of plant and machinery to meet the budgeted production.

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9. Cash Budget It shows anticipated receipts and payments of cash. It is based on the operating budget and the statement of financial position at the beginning of the budget period.

10. Master Budget It is an integration of separate budgets and include the estimated profit and loss account for the future period and the estimated balance sheet at the end of that period. As its name indicates, it is a summary of all other principal budgets.

BENEFITS AND WEAKNESSES OF THE BUDGETARY CONTROL SYSTEM

There are various benefits to be derived from the budgetary control system. These are mentioned below:

1. The system co-ordinates and controls the policy, plans and action. This facilitates an achievement of the budget goal.
2. Existence of efficient budgetary control system is an indication of sound management.
3. All personnel know the part they have to play to achieve the targets set.
4. Corporate planning and budgetary control can be linked. (That is why an efficient budgetary control system is an indication of sound management). Planning does not cover the present, but also covers the future. In other words, it takes into account the past results with an eye to the future.
5. Budgetary control system is very helpful in the standard costing system.
6. On account of an efficient operation of the system, the costs may be reduced and wastage in manpower and material may be eliminated.
7. Comparison of alternative courses of action, constant maximum utilisation of resources, comparison of the actual output and expenses with the budgeted figures—all these help in achieving the maximum profits.
8. On account of budgetary control system, the concern may be able to utilise the liquid capital in a proper manner.
9. The system serves as an effective control over stores and stocks.
10. The Cash Budget enables the management to know the need for additional cash or the availability of excess cash. This helps the management to arrange for the credit (bank overdraft, etc) or to invest surplus cash in advance, (as the case may be).
11. The sale forecast enables the management to key the economic balance between plant and machinery, storage, warehouse and inventories.

Weaknesses (or Limitations) of the System

Every system may not bestow all the advantages mentioned above. This is due to the following reasons:

1. All the systems may not be equally efficient.
2. Person operating the systems may also vary in efficiency.
3. The concern operating the system may have some problems limiting the efficiency of the concern.

Thus, efficiency of the system itself, (its organisation etc.), efficiency of the persons handling the system, and also the problems related to the concern, may limit the advantages or add to the weaknesses of the system.

Inaccuracy

Absolute accuracy is impossible in the budget plan. In actual practice, the forecasting and budgeting are not as easy as one may think. However, a high standard should always be aimed at. All pertinent facts should be considered before setting the targets. Targets set should be realistic. In the absence of reality in the budgeted figures, the system is likely to be of very limited value.

Lack of Support

Budgetary control system, in order to be successful, must have the whole hearted support of management. The success of budgetary control system is dependent upon the energies and efforts of the management. Mere operation of Budgetary control system in an organisation does not ensure its success. Similarly, it does not guarantee future profits. Instead, the system is only a way or a medium that brings to light the fact that a mistake has been made and allows corrective action to be taken within a reasonable time. It is then the duty of the management to concentrate on the mistake enlightened by the system and to take corrective action within a reasonable time. If no steps are taken in this connection, the system itself will never avoid the mistakes. Thus, the budgetary control system comparing does not replace sound management. It is only an impersonal approach.

One should understand the fact that mere passing the examination and getting the degree does not give us anything, it is upto the degree holder to achieve the maximum benefit of this degree. If he does not at all take any chances enlightened by his degree, the degree itself then becomes of a very limited value from the viewpoint of the degree holder. Similar is the case with the budgetary control system, comparing the system with the degree and the management with degree holder.

Excessive Cost

The cost of installing and operating the budgetary control system sometimes limits the utility of the system. The cost of the system should always be considered in the light of benefits to be received from the system. No hard and fast rules can be laid down, for this depends on the size and nature of the activities of the individual business. However, the following may be done to minimise cost:

i. To fix a percentage for comparing the total cost of the accounting function with the direct labour cost or with the value of sales (keeping in view the size and nature of business)
ii. Also to obtain comparative costs through a trade association from other business.
iii. To employ qualified men and women who understand budgeting.
iv. To mechanise the accounting function (again keeping in view the size and nature of the business. The cost of mechanisation should also be considered.

Lack of Compromise between Flexibility and Rigidity

To become useful, the budgetary control system should allow flexibility in its structure keeping in view the changing business conditions. Degree of flexibility should always be considered. The system should not be too rigid nor it should be too much flexible. The following may be noted in this connection.

i. It should be flexible enough to allow the implementation of any decisions to be made.
ii. Plans should be made very carefully in order to avoid frequent changes therein.
iii. Budgets should be revised only if there are significant changes in conditions and circumstances.

The above rules are important to note as the system loses its usefulness on account of too much rigidity and too much flexibility may also result in loss of control. Hence, there should be a compromise between the two.

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Overlapping of Duties

In Budgetary Control System, the responsibilities of the executives and personnel for the achievement of the policy are defined. Theoretically, this may be one of the advantages of the system. But, in actual practice, the task of putting the appropriate responsibilities on the executive and personnel, is not so simple as one may assume. Quite often, there may be overlapping of responsibilities. Improper definition of responsibilities causes many problems and limits the efficiency of the system. It should, therefore, be noted that responsibilities should be clearly understood and stated.

Illustration 1: Assuming the following overhead expenses in a factory when operating at 50% of normal capacity draw up a flexible budget on the basis of 75%, 100% and 125% of normal capacity.

Against each expense, indicate the principle upon which you have revised it, if at all for the different operating volumes.

TABLE 20.2

Foreman	600
Assistant foreman	400
Inspectors	650
Shop Labourers	400
Machinery repairs	1,000
Defective work	250
Consumable Stores	200
Machine depreciation	1,100
	Rs.4,600

FLEXIBLE BUDGET
(For overhead expenses)
Cost Centre Machine Shop Month
Normal Capacity (Units)

TABLE 20.3

		Capacity			
Items	Basis of revision	50%	75%	100%	125%
Foreman	To remain fixed irrespective of capacity level	600	600	600	600
Asstt. Foremen	Beyond 100% of normal capacity two Asstt. Foremen will be required.	400	400	400	800
Inspectors	Being a semi-variable step cost, 5,7,8 and 9 Inspectors will be required for respective capacity levels.	650	910	1,040	1,170
Shop Labourers	Being 100% variable	400	600	800	1,000
Machinery repairs	Increase being more than proportionate due to increased load on machines.	1,000	1600	2,300	3,100
Defective Works	Being more than proportionate increase due to the effect of factors such as strain, fatigue etc. after 100% capacity.	250	375	500	650
Consumable Stores	Being 100% variable	200	300	400	500
Machines Depreciation	Being 75% variable due to wear and tear 25% fixed due to effluxion of time	1,100	1512	1,925	2,337

Over time Bonus	Being payable to reach and exceed 100% capacity level due to factors such as accident absenteeism of the workers etc.	-	-	600	2,200
	Total Rs.	4,600	6297	8,565	12,357

Illustration 2: Prepare Flexible Budget at 60%, 80% and 100% production capacity from the following information relating to XYZ Limited.

TABLE 20.4

Fixed Expenses	*Rs.*
Management salaries	63,000
Rent, Rates & Taxes	42,000
Depreciation	52,500
Miscellaneous office expenses	66,750
	2,24,250
Semi-variable expenses 50% capacity	
Maintenance Expenses	18,750
Indirect Labour	74,250
Salesmen's Salaries	21,750
Miscellaneous Expenses	19,500
	1,34,250
Variable expenses at 50% capacity	
Materials	1,80,000
Labour	1,92,000
Commission to Salesmen	28,500
	4,00,500

It should be noted that the semi-variable expenses remain constant between 40% and 70%. They increase by 10% of the above figures between 70% and 85% capacity and increase by 15% of the above figures between 85% and 100% capacity. Sales figures are as follows:

Capacity	Sales value
60%	7,65,000
80%	10,20,000
100%	12,75,000

There are no opening and closing stocks.

PLANNING AND BUDGET

Modern management problems is noted for its complexity. Hence, managerial tools have come up with development that have been known as scientific management. The effect of this is seen that all business manager have started making plans that one kind of organisation cannot be said to exist and are able to provide its objectives to be achieved. They are working without any direction and hence can't be said to be an organisation. Hence, planning is quite necessary to deal with modern business conditions.

There is difference in planning of all managers. Some may apply intuition, while others write on rough papers, while some others give it in quantitative way in an orderly form and systematic manner. Thus,

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TABLE 20.4A

XYZ Ltd. Flexible Budget

Particulars	*Level of Activity*								
	60%			*80%*			*100%*		
	Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*
Sales			7,65,000			10,20,000			12,75,000
Variable Expenses									
Materials	2,16,000			2,88,000			3,60,000		
Labour	2,30,400			3,07,300			3,84,000		
Commission to Salesman	34,200	4,80,600		45,600	6,40,800		57,000	8,01,000	
Semivariable Expenses									
Maintanance Expenses	18,750			20,625			21,563		
Indirect Labour	74,250			81,675			85,388		
Salesman Salaries	21,750			23,925			25,012		
Misc Expenses	19,500	1,34,250		21,450	1,47,675		22,425	1,54,388	
Fixed Expenses									
Management Salaries	63,000			63,000			63,000		
Rent, Rate, Taxes	42,000			42,000			42,000		
Depreciation	52,500			52,500			52,500		
Misc. Office Exp.	66,750	2,24,250	8,39,100	66,750	2,24,250	10,12,725	66,750	2,24,250	11,79,638
Total Cost Profit (Lose)			(74100)			(7275)			95362

it is what we call Taylorism or Scientific Management or as Fayol has adopted the methods of fixing performance standard. This can be applied to the whole field of activity of the enterprise.

All these together form a plan or budget giving the directions and indications for future management, and given the standard that can yield the actual results as expected. Budgetary control has been introduced into the system as a means aimed at the comparison of the actual outcome with budgeted figures and the analysis of deviations.

Concept of Budgets and Budgetary Control

Budget is expressed as a firm's plan in financial form for a future period. It is a future estimate calculated for a definite period. It gives income for a given period and cost with expenses to get this income with control over losses.

The system of business budgets has been said as a 'predetermined detailed plan of action developed and distributed as a guide to current operation and as a partial basis for subsequent evaluation of performance'.

Thus, budget system is a plan and control and hence, includes budgetary control. The budgetary control has been defined by the International Management Institutes Conference on Budgetary Control held at Geneva in 1930 as:

"An exact and rigorous analysis of the past and the probable and desired future experience with a view to substituting considered intention for opportunism in management".

Hence, budget is concerned with policy making while budgetary control results from the implementation of that policy. According to others "Budgetary control" is a system of controlling costs which includes the preparation of budgets, co-ordinating the departments and establishing the responsibilities, comparing actual performance with that of budget and acting upon results to achieve maximum profitability.

Nature of Budget and Budgetary Control

A business budget is a plan including all phases of operations for a definite period in future. It is formal expression of polices, plans, objectives and goals laid down in advance by top management for the undertaking as a whole and for every subdivision thereof. So, there is an overall budget for the unit composed of numerous sub-budgets in the form of departmental and divisional budgets which, in turn, are generally broken down to still smaller subdivisions consistent with organisational subdivisions. The budget expresses revenue goals in the sales budget and expense limitation in expense budgets that must be attained in order to realise the desired net income objective. Again, budget expresses plans relative to items like inventory revels, capital additions, cash requirements, financing, production plans, purchasing plans, labour requirements, etc.

Budgetary control is gained through operational plan which is the budget. It includes, besides matching of estimated expenses with probable income, checking of the forecast figures by comparing actual results and failure is the responsibility of the person incharge. Timely checking of incomes, costs and expenses come under the administration of budget that is the outcome of budgetary control.

Budget constitutes the financial document. Now, it is related to devising a co-ordinated programme of operation, giving an effective means of communication among managerial personnel. Hence, there is an increasing trend towards extending business budgets to include planning, co-ordinating and controlling of the whole operations of a business.

Budgets encourage cogent thinking and help in the avoidance of vague generalisations as all executives concerned have to quantify plans to examine their feasibility in terms of profit potential.

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Objectives of Budgets and Budgetary Control

(i) To smooth out seasonal variations in production by developing new fill-in products and so accomplishing a phase of economic planning.
(ii) To conform with good business practice by planning for the future.
(iii) To co-ordinate the various divisions of a business, namely production, marketing, financial and administrative divisions, by consultation among the divisional heads and mutual agreement on company policies.
(iv) To operate most efficiently the divisions, departments and cost centres of a plant.
(v) To establish divisional and departmental responsibilities.
(vi) To provide a method of measurement of operating activities and financial position both where standards are and are not used.
(vii) To provide more definite assurance of earning the proper return on capital invested.
(viii) To prevent waste, to reduce expenses and to obtain the income desired.
(ix) To aid in obtaining better inventory control and turnover.
(x) To aid in controlling cash.
(xi) To centralise management control.
(xii) To achieve a more economical use of capital.
(xiii) To show management where action is needed to remedy a situation.
(xiv) To ensure that sufficient working capital is available for the efficient operation of the business.

Advantages of Budget and Budgetary Control

(i) The reduction is seasonal variation in production, brought about by the budgets, decreases the cost of production by increasing volume.
(ii) Advance planning inherent in the budgets is looked upon with favour by credit agencies showing sound management.
(iii) Co-ordination of the main division of a concern makes for smoother operation and less internal friction that results in the achievement of the budget goal.
(iv) Efficient operation of the whole unit depends upon all employees working towards a common goal which is ensured by the budget.
(v) Establishment of divisional and departmental responsibilities prevents 'buck-passing' when the budget figures are not achieved.
(vi) The forecast of operations and financial conditions sets a goal to 'shoot for' and becomes a basis for dynamic action rather than historical cost system's post mortems.
(vii) The use of budget figures as measurements of operating performance and financial position makes possible the adoption of standard cost principle in divisions other than the production division.
(viii) The desired earning on a given investment of capital sets up a profit point objective which is the logical basis to be used in working out the estimated sales volume.
(ix) The purchase of stores is based upon predetermined requirements for raw materials and this helps to prevent stock shortage as well as excessive purchases.
(x) The budgets serve as stimuli to meet pre-determined goals for both incomes and expenses thereby achieving desired profits or reducing existing losses.
(xi) The budget of cash expenditures and cash receipts makes it possible for the financial management to forecast their need for credit and arrange for it in advance.

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(xii) The centralisation of budgetary control over all divisions and departments helps in carrying out a uniform policy without the disadvantage of an authoritarian type of business organisation.

(xiii) The forecast of sales enables the management to work out the economic balance between plant and machinery, storage, warehouse and inventories.

(xiv) As goals are set up for being attained and achievements of failures are revealed only with reference to these goals, results can be viewed objectively with minimum of personal prejudice.

Because of these benefits, budgets and budgetary control have the way for the most effective use of productive resources employed in the business. Again, as costs are kept to a minimum, and performance is to be continuously improved, financial resources would be needed most advantageously.

In this context, budgetary control is no longer regarded as a dispensable luxury, which only a few large profitable companies can afford, and a realisation is gradually dawning upon enlightened managements that it is absolutely essential in modern complex business conditions. Still, every budgetary control system does not bestow all the advantage shown above–some systems are more efficient than others.

Classification of Budgets

The following basis of classification are currently in use:

1. Classification according to time factor.
2. Functional classification
3. Classification according to flexibility factor.

Here, we will deal with each of those classification in short.

1. Classification According to Time Factor Under this budgets acquire the following three types:

(i) Long-term budgets. Long-term stands for a period of 5 to 10 years. Here, the budgets are planned for operations covering the period ranging between 5-10 years. They are in the form of physical quantities.

(ii) Short-term budgets. This involves the short periods of a year or two and are in the form of production plan in monetary terms.

(iii) Current budgets. They can be said to be short-term budgets and cover a period of shortest term say a month or so and are adjusted to current conditions or prevailing circumstances.

Within the scope of short-term budgets at times there are quarterly plans which are prepared by recasting it for a still shorter period on the basis of performance of immediate past. In a way, these quarterly budgets are meant to be an elaboration of the annual budget.

2. Functional Classification Functional budgets are those whose number depends on the size and nature of the business. The usual functional budgets of business are:

(i) Sales budget. It is a forecast of total sales classified to groups of products, salesman and geographic locations.

(ii) Selling and distribution cost budget. This is concerned with the estimate of the cost of selling and distribution of goods.

(iii) Production budget. This is a forecast based on sales, productive capacity and requirements of inventories.

(iv) Production cost budget. This is concerned with the cost of production including direct material cost, direct labour cost and expenses-fixed, variable and semi-variable.

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(v) Purchase budget. Correlated with sales forecast and production planning, it is related with purchases that are needed for planned production. Purchases would include both direct and indirect materials and goods.

(vi) Personnel budget. This refers to the utilisation of men and would include labour employed in productive activity. This would be split up between direct and indirect labour.

(vii) Research budget. This is concerned with the improvement in the quality of the products or research for new products.

(viii) Cash budget. This is a sum-total of the needs of cash in respect of various functional budgets and anticipated cash receipts.

(ix) Plant utilisation budget. This is meant to cover the plant and machinery needs to meet the budgeted production during the period. Schedules will be produced showing the available load in each department expressed in standard hours or units.

(x) Office and administration budget. This budget depicts cost of all administrative expense like managing director's salary, staff salaries and expense of office management including lighting and cleaning.

(xi) Capital budget. It is a forecast of outlay on fixed assets as also of the sources of capital needed. The budget period in the case of capital budget may differ from that of other budgets as expenditure is always planned a number of years in advance.

(xii) Master budget. The ultimate integration of separate budgets by the accountant provides the master budget that consists of estimated profit and loss account for the future period and an estimated balance sheet at the end thereof.

3. Classification According to Flexibility

(i) Fixed budget. Herein targets are strictly fixed. Such budgets are mostly prepared from one to three months in advance of the fiscal year to which they are applicable. In this way twelve months or more may pass before figures forecast for the December budget are used to measure actual performance. Many things may happen during the intervening period and they may make the figures go widely out of line with the actual figures.

Though it is true that a fixed or static budget can be revised whenever the necessity is felt, it smacks of rigidity and artificiality so far as control over costs and expenses are concerned. Such budgets are preferred only where sales can be forecasted with the greatest of accuracy that means, in turn, that the costs and expenses in relation to sales can be quite accurately ascertained.

(ii) Flexible budget. The figures used in this form of cost and expense budget are made adaptable to any given set of operating conditions within any month of fiscal year. The figures range from the lowest to the highest probable percentages of operating activity in relation to the standard operating performance.

From this viewpoint, a flexible budget prepared for an expense group can be used for the entire fiscal year or as long as there is no need of material changes in the standards.

In this way, the flexible budget possesses a distinct advantage over the static budget, particularly where it is difficult to forecast sales, costs and expenses with any great degree of accuracy.

Limitations of Budgets and Budgeting Control

(i) Budget plan is based on estimates. No accurateness can be achieved by the forecasting and budgeting. The adequacy depends on accuracy with which estimates are made. If the budgeted figures are removed from reality, very little purpose will be served by them. The fact of the budget being based on estimates must be kept in view while interpreting the results thereof.

(ii) Danger of rigidity. Because budgets are the preparation of quantification of all relevant data, there is tendency to attach some sort of finality to budget figures but, as they are meant to deal with business conditions that are constantly changing, they would lose much of their usefulness if they acquire rigidity. Hence, it is essential that budgeting programme must be continuously adopted to changing conditions in and off a business unit.

(iii) Impersonal approach. At times, it is thought that the introduction of the budget system is alone sufficient to ensure its success and to guarantee future profits. After the preparation of budget, it is necessary that the energies and efforts of the entire organisation are harnessed for the realisation of budgetary goods. In this connection, it must be always kept in view that budgeting can never be more than a perfect way of observing results, to show more closely and quickly than any other system as to how far more rationalisation is necessary, it is not rationalisation in itself. In this way, it constitutes only an impersonal approach to the conduct of business activity and has to be supplemented with proper management and administration.

(iv) Prohibitive cost. It is clearly common to find that the budgetary system becomes too heavy and costly to that extent that small concerns cannot afford to adopt it. Still, it is essential that there must be some correlation between the cost of system and the benefits obtained from it.

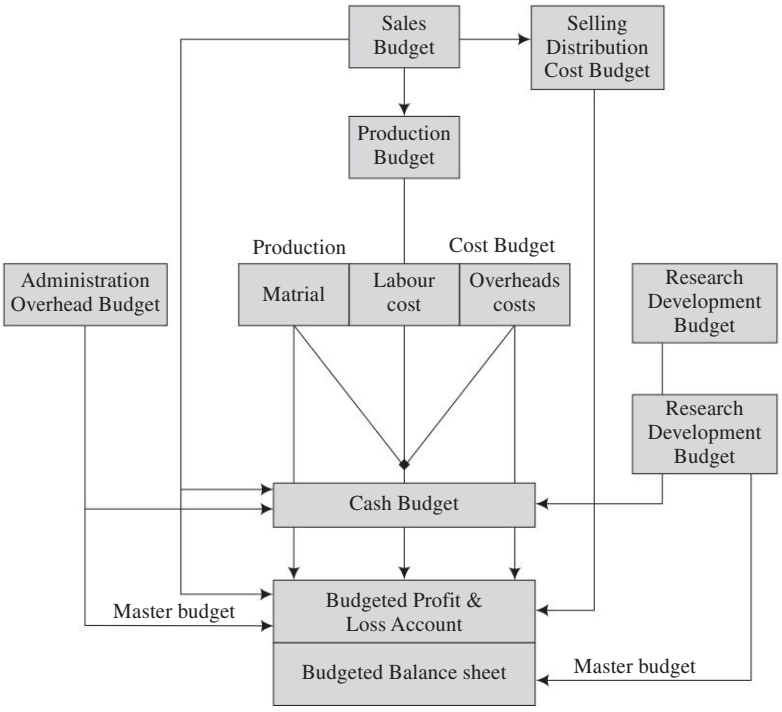


FIG 20.1 Budgeting Framework

Essentials for Effective Budgeting

(i) Support of top management: If the budget programme needs to be successful, it must have the full support of every member of management, the impetus and direction must come from the

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top. This needs commitment of top management to the budget idea as well as to the principles, policies and philosophy underlying it.

(ii) Clearly defined organisation: In order to carry out budgeting in a manner that will give maximum benefits, organisation within the business is essential. There should be a sound plan with responsibilities, well- defined and sufficiently maintained. Further, records should be clear, consistently departmentalised and established in such a manner that will show definite responsibility on each unit or section of the business.

(iii) Accurate accounting system: In the business, system of accounting should be such as to hold each part of the organisation to its responsibilities. The budget fosters co – ordinated action and wherever this is broken down or inteferred with, the responsible factor should be unmistakably revealed. The Accounting System should make it possible to establish such responsibility beyond doubt.

(iv) Unambiguous policy: A budget programme is always based on certain fundamentals, the collection of which is called the policy of the business. Naturally, therefore, no programme can be prepared without the knowledge of the business policy to be adopted during the period covered by the budgets. In its absence any attempt to make estimate for the current year would be an exercise in the dark and is bound to affect usefulness for future.

(v) Preparation by responsible executives: Subject to the natural control of the budget personnel and the chief executive, arrangements should be made to ensure the participation of those entrusted with the performance of the budget in the formulation of budget proposals. Such an approach would guarantee to a certain extent, the proper implementation of the programme contained in the budget.

(vi) Logical sequence in the budget preparation: It is needed that proper procedures should be evolved for the preparation, submission, examination and review of budget figures in logical order. Budget preparation is often exacting and demands much careful thought and attention on the part of the entire staff of business unit engaged in the compilation of the various figures.

(vii) Constant Vigilance: An effective system of budgetary control needs that provision must be made for comparison of budgeted and actual result at frequent intervals. As soon as unfavourable trends are detected, immediate action should be taken to remedy them.

(viii) Continuous budget education: A needful condition for the success of budgeting is that it must be able to sustain the interest of those who shoulder the responsibility of putting budget proposals into effect. This needs continuous 'budget education' which is concerned with briefing the employees of the undertaking on the objectives, potentials and techniques of budgeting as well as making them understand its uses and limitations.

(ix) A degree of flexibility: It is always desirable to provide for both possible and unforeseen circumstances. In fact control is increased and strengthened through the provision of an arrangement whereby differences are automatically catered for, as in flexible budget rather than an amendment to the budget plan as would be necessary in the case of fixed budget.

The preliminary production budget is prepared simultaneously with preliminary sales budget. The personnel compiling the production budget will assume a pattern of demand for the finished product.

Normally, this pattern will be based on previous requirements of the selling department though major alterations in sale policy will also be taken into account.

The objectives of production budget are:

(i) To bring to a common focus all the factors necessary to establish policies and to determine operations.
(ii) To project these established policies into the future by an analysis of past performances.
(iii) To plan and control the operations being carried out to implement policies decided upon.
(iv) To make provision for materials at right time and place.
(v) To plan the sequence of operations required for economical production.
(vi) To co-ordinate the various aspects of factory operation so as to make them a vital link in the chain of profitable programme.

The Preparation of Production Budget Involves the Following Steps

(i) Recasting of Sales budgets: As Sales budgets are typically classified according to product line and sales territory, it is required to recombine these planned sales figures on a basis that will allow determination of physical input requirements. Generally, this means product output needs for individual plants or productive facilities.
(ii) Production Analysis: Herein, production is broken down into its ultimate parts.
(iii) Scheduling: This fits the various processes into a general time-table to permit orders to be manufactured according to the needs based upon the selling estimates.
(iv) Despatching: This means the movement of materials and stores from the place they are initially deposited to the first process and thereafter from one process to another.
(v) Inspection: It is planned to exercise control over the quality of the product to prevent further work on spoiled parts, to ensure that payment is made in respect of satisfactory work only to find and locate faults in machines and to maintain a satisfactory standard of accuracy.

The production budget includes units of output labour hours and material requirements. Yearly plans for production costs, purchases manpower and costs of goods sold, are all derived from the physical production budget that determines the real production level by taking into account deviation from planned sales and inventory levels. Besides, normal loss in many process industries has to be reckoned in estimating production requirements.

Example

TABLE 20.5 Jai Nicco Limited

Production Budget
(2004-2005)

	Products units		
	A	*B*	*C*
Estimated Sales	4,87,000	3,65,000	5,00,000
Add stock to be maintained on 30-6-78	13,000	35,000	35,000
Total	5,00,000	4,00,000	5,35,000
Less estimated quantity of opening stock	20,000	30,000	35,000
Estimate of production	4,80,000	3,70,000	5,00,000

Raw Materials Budget

Each product to be manufactured will have a formula or design and a raw materials specification. On the basis of these specifications, the quantity of raw material per product would be multiplied with the

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quantity estimated to be produced to give the total quantities of raw materials required. These material quantities would then be converted into money amounts by multiplying quantities with estimated unit prices of raw materials.

The objectives served by the materials budget are:

(i) To give information regarding the stock position.
(ii) To enable estimates to be made of the total quantity of all materials required for production.
(iii) To arrive at the costs of the various raw materials.
(iv) To provide the purchasing department with the data for formulating purchase programme.

Example

TABLE 20.6 Jai Kishen Limited

Material Budget
(2004-2005)

Products	*Units to be produced*	*OP (Kg)*	*QR (kg)*	*ST (kg)*
A	6,00,000	1,00,000	2,00,000	3,00,000
B	5,00,000	1,25,000	1,50,000	1,00,000
C	6,50,000	2,00,000	1,00,000	1,50,000
Total required quantity		4,25,000	4,50,000	5,50,000
Price per kg				
Material cost in Rs.		Rs. 2	Re. 1	50.p.
		8,50,000	4,50,000	2,75,000

Purchases Budget

Arising from the materials budget, it shows the starting point of the purchase programme inasmuch as it sets the dimensions of such a programme that also involves initiation of action to accomplish the same.

After determining the quantities of different types of raw materials required, preparation of purchase budget entails further adjustments arising from raw materials, stock policies and contracts already placed. In this way, where the stocks of raw materials are to be reduced, the quantities to be purchased will be less than the quantities of materials needed by the production budget while opposite will be the case if stocks are to be increased. Again, the possibility of procuring materials requirements from internal sources, as in the case of spares, has also to be concerned.

Example

TABLE 20.7 Khushiram Limited

Purchase Budget
(2004-2005)

Particulars	*AB*	*BC*	*CD*
Estimated consumption	9,20,000	2,90,000	5,45,000
Add Stock needed on 30-6-78	30,000	10,000	5,000
Total requirements	9,50,000	3,00,000	5,50,000
Less estimated stock on 1st July, 1977	50,000	1,00,000	50,000
Quantity to be Purchased	9,00,000	2,00,000	5,00,000
Price per kg. (estimated)	Rs. 2	Re.1	50 P
Estimated cost of purchase of materials	Rs.18,0,000	2,00,000	2,50,000

Factory Overhead Budget

This budget shows the forecast of all production overheads that have to be divided– variable expenses, semi – variable expenses and fixed overheads. Variable and semi – variable expenses will change with the level of activity, and fixed overheads may also change, when there is a necessity to increase the size of the factory or the number or size of the machines included therein.

A factory consists of production and service departments. A production department is one in which actual productive operations are performed. Service departments are those ancillary to the production departments and are made to facilitate the manufacture of products at the factory. Each item of expense should be individually considered and charged to the appropriate department in which it arises. The overheads apportioned to the service department are totaled and allocated to the production departments on an agreed basis that will be determined by the use made by each production department of the services available.

Whether the production departmental charges are allocated to products or operations in the department will depend upon the wishes of management.

Each item of expenditure must be the express responsibility of a particular individual. The statement showing the allocation made to him must distinguish between those expenses that he can and those which he cannot control.

While budgeting factory overheads for a future period, management must consider the level of activity to be attained so that variable and semi – variable expense can be forecasted accurately as well as the effect of external influences and variations in expenses as a result of capital expenditure or factory re-organisation can be measured.

Productive machines refers to machines in various departments and does not include cost office machines.

Allocate repairs, insurance and cleaning materials of productive machines and boilers in proportion to their depreciation.

The floor space of the factory building is occupied by various departments.

The boiler houses gives power for productive machines to various departments, besides space, heating and lighting. Power is also consumed by various departments.

The services of the cost office are to be charged to various departments.

TABLE 20.8

Factory Costs
(for 12 weeks ended 31st Dec.2007)

Indirect wages	*Rs.*	*Rs.*
Department X	25,320	
Department Y	14,780	40,100
Boiler men's wage	2,100	
Cost office salaries	2,500	
Depreciation:		
Productive machines		
Department X	1,000	
Department Y	1,000	
Boilers	600	

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Cost office machines	400	
Buildings	500	
	3,500	
Repairs:		
Productive machines & boilers	6,500	
Cost office machines	175	
Buildings	2,000	
	8,675	
Rent of factory	1,500	
Rates of factory	1,200	
Insurance		
Productive machines	700	
Buildings	300	1,000
	60,575	
Coral and water	1,425	
Printing & stationery		200
Cleaning material		
Productive machinery & boilers	400	
Buildings	650	1,050
		63,250

Cash Budget

It is a detailed estimate for some future period of time of cash inflows all sources, cash disbursements for all purposes and the resultant cash balances.

The period of cash budget much coincides with the periods for which other budgets, specially master budget, are prepared as cash budget is mostly dependent on information contained in other budgets. A break-down in terms of weeks, months and other time periods is provided within the broad framework of the budget period.

Though cash budget is derived from other budgets, it is a bit different in nature from most of them. It plays a very important role in the financial management of a modern business cash undertaking specially those conducting business operations on a large scale, of course its value is greater in some cases than in others.

(i) It is always a valuable adjunct to other budgetary statements.

(ii) It is useful to the borrower inasmuch as it enables him to ascertain his cash position to ensure prompt payments of debts on maturity dates without adversely affecting cash resources for trading purposes.

(iii) It enables to determine the quantum and the timing of and the period for which surplus funds can be loaned out or invested in some other way or used for expansion.

(iv) Good cash budgeting can help in increasing the volume of business without any corresponding increase in working capital by facilitating the flow of cash.

In this way, cash budget is extremely useful as a tool-planning for new borrowings or replacement of existing debt for dividend payments for cash outlays for capital expenditures, for any cash flow. As it is

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based on estimates, the position shown by it is bound to be uncertain to an extent depending upon the budget period being neared to or farther from the present.

Construction of Cash Budget The preparation of cash budget is simple with a complete system of budgetary control as most of the information needed for the preparation of cash budget is contained in the budgets that precede its formulation.

In case a business is satisfied to confine its system of budgetary control to cash, fixed assets budgets preparation would become a little more involved due to the fact that the information usually contained in various operating budgets under a comprehensive budgetary system will have to be somehow assembled, and this is likely to prove difficult owing to the absence of detailed budgeting.

There are three methods usually used in preparation of cash budget. These methods are:

(i) Receipts and Payments Method.
(ii) Adjusted Profit and Loss Method.
(iii) Balance Sheet Method.

Representing different approaches to the preparation of cash budget, the first method is found useful over short periods while the other two methods are generally used over long periods.

(i) The Receipts and Payments Method. This method is akin to the preparation of receipts and payments account with the only difference that while the former relates to a future period, the latter is concerned with a past period. In this way, it is quite simple and easy to understand and apply.

The method involves the following steps:

(a) Estimating cash receipts. The details of cash receipts from sales, accounts receivables, income from investments if any, sales of assets, accounts receivables, income from investments if any, sales of assets and investments, probable borrowing will have to be anticipated and brought into cash budget-delay in cash receipts to be taken into for making estimates.
(b) Estimating cash requirements. Cash expenditures as found in materials, labour, various overheads and miscellaneous expense budgets and capital expenditure budget have to be transferred to the cash budget. In this connection, lags in payments have to be considered.
(c) Exclusion of adjustments and accruals. Seeing the fact that the method is based on the concept of cash accounting accruals, adjustments obviously cannot find place in the preparation of cash budget.

The closing balance of cash in hand for the budget period will be found by adding the expected cash receipts to the opening balance of cash and deducting them from anticipated cash payments.

As customers are given one month credit the amount of credit sales realised during a month is the amount of such sales of the previous month.

In view of the fact that the period of credit allowed by suppliers is two months, payment made for credit purchases in a month is the amount of such purchases of two months back.

Owing to the one month delay in the payment of all expenses, wages as well as office and selling expenses paid during a month are those of previous month.

Manufacturing expenses paid during the month have been adjusted by bringing forward one-half of these expenses of the preceding month and carrying over one-half of these expenses of the current month to the next month.

TABLE 20.9 Khusiram Ltd.

Cash Budget
(for the quarter ended 31st Jully, 2007)

Receipts:	*May* *Rs.*	*June* *Rs.*	*July* *RS.*
Opening balance	5,000	15,000	12,000
Sales	67,000	65,000	48,000
Total	72,000	80,000	60,000
Payments:			
Purchases	25,000	20,000	22,000
Wages	5,000	4,000	5,500
Manufacturing expenses	3,000	2,000	5,500
Office expenses	1,200	1,000	1,100
Selling expenses	4,000	3,000	3,500
Advance Tax	-	6,000	-
Delivery of plant	-	6,000	-
Total	38,200	36,000	36,100
Cash available (Closing balance)	33,800	44,000	33,900

(ii) Adjusted Profit and Loss Method: The method is named so due to the fact that it converts the figure of profit based on accrual accounting into a cash figure, thereby necessitating the adjustment of profit and loss account in respect of all those items of income and expenses that do not respectively involve outflow of cash.

The opening cash balance with the anticipated increases or decreases in current assets and liabilities, provision for depreciation, special receipts and the net profit for the year before taxation and appropriations. From the aggregate amount of these are deducted the estimated taxation and dividends to be said, expenditure on fixed assets and special payments, if any. The outcoming balance is the estimated cash in hand at the end of the budget period. In this way, the alternative method of the preparation of cash budget is also known as cash flow statement.

The method in concept is more abstruse than the simple receipts and payments method. The vital point of difference between receipts and payments method and adjusted profit and loss method is that the former takes into account only cash transactions while the latter takes non – items as it reverses all accruals.

Again, adjusted profit and loss method gives only a broad structure of the cash position, but receipts and payments method furnishes the maximum possible details. Hence, adjusted profit and loss method is mostly used when management thinks long – term plans, and is interested in the cash position without much concern for minute particulars of income and expenditure.

Example:

TABLE 20.10

Cash Budget – Adjusted Profit and Loss
(for the budget period ended 31st Dec.,2007)

	Rs.	*Rs.*
Opening balance of cash		25,000
Add: additions to cash:		
Issue of share capital	40,000	
Sale of plant	20,000	
Sale of investments	15,000	
Depreciation written back	25,000	
Loss on sale of plant	5,000	
Increase in creditors	35,000	
Profit of the year	1,65,000	3,05,000
		3,25,000
Less reduction in cash:		
Redemption of debentures		25,000
Purchase of plant		75,000
Payment of dividend	15,000	
Profit on Sales investments taken back	3,000	
Increase in Stock	30,000	
Increase in debtors	35,000	
	1,83,000	
Closing balance of cash	1,42,500	

(iii) Balance Sheet Method: This method prepares a cash budget or cash forecast, a forecast balance sheet is prepared as at the end of the budget period with all the items of assets and liabilities except cash balance that is then arrived at as a balancing figure. The magnitude of the two sides of the balance sheet excluding cash balance sheet excluding cash balance would determine whether the bank account would show a debit or credit balance, i.e, cash balance of bank or bank overdraft.

In this way, the method very much resembles the adjusted profit and loss method in mechanics and broad approach with the only difference that, while cash balance is calculated by preparing a cash flow statement under the adjusted profit and loss method, the same is computed as a balancing figure under the balance sheet method.

Sales Budget

Concept: It forgets what the business can reasonably accept to sell to its customers during the budget period, including within its fold both the sales qualities and the sales revenue; sales budget shows the income side of the planning budget.

Rationale: The company earns profits only when it is able to sell its products and not when it produces them. It is useless to produce goods if they are not to be sold and it has a limited demand.

In certain businesses, it is needful to establish that the product will sell even before it is produced. It is only during boom times, when a company has full order book, that sales budget loses its prime importance. In normal periods of keen competition, the sales forecast must be realistic.

Need for accuracy: A reasonable accuracy is mostly hard to get in sales budget, but it is imperative owing to the dependence of other budgets on sales budget.

In case the degree of accuracy is not large, some of the other predetermined figures, specially the production estimates will be based on wrong premises which may have serious results for the business. The need for accuracy has speeded the abandonment of the method, formerly very popular, of arriving at next year's figures by adding an arbitary percentage to the current year's result. Such a method is surely simple but has little else to recommend it.

No method will provide accuracy but reasonably correct forecasts are much more likely to result through market research and analysis and use of this knowledge to the individual circumstances of a particular business.

The preparation of sales budget is always difficult even in cases where much experience has been gained by carrying out work over a number of years. Through such factors as experience, and wise judgement, a knowledge of market trends and business conditions are of utmost help, they have to be used with great care and sometimes, even these, are useless due to the development and operation of circumstances as well as events that were impossible of prediction at the time sales estimates were made.

Information of Sales Budget It is true without doubt that past can provide experience and information that will be of help in estimating present and future results, but care must be taken in presenting past facts to management, so that incorrect conclusions may not be drawn from that. If consecutive three year's sales tell constancy of Rs.1,00,000 a year, it may be predicted the same amount for the forecasting year, but such conclusions may be misleading if there is continuous inflation. The sales statement can be made more informative if it can show units sold as well as their monetary value as such:

TABLE 20.11

Year	*Sale Value Rupees*	*Units sold*
2004	15,000	1,500
2005	15,000	1,000
2006	15,000	900

If the fourth year shows inflation and the quantity sold continues to decline, the sale value for that year would show a serious decline.

Sales statistics and market research: To help the accurate preparation of sales budget, some large businesses create expert statistical and market research departments.

Market research is the study of problems relating to the sale of goods and services by a business. It will involve the analysis of sale figures and other information within the business and a consideration of probable likes and dislikes of the customer. Such concerns are, however, in a minority.

While each business will need figures special to itself, the under mentioned matters must be considered.

(i) Whether the geographical scope of the business is local, national.

(ii) The main clientele – if it is one industry or trade, one group of industries or trades, a section of the general public or the general public.

(iii) The number and types of products dealt in and their individual popularity with customers.

(iv) The main influences on the volume and value of sales of each product or category, distinguishing between external influences and those within the business.

(v) Current sales and marketing policy.

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From the aforementioned basic information, up-to date statistics will be compiled covering the following:

(i) The sales made by the business and by its competitors in each geographical area served, and a comparison of the two sets of figures.
(ii) The total sales by competitors of products similar to those of the business outside the geographical area served.
(iii) If the business's share of trade with an industry is increasing or decreasing.
(iv) The trend in the sales of the business compared with the trend of the sales of the industry to which that business belongs.
(v) Where possible, the trend of sales to customers compared with the trend in sales in the industry to which the customers are thriving businesses and will continue to require the products at present sold to them.
(vi) The trend of sales of business analysed as to product or group of products.
(vii) Details of forward sales contract.
(viii) The movements of population wherever relevant.
(ix) Details of seasonal fluctuations in sales.
(x) Trend of sales in each area compared with the trend in other areas to determine in which area the greatest effort should be made by the sales staff.

Degree of Probability: On the basis of the statistics compiled as given above, it will be possible to estimate the probable sales in future period, and net probability of sales for that period. In compiling the forecast for sales, three factors must be considered:

(i) Stable business as a consequence of:
  (a) contracts already placed,
  (b) repeat business from old customers.
(ii) Unstable business, as a consequence of:
  (a) windfalls in current period,
  (b) anticipated repeat business as a result of sales in the budget period to new customers.
(iii) Sales expansion or contraction as a consequence of:
  (a) The trend of customer's trade, as a reduction in the number of new cars purchased by customers will affect the manufacture of motor spare parts.
  (b) The trend of customer demand for existing products sold, as preference of customers for chocolate-coated ices rather than plain ices.
  (c) The seasonal fluctuations in sales.
  (d) Political decisions on the economic trends in the country as new sales taxes, increasing unemployment.
  (e) Selling in new territories or discontinuing sales in a geographical area.
  (f) Introducing new or discontinuing sales of existing products or varying the style or type of existing products.
  (g) Increased or decreased expenses on advertising and sales promotion.

Sales Expansion Programme: A long-term forecast will have to make provision for any intended expansion in sales. Still, only the sales anticipated to be attained, should be included in the budget. Each forecast must be carefully examined to confirm the facts on which it is based. Naturally, there will be differences of opinion about the conclusions that can be drawn from such facts.

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The accountant will establish the degree of reliability to be expected from each forecaster and this will be done on the basis of experience. To avoid unreasonable optimism or pessimism, every forecaster must be told that real performance will be measured against the forecast. This comparison can show errors in budgets.

Preparation of Sales Budget The organisation of the sales department will ascertain the detailed planning of the sales budget. Generally, personnel at all levels will be involved but different grades will be concerned with different aspects of the problem. Those concerned will probably include sales representatives, area and divisional sales managers, the sales managers and the accountant. Each will, ultimately be responsible for carrying out his share of the plan.

Assuming that the organisation of the department is on the usual pattern, i.e. sales manager, divisional sales managers, area sales managers and salesman, each salesman will estimate the sales he can do in the budget period distinguishing between products.

He will forward his forecast to his area manager who will collate all such forecasts from his area. After carefully considering each forecast, the area manager will prepare his area budget and forward it to divisional sales manager.

Thus, the sales budget will be built from the bottom and not from the top. While preparing his budget, each salesman will consider some or all of the factors needed to estimate the probable sales in the future period. (see table on page – 43)

On the other hand, the sales manager may know of facts or influences which will affect the business as a whole and which are not known to individual salesman. He must, hence, inform his divisional sales managers, who will instruct their area sales managers, of variations that are to be made to the salesmen's budgets as a result of these factors. Likewise, if a new line is to be introduced, the divisional and area sales managers and salesman must be informed.

The management agrees in principle that the price changes should be put through. Accordingly, estimates based on price changes and on reports from salesman are prepared by divisional sales managers.

The company follows the practice of preparing sales budget that highlights, apart from the budgetary figures for the next period, the budget sales and the actual sales for the current period.

Selling and Distribution Cost Budget

This budget is the forecast of all costs incurred in selling and distributing the company's products during the budget period.

It is closely connected with the sales budget inasmuch as it is mainly based on the volume of sales projected for the period. Still, the fact must be kept in view that expenses may be thought over during the budget period that will have no effect on sales until a future budget period. An advertising campaign may be launched this year which will have no immediate effect, but should influence sales in future.

Normally, the sales manager is responsible for the preparation of the selling and distribution cost budget. Still, he will co-operate with the sales office manager, distribution manager and the advertising manager or the advertising agents. Advertising is regularly becoming an increasingly important and costly item in selling-cost budgets. So much so that some companies now prepare an advertising budget. The point can be illustrated by the instance of a company which has in the recent past spent Rs.100 million a year on advertising and publicity and it is expected that the figure will increase in future.

The work regarding the preparation of selling and distribution cost budget is simplified, if it is broken down in the following four parts:

(a) Direct Selling Expenses.
(b) Distribution Expenses
(c) Cost of Sales office
(d) Publicity Expenditure.

(a) Direct Selling Expenses While preparing the budget, following points must be thought over.

(i) The scope of the representation, e.g. a planned expansion or contraction of the geographical area served may involve variations in the number of travelers and in traveling expenses.
(ii) The basis of remuneration of travelers as whether travellers are remunerated by a commission or sales only or receive a fixed salary and commission.
(iii) The changes in the basis of remuneration to gives an incentive to sell particular products.
(iv) The appointment of agents and their remuneration under their agreements.
(v) The effect of anticipated changes in the volume and value of sales as where installe' commission is based on units sold, an increase in budgeted sales in units will result in an increase in installe' commission.
(vi) The effect of seasonal changes where the majority of annual sales are made in certain months of the year, the expenditure or commission to travelers may be heavier in those months.

(b) Distribution Expense These expenses are incurred either in the storage of finished products to enable orders to be swiftly fulfilled or after a sale to a customer has been made. While preparing the budget the following considerations must be kept in view:

(i) Expenditure on rent, rates, wages, insurance in connection with necessary warehouses.
(ii) Handling costs that may be affected by changes in the products sold, where these will require a variation in the method of handling.
(iii) Transport costs having regard to the geographical pattern of sales.
(iv) External influences on transport costs as increase in rail freight charges.
(v) Type of transport used as own motor vehicles, or those of outside contractors.

Cost of Sales Office The expenditure on salaries of staff, rent, rates, light and heat of the sales office, stationery, postage will be budgeted. Such expenditures will not change with sales to the same extent as direct selling and distribution expenses. A change in the value of sales does not always represent an increase or decrease in the number of transactions as each transaction may have a higher value. However, major alterations in the number of transactions will affect the number of staff needed with all its concomitants.

Publicity Expenditure Generally, the total expenditure on publicity is fixed by management as a matter of policy. Mostly, the type of advertising and expenditure thereon, is laid down as press, window displays, posters, exhibition, television.

Example: The sales department of Northland Ltd., is divided into three divisions and each division is further subdivided into three areas North, South and West.

The actual expenses in respect of selling expenses of a division in the last budget period was thus:
Selling Expenses for the year ending 31st March 2006

TABLE 20.12

Description of expenses	*Area*			
	East	*West*	*South*	*Total*
Direct Selling Expenses				
Representatives Salaries and Commission	7,000	6,000	8,000	21,000
Representatives expenses	4,000	3,500	4,500	12,000
Distribution expenses				
Carriage outward	2,000	2,500	3,500	8,000
Warehousing wages	6,000	6,500	7,500	20,000
Warehouse general expenses	3,000	3,500	4,500	11,000
Sales Office				
Salaries	4,500	4,500	8,000	17,000
Rent, Rates, Light, heat	2,000	1,500	5,000	8,500
Miscellaneous expenses	500	400	600	1,500
Publicity				
Advertising contracts	8,000	12,000	11,000	31,000
Total	37,000	40,400	52,600	1,30,000

During the next budget period ending on 31st March, 2007, the changes to be provided for, are as follows:

(i) As a result of increased turnover, the representatives commission in each area is to be increased.

(ii) On the formation of new area of North, the transfer of experienced respresentative from other area will result in transfer of amount in respect of his salary and commission.

(iii) Representative's expenses in the North area will be more.

(iv) On a variation in the pattern of sales, the expenditure for carriage outward will rise. Total cost in North area is anticipated more.

(v) Sales office salaries will increase.

(vi) In respect of rent, rates, light and heat of sales office some amount is transferred to North.

(vii) Miscellaneous expenses will rise.

(viii) Advertising costs will cost an additional burden.

(ix) Besides the above warehouse wages, Advertising contracts, warehouse general expenses and miscellaneous expenses are to be charged from the new area.

Thus, the selling expenses budget is to be prepared for the next budget period ending 31st March, 2007.

The sales expenses budget refers to only a division, a similar budget can also be prepared for the business as a whole, substituting divisions for the areas.

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TABLE 20.13 Sales Expenses Budget

(For the period ending 31st March, 2006)

Description of expenses	*Area*				
	East Rs.	*South Rs.*	*West Rs.*	*North Rs.*	*Total Rs.*
Direct Selling Expenses					
Representatives Salaries and Commission	8,000	10,000	11,000	12,000	41,000
Representatives expenses	4,000	5,000	5,500	6,000	20,500
Distribution expenses					
Carriage outward	2,500	2,600	2,700	2,800	10,600
Warehousing wages	6,000	6,500	7,000	8,000	27,500
Warehouse General expenses	2,000	2,400	3,200	2,200	8,900
Sales Office					
Salaries	4,500	5,000	6,000	7,000	22,500
Rent, Rates, Light, heat	1,400	1,500	1,600	1,700	6,200
Miscellaneous expenses	600	700	800	900	3,000
Publicity		8,000		7,000	
Advertising contracts	6,000		9,000		30,000
Total	35,000	41,700	45,900	47,600	1,70,200

BUDGETARY CONTROL ORGANISATION

In view of the fact that budgets and budgetary control are not only accounting exercises, but as well as a tool of management at all levels, it is essential for the system of budgetary control to be effectively organised, and this is possible in case the system is laid out on the following lines:

(i) Installation of budget centres. A budget centre is situated within the four corners of the concern and is defined as such from the viewpoint of budgetary control. It must be clearly delimited as a separate budget has to be set installed with the aid of the head of the department concerned.

Production manager has to be consulted for the preparation of production budget and finance manager for cash budget. Budget centres are also numbered under mechanised accounting system.

(i) Provision of appropriate Accounting records. A chart of accounts similar to the budget centres should be maintained in order that the accounting system may be in a position to record and analyse information needed for the operation of the feedback.

(ii) Arrangement for general instruction in technique. This indicates the educational aspect of the Budgetary Control System and is meant for all those who are concerned with operating the same. All the personnel connected with budgets must be well-known with the targets fixed individually for them and with the overall budgetary goods so that they may be conscious of their role in the accomplishment of the targets.

(iii) Preparation of organisation chart. This shows the functional responsibilities of each member of the management team thereby making it possible for him to know his position in the organisation hierarchy as also his relationship to other members.

(vi) Establishment of Budget Committee. One person is appointed as in charge of budgetary arrangement in small size businesses, but provision is made for consulting the Manager or the Managing Director or some other high–placed executive on any special problems that may come up in respect of various budgeting aspects.

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It has become a custom in large organisation to appoint a Budget Committee, so that it would comprise the Managing Director or the Manager as a chairman, the managers of various departments and one more person, commonly known as Budget Officer, who carries out the administrative work of the budget. Though individual circumstances affect the real composition of the committee, it has often been found advisable to include other officials, such as the advertising manager, the chief engineer, to be purchasing agent.

Every member of the committee will prepare his own initial budget or budgets that will then be considered by the committee for being co-ordinated. This, usually needs a number of changes in individual budgets before they could be integrated within a logical framework.

The Main Functions of the Budget Committee are

(i) To lay down general policies of management in relation to the budgetary system.
(ii) To issue broad directions in connection with budget requirements, dates for the receipt of budgets.
(iii) To furnish historical data to help managers in forecasting.
(iv) To make available the advice, if asked for, in the preparation of budgets.
(v) To receive and scrutinise budgets.
(vi) To suggest lines of revision and amendment to outlets submitted.
(vii) To accord final approval to budget.
(viii) To formulate the master budget after the functional budgets have been cleared.
(ix) To prepare budget summaries wherever necessary.
(x) To keep track of deviations of actual results from those budgeted.
(xi) To recommend corrective action, if and when required.
(xii) To co-ordinate the budgetary programme.

The chief duties of the Budget Director or Budget Officer are fundamentally the same, regardless of his title or position in the enterprises. These duties are as thus:

(i) To arrange for all meetings of the Budget Committee.
(ii) To arrange the preliminary programme for the compilation of the various budgets.
(iii) To see that any and every information, likely to be essential or of help in budget preparation, is available and that such information is passed to the proper person.
(iv) To prepare schedules showing when each of the estimate will be required and to collect the estimates on the due dates.
(v) To accumulate preliminary budget data in worksheet and schedule form.
(vi) To co-ordinate the preliminary budget data of all divisions and departments.
(vii) To prepare revised budget schedules.
(viii) Setting up daily, weekly or monthly budget reports with budget figures only.
(ix) To review the periodic budget reports after the actual figures have been inserted therein.
(x) To obtain detailed explanations, where these are needed of any important variations between the estimated and actual results
(xi) To confer with the divisional and departmental executives with respect to the results shown in periodic budget reports.
(xii) To discuss and think with the Board of Directors or other immediate head, with respect to the polices to be issued as a result of review and interpretation of the budget reports.

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Preparation of Budget Manual: As the budgetary system gets into stride, it becomes essential to systematise the procedure for the preparation of various budgets. Generally, the practice is to arrange this by means of a budget manual which has been described by the Institute of Cost and Works Accountants, London as "a document which sets out the responsibilities of persons engaged in the routine of, and the forms and records required for budgetary control".

Prepared and maintained, usually in a loose leaf form to easily make possible alternations as and when required, such a manual would include such matters as the following:

(i) An outline of the functions of various individuals who are responsible for any portion of the preparation of any budget.
(ii) A statement of the steps in the preparation of the sales budget including its submission, review, approval and final adoption.
(iii) The various matters connected with the preparation of the production budget and the materials and purchase budgets.
(vi) The preparation of budgetary functions in relation to such matters as labour, materials and expenses,
(v) The preparation of departmental expense budgets.
(vi) The preparation and development of the plant and equipment budget.
(vii) The formulation and thorough examination of the financial budget.
(viii) The preparation of final statements, together with the procedure to be followed in their submission, review and approval.
(ix) Accounts code in use.
(x) Determination of the 'Key Factor'. Key factor shows some powerful influence which so dominates business operation as to present obstacles in the achievement of the ambitions contained in the functional budgets. Hence, it becomes necessary to assess its impact right in the beginning of the budgetary process.

This is also known as 'limiting' or 'governing' or 'principal budget factor'. The Key Factor serves as the starting point for the preparation of the budget. After the Key Factor is determined, the relevant budget is first prepared and integrated with other budgets after being reconciled. It is possible that there may be two or more limiting factors at the same time. Under such conditions, the budget preparation has to reckon the relative impact of these factors which is done with the help of graphs, linear programming, and operations research.

Though sales are, generally the Key Factor, other factors of production, like materials, labour, equipment, management may also become the key factor.

Following are the key factors that can possibly affect budgeting:

(a) Sales

(i) Shortage of talented and experienced salesmen.
(ii) Weak market demand or consumer's resistance.
(iii) Inadequate advertising due to paucity of funds.

(b) Materials

(i) Availability of supply.
(ii) Constraints arising from licences, quotas

(c) Plant and equipment

(i) Limited capacity due to lack of capital.

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(ii) Insufficient capacity due to shortage of supply
(iii) Inadequate capacity due to shortage of space
(iv) Bottleneck in certain key processes

(d) Management

(i) Overall paucity of capital.
(ii) Limited availability of experts – technical and managerial
(iii) Flagging research effort in respect of methods of production, product design.

(e) Labour

(i) Shortage of labour in absolute terms
(ii) Shortage in relative terms i.e.in certain fields only.

However, the Key Factor does not constitute a permanent constraint on business operation and it is possible for management to reduce it not to overcome completely, the effect of the Key Factor by a number of devices which depend on the precise nature of the Key Factor.

The application of the principle of governing factor will produce the net probability or level of attainment. The net probability for any product is the maximum number that can be produced or sold as a result of the governing factor. This can be shown as follows:

Assuming the governing factors, the products P to T are as shown, the statement setting out the net probability for each product would appear as follows:

TABLE 20.14

Products	*Units*	*Sales* *Governing factor*	*Units*	*Production* *Governing factor*
P	1,000	Customer demand	5,000	Plant capacity
Q	8,000	Policy-only sold in Bombay, Nagpur, Andhra, Karnataka	10,000	Raw material Supply
R	6,000	Customer demand	5,000	Plant capacity
S	4,000	Customer demand	2,000	Skilled labour availability
T	2,000	Policy-only meant for export as purchase Tax means negligible sales in India.	1,500	Capital available to finance purchase of special plant necessary in manufacturing for export trade.

TABLE 20.15 Statement of Net Probabilities of Products P to T

Products	*Sales*	*Production*	*Net Probability*
P	1,000	5,000	1,000
Q	8,000	10,000	8,000
R	6,000	5,000	5,000
S	4,000	2,000	2,000
T	2,000	1,500	1,500

Laying down level of activity. It is essential to establish the normal level of activity, i.e. the level the company can reasonably be expected to achieve. This will be decided by the management after taking into consideration the prospects of improving the net probability of a product. This level of activity is important in planning production for material and labour requirements as well as production overheads that are to be recovered on the basis of machine hour rates.

Budget period. One of the pre-conditions to the actual preparation of the budget is to determine the length of period for which the budget is to formulated. Under the static budget plan, the budget period is usually the fiscal year.

The budget is prepared for one year as a master budget, it is then subdivided into quarters and, in turn, each quarter is broken down into its respective three separate months. A budget prepared for lesser period of time negates one of the fundamental characteristics of budgeting, namely, long-period planning of sales and production with its accompanying benefits.

However, a budget prepared for a longer period of time than one year cannot be very accurate as it is impossible to forecast sales owing to the uncertainly of business cycle over a longer period of time. These are instances where static budget is prepared for every quarter and, in some cases, for only one month in advance so as to enable more accurate budgeting than is possible over a longer period of one year. Where flexible budget are used, the budget period is one year as such.

Flexible budget is a budget that is designed to change in accordance with the level of activity, actually achieved. The Institute of Cost and Works Accountants of England defines Flexible budget as "A budget that is not designed to remain unchanged irrespective of the level of activity attained".

This is in contrast to fixed budgetary control because a fixed budget has been defined as " a budget designed to remain unchanged irrespective of the level of activity actually attained".

In fixed budgetary control, the budgets are prepared for one level of output, a level which has been carefully planned to equate sales and production at the most profitable rate. If the level of output actually attained differs sufficiently from the budget, large deviations are sure to result. There are cases where it is extremely difficult to forecast sales even with a reasonable change of success and consequently, the budget becomes uncertain.

Such uncertainty does not arise because of lack of management policy but due to outside and uncontrollable factors. Occasions when a firm forecast of future cannot be made include the following:

(i) Where sales, by the nature of the business, are dependent upon external influences as luxury trades dependent on political decisions.

(ii) Where the venture or an aspect of it, is so entirely new that public reaction cannot be prejudged as businesses selling fashion products.

(iii) Where violent fluctuations are probable according to the season or the weather as in business selling soft drinks raincoats, etc.

(iv) Where labour supply is unpredictable, as contracting business.

In this way, it is clear that above three factors relate to uncertainly coming out of customer demand. In these circumstances, sales volume is the governing factor in the budget. As a consequence of uncertain future, the flexible budget has to show management's intentions and expectations for a number of situations. This is fully against the usual budget that defines the future plan to one foreseeable set of circumstances.

Underlying Principle. The idea of a flexible budget is that there shall be some standard of expenditure for varying levels of output.

Flexible budgetary control has been developed with the objective of changing the budget figures progressively to correspond with the actual output achieved. In this way, a budget might be prepared for each level of activity.

Some companies operate flexible budget side by side with a fixed budget. A business with a steady production run, but seasonal and uncertain sales, might conveniently operate a flexible budget for sales and a fixed budget for production. There can be cases of a company having monthly flexible budgets but a fixed annual budget to permit variations in the monthly budget period.

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Preparation. In a system of flexible budgetary control, a series of fixed budgets is set for each manufacturing budget centre, so that, within limits, whatever the level of output reached, it can be compared with an appropriate budget.

The preparation of flexible budgets necessitates the analysis of all overheads into fixed, semi-variable and variable costs. The analysis is not a peculiar feature of flexible budgeting alone but it is more important to fully carry out such analysis in flexible budgeting rather than in fixed budgets. This is so because varying levels of output have to be considered and they would have a different impact on each class of overhead.

The fixed expenses tend to remain unaffected by variations in the volume of output or sales, semi-variable expenses will change with, but not proportionately, change in output or sales, variable overheads will vary directly with alterations in output or sales. When a fixed budget is prepared, the amounts of variable and semi-variable expenses included therein are computed for a single level of activity. A flexible budget requires, precisely the same technique of assessment but for several different levels. Hence, it is necessary that the sums included for variable and semi-variable expenses must be adjusted for each level of activity.

The work necessary to install a flexible budget for a large departmentalised concern can be considerable. Hence, it should be based on durable terms as hours, quantities that should be converted into money, only where necessary, so that there is no need for amending the budget at frequent intervals for variations in prices. A flexible budget can be used while the physical circumstances on which it is based remain constant. As a variation in the quantity produced and sold may not be the sole factor involved, a separate flexible budget may be prepared for every manufacturing or selling pattern which might occur.

Meaning of Sales Forecasting, Steps Involved

In most cases, sales forecast is the starting point of the budgeting process. Sales forecast is the basis for the successful working of any system of budgeting and production of planning and control. We know that sales demand (or the quantity of the company's products which can be sold in the market) is the principal budget factor and the whole budgetary control system revolves around this factor. Hence, the sales forecast is the most important aspect.

After this background, let us know what is meant by sales forecast. It is concerned with probable sales (both in quantities and in values) for a future budget period. (i.e forecast of sales). It forecasts the probable sales.

There are various methods to be employed for forecasting the sales. However, the selection of any method should be done after considering the nature of the product. The methods of distribution, the size of the business, and the degree of competition, etc. Generally, there should be a combination of all the methods to obtain the best results. These methods are briefly explained under the head steps involved in sales forecasting.

Steps Involved in Sales Forecasting

Following are the steps involved in sales forecasting:

Methods to be employed for Forecasting Sales :

Past Sales In this case, future trend of sales is determined with the help of analysis of past sales for a number of years. This method may be adopted after careful consideration of all the factors affecting the trend of sales.

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Opinions of Salesmen and Sales Manager Under this method, salesmen, branch managers, area managers and the sales director, all of them contribute to the sales forecast.

Salesmen is given past sales figures for each product and are required to give their own estimates of sales. A forecast statement drawn up in columnar form is given to each salesmen. This statement shows the past performance figures for each product sold and also average figures for last certain years. The statement also includes one blank column for the salesman to insert his estimated figures. The specimen form is given below for general information.

ABC Limited
Sales Forecast For year ending .....
Sales Area .....

Salesman .....

TABLE 20.16

Product	*Estimate for year (units)*	*Units sold Last year*	*Average for three years*
X at standard Price Rs…	-	-	-
Y at standard Price Rs…	-	-	-
Z at standard Price Rs…	-	-	-
Sundries (Value)			

Similarly, branch managers and area managers are asked to give their own, estimates of sales.

After this, the statistical department of the concern makes a summary of probable sales which is generally analysed by products, areas and sales territories. This summary, after preparation, is submitted to the sales director. Then comes the step of establishing the prices.

The sales director, the budget controller and other executives establish the standard prices of the products. The prices so established may be subject to the approval of the budget committee. Impact of factors affecting sales is studied at this stage. For example, a change in the company policy may affect the sales forecast and may, therefore, require a modification in sales forecast. We shall mention the factors affecting sales forecast later on.

After establishing the prices, the most appropriate sales-mixture (Having regard to the optimum level of operations) is selected. In other words, the sales mixture which will maximise the profits is selected.

The last step in the evaluation of the sales forecast. In other words, the quantities of sales are multiplied by the standard prices established. Sales forecast then becomes sales budget.
(Here, it should be noted that this last step i.e evaluation of the sales forecast is taken only after the finalisation thereof, i.e after modification (if any) of the sales forecast and its approval by the budget committee).

Analysis of the Potential Market Medium size and large size concerns may have their own statistical and market research departments. These departments study the problems relating to the sale of goods and services by business. In some cases, an outside specialist may be employed by such concerns for collection and analysis of the relevant data.

The information may thus be collected with the help of market research and statistical techniques.

Degree of Probability In the preceding section, we studied the various methods employed for forecasting the sales. In actual practice, a combination of methods will be employed. Anyhow, the concern should employ the most appropriate method. The accountant will establish the degree of reliability to be expected from each forecaster. This require deep experience. On account of reducing or increasing trend

of production, as well as customers' demand, seasonal fluctuations in sales, new market and products, publicity, etc., a long-term forecast should, no doubt, provide for any unexpected sales expansion or contraction. Stability or otherwise of a business should also be considered. After proper consideration of all such factors, conclusions should be drawn. Moreover, the actual performance should also be measured against the forecast to find out the errors (if any) in forecasting.

Organisation There should be proper organisation for preparing the sales budget. It is the sales department that determines the planning of the sales budget. As we have seen earlier, the Salesmen, branch managers, area managers, sales director, accountant – all these personnel are associated with the preparation of sales budget. This shows that sales forecast will be built up from the bottom (and not from the top). That is why, it is necessary to communicate to the sales men (through divisional and area managers), the factors affecting sales e.g introduction of a new design of the product, after sales service etc. After the knowledge of such factors (if any), the salesman takes a note thereof in his budget.

Factors to be Considered to Make an Accurate Sales Forecasts

There are various factors to be considered in this connection. Following is the summary of such factors.

Economic Factors Beyond the Control of the Concern

1. Nature of the commodity
2. Competition
3. Demand of the commodity
4. Changes in purchasing power
5. Import restrictions
6. Depression or inflationary state of economy
7. Changes in the overall economic situation and the national economic condition.

Social and Psychological Factors

1. Custom habits, religion of the section of the population forming the market
2. Change in fashion
3. Growth of population
4. Social status and pride
5. Change in the character of the population
6. Changes in income distribution in the community.

Other External Factors

1. Monsoon conditions
2. Specific festivals
3. Natural calamities such as flood, earthquake
4. Nature of the harvest
5. Drought
6. Major conflict among nations

Governmental Changes may also be Regarded as Considerable Factor. This may Include

1. Major controls and regulations by Government
2. Control of the distribution channel, rationing etc

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3. Control on capital issues and licensing
4. Fiscal and budgetary issues and licensing
5. Export restrictions
6. Regulations on the supply of raw materials
7. Compulsory export quota
8. Control on prices
9. Bonus and other compulsory social security measures.

The above factors are external factors and hence, are beyond the control of the undertaking.

Following is the list of the internal factors that can be controlled by the undertaking :

1. Pricing policy of the management
2. Quality of the product
3. Consumer satisfaction
4. Extent of installed and available capacities
5. Availability of raw materials, labour, technical skill and know-how
6. Competitive strength of the undertaking
7. Supply of capital investment for modernisation and expansion
8. Policy as regards product diversification and products mixture
9. Competition from substitutes and
10. Research renovation and development.

To conclude, all the above factors should be given due consideration to make an accurate sales forecast. Here, it is not out of place to write that due consideration of such factors should, no doubt, be supplemented by personal factors like the deep experience, judgement, etc. In the absence of deep experience, prudent judgement, the sales forecast (and then sales budget) will become more theoretical one (i.e far from reality).

Notes on Selling Costs Budget and Distribution Costs Budget

Both selling and distribution aspect are as important as the production aspect. The selling and distribution budget is the forecast of the selling costs and the distribution costs. These costs are directly related with the volume of sales.

Selling costs budget is the forecast of selling expenses. It includes variable and semi-variable selling costs like expenses relating to salesmen (e.g salaries, commission, telephones travelling, stationery, postage and other expenses incurred by the salesmen) bad debts and fixed expenses like salaries to sales staff, rent of sales office, rent of showrooms, depreciation of equipment, insurance and administration costs of sales office, etc.

Nature of each type of selling costs should be properly understood at the time of budgeting the selling costs. Generally, flexible budget is employed in this connection in order to know the selling costs at different volumes of sales. These costs should be pre-determined after due consideration of future as well as current conditions. Past experience should also be used as a guide. The future trend of sales with possible changes in conditions, if any, should be considered.

Budgeting of fixed selling costs, does not create any difficulty unless changes occur in prices, rates or company's policy, fixed costs remain the same at the same level. But, variable selling costs should be predetermined with careful considerations. Such costs may be pre-determined as a percentage on sales and/or on the basis for calculation of the variable element. For example, advertisement cost may be predetermined as a percentage on sales and/or on the basis of number of catalogues, postage expenses may

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be budgeted on the basis of fixed sum per salesman or per customer, commission to salesmen units sold, salaries of salesman on the basis of fixed sum per salesman or salesman-day, travelling expenses on the basis of rate per kilometre and so on.

Selling Costs budget also includes the advertising expenses. A separate budget for advertising expenses (called advertisement cost budget) may also be prepared. If separate budget for advertising cost is prepared, then the total figure from this budget should be transferred to the selling costs budget.

Distribution costs are the costs incurred to make the finished product reach the consumer. These costs, thus, include transportation costs, storage and warehousing costs. If the concern has its own vehicles then all the standing costs like administration costs, licenses, insurance, crew's wages, depreciation, etc., relating to vehicles and all the running costs like fuel, oil, tyres, repairs and maintenance should be pre-determined for the purpose of distribution costs budget, similarly included in the other category of distribution costs, are the storage and warehousing costs. These include management and clerical staff salaries, depreciation of equipment, power, light rent of warehouse, repairs, maintenance, wages, stationary, insurance etc.

Both types of distribution costs should be classified in the fixed and variable costs. Such a procedure facilitates pre-determination.

Fixed costs of distribution, like fixed selling costs, do not create any difficulty. But variable costs of distribution should be pre-determined carefully. There are various factors which should be given due consideration while budgeting variable distribution costs. Such factors are nature of expense, use of external transport or own transport vehicles, forms of transport, the place from which the goods are to be dispatched (i.e a factory warehouse, or depot or other sources) conditions under which a vehicle operates (i.e long journey, short journey), handling of the vehicles.

Distribution Costs Budget, like Selling Costs Budget, should also be prepared with the element of flexibility. In other words, there should be flexible budget for distribution costs in order to know the distribution costs at different volumes of sales.

Preparation of both these budgets is the responsibility of the Sales Manager. Some concern prepare only one budget covering both selling costs and distribution costs. Such budget is called selling and distribution costs Budget.

Illustration 1: Given below is the selling expenses budget for the period ended 31st March, 2006.

TABLE 20.17

Particulars	*Area 1 Rs.*	*Area 2 Rs.*	*Area 3 Rs.*	*Area 4 Rs.*
Direct selling expenses				
Commission and salaries to salesmen	16,000	16,000	28,000	60,000
Other Expenses	10,000	8,000	16,000	34,000
Sales Office Expenses :				
Salaries	8,000	8,000	20,000	36,000
Rent, Rates, Light	3,000	2,000	9,000	14,000
Sundry Expenses	600	400	2,000	3,000
Distribution				
Expenses				
Carriage Expenses	5,000	7,000	4,000	16,000
Warehousing Expenses	22,000	14,000	42,000	78,000
Advertising Expenses	14,000	26,000	20,000	60,000
Total	78,600	81,400	1,41,000	3,01,000

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During the ensuing budget period (ended 31st March 2007), the changes allowed are as follows:

The Sales Manager decided to sell the product of the concern in a new area NO.4 . You are given the following information relating to Area No.4

1. The transfer of a salesman from Area No.3 will result in a transfer of Rs. 7,200 in his salary and commission.
2. Salaries and commission to other new salesman are estimated at Rs.28,800
3. Other expenses are estimated at Rs. 10,000
4. Other direct selling expenses are estimated at Rs. 20,000
5. Sales office salaries are estimated at Rs. 6,000 while rent, rates and light expenses are estimated at Rs. 1,000 and sundry expenses are estimated at Rs. 1,000.
6. Warehousing expenses are anticipated at Rs.30,000 and Advertising expenses at Rs.20,000

TABLE 20.18 Increase in the expenses to be incurred for Areas No.1, 2 and 3 are estimated as below:

Expenses	*Area No.1*	*Area No.2*	*Area No.3*
Commission and salaries to salesmen	2,000	2,000	2,000
Carriage Expenses	400	400	800
Sales Office Salaries	800	800	2,000
Sundry Expenses	200	200	200
Advertising Expenses	-	-	8,000

Prepare the selling expenses budget for the ensuing period.

Sales Expenses Budget

For the period ended 31st March 2007.

TABLE 20.19

Particulars	*Area*				*Total*
	No.1	*No.2*	*No.3*	*No.4*	
Direct selling expenses					
Commission and salaries to salesmen	18,000	18,000	22,800	36,000	94,800
Other Expenses	10,000	8,000	16,000	20,000	54,000
Sales Office Expenses :					
Salaries	8,800	8,800	22,000	6,000	45,600
Rent, Rates, Light	3,000	2,000	9,000	1,000	15,000
Sundry Expenses	800	600	2,200	1,000	4,600
Distribution Expenses					
Carriage Expenses	5,400	7,400	4,800	10,000	27,600
Warehousing Expenses	22,000	14,000	42,000	30,000	1,08,000
Advertising Expenses	14,000	26,000	28,000	20,000	88,000
Total	82,000	84,800	1,46,800	1,24,000	4,37,600

Illustration 2: ACE Distribution Ltd., has three sales divisions at Bombay, Delhi, and Calcutta. It sells two products – Product A and Product B. The budgeted sales for the year ending 31st December 2006, at each place are given below:

Bombay : Product A 10,000 units @ Rs.8 each
Product A 70,000 units @ Rs.5 each
Delhi : Product A 110,000 units @ Rs.5 each
Calcutta : Product A 150,000 units @ Rs.8 each

The actual sales during the same period were as follows

Bombay : Product A 125,000 units @ Rs.8 each
Product A 75,000 units @ Rs.5 each
Delhi : Product A 125,000 units @ Rs.5 each
Calcutta : Product A 155,000 units @ Rs.8 each

From the reports of the sales personnel, it was considered that the sales budget for the year ending 31st December 2006, would be higher than 2005 budget in the following aspects.

Bombay : Product A 8,000 units
Product A 5,000 units
Delhi : Product A 13,000 units
Calcutta : Product A 10,000 units

Intensive sales compaign in Delhi and Calcutta is expected to result in additional sales of 25,000 units of product A in Delhi and 18,000 units of Product B in Calcutta.

Illustration 3: The following is the information regarding the budgeted and actual production cost for the six months ending 31st October 2005.

TABLE 20.20

Units Produced		40,000		50,000
	Budget		Actual	
	Units	Amount	Units	Amount
Materials consumed	45,000	1,35,000	55,000	1,90,000
Wages at 3 hrs per unit at Rs.1.50 per hour		1,80,000		2,45,000
Variable overheads at Rs.2 per unit		80,000		1,25,000
Fixed overheads		75,000		1,00,000
	4,70,000		6,60,000	

During the period:

i. Production is expected to increase upto 60,000 units.
ii. The price of the materials are expected to increase further in the same manner as they had increased over the budget price.
iii. Labour charges are expected to increase by 50 paise per hour above the actual rates shown above, though efficiency is expected to decline by 20%
iv. Loss of materials is expected to be unaffected.
v. Fixed overheads are expected to increase by 20%
vi. Variable overheads are expected to increase by 10%

You are required to prepare a production cost budget for the six months ending 30th June 2005.

Production Cost Budget for the Six Months Ending 30th June 2005.

TABLE 20.21

Estimated units of production	*Units*	*60,000 Budget Amount*
Materials consumed	65,000	2,54,150
Wages at 3.6 hrs per unit at Rs.2.13 per hour		4,60,080
Variable overheads at Rs.2.75 per unit		1,65,000
Fixed overheads at Rs.2.40 per unit		1,44,000
		10,23,230

Working Notes:

1. Materials Consumed:
   Price to increase in the same manner as had increased over the budgeted price.
   Budget price Rs.3/- Actual Rs.3.50 Rs.1,90,000/55,000 = 3.454
   Per unit per hour Say, Rs.3.50
   Percentage increase is 11.75%
   Rs.3.50 per unit will increase @11.7% to Rs.3.91
   Total cost of 65,000 units = 65,000 × Rs.3.91 = Rs.2,54,150.
2. Wages:
   a. To increase at 50 paise per hour more than actual rate
   b. Efficiency to decrease by 20%
   Instead of 3 hours per unit, 3.6 hours will be required.
   Total hours is 60,000 × 3.6 hours – 2,16,000 hours.
   Actual rate is Rs.2,45,000/1,50,000hrs = Rs.1.63
   Rate applicable is Rs.1.63 + 50 paise = Rs.2.13.
   Total cost of wages is 2,16,000 hrs × 2.13 = 4,60,080.
   Variable overheads: to increase by 10%
   Actual rate is 1,25,000/50,000 = Rs.2.50 p.
   10% of Rs.2.50 = 25 paise
   Rate applicable is Rs.2,50 + 25 paise i.c Rs.2.75 per unit
   Total cost on 60,000 units is 60,000 × Rs.2.75 = Rs.1,65,000
   Fixed Overheads : to increase by 20%
   Present rate is Rs.2,00,000/50,000 = Rs.2
   20% OF Rs.2 is 40 paise.
   Rate applicable is Rs.2 + 40 paise = Rs.2.40 per unit
   Total cost on 60,000 units is 60,000 × 2.40 = Rs.1,44,000.
   It is assumed that increase in the units of materials consumed would be 10,000 units following the trend shown in the problem.

Illustration 4: ACE Limited manufactures two products A and B. A forecast of the number of units to be sold in the first seven months of a year is given

TABLE 20.22

	Product A	*Product B*
January	1,000	2,800
February	1,200	2,800
March	1,600	2,400
April	2,000	2,000
May	2,400	2,600
June	2,400	1,600
July	2,000	1,800

It is anticipated that,

i. there will be no work in progress at the end of any month

ii. finished units equal to half the sales for the next month will be in stock at the end of each month) including December of the previous year)

Budgeted production and production costs for te year ending 31st December are as follows

TABLE 20.23

	Product A	*Product B*
Production (Units)	22,000	24,000
Direct materials per unit	Rs.12.5	Rs.19
Direct wages per unit	Rs.4.5	Rs.7
Total factory overheads	66,000	96,000

Prepare for the 6 months period ending 30th June of the year, a production budget for each month and a summarised production cost budget for the year.

Production budget for 6 months period ending 30th June (in units)

TABLE 20.24

	Jan	*Feb.*	*Mar.*	*April.*	*May*	*June*
ProductA	1100	1400	1800	2200	2400	2200
Product B	2800	2200	2200	2300	2100	1700

Working notes for Product A : January production estimates is arrived at as follows:

No. of units to be sold	1000
+ Stock at ½ months sales of Feb	600
	1600
–Opening stock at ½ months sales of Jan (Closing stock of December)	500
Required production	1100

Similarly, for product B for the month of January, it is arrived as follows:

No. of units to be sold	2800
+ Stock at ½ months sales of Feb	1400
	4200
–Opening stock of Jan	1400
Required production	2800

The production Budget units is cast on the basis of the above for rest of the months.

Product Cost Budget for the year

Production:

A-2200 (Given)

B-2400 (given)

TABLE 20.25

	Product A		*Product B*		
Direct materials cost	2,75,000	12.50	4,56,000	19.00	7,31,000
Direct wages	99,000	4.50	1,68,000	7.00	2,67,000
Prime cost	3,74,000	17.00	6,24,000	26.00	9,98,000
Factory overheads	66,000	3.00	96,000	4.00	1,62,000
Costs of Production	4,40,000	20.00	7,20,000	30.00	11,60,000

Note: The production cost budget is required for the year and hence, the full year's production is taken into account.

Illustration 5: National Products Limited wants to approach its bankers for temporary overdraft facility for the period 1st October 2005 to 31st December 2006. During the period of these three months, the company will be manufacturing mostly for stock. You are required to prepare cash budget for the above period from the following data indicating the overdrafts facility required by the company at the end of each month.

TABLE 20.26

	Sales Rs.	*Purchases Rs.*	*Wages Rs.*
August 2005	3,60,000	2,49,600	24,000
September 2005	3,84,000	2,88,000	28,000
October 2005	2,16,000	4,86,000	22,000
November 2005	3,48,000	4,92,000	20,000
December 2005	2,52,000	5,36,000	30,000

a. 50 percent of credit sales are realized in the month following sales and the remaining 50 percent in the second month following.
b. Creditors are paid in the month following the month of purchase.
c. Estimated cash at back as on 1st October 2005 Rs.50,000.

TABLE 20.27 Cash Budgets

	October	*November*	*December*	*Total*
Opening Balance (a)	50,000	1,12,000	6,000	50,000
Sales (received from debtors)	3,72,000	3,00,000	2,82,000	9,54,000
Bank Overdraft		1,00,000	2,40,000	3,40,000
Total Receipts (b)	3,72,000	4,00,000	5,22,000	12,94,000
Payment Purchases (Creditors)	2,88,000	4,86,000	4,92,000	12,66,000
Wages	22,000	20,000	30,000	72,000
Total Payments (c)	3,10,000	5,06,000	5,22,000	13,38,000
Balance [(a + b) – c]	1,12,000	6,000	6,000	6,000

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TABLE 20.28

Working	*Aug.*	*Sep.*	*Oct.*	*Nov.*	*Dec.*
Sales	3,60,000	3,84,000	2,16,000	3,48,000	2,52,000
50% realised in the month following sales	1,80,000	1,92,000	1,08,000	1,74,000	
50% realised in second month of		1,80,000	1,92,00	1,08,000	
Sales		3,72,000	3,00,000	2,82,000	

Creditors are paid in the month following the month of purchases, i.e September month's purchases paid for in the month of October.

Overdraft in November is Rs.94,000/- but overdraft is assumed for whole figure of Rs.1,00,000/- in the same manner overdrafts for December is Rs.2,40,000/-.

PLANNING FOR PROFIT-BUDGETS

Zero Base Budgeting

Zero base budgeting (ZBB) is new technique designed to revitalise budgeting. A company should not only make decisions about the proposed new programme, but it should also, from time to time, review the appropriateness of the existing programme. Such review is particularly done of such responsibility centres in which there is relatively high proportion of discretionary costs. Zero-base budgeting or review is one of the techniques of such an appraisal.

Zero base budgeting (or review) as the term suggests, examines a programme or function or responsibility from scratch. The reviewer proceeds on this assumption that nothing is to be allowed. The manager proposing the activity has, therefore, to prove that the activity is essential and the various amounts asked for, are really reasonable, taking into account the volume of activity. Nothing is allowed simply because it was being done or allowed in the past.

The following steps are involved in Zero-base budgeting:

(i) The determination of the objectives of budgeting. The objective may be to effect cost reduction in staff overheads or to analyse and drop the projects which do not fit in the organisational structure or which are not likely to help in achievement of the organisation's objectives, etc.

(ii) The determination of the extent to which the zero-base budgeting is to be introduced, ie. whether it has to be introduced in all areas of the organisation's activities or only in a few selected areas on trial basis.

(iii) The development of the decision units, that is, units regarding which cost-benefit analysis will be done to arrive at a decision whether they should be allowed to continue or should they be dropped. Each decision unit must be independent of all the other units so that if the cost analysis proves unfavourable, that unit can be dropped.

(iv) A decision package for each unit should be made. The decision package consists of answer to the following questions.

  (a) Is it necessary to perform that activity at all? If the answer is in the negative, there is no need of proceeding further.

  (b) How much has been the actual cost of the activity and what has been the actual benefit both in tangible as well as intangible forms?

(c) What should be the estimated cost of the level of activity and the estimated benefit from such activity?

(d) Should the activity be performed in the way in which it is being performed and what should be the cost?

(e) If the project or activity is dropped, can the unit be replaced by an outside agency or shelved altogether?

(f) After completing decision packages for each unit, the units are ranked according to the cost benefit analysis. Essential projects are, however, identified and given the highest ranks.

(g) The last stage is that of implementation of the decisions taken in the light of the study made. It involves accepting or finding of those projects which have a positive cost-benefit analysis or alternatively, the projects which meet the objectives of the organisation.

The above analysis shows that zero base budgeting is simply extension of the cost benefit analysis method to the area of the corporate budgeting. It can, therefore, be easily understood by all concerned.

KEY CONCEPTS

- Budget
- Budgeting
- Budgetary Control
- Budget Manual
- Budget Period
- Fixed Budget
- Flexible Budget
- Forecast
- Master Budget

REVIEW QUESTIONS

OBJECTIVE TYPE QUESTIONS

1. Which of the following is not the method of calculating the re-apportionment of costs of service departments into the production departments?
   a. The repeated distribution method b. The simultaneous equation method.
   c. The labor hour method. d. The direct method. e. The step method.
2. Absorption means
   a. Charging of overheads to cost centers
   b. Charging of overheads to cost units
   c. Writing off to profit and loss account
   d. Charging to the service departments fully
   e. Both (a) and (b) above.
3. When under-applied or over-applied, overhead is allocated among the three accounts work-in-process, finished goods, and cost of goods sold, this process is called.
   a. Applied cost of goods sold b. Proration c. Just-in-time costing
   d. Zero-based costing e. Overhead application.
4. Supplementary rates become useless when
   a. The management maintains actual historical costs for future comparisons
   b. The prices are fixed on cost plus basis
   c. The accounting period is fixed in order to avoid seasonal fluctuations in the overhead cost or level of activity

d. The amount of under or over absorbed overheads are not significant enough to justify the use of supplementary rates
e. Both (c) and (d) above.

5. A predetermined overhead rate is computed as
   a. Budgeted total expenses/Budgeted activity base
   b. Budgeted manufacturing overhead/Budgeted total expenses
   c. Budgeted manufacturing overhead/Budgeted non-manufacturing overhead
   d. Budgeted amount of activity base/ Budgeted manufacturing overhead
   e. Budgeted manufacturing overhead/ Budgeted amount of activity base.
6. Which of the following is/are shown on the debit side of the manufacturing overhead account?
   a. Actual manufacturing overhead incurred during the year
   b. Estimated manufacturing overhead during the year.
   c. Under absorption of overhead
   d. Both (b) and (c) above
   e. Both (a) and (c) above.
7. Departmental overhead rates are usually preferred to plant-wide overhead rates when
   a. Most of the overhead costs are fixed
   b. The activities of each of the various departments in the plant are not homogeneous
   c. All departments in the plant are heavily automated
   d. Most of the fixed overhead costs are uncontrollable
   e. Cost drivers, such as direct labor are the same overall process.
8. The rate which is used to carry-out adjustment for the difference between overheads incurred is known as:
   a. Blanket Rate b. Plant Wide Rate c. Single Rate
   d. Supplementary Rate e. Moving Average Rate.
9. The appropriate method for disposition of under-or over-applied factory overhead
   a. Is to adjust it to cost of goods sold
   b. Is to adjust it to work-in-progress
   c. Is to adjust it to finished goods inventory
   d. Both (a) and (b) above
   e. All of (a), (b) and (c) above.
10. The appropriate method for the disposition of under or over applied factory overhead
    a. Is to adjust it to cost of goods sold only
    b. Is to adjust it to work-in-process only
    c. Is to adjust it to cost
    d. Is to apportion to cost of goods sold and finished goods only
    e. Depends on the significance of the amount
11. Which of the following is not considered as common economic performance measurement?
    a. Return on investment b. Residual income c. Return on sales
    d. Customer satisfaction e. Return on investment and residual income
12. Which of the following statement is false in relation to budget?
    a. Direct labor budget represent direct labor requirements necessary to produce the types and quantities of output planned in the production budget
    b. An inventory budget can be prepared to find out the values of direct materials and finished inventory
    c. A fixed budget is a budget that is prepared for a range i.e. for more than one level of activity

d. A direct materials budget indicates the expected amount of direct materials required to produce the budgeted unit of finished good
e. Direct labor budget costs consist of wages paid to employees who are engaged directly in specific production output

13. The process of identifying appropriate cost drivers and their effects on production and service costs is called
a. Activity analysis b. Cost measurement c. Management audit
d. Cost behavior study e. Absorption costing

14. Full-cost price is defined as
a. The price usually based on absorption-costing
b. The price usually based on marginal-costing
c. The price in the open market
d. The price representing the cash flows of the supplying division plus the contribution to the supplying division from an outside sales
e. The price based on variable cost plus a lumpsum

15. Which of the following variance do/does not exist if only one type of raw materials used for producing finished product?
a. Material usage variance b. Material sub-usage variance c. Material Mixed variance
d. Material price variance e. Both (b) and (c) above

16. Which of the following is not a pricing model?
a. Fixed cost based pricing b. Full cost pricing c. Differential cost pricing
d. Return on investment based pricing e. Absorption cost based pricing

17. The difference between the budget amount and the best estimate is called
a. Variance b. Contingency provision c. Slack
d. Standard error e. Probability

18. Which of the following ignores the fixed cost for pricing purposes?
a. Mark up percentage pricing b. Full cost pricing c. Differential cost pricing
d. Return on investment based pricing e. Absorption cost based pricing

19. Under which of the following situation a market penetration pricing policy is appropriate?
a. If the demand of the product is highly elastic
b. If a product is new and different
c. If a product has a short-life cycle
d. If there is no possibility of economics of scale
e. If the demand for the product is inelastic

20. Which of the following statement is true regarding flexible budget?
a. It accommodates changes in the interest rate
b. It accommodates changes in the inflation rate
c. It accommodates changes in activity level
d. It is used to evaluate capacity use
e. It is a static budget that has been received for changes in prices

DESCRIPTIVE QUESTIONS

1. What can you put as the concept of budget and budgetary control?
2. What is the nature of budgets and budgetary control?
3. What are the objectives of budgets and budgetary control?
4. What can you count as the advantages of budgets and budgetary control.
5. What do you understand by budgetary control organisation?

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6. What is the establishment of Budget Committee?
7. What are the functions of the Budget Committee?
8. What are the duties of the Budget Officer?
9. In what way Budget Manual is prepared?
10. What are the inclusions of Budget Mannual?
11. How will you determine the 'Key factor'?
12. What are the key factors?
13. What do you understand by Budget period?
14. How will you classify budget?
15. What are the types of budgets according to time factor?
16. What are the functional classification of budgets?
17. How will you classify budgets according to flexibility factor?
18. "These budgets for tomorrow never work out just as planned, conditions always change, so why bother to make them"? Enumerate the points which you would make briefly, when confronted with arguments expressed in the above quotation.
19. What are the limitations of budgets and budgetary control?
20. What are the essentials for effective budgeting?
21. What do you know about production budget?
22. What are the objectives of production budget?
23. What are the steps for the preparations of production budget?
24. What do you mean by recosting of sales budget?
25. What is production analysis?
26. How will you prepare a cash budget?
27. What do you understand by construction of cash budget?
28. What is receipts and payments methods?
29. What do you know about profit and loss method?
30. How will you guide for a balance sheet method?
31. What do you understand by the term "Sales Forecast"? State briefly the procedures adopted in making such forecasts.
32. Describe in brief the modus operandi for the purpose of preparation of a sales forecast.
33. What do you understand by sales budget?
34. What is the concept of sales budget?
35. What do you know of rational of sales budget?
36. How will you get information for sales budget?
37. Why you can't have a reasonable degree of accuracy in sales budget?
38. How sales statistics and market research help in the accurate preparation of sales budget in large businesses?
39. What is the degree of probability in the sales budget?
40. What do you understand by sales expansion programme?
41. How can the sales budget be prepared?
42. What is the selling and distribution?
43. Write notes on:
    (a) Direct selling expenses.
    (b) Distribution expenses.
    (c) Cost of sales office

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(d) Publicity expenditure

44. What are direct selling expenses?
45. What do you know about distribution expenses?
46. What are cost of sales office and publicity expenditure?
47. What do you mean by flexible budget?
48. What is flexible budgetary control?
49. What is the concept of flexible budgetary control?
50. What is the underlying principle of a flexible budget?
51. How will you prepare a flexible budget?

PRACTICAL PROBLEMS

1. The expenditure in respect of selling prices in the last budget period of a company was :

TABLE 20.29

Particulars	*Ahmedabad*	*Rajkot*	*Surat*	*Total*
Commission on sales	1,500	1,200	1,400	4,100
Selling expenses	1,200	1,600	800	3,600
Warehouse expenses	1,400	1,500	1,300	4,200
Ware house wages	800	900	600	2,300
Salaries	700	800	500	2,000
Rent and rates	300	400	300	1,000
Advertising	400	500	200	1,100
	6,300	6,900	5,100	18,300

During the ensuing budget period, following changes are to be allowed :

1. commission in each area is to increased by 5%
2. Warehouse wages in cast of Ahmedabad and Surat will increase by 3%
3. Salaries will increase by Rs.50 , Rs.60 and Rs.40 for Ahmedabad, Rajkot and Surat respectively.
4. Rent in each area will increase by 5%
5. In Surat, advertisement expenses will increase by Rs.100.

You are required to prepare the selling expenses budget for the ensuing period.

2. Essex canning company Limited produces jams and sausages. The sales division prepared the following forecasts for the six month of the coming year:

TABLE 20.30

Jams:	*Number of cans*	*Sausages:*	*Number of cans*
Pineapple	2,50,000	Tomato	10,00,000
Apple	1,50,000	Peanut	7,50,000
Mixed	3,50,000		

The following inventory levels have been decided upon:

TABLE 20.31

	Work-in-progress				Finished Goods	
Jams	*Opg*	*Clg*	*Opg*	*Clg*	*Opg*	*Clg*
Pineapple	50,000	40,000	80	75	15,000	20,000
Apple	30,000	30,000	70	80	8,000	5,000
Mixed	40,000	50,000	75	80	20,000	20,000

Sausages:						
Tomato	2,45,000	4,00,000	80	60	75,000	60,000
Peanut	1,50,000	2,50,000	60	80	30,000	20,000

The production in each of the 6 months is expected to be uniform. Prepare a statement showing budgeted production for the 6 month peiod.

3. Gauges Manufacturing Company wants to approach the bankers for temporary overdraft facility for the period from 1st October 2004 to 31st December 2004. During the period of these three months the company will be manufacturing mostly for stock. You are required to prepare cash budget for the above period from the following data indicating the overdraft facility required by the company at the end of the each month.

TABLE 20.32

	Sales	*Purchases*	*Wages*
August	3,60,000	2,49,600	24,000
September	3,84,000	2,88,000	28,000
October	2,16,000	4,86,000	22,000
November	3,48,000	4,92,000	20,000
December	2,52,000	5,36,000	30,000

a. 50 percent of credit sales are realised in the month following the sales and the remaining 50 percent in the second month following.
b. Creditors are paid in the month following the month of purchase.
c. Estimated cash at bank as on 1-10-2004 Rs.50,000.

4. The following is the Trial Balance of R.Co for the year ended 31-12-2005

TABLE 20.33

	Dr		*Cr*
Cash	300	Allowance for depreciation	500
Accounts receivable	400	Accounts payable	300
Raw material – A	100	Accrued expenses	100
Raw material – B	100	Income tax payable	200
Finished goods (25 units)	300	Bank loan – short term	800
Prepaid Insurance	10	Equity shares	700
Property, plant and equipment	2,000	Retained earnings	610
Total	3,210		3,210

Notes:

1. Sales for the next year are estimated at 200 units @ Rs.20 per unit
2. Standard cost per unit:
   a. Material : 2 kg of A @ Re. 1 per unit 2
   b. Material : 2 kg of B @ Re. 2 per unit 4
   c. Labour : 1 hour @ Rs. 2 per labour hour 2
   d. Variable factory overhead : 1 hour @ Rs. 2 per hour 2
   e. Factory over head – fixed : 1 hour @ Rs.2 per hour 2
   f. Total cost per unit 12

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3. It was decided to cut all inventories by 60% by the end of the year.
4. Only December purchases of 50kg of A and 60 kg of B are to remain unpaid. Purchases are at the standard price.
5. One half of November sales (20 units) and two-thirds of December sales (30 units) are expected to be uncollected.
6. Discounts are 5% of collections
7. Estimate of variable overheads:

Indirect labour	Rs.200
Supplies	75
Power	95
	370

8. Estimate of fixed overheads:

Salaries	100
Depreciation	200
Insurance	20
Rates and taxes	30
	350

9. Total factory overhead
10. Selling and administrative expenses are estimated as follows:

Salaries	Rs.300
Supplies	25
Sales promotion	100
Telephone and telegraph	20
Depreciation	50
Insurance	10
Interest	25
	530

11. Accrued expenses are estimated at Rs.100
12. Insurance bills amounting to Rs.20 will be prepaid
13. Direct labour is likely to be 10% more efficient
14. All variance are to be adjusted against cost of sales
15. Rs.400 of the bank loan is to be repaid this year if there is at least a cash balance of Rs.800 after paying the loan.

Required : Prepare a cash budget with the aid of the above data.

5. A company has seasonal sales ; it sells its goods at Rs.50 per unit. Sales are 25% cash and the remainder at 1 ½ months' credit. Cost of goods in terms of percentage of the selling price is as follows :

Materials	20%
Wages	25%
Factory expenses	20%
Depreciation	10%

In addition, each month a sum of Rs.1,00,000 has to be paid in respect of fixed factory and administrative expense. Income tax Rs.60,000 is payable in July, October and December. The company pays the dividend on equity shares in August, totaling Rs.75,000. The company purchases materials a month before the one in which it is required. Payment is made to suppliers after one month and in respect of expenses fortnightly unless otherwise indicated.

The sales in units for various months is as follows:

April	3,000
May	5,000

June	6,000
July	8,000
August	8,000
September	10,000

Sales in each month are spread uniformly over the month.

On 1st July 2001, the company is expected to have an overdraft of Rs.54,000. Prepare the cash budget for the three months ending September 30, 2001.

6. A new company commences business on 1st July 2005, and deposits Rs.10,000 in the bank. This sum will be insufficient to finance its operations over a period of six months and you are asked to prepare a cash budget to December 31, 2005, to determine the monthly overdraft limits to seek from the company's bankers.

Data supplied to you are:

a. Sales are made to one distributor only on thirty days' terms, 3% discount, and cheques are received on the first date of the month following the due date
b. Plant purchases totaling Rs.5,000 are to be made in July.
c. All purchases are made on net thirty days terms and cheques are posted to creditors on the last day of the month due.
d. Budget figures are:

Purchases	5,000	4,000	3,000	4,000	4,000	5,000
Wages	4,000	5,000	4,000	4,000	5,000	4,000
Cash expenses	400	500	400	400	500	400
Sales	6,000	7,000	8,000	8,000	9,000	12,000

7. From the following information relating to 2003, and conditions expected to prevail in 2004, prepare a budget for 2004.

State the assumptions you have made:

2003 Actuals:

Sales	1,00,000
Raw materials	53,000
Wages	11,000
Variable overheads	16,000
Fixed overheads	10,000

2004 Prospects:

Sales	1,50,000 (60,000 units)
Raw materials	5 percent price increase
Wages	10 percent increase in wage rates
	5 percent increase in productivity
Additional plant	One lathe Rs.25,000; One drill Rs.12,000

8. The management of the Padam Company has asked one of the company's accountants to prepare estimates of the cost of processing orders for small quantities of the company's merchandise. The accountant prepared the following estimates of the average cost of processing per order:

Credit investigation	Re.0.04
Ware housing	0.18
Shipping	0.28
Billing	0.15
Accounts receivable department costs	0.50
Cashier	0.25

Most of the company's products are priced at a mark up of 25 percent over standard manufacturing cost. Using the above information as the cost of processing an order. What is the smallest order that the company should accept?

9. By the method of least squares, determine from the following data the fixed costs per month and the variable costs per direct labour hour:

Month	*Direct Lab Hrs.worked*	*Cost incurred*	*Month*	*Direct Lab Hrs.worked*	*Cost Incurred*
January	500	700	July	600	850
February	400	600	August	700	900
March	600	800	September	800	1,100
April	600	900	October	600	800
May	700	950	November	500	700
June	500	710	December	400	650

10. The machine shop of a factory using flexible budgetary control formulated the following budget for April 2004:

Budgeted machine hours	20,000	
Budgeted overheads:		
Variable with machine time		40,000
Variable with output		10,000
Fixed		10,000
The actual performance and the data for the month was		
Machine hours worked	19,000	
Standard hours for the output	20,400	
Overheads:		
Variable with machine time		44,000
Variable with output		12,000
Fixed		10,800

Work out the fixed over head allowance for the budgeted level of activity and the variable.

10. The annual sales forecast of a popular of Tamil Nadu Supplies Limited is made at 1,20,000 units. Sales in the month of March are expected to be exactly equal to the monthly average. The monthly sale for the rest of the months on the basis of an index is expressed as follows:

TABLE 20.34

January	80	May	120	September	100
February	90	June	130	October	90
March	100 (normal)	July	120	November	80
April	110	August	110	December	70

The following schedule shows the break-up of each month's sales into four districts for a 6-month period:

TABLE 20.35

	Madras	*Madurai*	*Tiruchi*	*Coimbatore*
January	35%	30%	10%	25%
February	30%	20%	15%	35%
March	40%	20%	10%	30%

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April	40%	20%	20%	20%
May	30%	30%	20%	20%
June	30%	20%	25%	25%

Prepare a sales forecast for the 6-month period showing both quantity and value. Background information may be ignored.

11. The salesmen of U.P Fertilizers Limited have prepared a sales forecast for 2007 (first six months only) of its two products for the two regions of western and eastern U.P. on the basis of previous years' results. The forecast is as follows:

TABLE 20.36

	East U.P.	*West U.P.*	*Total*
Product A (Tons)	9,900	5,940	15,840
Product B (Tons)	14,850	8,910	23,760
			39,600

The above estimates were made by adding simply 10% to the pervious years (6 months) actual figures. The previous year (6 months) actuals were done by 10% from their corresponding budget figures. In building up the correct forecast, however, instead of the 10% increase from 2006 actuals, an increase of 15% in product A and 20% in product B is considered as reasonable.

In the past when the industry was 20% below normal, the company's business was 30% below normal; when industry was above normal, the reverse was true. In 2007, the industry was expected to be below normal by 10% according to reliable estimates. This factor should be adjusted after giving effect to the provisions of the previous para. You are required to prepare a sales budget (in summary form) for the first six months of 2007.

12. The output of a factory is sold through three salesmen who are each paid a salary of Rs.30,000 per annum, plus a commission of 2% on sales. In the budget, the cost and gross profit mark up of the products as a percentage of selling price were:

TABLE 20.37

	Pumps %	*Motors* %	*Compressors* %
Production cost:			
Fixed	30	25	35
Variable	40	50	45
Gross profit	30	25	20
Selling price	Rs100	Rs.100	Rs.100

The sales for the year were:

TABLE 20.38

	Salesmen		
	A	*B*	*C*
Pumps	Rs.9,00,000	Rs. 8,00,000	Rs.7,00,000
Motors	4,00,000	6,00,000	5,00,000
Compressors	3,00,000	5,00,000	5,00,000

The expenses were:

TABLE 20.39

	A	*B*	*C*
Traveling cost	12,600	11,000	14,000
Bad debts	5,000	1,500	3,800

Local advertising 4% on sales. Carriage and other selling expenses 2% on budgeted production cost.

Prepare a budgeted annual profit statement for each salesmen, so that they share the year's fixed production cost on the basis of Rs.5,00,000 each for A and C and Rs.5,50,000 for B.

13. Your company manufactures two products A and B. A forecast of the number of units to be sold in the first seven months of a year is given:

TABLE 20.40

	Product A	*Product B*
January	1,000	2,800
February	1,200	2,800
March	1,600	2,400
April	2,000	2,000
May	2,400	2,600
June	2,400	1,600
July	2,000	1,800

It is anticipated that: (i) there will be no work-in-progress at the end of any month; (ii) finished units equal to half the sales for the next month will be in stock at the end of each month (including December, of previous year).

Budgeted production and production costs for the year ending 31st December are as follows:

TABLE 20.41

	Product A	*Product B*
Production (units)	22,000	24,000
Direct materials per unit	Rs. 12.5	19.0
Direct wages per unit	Rs. 4.5	7.0
Total factory overhead apportioned to each type of products	Rs. 66,000	96,000

Prepare for the 6-month period ending 30th June of the year, a production budget for each month and a summarized production cost budget.

14. Production costs of a factory for a year are as follows:

TABLE 20.42

Direct wages		Rs. 4,80,000
Direct materials		6,00,000
Production overheads		
Fixed	Rs. 2,00,000	
Variable	3,00,000	5,00,000

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During the forthcoming year, it is anticipated that: (a) average rate for direct labour will fall from Rs.2.40 per hours to Rs. 2.00 per hour; (b) production efficiency will be unchanged; (c) direct labour hours will increase by 25%; and (d) the purchase price per unit of direct materials and of the other materials and services included among overheads will remain unchanged.

Draw up a budget and compute a factory overhead rate, the overheads being absorbed on a direct wages basis.

15. The following relevant data for the preparation of a production budget of a light engineering company are available:

(i) Machine capacity is a limiting factor which cannot be got over. However, if sales is a limiting factor i.e, if sales forecast is less than the machine capacity, it is the policy to use the capacity fully, provided the shortage is within 20% of the sales forecast. It is hoped that extra sales could be pushed in that month itself. If the shortage is more than 20% of the sales forecast, the sales would be considered a limiting factor of the capacity.

(ii) The component required for Part S 98 which available in stock would enable the production capacity to be utilized to the practical capacity for the first 3 months only. The component is no more available in the market.

(iii) The machine capacity available for part S 86 and Part S 98 could be interchanged.

(iv) The storage capacity is limited to 60% of the subsequent month's requirement. However, alternate temporary accommodation could be arranged instead of curtailing production. Generally, 40% of subsequent month's demand is produced in the previous month.

(v) (a) Sales forecast (units)

TABLE 20.43

	Jan	*Feb*	*March*	*April*	*May*	*June*
Part S 35	35,000	30,000	40,000	40,000	30,000	30,000
Part S 86	30,000	30,000	40,000	40,000	35,000	35,000
Part S 94	10,000	15,000	10,000	20,000	10,000	20,000
Part S 98	20,000	25,000	30,000	20,000	30,000	25,000

(a) Theoretical and practical machine capacities per month for the 4 items are as follows:

The inventory levels for the four products as on 1st January were expected to be: 15,000; 10,000; 5,000; and 20,000 units respectively. The same inventory levels are desired to be maintained on June 30th, except for part S 98 which shall be only 50,000 units. Prepare a production forecast which would envisage maximum utilisation of capacity.

16. The sales director of a manufacturing company reports that next year he expects to sell 50,000 units of a certain product. The production manager consults the storekeeper and submit his figures as follows:

Two kinds of raw materials A and B are required to manufacturing the product. Each unit of the product requires 2 units of A and 3 units of B. The estimated balances at the commencement of the next year are- finished product 10,000 units; A 12,000 units; B 15,000 units. The desirable closing balance at the end of the next year are- finished product 14,000 units; A, 13,000; B 16,000 units.

Draw up (i) a quantitative chart showing the materials; and (ii) purchases budget for the next year.

17. From the following data prepare a cash budget for the quarter October-December. Draft a note from the management accountant and financial controller to accompany this statement:

(a) Sales:

For the month of

TABLE 20.44

August	Rs. 20,000
September	25,000
October	30,000
November	30,000
December	32,000

All the sales are on credit. Half of the dues are collected in the month of sale, on which a cash discount of 20% is allowed and the other half are realized in the next month.

(b) Materials are purchased for cash on which a rebate of 5 percent is offered by the supplier. If the company buys on credit, payment can be deferred by one month foregoing the rebate. The purchase budget for the next quarter is: October Rs.12,500, November Rs. 15,000 and December Rs.18,000.

(c) The direct labour budget is as under:

TABLE 20.45

	Deptt. A	*Deptt. B*
October	Rs. 3,000	Rs. 4,000
November	3,000	4,000
December	3,200	3,800

The manufacturing overheads budget is as under:

TABLE 20.46

	Deptt. A	*Deptt. B*	*General Factory*
October	Rs. 2,400	Rs. 1,550	Rs. 800
November	2,400	1,550	800
December	2,500	1,650	900

The above estimates include the quarter's provision for depreciation amounting to Rs.900 for Department A and Rs.750 for Department B.

(e) The general overheads budget for the quarter is Rs.3,500 (out of which Rs.200 is for depreciation, reserve, Rs.300 for bad debts reserve)

(f) An old machine is to be replaced with an additional outlay of Rs.7,000 in the month of December.

(g) The cash balance on 1st October may be taken Rs.15,000.

18. Prepare the cash budget of ABC Ltd. for July- September, 2002, from the data given below showing the cash balances and balances in the overdraft account, if any, at the end of every month. The company has an equity capital of Rs.50,00,000. It has recently arranged overdraft facilities with its bankers to the tune of Rs. 10,00,000, at 9% per annum. The debits and credits to the overdraft account are given in multiples of Rs10,000. Interest is charged at the end of the each half-year.

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(i) Estimated cash balance on 1st July 2002, Rs.10,375

(ii) Sales:

TABLE 20.47

	April Rs	*May* Rs	*June* Rs	*July* Rs	*August* Rs	*September* Rs
Actual	1,80,000	2,00,000	—	—	—	—
Budget	—	—	2,00,000	2,20,000	2,40,000	2,40,000
(iii) Raw material	80,000	80,000	75,000	75,000	75,000	75,000

(iv) Wages and salaries:

TABLE 20.48

Deptt. A	—	—	—	10,000	10,500	11,000
Deptt. B	—	—	—	12,000	12,000	13,200
Service and Adm. Deptt	—	—	—	8,000	8,400	8,800

Indirect materials:

TABLE 20.49

Deptt. A	—	—	—	12,000	13,000	15,000
Deptt. B	—	—	—	18,000	18,000	20,000

Depreciation: annual provision charged to overheads every month
Department A Rs.96,000; B Rs.1,20,000
Miscellaneous expenses:

TABLE 20.50

	Department A	*Department B*	*Service Deptt.*
July	2,500	3,000	13,000
August	2,500	3,000	11,200
September	2,500	3,000	10,000

Premiums amounting to Rs.1,200 and Rs1,600 are due to insurance policy, on 10th July and 25th September and are include in the budgeted expenses for service and administrative department. The insurance company allows 30 days of grace for payment of premiums and charges 6% interest for late payment.

Budgeted capital expenditure : Installments due in

TABLE 20.51

July	*August*	*September*
Rs	Rs	Rs
23,000	12,000	50,000

For new car and calculating machine purchased last year.

The company makes all sales on one month's credit, but allows 2% discount on payment received within a week of sale. Its experience is that for 10% of the sales, cash discount is availed of by its customers and for 80% of them, payment are received on time, ie., after 1 full month. However, 10% of the dues remain uncollected for about 2 months. The suppliers allow 5% cash discount for cash payment, though they allow 30 day's credit. The half-yearly interim dividends @ 12% per annum, on equity share, is due in July 2002.

19. The Board of Directors of Punjab Cable Factory Limited have arranged for repayment of loan to a financial institution. You have been asked to prepare a projected profit and loss account from 2003 on the basis of figures available for 2001 and 2002 and to submit the net cash flow. If 75% of the net cash flow is estimated as the fair amount for repayment of loan, ascertain the sum that may be borrowed.

TABLE 20.52 Profit and Loss Account

	2001 *Rs*	*2002* *Rs*
Opening stock	80,00,000	1,00,00,000
Raw materials	3,00,00,000	4,00,00,000
Stores	1,00,00,000	1,50,00,000
Manufacturing expenses	1,00,00,000	1,20,00,000
Other expenses	1,00,00,000	1,30,00,000
Depreciation	1,00,00,000	1,00,00,000
Net profit	1,00,00,000	1,50,00,000
	9,10,00,000	11,60,00,000
Sales	8,00,00,000	10,00,00,000
Closing stock	1,00,00,000	1,50,00,000
Miscellaneous income	10,00,000	10,00,000
	9,10,00,000	11,60,00,000

Sales are expected to increase to Rs.12,00,00,000 along with which raw materials stores and manufacturing expenses are expected to rise by the same amount by which they rose between 2001 and 2002. Other expenses will increase by Rs.50,00,000. Depreciation will remain constant. Assume sales and purchases against cash and the closing stock is expected to go up by the same amount as between 2001 and 2002. You may assume that no dividend is being paid.

20. From the following information, prepare the sales budget for M/s. ABC Limited for the next year:

TABLE 20.53 Budgeted sales for the current year

Product	*Department 1*	*Department 2*	*Department 3*
X	1,600 @ Rs.5	18,000 @ Rs.5	24,000 @ Rs.5
Y	12,000 @ Rs.10	24,000 @ Rs.10	16,000 @ Rs.10

TABLE 20.54 Actual sales for the current year

Product	*Department 1*	*Department 2*	*Department 3*
X	20,000 @ Rs.5	24,000 @ Rs.5	28,000 @ Rs.5
Y	8,000 @ Rs.10	30,000 @ Rs.10	20,000 @ Rs.10

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Following adjustments are required to be made on the previous budget

1. Sales of product X estimated to increase by 30%, 40% and 20% in Department 1,2 and 3 respectively.
2. Sales of product Y estimated to increase by 10%, in Department, 2 and decrease by 10%, in each of the remaining departments.
3. On account of heavy publicity of product Y, sales would again increase by 10% in each of the three departments
4. The budget committee approved all the above estimated increases in the sales. The committee also approved 10% increase in the price of product X and 15% increase in price of product Y.

The sales budget prepared by you should also mention the budgeted as well as actual sales for the current period.

CASE – BUDGET AND BUDGETARY CONTROL SYSTEM

1. Tharanga Thara Chemicals provides you with the following cash budget covering the six months ending 31st October following:

	May *Rs.*	*June* *Rs.*	*July* *Rs.*	*August* *Rs.*	*September* *Rs.*	*October* *Rs.*
Overdraft at the beginning of the month	54,03,400	53,65,650	57,31,600	56,37,550	55,34,500	54,90,950
Add : Expenditure : direct variable	35,000	37,700	40,000	37,300	35,000	40,000
Costs	80,000	80,000	80,000	80,000	—	80,000
Materials	70,000	68,000	70,000	67,000	—	75,000
	1,85,000	1,85,700	1,90,000	1,84,300	35,000	1,95,000
Fixed overhead expenses:-						
Rates (for the six-month period)	44,700	44,700	44,700	44,700	1,64,700	44,700
	—	32,500	—	—	—	—
Office, etc. expenses	57,550	59,550	58,250	61,950	1,08,750	51,250
Insurance (for the year to 30th April, following)	—	10,000	—	—	—	—
Legal, etc., expenses (for the six-month period)	—	26,500	12,000	5,000	5,000	5,000
	1,02,250	1,73,250	1,14,950	1,11,650	2,78,450	1,00,950
Financial and other–						
Interst on debtntures and Overdraft	—	87,500	—	—	47,000	—
Capital expenditure	25,000	3,14,500	16,000	16,000	11,000	6,000
	25,000	4,02,600	60,52,550	59,49,500	59,05,950	57,92,900
Su-total	57,15,650	61,26,600	60,52,550	59,49,500	59,05,950	57,92,900
Less: Receipts from sales	3,50,000	3,60,000	3,80,000	3,80,000	3,80,000	—
Equivalent to production in						
Representing a reduction in finished stock	—	35,000	35,000	35,000	35,000	4,00,000
	3,50,000	3,95,000	4,15,000	4,15,000	4,15,000	4,00,000
Overdraft at the end of the month	53,65,650	57,31,600	56,37,550	55,34,500	54,90,950	53,92,900

Your are told:

(1) all direct variable cost expenditure relates to production in the month in which paid, with the exception of Rs.35,000 spent on materials in September, which represents an accretion to raw material stocks. There will be no production in September because the factory will be shut down for holiday; certain extra expenditures for the month account for the additional Rs.1,20,000 paid for works management, etc., in September;

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(2) Office, etc. expenses are up by Rs.50,000 in September, because of a payment for advertising charges attributable to the six-month period;

(3) Fixed overhead expenses and sales collections have been budgeted to be paid and received one month in arrear. The cash budget for November shows as follows:

Fixed overhead expenses – works management	Rs. 44,700
Office, etc., expenses	59,650
	1,04,350
Receipts from sales-equivalent to production in the month of sales	3,80,000

(4) Opening and closing finished stocks are valued at standard cost prices ascertained with reference only to the direct variable costs of production. The relationship between these costs and selling prices remains unchanged on an average throughout.

(5) Fixed overhead expenses are incurred on a time basis and there are 20 working days in each calendar month worked.

You are required to – (a) prepare a budget statement of operations for the half-year to 31st October, showing sales, cost of sales, cost of sales in terms of direct variable expenses, fixed overheads and the results before charging interest. (b) Prepare a budgeted statement of production costs in relation to production sold for the month of May, showing the value of production at selling price, the direct costs and the fixed overheads attributable thereto and the budgeted result before charging interest.

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CHAPTER

21

Understanding Financial Statements

"Financial statements reflect a combination of recorded facts, accounting conventions and personal judgements and the judgements and conventions applied affect them materially"

—American Institute of Accountants, New York

LEARNING OBJECTIVES

- *Balance Sheet and Income Statement.*
- *Nature of Financial Statements.*
- *Limitations of Financial Statements.*
- *Comparative Financial Statements*
- *Computation of Trend Percentages*
- *Rest of Solvency or Analysis of Long-term Financial Condition*
- *Role of Ratio Analysis.*

INTRODUCTION

Financial statements are account balances arranged in effective and significant order in such a manner that facts and figures depicted may easily be interpreted and used as grounds for decisions by all concerned in the work of business. Because of those informations given in these statements or reports the management finds out the concern's progress up to current date and decides upon the courses of action for the future. Creditors decide to give more credit or maintain as before to make less contributions to it. Shareholders decide their way of investments and try to dispose off their share or keep it, workers decide as to pay grade increase by these statements if profits are more. At the same time general purchasers look to its economic sense of the goods and services.

BALANCE SHEET AND INCOME STATEMENT

In modern business, financial statement is concerned with balance sheet or statement of financial position showing the assets, liabilities and capital as stands on a particular date and income statement or profit and

loss statement with results of a certain period. These are described at the end of the accounting year of a business concern. Some concerns add a third statement known as the statements of retained earnings.

Schedules

Besides the above package of financial statements, such schedules as connected with land buildings, equipment inventories, long-term investments accrued liabilities, long-term debts, cost of goods manufactured, selling expenses and administrative and general expenses, are invented to supplement the data contained in financial statements. During analysis these schedules are taken to be a part of the statements. Besides minor changes in the net working, capital is used in analysis of these statements of the concern.

Explanatory Footnotes

By listing the financial statement's items no proper information are classified. Explanatory footnotes are furnished as an integral part of financial statement. These footnotes cover topics on explanations of depreciation, depletion or amortisation policies, indication of valuation method used to inventories, description of contingent liabilities, explanation of capital reserves and restrictions placed on retained earnings, comment on extraordinary gains and losses, references to special change or unusual situations, and disclosure of events after the statement date as collection of receivables, payments of debts, expansion of plant facilities and change in capital structure plans for new financing. The explanatory notes increase the value of the statements to the student.

NATURE OF FINANCIAL STATEMENTS

According to American Institute of Accountants, the financial statements reflect a combination of recorded facts accounting conversions and personal judgements and the judgements and conventions applied affect them materially.

Thus, the nature of financial statements is that they are plain statements of true informed opinion, they rest on judgements and estimates without fancy or prejudice.

Recorded facts convey the data brought in through statements that have been written in accounting records. Recorded facts are such data as the amount of cash on hand and in banks, due from customers fixed assets cost amount payable to creditors. The cost or the price level of the date on accounting gives the fixed assets price. It does not convey the replacement cost. The balance sheet does not depict the financial position of the concern as more price is substituted for the cost.

Some other factors affecting the financial position are not depicted in the body of the balance sheet, as they have no place in the accounting records. These are covered by the footnotes to the balance sheets including unexecuted orders, purchase and sale contracts and commitments claims for tax refunds judgements, endorsements and guarantees. Accounting conventions are some fundamental accounting principles sanctified by long usage, as asset valuation is the problem of proper allocation of expenditure between capital and revenue in different accounting periods.

Besides the above two recorded facts and accounting conventions, personal judgements or opinions are also accorded a place for determining the depreciation or depletion charges for a particular year to write-off intangible value within five years to evaluate the inventory at cost or market price, to consider that first goods are in the first or last goods to be issued and recording of some expenditures as capital and not revenue.

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All these three collectively do not show current economic value, if not specially prepared.

LIMITATIONS OF FINANCIAL STATEMENTS

(i) Financial statements are interim reports only since the company's profit or loss is not revealed
(ii) It gives final appearance and accuracy as it is expressed in exact money amounts.
(iii) Financial statements are collected on the basis of historical costs while there are fluctuations in market, the balance sheet loses its current economic realities.
(iv) Financial statements are qualitative in nature. It does not show the financial condition of a concern, but they show the position of financial accounting for a business.

Analysis and Interpretation of Financial Statements

According to Myers:

"Financial statement analysis is largely a study of relationships among the various financial factors in business as disclosed by a single set of statements and a study of the trend of these factors as shown in a series of statements."

The chief function of financial analysis is the de-picturisation of the strength and weaknesses of a concern by regrouping and analysis of figures contained in financial statements. It can be utilised by the financial manager as the ground to plan future financial needs.

The analysis and interpretation of financial statements show the last of the four major steps of accounting. The first three steps refer to the work of accountant in the collection and summary of financial and operating data and in the construction of financial statements being as given hereunder:

(i) Analysis of each transaction to determine the accounts to be debited and credited and the measurement and valuation of each transaction to ascertain the amounts involved.
(ii) Recording of the information in the journals summary in ledgers and preparation of work sheet.
(iii) Preparation of financial statements.
(iv) Accounts results in the presentation of information that helps business managers, investors and creditors.

The analyst must understand what represents sound and unsound relationships reflected by the administrative, financial and operating policies of management, or being devoid of polices can be known by studying the statements.

The process of analysing financial statements involves the compilation and study of financial and operating data and the preparation and interpretation of measuring devices such as ratios trend and percentages. Again, the financial and operating data of one concern should be compared with relative data of other concerns.

Interpretation and analysis are closely connected as interpretation is impossible without analysis and without interpretation, analysis is baseless. Hence, interpretation needs analysis.

In earlier times, accountants were to work for the construction of the statements. But now they take active part in analysis and interpretation of financial and operating data due to great demand for analytical information by business executives and bankers.

Types of Financial Analysis

The financial analysis differs on the basis of material used for the same or according to the modus operandi of the analysis.

(A) According to Material used

(i) External analysis. This is done by those who do not have access to the concern. This group depends mostly on published financial statements that concerns investors credit agencies and governmental agencies who control the business nominally. Now, the external analysts are allowed to go through the audited accounts due to government regulations.

(ii) Internal analysis. Those who are allowed to see the accounts books and other necessary information of the concern. The analyst thus becomes the part and parcel of the firm under analysis. For managerial purposes, these analysis are conducted by executives and workers of the firm and government and court agencies with jurisdiction.

(B) According to Modus Operandi of Analysis

(i) Horizontal analysis. It is the form of analysis when financial statements are reviewed and analysed for many years past. It is based on yearly data and not on one date or period of time as a whole. It is also called dynamic analysis.

(ii) Vertical analysis. It refers to ratios developed for one date or for one accounting period. It is also known as static analysis. It can only be got by a study conducted over a number of years so that comparisons can be effected. Hence, it is not mostly used.

Methods and Devices used in Analysis of Financial Statements

The analysis of financial statements leads to the knowledge of company's financial progress, if satisfactory or unsatisfactory. The fundamental objective of any analytical method is to simplify or reduce the data under review to more understandable terms. The following methods and devices are employed in analysis of financial statements.

(i) Comparative financial and operating statements.
(ii) Statement of changes in net working capital.
(iii) Trend ratios.
(iv) Common size percentages,
(v) Individual ratios.

Comparative Financial Statements

There are the statements of the financial position of a business enterprise formed in such a manner so as to give time perspective to the consideration of several elements of financial position put in such statements. Any such statement can be produced in a manner that it may be said to belong to the family of comparative financial statements. Most commonly, still it is the Balance Sheet and Income Statement which relates to the impact of the conduct of business.

Comparative statements may be made to show:

(i) Absolute data (money values or rupee amount)
(ii) Increases and decreases in absolute data in terms of money vaues.
(iii) Increases or decreases in absolute data in terms of percentages.

(iv) Comparisons expressed in ratios.

(v) Percentage of totals.

Analysis has its utility as they contain data and also information necessary for the study of financial and operating trends over a period of years. They show the trend of the movement about the financial position and operating results.

While financial statements are made for a month or quarter, interval comparisons can be done with the previous years' accounting with the corresponding month or quarter, collective figures for the passed portion of the current year with the corresponding totals of the preceding year or years, may be computed by the analyst.

Comparisons become misleading losing their meaning if the data after comparison do not show the consistent application of common accepted accounting principles from date to date or period to period. The absence of comparability of statements should be shown in the footnotes that adjoin the financial statements and in the report of the accountant.

The analyst should be careful about the accounting data recorded as on the dates of the incurrence of transactions and hence accounts mostly show variations to price levels. As a result, each year's income statement includes items like supplies and salaries shown in terms of the current price level and items like depreciation, depletion, amortisation and stock at the commencement of the year that reflect price level on dates passed by, while there is sufficient fluctuations in the price level. Analyst should be careful in interpreting the trends shown by comparative statements.

Comparative Balance Sheet

During the business, increases and decreases in several assets and liabilities and in owners equity or capital, can be seen by a comparison of the balance sheets at the commencement and at the end of the period. Such observation mostly gives sufficient information that is of value informing an opinion regarding the progress of the concern and to make such comparison easy and the comparative balance sheet may be utilised.

The single balance sheet depicts the balances of accounts after closing the books on a certain data, while comparative balance sheet shows balance of accounts on different dates as well as their increases and decreases between these dates.

The single balance sheet stresses on status: the comparative balance sheet stresses on change. The changes are the outcome of operations, the conversion of asset liability and capital forms into others and the different interactions among assets liabilities and capital.

No doubt balance sheet is a useful statement, but comparative balance sheet is of even greater use as it contains not only the data of a single balance sheet, but also such data that may be used in the study of trends of a concern. Information about trends showing the direction wherein a business is headed, is mostly more significant to the analyst than that related to the book value of assets and liabilities. As the income statement shows the review of the operating activities of the concern and the comparative balance sheet shows the effects of operation on its assets and liabilities, the latter consists of a connecting link between the balance sheet and the income statement.

The comparative balance sheet forms consist of two columns for the data of the original balance sheets, and a third column for fluctuations in various item. while the fourth column consists the percentages of fluctuations if added.

TABLE 21.1

WESTMAN LIMITED
Comparative Balance Sheet
(As on 31st December, 2006-2007)

In Lakhs.

	December 2006	*31, 2007*	*Amount of increase or decrease in 207*	*Percentage of increase or decrease in 2007*
1	*2*	*3*	*4*	*5*
Assets	*Rs.*	*Rs.*	*Rs.*	*Rs.*
Current Assets:				
Cash	120	10	10	92
Sundry debtors	213	195	18	9
Less Reserve for doubtful debts	13	5	8	62
Net sundry drbtors	200	190	10	5
Trading Stock	150	120	30	20
Prepaid expenses	3	3	-	-
Other Current Assets	30	10	20	66
Total current assets	506	333	173	30
Investments				
Real estate	200	100	100	50
Subsidiary A	50	50	-	-
Total investments	250	150	100	40
Fixed Assets				
Furniture and Fitxures	15	25	10	150
Less Allowance for Depreciation	1	2	1	100
Net furniture & fixtures	14	23	9	150
Building and equipment	260	840	-	-
Less allowance depreciation	50	60	-	-
Net buildings & equipment	210	780	-	270
Land	20	30	570	50
Other fixed assets	10	15	10	50
Total fixed assets	254	848	5	234
Other fixed assets	46	52	594	75
Total assets	1056	1383	327	33

Liabilities & Capital Current Liabilities:

TABLE 21.2

Sundry creditors	250	112	–138	–19
Other current liabilities	12	15	3	25
Total current liabilities	262	127	–135	–52

Fixed liabilities:

TABLE 21.3

Debentures	40	80	40	100
Mortgage debentures	160	245	85	25
	200	325	125	63
Total liabilities	462	452	-10	-2

Capital:

TABLE 21.4

Equity share capital	400	600	200	50
Capital reserve	50	100	50	100
General reserve	222	209	13	-6
Sinking fund	40	50	10	25
Total surplus	312	359	47	11
Total capital	712	959	247	29
Total liabilities	1174	1411	237	20

The analysis and interpretation of the above Comparative Balance Sheet gives the following results:

1. Total fixed assets were increased by Rs. 5,94,000 and that this new investment in fixed operating assets was financed mainly by the use of a portion of net working capital amounting to Rs. 37,000 by the further issue of two categories of debentures to the tune of Rs.1,25,000, by the issue of equity shares of the value of Rs.22,000, by an increase of Rs. 50,000 in capital reserve and by liquidating real estate investments for Rs. 78,000 at a loss of Rs.22,000 as shown in the income statement. Though this analysis of the financing of fixed assets is over-simplified, it serves to broadly illustrate the basic approach. The expansion of fixed assets have resulted in increased plant capacity increased productivity of existing plant or increased unit cost of operation.
2. Though the relationship between total current assets amounting to Rs.,3,33,000 and total current liabilities of Rs.1,27,000 appear to be satisfactory from the point of view of the capacity of the business to pay off its current liabilities as and when they fall due for payment, it appears that the cash balance has been drawn upon to an extent as to reduce it to only Rs. 10,000 which is inadequate for the regular operation of the company of this size.
3. Increase in capital reserve of the order of Rs. 50,000 may have been the result of the appreciation of fixed assets consequent upon their revaluation.
4. In spite of the fact that the extent of net changes in the absolute data from year to year is seen more quickly through percentages as calculated in the comparative balance sheet given above an additional column may be added to it to show the changes during the year in terms of ratios as shown below:

TABLE 21.5

	December 2006 *Rs.*	*December 2007* *Rs*	*Amount* *Rs.*	*Increase or decrease Percentage* *Rs.*	*Ratio* *Rs.*
Cash	10,000	20,000	10,000	100	2.00
Trading book	50,000	40,000	–10,000	20	.80
Bills payable	20,000	5,000	–15,000	75	.25
Sundry creditors	4,000	9,000	5,000	125	2.25
General Reserve	37,500	51,875	13,875	37	1.37

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In this way, cash increased by Rs. 10,000 or 100 percent during 2007, so that cash on 31st December 2007 was double the balance on 31st December 2006; in the same way, general reserve and sundry creditor on 31st December 2007, were respectively 1.37 and 2.25 times the balances on 31st December 2006. Against this stock and bills payable were.80 and .25 or 4/5 and ¼ respectively of those one year before. Other items of the comparative balance sheet can also be treated in the same way.

The ratios are determined by dividing the rupee amount for the current year by rupee amount for the preceding year or base year, if any. The use of ratio avoids the necessity of showing minus or decrease signs as if a ratio is less than one, it means that the amount for the current year is less than the amount for the base year.

Comparative Income Statement

An income statement shows the net profit or loss resulting from the operation of a business for designated period of time. A comparative income statement shows the operating result for a number of accounting periods so that changes in absolute data from one period to another may be stated in terms of money and percentages.

Comparative income statement has the columns like that of comparative balance sheet and gives the similar information of the account balances increases and decreases in money and output, and if wanted, the percentages of increases or decreases as given hereunder:

TABLE 21.6

WESTMAN LIMITED
Comparative Statement of Income
(for the year ended 31st December, 2006 and 2007)

In Lakhs.

	2006	*2007*	*Amount of increase or decrease during 2006*	*Percentage increase or decrease during 2007*
1	*2, Rs.*	*3. Rs.*	*4. Rs.*	*5. Rs*
Net Sales	823	923	100	12
Cost of goods sold	500	572	72	14
Gross profit on sales	323	351	28	12
Operating Expenses				
Advertising Expenses	8	16	8	100
Delivery Expenses	16	14	-2	-8
Salesmen Salaries	96	98	2	1.6
Sales Supplies expenses	12	13	1	12
Miscellaneous Selling expenses	24	27	3	8
Total Selling expenses	156	168	12	13
1	*2*	*3*	*4*	*5*
Administrative and General Expenses:				
Doubtful debts	3	4	1	33
Office salaries	30	34	4	13
Office Expenses	2	4	2	100
Officer's Salaries	28	25	–3	–11

Stationary & Postage	1	2	1	100
Telephone & Telegraph	2	1	–1	–100
Miscellaneous General Expenses	3	5	2	67
Total Adm & General	69	75	6	9
Expenses	225	243	18	12
Total operating expenses	98	108	10	9
Operating Profit				
Other Income	2	2	—	—
Interest income	2	4	2	100
Rent income	4	6	2	50
Purchase discounts	8	12	4	50
Total other income				
Total of operating profit	106	120		
And other income				
Other Expenses	24	12	–12	–50
Interest Expense	8	7	–1	–12
Sales discount	32	19	–13	–24
Total other expenses				
Income for the year	48	60	12	25
before income tax	10	15		
Income tax	38	45	7	5
Income after income tax				
Loss on the sale of long	—	22	22	—
Term investments				
Net income transferred	28	27	–1	
To appropriation account				
Balance of appropriation	224	222		
Account on Jan. 1	252	249		

Appropriations:		
Reserve fund	20	20
Dividends declared	25	30
Total appropriations	45	50
Balance of Appropriation A/c on 31st December	207	199

If a study is made of the changes shown in income statements, the analyst should be careful about the relationship of the cost of goods sold and operating expenses to sales. The cost of goods sold should not go up out of proportion to the increase in sales and would affect against gross profit on sales. Selling expenses bear a direct positive correlation to sales volume as most of these expenses change more or less in the same ratio as the sales. This has particular reference to sales and should not normally increase with sales volume.

With reference to this, the comparative statement of Westman Limited shows that net sales and cost of goods sold increased by Rs. 1,00,000 and Rs.72,000 respectively. Though gross profit on sales also increased by Rs.28,000, it declined as percentage of net sales. The comforting point is that the increase in

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gross profit is sufficient to cover the increase of Rs. 16,000 in operating expenses and to leave Rs.8,000 increase in operating profit.

It is evident that selling expenses increased by a larger amount than general and administrative expenses but it is only natural as the former bears a direct relationship to sales. Still, as a percentage of net sales, selling expenses have declined.

Because income statement and balance sheet are the complementary documents, they bring to light certain facts. A study of these aforementioned statements shows the clear fact that sales increased by 12% while sundry debtors and inventory declined by 9 and 20% respectively. A superficial analysis of these figures shows a favourable tendency as large sales volume has been accomplished on 31st December, 2007. Before conducting such an inference as conclusive, it has to be known whether the balance of sundry debtors and inventory on hand on 31st December, 2007, is typical of the average monthly debtors and inventory items, change in policy with respect to the amount of inventory to be maintained or a change in the valuation method, whether the balance of sundry debtors is less due to move more, efficient and effective credit and collection policy, a more portion of cash as compared with credit or a change in policy with regard to the extension of credit whether the upward trend in sales is a result of plant expansion, a greater activity on the part of sales department, an increase in price level, an adoption of a higher mark up policy, special year-end sales or extension of sales territories.

Again interest expense declined by Rs.12,000, whereas there has been increase in long-term debt to the sum of Rs.1,25,000. This shows a refinancing programme that is accompanied by a substantial reduction in the rates of interest. To cover up all these, the analyst requires a more detailed about the financial and operating data.

A number of financial statements may be analysed by ascertaining and studying the trends of the data given in the statements. This method of analysis is one of the direction-relationship which each statement item bears to the same item in the 'base year' that may be the earliest year or many intervening years. Trend percentages or relatives to the base year, and stress changes in the financial operating data every year make it possible for a horizontal study of the data.

Percentages are also known as trend ratios. They are also thought as index numbers showing relative changes in the financial data resulting with the passage of time.

COMPUTATION OF TREND PERCENTAGES

(i) A statement is taken as a base with reference to which all other statements are to be studied.
(ii) Every item is to be stated as 100 in the statement that is taken as the base.
(iii) If the amount of an item in another statement is less than that in base statement, the trend percentage will be below 100 and, if the amount is more than the base amount, the trend percentage would be above 100 per cent.
(iv) Trend ratios can be computed by dividing each amount in the statements with the corresponding item in the statement taken as the base.

Generally, trend ratios are not computed for all of the items in the statements as the fundamental objective is to make comparisons between items having some logical relationship to one another.

Evaluation of Trend Percentages

One trend is not much informative and, hence, analyst has value of the related trends only by comparison. Conclusions for such comparisons bring to light some of the aspects of the financial position and have

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to be reconciled with those from other aspects. Illogical conclusions may be conclusions if percentages and ratios are torn from the data from which they have been derived.

In this way, it must be noted that though trend ratios show if an item has increased or decreased, and the degree of change, they are available only to the extent to which they supply clues to favourable or unfavourable tendencies and point the way for further analysis.

The comparability of trend ratios is adversely affected to the extent to which accounting principles and policies reflected by the accounts have not been followed consistently throughout the period being studied. Comparability for data is also influenced when the price level has changed materially during the years under review. Some analysis deflate the statement data by dividing the money amounts with the related price index, thereby the figures will give a broad idea of changes in physical quantity and volume exclusive of price changes.

Against this, the measurement of changes in terms of percentages is greatly useful as the rate of changes is more vital than the quantum of change.

Statement bearing sales of enterprises with increase must show the scale of the operation of business.

Again, there is danger that undue importance might be given to percentages. Where the base is a small number, a little variation might be without considering the proportion enlarged by the percentage of change.

It is always desirable to have information both about the absolute and relative changes as in the case of comparative financial statements that are supported with an extra column for percentage change, while selected base year may not be typical especially for results that may be supported by a distorted image of the change. From this viewpoint, the cash position of Bigbond Company in 2004 is clearly not representative as given in the Table 21.7.

The analysis of the data produced in the Income Statements and the Balance Sheets of WESTMAN Limited, made with the calculation of trend percentages, reveals the following favourable tendencies.

(i) The present financial position of the company has continuously improved over the four year period as is evident from the relationship between current assets and liabilities. Current assets and liabilities have declined during this period, the decline has been steeper in the case of latter than the former resulting on 31st December, 2007, current are about three times the current liabilities, while four years back of current liabilities.

TABLE 21.7

BIGBOND COMPANY
(Comparative Balance sheet)
(As 31st December 2004-2007

	Amounts				*Trend percentages (1974 = 100)*		
	2004	*2005*	*2006*	*2007*	*2005*	*2006*	*2007*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Assets Current Assets:	Rs.	Rs.	Rs.	Rs.	%	%	%
Cash	25	125	10	20	500	45	90
Marketable Securities	81	26	5	5	31	6	6
Bill receivable	32	40	45	60	125	141	188
Sundry Debtors	231	191	167	178	80	72	77

Less Reserve for doubtful Debts	21	14	16	17			
Sundry debtors Net	210	177	151	161	82	72	77
Trading Stock	116	161	131	101	139	113	87
Other current Assets	71	16	6	6			
Prepaid expenses	18	21	16	12			
Total current Assets	553	566	364	365	102	68	69
Fixed Assets:							
Buildings	29	24	37	27	82	129	93
Furniture and fixture	32	27	42	36	84	132	113
Plant & Machinery	323	295	502	459	91	156	142
Land	41	41	72	117	100	178	290
Total Fixed Assets	425	387	643	639	91	154	151
Total Assets	978	943	1,007	994	96	105	104
Liabilities and Capital							
Current Liabilites:							
Bills Payable	98	139	11	33	142	10	33
Sundry Creditors	161	101	71	43	63	44	26
Taxes Payable	15	11	28	35	67	180	227
Other current liabilities	11	7	8	9	-	-	-
Income received in Advance	4	3	4	5	-	-	-
Total current liabilities	289	261	122	125	90	41	42
Long-term liabilities							
Mortgage Debentures	76	76	236	226	100	300	300
Total liabilities	365	337	358	351	92	95	95
Capital							
5% Cumulative Preference Share Capital	150	150	150	150	100	100	100
Equity Share Capital	300	300	400	400	100	133	133
Total Capital	450	450	550	550	100	125	125
Surplus							
Earned Surplus	80	70	41	27	89	47	31
Appropriated earned Surplus- Reserve for new construction	16	21	24	31	133	167	200
Total Surplus	96	91	65	58	95	64	88
Total Capital	546	541	615	608	99	110	109
Total Liabilities & Capital	911	878	973	959	86	105	104
Dividends declared & paid	25	22	26	26			
Appropriation of earned surplus	5	5	5	5			

TABLE 21.8

COMPARATIVE INCOME STATEMENT
(For the year ended 31st December, 2004-2007)

	Amount Trend				*Percentage*		
	2004	*2005*	*2006*	*2007*	*2005*	*2006*	*2007*
	Rs.	*Rs.*	*Rs.*	*Rs.*			
Net Sales	700	800	900	1,000	114	112	111
Cost of goods sold	490	510	582	711	104	119	145
Gross profit on sales	210	290	318	289	133	135	108
Operating Expenses							
Selling expenses	181	191	205	361	106	113	200
Administrative & general							
Expenses	55	68	75	93	128	139	170
Total Operative expenses	236	259	280	454	111	119	193
Operating Profit	50	60	70	100	120	116	145
Other income	11	9	13	14			
	61	69	83	114			
Other expenses	28	17	11	20			
Income before							
Income Tax	33	52	72	94	112	153	285
Income Tax	16	11	26	30	67	180	277
Net-Income after Tax	17	61	46	64	350	75	150
Deduct-Extraordinary Items							
Loss on sale of fixed assets	2	29	-	49			
Loss due to fire	-	-	33	-			
Total deductions	2	29	33	49			
Net Income transferred to	15	32	13	15			
Earned surplus							

(ii) There has been a sufficient reduction in the amount of sundry debtors which declined by 23% and in trading stock that declined by 13%. This, along with the fact that sales during the period increased by 60% represents a favourable tendency and points towards more effective credit collection and trading facilities. Since 2005, it is seen that the management has been stirred to make possible a more rapid turnover of debtors and a large increase in cash sales. A gradual increase in the amount of bills receivables to 87% in 2007, shows the emergence of a new policy with reference to the terms granted to the customers.

(iii) As new constructions as well as acquisitions at one side, and increase in sales, on the other hand, have been parallel, it can be assumed that the larger sales volume has been the result of increased and more efficient manufacturing capacity, to which can also be attributed the reduction in cost of goods sold shown by 85% increase in gross profits or sales over a period of four years.

(iv) Though sales and cost of goods sold have increased, the increase in the former has crossed the increase in the latter with the result that gross profit on sales has increased at a higher rate than the increase in net sales.

(v) Fixed assets expansion has been mainly financed by a 200% increase in mortgage debentures and to a far lesser extent by a 25% increase in equity capital. This shows 'trading on equity'. Fixed assets expansion programme has been more than justified by 90% increase in net income.

The unfavourable tendencies made clear are as follo

(i) The most important unfavourable tendencies have been cleared by the extraordinary items in the income statement that reveal an ineffective fire insurance plan and an inadequate depreciation policy.

They need replacement soon, while framing depreciation policy. Still, the analyst must try to get relevant information to the fire insurance programme of the company and the reasons for the loss on the sale of fixed assets.

(i) Operating expenses have increased by a larger margin than the increase in net sales.

(ii) The trend of earned surplus is downwards certainly. Cash reserve is not sufficient from the viewpoint of the payment of dividends.

Common Size Statement

The analyst is unable to cope up with the changes that occur every year regarding total assets, liabilities and capital or total net sales. This limitation is seriously brought forth when a comparison is being made between two or more business units or of one unit with statements for a concern fully, as there is no common ground for comparison while dealing with full figures. Still, as far as balance sheet and income statement items are considered, and exhibited in analytical percentage i.e. ratios of the total of appropriate item (total assets, total liabilities, capital and total net sales, a common base for comparison is given. The statements in this form are known as 'common size statements'. They are also known as 100 per cent statements as cash statement is reduced to the total of 100 and each individual item is stated as a percentage of the total of 100. Each percentage shows the relation of the individual item to its respective total.

Computation of common-size statements

(i) Total assets, liabilities and capital and total net sales are stated as 100%.

(ii) The ratio of each statement item to the statement total is found out by dividing money amounts by the total amount in the statement.

We can better make it clear: if selling expenses of a business are Rs. 6,000 and its net sales are Rs. 6,00,000 in any particular year, the above two steps may be applied as follows:

$$\frac{\text{Selling expenditure}}{\text{Net Sales}} \times 100$$

$$= \frac{60{,}000}{6{,}00{,}000} \times 100 = 10\%$$

This shows that selling expenses for that particular year are 10% of net sales or they amounted to Rs.10 for each Rs.10 worth of net sales.

Other items can also be incorporated in the statements in the same manner and similar conclusions can be had.

Common Size Balance Sheet Here, the percentages show the relation of each asset item to total assets and each liability and capital item to total liabilities and capital. These percentages show relationship to balance sheet totals, differences every year do not show changes in money amounts.

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In reality, the balance sheet common size ratios may reflect a change in the individual item, a change in the total or a change in both.

In order to increase materially the value of common size balances sheet, an extra column may be had for each year to depict the percentages of each item within a group to the total of the group. This enables to establish a normal relationship between similar group items and their totals as shown below:

TABLE 21.9

Assets	*Amount Rs.*	*Percent of Sub-total*	*Percent of Totals*
Current Assets			
Cash	75	15	7.5
Sundry debtors	213	43.5	21.7
Trading Stock	164	33.5	16.8
Other Current Assets	22	4.5	2.3
Prepaid expenses	20	3.8	1.7
Total Current Assets	494	100.0	50.0
Fixed Assets	497		50.0
Total Assets	981		100

Because the common-size balance sheet percentages show component parts of the totals, a horizontal comparison from year to year would result in a study of the trends of relationships. They do not provide information about the trends of individual items every year. It has doubts if the observation of the trends of these relationships is of any utility as the total is affected by the changes in all its parts with the outcome that the trends of relationships are very difficult for interpretation. Common-size balance sheet can be utilised only if it would be established in any particular business that a certain item should be a certain percentage of the relevant total, but it is not very easy, if not impossible, to establish such norms and this fact detracts from the usefulness of common-size balance sheet.

Common-size Income Statement This shows that the amount or percentage of net sales has been absorbed by each individual cost or expense item. A comparison of common size income statement ratios is clear as they show that a large particular or smaller relative amount of net sales figure was used in meeting costs or expenses, though percentages may be influenced by variations in sales prices, higher or lower costs of goods acquired.

TABLE 21.10

BLACK BIRD AND GREEN BIRD COMPANIES
Comparative Balance Sheet
(As on 31st December 2007)

Assets	*Black Bird Co.*		*Blue Bird Co.*	
	Amount	*Percent of total*	*Amount*	*percent of total*
Current Assets:	*Rs.*		*Rs.*	
Cash	25	2.5	75	7.5
Sundry debtors net	225	2.25	220	2.20
Trading Stock	110	11.0	175	17.5
Prepaid Expenses	12	1.2	22	.2

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Other Current Assets	11	1.1	22	2.2
Total Current Assets	383	37.3	514	51.4
Fixed Assets net	627	62.7	506	50.6
	1,010	100.0	1,020	102.0
Liabilities and Capital				
Current Liabilities				
Sundry Creditors	41	4.1	153	15.3
Other Current Liabilities	77	7.7	61	6.1
Total Current Liabilities	118	11.8	214	21.4
Fixed Liabilities	224	22.4	317	31.7
Total Liabilities	342	34.2	531	53.1
Capital	668	65.8	489	48.9
Total Liabilities & Capital	1000	100.0	1020	102.0

TABLE 21.11

Comparative Income Statement
(For the year ended 31st Dec., 2007)

Assets	*Black Bird Co.*		*Blue Bird Co.*	
	Amount	*Percent of total*	*Amount*	*percent of Sales*
	Rs.		*Rs.*	
Net Sales	1,364	100.00	975	100.00
Cost of goods sold	732	54.0	477	48.00
Gross Profit on Sales	632	46.00	498	52.00
Selling Expenses	358	28.2	271	27.9
Administrative and General Expenses	90	7.1	96	10.10
Total Operating Expenses	448	35.3	367	37.9
Operating Profit	184	10.7	131	14.1
Other Income	10	1.0	8	0.8
	194	11.7	139	14.9
Other Expenses	14	1.4	31	3.1
Income before Income Tax	180	10.3	108	11.8
Income Tax	60	5.2	27	2.8
Net Income after Income Tax	120	5.1	81	9.00
Deduct extraordinary items		-		-
Loss on the sale of securities	80		-	
Net Income transferred to earned surplus	40	5.1	81	9.00

The results drawn from the computation of common-size income statement percentages are as given below:

(i) The Blackbird Co. appears to be more traditionally financed as its capital and retained earnings constitute 65.8% of the total capital and liabilities, while Bluebird Co. has a tendency to lean on borrowed funds as liabilities to third parties are 53.1% of the total capital and liabilities.

(ii) On the assumption that the amounts of sundry debtors and trading stock given in the balance sheets are representative of the full year, it can be said that Blackbird Co. has in effect a more

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efficient credit and collection policy as Bluebird Co. has a larger amount locked up in Sundry Debtors and Trading Stock alone with a lower turnover.

(iii) Bluebird Co. has 7.5% of its total assets in the form of cash while the corresponding percentage of Blackbird Co. is only 2.5%. This may warrant the view that the former is better placed than the latter so far as the cash resources are concerned but it has to be further verified with the help of trend ratios for cash for several years in the past.

(iv) Though the fixed assets block of Blackbird Co. is larger than the fixed assets investment of Bluebird Co., the cost of fixed assets in relation to sale volume is lower in case of the former, than in the case of the latter. In order to express any firm opinion on this point, a detailed analysis of the fixed assets in the case of both the companies is necessary.

(v) Bluebird Co. has a definite advantage over the Blackbird Co. with reference to purchase and sales prices due to the fact that while Bluebird Company's cost of goods sold amount to 48% of net sales, the relative percentage for Blackbird Co. is 54%. However, the percentage which general and administrative expenses bear to net sales, is lower in the case of Blackbird Co. than in the case of Bluebird company.

Though commercial banks and other short-term creditors are primarily concerned with the analysis of short-term financial position or test of liquidity, it is valuable to management in checking the efficiency with which working capital is being employed in the business. It is also of importance to shareholders and long-term creditors in determining to some extent, at least the prospects of dividend and interest payment. The questions to be studied in connection with the ratio-analysis of short-term financial position are:

(i) Will the company be able to pay its current debts promptly?

(ii) Is management utilising working capital efficiency?

(iii) Is the current financial position improving?

Current Ratio

Meaning. Current ratio (CR) is also called working capital ratio. It is most widely used of all analytical devices based on the balance sheet. It matches the total current assets of the concern to its current liabilities.

Formulation

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Components. Current assets include normally cash in hand or at bank, marketable prepaid expenses, work-in-progress, sundry debtors and inventories, while current liabilities are composed of sundry creditors, bills payable, outstanding and accrued expenses income tax payable.

In this connection a problem arises whether a bank overdraft should be regarded as a current liability. In many cases, overdraft arrangement with the bank is more or less permanent and therefore, it is contended that overdraft should be treated as a long-term liability to be excluded from the preview of current ratio. In spite of the fact that this sort of argument has a substantial degree of truth, the fact remains that overdraft facility may be cancelled by the bank at any time. Hence in keeping with this reasoning, coupled with the need for conservation in dealing with a situation, it is advisable to include bank overdraft in current liabilities.

Precautions. In determining the current ratio, it is important that all current assets and current liabilities should be properly valued. To the extent that values of current assets are not correctly estimated in the

balance sheet, current ratio may be unduly inflated or unnecessarily reduced. Hence, reserves and other accounts related to the valuation of current assets are deducted from the total current assets.

Besides contingent liabilities by way of discounted bills, receivables should be given proper consideration in the study of current ratio and consequently though it is not the most common practice. All bills receivable – whether discounted or not – are treated as current assets while at the same time discounted bills receivable are treated as current liabilities. In so far as a business is contingently liable in the event of a default on discounted bills at maturity, such a procedure gives a more realistic and accurate idea of the current financial position.

Example

Excerpts from Balance Sheet

TABLE 21.12

	Rs.			*Rs.*
Creditors	16,000	Cash		
Bills Payable	15,000	Investments		
Bank Overdraft	10,000	Giltedged bills receivable		
Outstanding Expenses	5,000			
Income – tax – payable	23,000	Debtors	32,000	20,000
		Less reserve	12,000	50,000
		Investories		25,000
		Work in Progress		145,000
Total current liabilities	69,000	Total current assets		15,000

$$\text{The current ratio would be } \frac{\text{Rs.145,000}}{\text{Rs.69,000}} = 2:1$$

This depicts that for every Re. 1 worth of current liabilities, there are current assets worth Rs. 2. It also means that the concern will be able to pay off its current liabilities in full, even if it liquidates its current assets at 50% of their book values, while there is every probability of their realising more.

Problems of Window-dressing

The analyst must always be on the look-out for signs of what is known as window-dressing that depicts the practice of showing current assets and current liabilities in a manner so as to present a more favourable current ratio than the actual one. This may be done by manipulating the value of inventory, recording in advance cash receipts applicable to the next accounting period's sale of merchandise, omission of liability for merchandise included in inventory, and treating a short-term obligation as long-term debt. In the same way, a balance sheet may be window-dressed when the business defers the replenishment, or has numerous special sales to reduce its inventory at the close of the accounting period. In such cases the cash, position will be adversely affected immediately after the closing date and current ratio will not be representative of the position during the year.

Significance. Current ratio shows the liquidity of current assets or the ability of the business to meet the maturing current obligations. The popularity of the current ratio shows the facts that almost everybody, who has a chance to analyse the Balance Sheet, whether he is mainly interested in short-term or long-term outlook, knows that prospects can only be bleak for firms that are not in a position clearly to meet obligations currently becoming due and expected to fall due in the near future. Cash need not be

immediately available to meet all current liabilities appearing in the balance sheet, but there should be good likelihood of an adequate short-term inflow shown by the amount of sundry debtors holdings of easily realisable investments. This constitutes the logic behind the components of the current ratio.

Then, the current ratio is bound up with the concept of working capital intimately. It is the amount of current assets after giving current liabilities and shows a margin of safety for short-term creditors. The larger the amount of net working capital in relation to current liabilities, the position will be more favourable with reference to the ability of the business to meet current debts, fixed interest charges and dividend needs and to absorb operating losses declines in the value of inventor and temporary investments, excessive amounts of bad debts, and cost of emergency events.

The minimum of two-to-one ratio is often referred to as a banker's rule of thumb standard of liquidity for a business. A criterion of hundred percent margin of current assets over current liabilities is a precaution based on the practical knowledge of the possible shrinkage that may come at any time in the property values of a business. However, such a need which is set up blindly, fails to recognize the changing quality and characteristics of the current assets of different businesses.

There can be instances where even a business with a high current ratio might not be in a position to pay current liabilities because of an unfavourable distribution of current assets in relation to liquidity. In this way, the merchandise inventory may be excessively high in relation to prospective sales and an increase in inventory accompanied by a decrease in sales may show an excessive inventory. Again, shifts may also take place between the various components of current assets much to the detriment of the ability of business to meet its current liabilities. A decline in the relative proportion of cash and bills along with an increase in the inventories, will generally bring about a less liquid current position, and an improvement in liquidity results when a greater proportionate part of the total current assets is invested in cash bills and debtors with a lower percentage in inventories. It is clear that the quality of short-term assets would be a pervasive factor in the interpretation of current ratios.

Analysis of Short-term Financial Position or Tests Liquidity

Acid Test Ratio Current ratio was developed as a means of deriving a rough idea of the liquidity of a concern many decades ago and, hence, a second testing device for the working capital position has been evolved by the name of Acid Test Ratio (ATR) or Quick Ratio (QR).

Meaning. Acid Test Ratio or Liquid Raio, as it is at times known, is concerned with the relationship between liquid assets and liquid liabilities to supplement the information given by the current ratio. In many lines of business, a concern whose current assets consist largely of inventory, can very easily become technically, involved within a very short period of time and this is the rationale of the term 'acid-test ratio' the name being prepared by some writers. At times, as a conservative measure of the liquid position, this ratio relates liquid assets to current liabilities.

Components. Liquid assets would include cash, debtors after providing for bad and doubtful debts and securities that can be realised for bad and doubtful debts and securities that can be realised without difficulty. Liquid or quick liabilities refer to current liability less bank overdraft, i.e. creditors, bills payable and outstanding less bank or accrued expenses.

Inventories are not included in current assets for the purposes of this ratio due to the fact that they are a step further removed from cash than are accounts receivable and hence, short-term creditors have to accept payment from existing cash balances and collections from debtors and maturing bills without depending upon the realisation of inventories which is shrouded with uncertainty. In the same way, as emphasis is on the ready availability of cash for payment, prepaid expenses are also excluded from quick

assets as they usually cannot be converted into cash. On the other hand, bank overdraft is not included in liquid liabilities as it tends to become some short of a permanent mode of financing.

Precautions. All the precautions that are needed to be observed in the computation of current ratio, have also to be taken in the case of this ratio- nature of assets has to be kept in view and assets must be properly valued.

Formula:

$$\text{Acid Test Ratio or Quick Ratio} = \frac{\text{Liquid or Quick Assets}}{\text{Liquid or Quick Liabilities}}$$

When the ratio is calculated with current liabilities, the formula stands as

$$\text{Acid Test Ratio} = \frac{\text{Liquid or Quick Denominator Assets}}{\text{Current Liabilities}}$$

Significance. Insofar as it eliminates inventories as a part of current assets in the calculation of ratio, acid test ratio is a more rigorous test of liquidity than the current ratio and, when used in conjunction with it, gives a better picture of the firms' ability to meet its short-term debts out of short –term assets.

While deriving conclusion from the ratio, it must be remembered that though technically inventories are not available to meet liquid liabilities, they can be used to a measurable extent to meet current liabilities as of their normal conversion at a profit in the ordinary course yielding a larger amount of cash.

Apart from these, the interpretation of the acid-test ratio is hedged in by the same factors and conditions as the current ratio.

Absolute liquidity Ratio The logical consequence of the concept of elimination of inventories as a liquid asset in the acid test ratio owing to their questionable value in liquidation is the elimination of debtors from the total of current assets in the computation of Absolute Liquidity Ratio (ALR). Though receivables are generally more liquid in nature than inventories, there may be doubts concerning their liquidity also. Hence, absolute liquidity ratio relates to the sum of cash and marketable securities to the total quick liabilities.

It gives a more meaningful measure of liquidity when used in conjunction with current and acid test ratios. However, the ratio is not much in use even while evaluating the liquid position of a firm.

Determination of the rate at which various short-term assets are converted into cash is another important dimension of liquidity and has, therefore, often been a concomitant of the analysis of short-term financial position. Following ratios are included under this category.

(i) Inventory Turnover Ratio.

Meaning. This is also called as Stock Turnover Ratio in the traditional language, usually establishes relationship between the cost of goods sold during a given period and the average amount of inventory outstanding during that period.

This ratio can be seen at from another view-point also. While it helps in determining the liquidity of a firm inasmuch as it gives the rate at which inventories are converted into sales, and then into cash, it helps true financial manager in evaluation of inventory policy finding out the reasonableness of such a policy at a given level to avoid any danger of over-stocking as a prelude to the effective utilisation of the resources of the firm.

Components. Inventory turnover rate is best expressed through the relationship between cost of goods sold and average inventory at cost, but ratio of sales to inventory in case the cost of goods sold is not available.

Though it may serve as an approximate measure of turnover the analyst should always be conscious of the fact that it is only a rough approximation. Over and above these, some firms like departmental stores customarily valuing their inventories at selling prices and using the so-called retail method for the purpose, compute inventory turnover as the ratio between net sales and average inventory at selling prices.

For greatest accuracy in the calculation of inventory turnover ratio, monthly inventories should ordinarily be used and this is specially desirable if the size of the inventories fluctuates substantially in the course of the year. In this way average inventory for a year is the sum of inventory at the beginning of the year and inventory at the end of every month, the total to be divided by 13. Still in most cases, the external analyst has to be satisfied with the inventory at the end of the accounting period or the average of inventories at the beginning and end of the accounting period. Many firms work on the basis of a fiscal year other than the calendar year due to the reason that they want their annual operations to conclude at a time when inventories are at or near their lowest level as well as due to the considerations of effecting appreciable economies in the work of stock-taking and valuation.

For a firm in such a position, a turnover ratio computed on the basis of the average of opening and closing inventories would be much higher than the one computed on the basis of monthly inventories, so that it would be quite misleading.

Formula:

Inventory Turnover Ratio can be calculated by any of the following three formulae:

(i) $\dfrac{\text{Cost of goods sold}}{\text{Average inventory at cost}}$

(ii) $\dfrac{\text{Net sales}}{\text{Average inventory at cost}}$

(iii) $\dfrac{\text{Net sales}}{\text{Average inventory at selling prices}}$

Exception has, at times, been taken to the second formula as the numerator and denominator are in different units while a more realistic turnover ratio is given when both the numerator and denominator are either at cost or selling prices. Accordingly, the remaining two formulae alone are considered adequate.

Example: If the cost of goods sold by a concern is Rs.5,00,000, and the average inventory Rs.50,00,000, the stock turn over ratio would be

$$\frac{\text{Rs.5,00,000}}{\text{Rs.50,000}} = 10 \text{ times}$$

Significance. Inventory turnover is an indication of the velocity with which merchandise moves through the business. An inventory turnover ratio standing by itself, means absolutely nothing, as there is no fixed norm for inventory turnover that depends greatly on the nature of industry and on the sales policies followed by the firm. Hence, it is apt to state that a comparative analysis with industry or a comparative analysis for the individual firm over time is the appropriate type of evaluative device to use. In this way, a firm's turnover ratio in the year just ended is 10,strong evidence of growing deficiency in inventory management is brought out – though not conclusive by any means, of the situation. So, should a firm's turnover ratio in the year just ended be 10, while those of its principal competitors were say, 12,15 and

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18, an investigation of the causes of what appears to be a record of poor performance, would surely be in order.

A low inventory turnover may reflect dull business, over-investment in inventory, accumulation of merchandise at the end of the period in antipation of higher and immediate requirements, inflated inventory valuation, or a change in the distributive functions performed by the business-the management of a retail business may be entering the manufacturing or wholesaling phase of business.

A higher turnover of inventory may not be accompanied by a relatively high net income, as profits may be sacrificed in obtaining a larger sales volume with the result that a higher rate of turnover is likely to prove less profitable than a lower turnover unless accompanied by a larger total gross profit although the rate of gross profit may well be the same or even slightly lower. Such a situation may arise so that the selling price of goods is lowered to increase the turnover of inventory or due to disproportionate increase in selling and administrative expenses. In the same way, a relatively high turnover ratio may not really be an indicator of favourable results, as it may show a serious under-investment in inventories and this may result in loss of customer patronage on account of the inability to show complete times or the failure to make prompt deliveries.

Precautions. The impression that higher the inventory turnover ratio, the better it is for the business as it shows greater sale with the same inventory or the same level of sales with less investment in inventory, is rather an over-simplification of the position with regard to inventory turnover ratio which should not be used to routine or mechanical manner without an analysis of the complex circumstances bearing upon the formulation of inventory policies. When ratios are found to be out-of-line, praise for blame upon the makers of policy must be withheld until reasons for out-of-line results have been sought and found.

(ii) Debtors Turnover Ratio

Meaning. The Turnover Ratio (DT) or Receivables Turnover Ratio (RT) matches net credit sales of a firm to record trade debtors thereby indicating the rate at which cash is generated by turnover or receivables or debtors. However, this is not immediately apparent from the debtors' turnover ratio and, hence, it has to be supplemented by average Collection Period,which involves the following steps :

(a) Calculation of daily sales. This is obtained by dividing number of working days during a year into net credit sales during the year.

(b) Calculation of Average Collection Period. This is calculated by dividing sales per day as arrived at by step 1, into the amount of trade debtors. The quotient represents the number of days of sales tied up in receivables.

Components. The word 'trade debtors' for the sake of this ratio is used in comprehensive sense and also includes the amount of bills receivable along with book debts at the end of the Accounting Period. Again, debtors which do not arise from regular sales should, if possible, be excluded, e.g. a bill receivable from the average of debtors at the beginning and at end of the year. Another important point in connection with the deducted amount from the total amount of receivables have been collected.

Due to the absence of the break-up sales into cash and credit sales in published accounts, the analyst has to use total sales for computation of the ratio with the result the ratio tends to be overstated. In many companies, all sales are made on credit but, even where cash sales are significant, a comparison of the collection period of two companies would be reasonable if both of them proportion between cash and credit sales.

So far as the calculation of daily sales is concerned, the denominator is to be the number of working days and would be to the extent of suggesting that the number of days is instituted in industry or business.

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The turnover of debtors-the collection ratio-can also be determined by multiplying the ratio of trade debtors to sales with the number of working days.

Formula:

$$\text{Debtor's Turnover Ratio} = \frac{\text{Trade debtors}}{\text{Sales per Day}}$$

$$\text{Sales per Day} = \frac{\text{Net Sales}}{\text{No of working days}}$$

Or

$$\text{Day's Sales Uncollected} = \frac{\text{Trade debtors}}{\text{Net sales}} \quad \text{No. of working days (360)}$$

Example: If the net sales for a year were Rs. 4,00,000, and the amount of debtors at the end of the year Rs. 1,00,000, debtors turnover ratio would ratio would be

$$\text{Sales per day} = \frac{\text{Rs.4,00,000}}{360} = \text{Rs.1,111}$$

$$\text{Debtors turnover ratio} = \frac{\text{Rs.1,00,000}}{\text{Rs.1,111}} = 90 \text{ days.}$$

Thus, the debtors show uncollected accounts in respect of 90 days of sales.

Significance. The amount of trade debtors and bills receivable depends upon the volume, credit extension practice and the effectiveness of the collection policy. Since debtors constitute a major element of current assets, the credit and collection policies of the business must be under continuous watch. The amount of trade debtors at the end of the accounting period should not exceed a reasonable proportion of sales and debtors turnover ratio is an enabling device to find out as to how many days' average sales are tied up in the value of amounts owned by debtors according to the Balance Sheet. It is also an excellent supplementary check to be used for judging the adequacy ratio.

The objective of the comparison implied in the debtors turnover ratio is to learn how old the accounts are, and partly to learn how fast cash will flow their collections. For this, a comparison is made with the terms on which the firm sells its goods.

For example, if in the above example, credit period is 45 days, it appears that at least half the accounts are overdue as 90 days sales are locked up in trade debtors. This position is thought of as over-investment in receivable and may be the result of over-extension of credit, liberalisation of credit, liberalisation of credit terms, ineffective credit investigations, lack of effective collection policies, or the inability of the collection amount of trade debtors in relation to net sales that is outstanding at the end of the Accounting Period, the greater would be the expense in connection with uncollectable accounts.

A variation in the ratio of net sales to trade debtors from year to year or as between companies, may be carried by specific factors such as changes in terms of sales; inclusion or exclusion of cash and instalment sales, special sales campaign at the end of Accounting Period, sales made directly to consumers or department; price changes, the effectiveness of credit, collection and sales department; strikes and lockouts and the stage of business cycle at the time of the ratio is determined.

REST OF SOLVENCY OR ANALYSIS OF LONG-TERM FINANCIAL CONDITION

While bankers and other short-term creditors are most interested in the current debt paying ability of a business, shareholders and debenture holders are mainly concerned with the long financial aspects of

primary interest to each other so that these groups concern themselves with current and non-current sections of the Balance Sheet and prospective earnings.

Debt to Equity Ratio

Meaning. This ratio (DE) relates recoded creditor's claims on assets to the owners recorded claims in order to measure the firm's obligations to creditors in relation to funds provided by the owners. It is also called 'External-Internal Equity ratio'.

Components. The creditor category includes all debts, whether long-term or short-term, or whether in the form of mortgages, bills or debentures, while the claims of owners consist of preference shares, equity shares, capital reserve, retained earnings and reserves representing earmarked surplus, like reserve for contingencies, and reserve for plant expansion.

In some financial circles, this ratio is also computed with preference shares classed as creditors' rather than as ownership claims, as preference shares are ownership commitments only in the eyes of law and usually do not exhibit other characteristics of an ownership security. Thus, there are differences of opinion regarding the treatment of preference shares as a creditor or ownership claim, depends upon the nature of preference shares and the purpose of financial analysis.

Formula:

$$\text{Debt to Equity Ratio} = \frac{\text{External Equities}}{\text{Internal Equities}}$$

$$\text{Debt to Equity Ratio} = \frac{\text{Outsiders' funds}}{\text{Shareholders funds}}$$

$$= \frac{\text{Rs.50,000}}{\text{Rs.75,000}}$$

$$= 2:3.$$

This means that the value of assets shrink by 66% before creditors prospects of payment would in any way be impaired.

Significance. The purpose of debt-to-equity ratio is to reach an idea of the amount of capital supplied by the owners to the firm and of 'asset cushion' available to creditors on liquidation. However, the interpretation of the ratio depends almost fully on the financial and business policy of the concern. From this viewpoint, the importance of the ratio lies in highlighting the seemingly irreconciliable viewpoints of the owners and creditors regarding the method of financing the business-the former having always the temptation of doing business with other peoples' funds and the owners should at least have as large an investment as creditors.

Theoretically, higher the interests of the proprietor as compared with that of the creditors, the sounder would be the financial analysis as this should not be treated as a generalisation. In the analysis of long-term financial condition of a business, the ratio enjoys the importance as the current ratio in the analysis of short-term financial position.

Proprietory Ratio

The variant of debt to equity ratio is the proprietory ratio which establishes the relationship between proprietors' funds and total assets. The difference between this ratio and cent percent represents the ratio of total assets.

Debts-to-Equity or proprietorship ratio is further analysed into the following :

(i) Ratio is Fixed Assets to Proprietor's Funds

This is calculated by the depreciated book value of same items as owners recorded claims in the case of Debt-to-Equity ratio.

$$\frac{\text{Rs.10,000}}{\text{Rs.1,00,000}} \quad 100 = 10\%$$

The ratio shows the extent to which ownership funds are sunk into assets with a relatively low turnover. When the amount of proprietors' funds exceed the value of assets, a part of the net working capital is supplied by the shareholders, provided that there are no other non-current assets and, when proprietors funds are less than the fixed assets, creditors obligations have been used to finance a part of the assets.

(ii) Ratio of Current Assets to Proprietor's Funds

This is calculated got by dividing value of current assets by the amount of proprietor's funds.

The purpose of the ratio is to show the percentage of proprietors' funds invested in current assets. There are cases where a higher proportion of current assets to proprietors' funds, as compared with the proportion of fixed assets, is derived to be an indication of the business.

Still, different industries have different standards and history of particular concern must be studied before too great a reliance is placed on this ratio. Then, any meaning employed in this ratio must be read along with the results given by the fixed assets of Proprietorship Funds Ratio or Proprietory Ratio.

Interest Coverage Ratio

Meaning. The Interest Coverage Ratio (IC) is also called Debt Service Ratio and is determined by dividing fixed interest charges and net profit. There is some controversy, regarding the connotation of the word 'net profit'-whether the item to be taken into consideration is before or after the deduction of income tax. Though there are arguments on both the sides, it can be stated in a summary that net profit before income tax is to be used in the computation of the interest charges with the result that the ability of the business to meet these charges is not affected by the levy of income tax.

Formula:

$$\text{Interest coverage ratio} = \frac{\text{Net before deduction of interest and income tax}}{\text{Fixed Interest charges}}$$

Usually, in the case of corporate enterprises the rate of income tax is 50% of profits.

Significance. The ratio gives an idea of the extent to which a firm's earnings may contract before it is unable to meet interest payments out of current earnings. It is used in external financial analysis and is watched more closely, by external analysis, than any other ratio.

The standard for this ratio for an industrial concern is that its fixed interest charges should be covered six to seven times. The weakness of the ratio would make the financial manager experience difficulty in raising extra funds from debt sources.

The assumption underlying this relationship is that the average historical performance of the firm under review will be its average performance in future, which may or may not be true but, in the absence of evidence to the contrary, historical data will be used by suppliers of capital to make such judgements regarding future.

Another viewpoint-cash to debt service ratio. There is another aspect of interest coverage ratio which is dealt with by Cash to Debt Service Ratio. The logic of the ratio is that interest expenses are met out

of which it meets its interest expenses out of operations, the total cash flow of the period ought to be used.

This observation is subject to the fact that, apart from interest expenses, a sinking fund is often needed and unless this is discretionary, it shows a fixed obligation of the firm with the result that needs to be more accurate, annual cash flow before interest ought to be related to the sum of interest payments, and sinking fund appropriations. In the refined language of financial management, it is known as "Debt cash flow coverage Ratio (CFCD).

As a matter of fact, cash before interest and taxes should cover service of debt interest and sinking fund by at least an average number of times so that the charges are covered once by even the current expected annual cash flow. Firms characterised by instability of earnings will need a larger average while, those with stable earnings, will need a smaller coverage.

Formula:

$$CFCD = H\frac{CE}{\frac{SFD}{1-1}}$$

Where CF CD = Cash flow coverage of debt.
CF = Annual cash flow before interest and taxes.
I = Interest payment
SFD = Sinking fund appropriation on debt

In case complete details regarding cash flow are not available, the numerator of the ratio would be the total of firms income before interest and taxes as well as depreciation charges.

The concept of debt cash flow coverage ratio, its formula and the difference in conclusion got from it in comparison with interest coverage, can be made clear by the example given here on :

Net income after tax	Rs.20,000
Depreciation charged	Rs.4,000
Tax rate	50% of net income
5% mortgage bonds	Rs.3,000
Fixed interest charges	Rs.2,000
Sinking fund appropriations	5% of outstanding Debentures

Using the formula of the ratio

$$CF\ CD = \frac{Rs.20,000 + 20,000 + 2,000 + 4,000}{Rs.2,000 + \frac{1,500}{1-5}}$$

$$= \frac{Rs.46,000}{Rs.2,000 + \left(\frac{1,500}{1} \times \frac{2}{1}\right)}$$

$$= \frac{Rs.46,000}{Rs.25,000 + 3,000}$$

$$= \frac{46,000}{5,500}$$

= 8.4 times approximately.

Interest coverage ratio

$$= \frac{\text{Rs.20,000} + 20,000 + 2,000}{\text{Rs.2,000}}$$

$$= \frac{\text{Rs.42,000}}{2,000} = 21 \text{ times.}$$

If interest coverage ratio is compared with debt cash flow coverage ratio, it can be stated that the latter is far less favourable than the former.

$$\frac{\text{Test of profitability}}{\text{Gross profit ratio}}$$

Concept. It shows the relationship of gross profit on sales to net sales as regards percentage, showing the percentage of gross profits earned on sales.

Components. The determinants of this ratio are the gross profit and sales got after deducting the value of goods returned by the customers from total sales. Gross profit comes from the difference between net sales and cost of goods sold without taking into account expenses charged to profit and loss account. Here, operating expenses are charged to Profit and loss account. Here, operating expenses are not entangled. Cost of goods sold in a trading concern is the purchase price of goods and directly all expenses are related with the purchase of goods, while for manufacturing firm, it includes the purchase price of raw materials and all manufacturing expenses.

Formula:

$$\text{Gross profit ratio} = \frac{\text{Gross profit}}{\text{Net sales}} \quad 100$$

Meaning. Gross profit ratio shows the degree to which selling prices of goods per unit may come down without resulting in losses the on concerns' operation. In other way, it depicts the average mark-up obtained on individual product or products lines. We have no norms to judging the gross profit ratio and hence, evaluation is a matter available with respect to purchasing markups and mark-downs, credit and collections and general merchandising policies. However, these data are not mostly available to the external analyst.

The gross profit should be sufficient to cover the operating expenses and to provide for fixed charges, dividends and building up of reserves.

A low gross profit ratio may show unfavourable purchasing and mark-up policies; the inability of management to develop sales volume, by which it makes impossible to purchase goods in large volume; marked reduction in selling prices not accompanied by proportionate decrease in cost goods; over-expansion or over-investment in plant facilities; unfavourable property locations and excessive competition.

Again, an increase in the gross profit ratio may show an increase in sale price of goods sold without its effect on the sale price of goods, stock at the beginning of the trading period valued at a figure lower than it should have been, artificial inflation of sales figures including goods sent or consignment, while the same are included in closing stock omitting purchase invoices from accounts, over valuation of goods stock, at the end of Accounting Period.

Operating Ratio

Concept. Operating ratio matches cost of goods sold plus other operation expenditure and net sales.

The ratio (OR) is closely related to the ratio of operating profit to net sales that can be obtained by deducting the operating ratio from 100.

Components. Operating expenses include the following:

(i) Selling and distribution expenditure such as salaries of salesmen, advertising and traveling allowances.

(ii) Administrative expenditure, including rent, insurance, salaries of clerks, directors' fees and legal expenditure.

Formula:

$$\text{Operating Ratio} = \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Net Sales}}$$

Significance. The ratio depicts the percentage of net sales which is absorbed by the cost of goods sold and operating expenses. Higher the operating ratio, the less favourable it is because it would leave a smaller margin to meet interest, dividends and other needs. Again, it can be useful as a partial index of overall profitability, but cannot be used as a test of financial condition without taking into consideration financial and extraordinary items. While interpreting the operating ratio, yearly possible variations in expenses should be recognized company-wise because of changes in policies with expenses subject to decisions of manager.

The ratio of operating profit to sales is obtained from the operating ratio, which shows the profitableness of sales and the portion remaining out of every rupee worth of sales, meeting all current operating costs and expenses.

Expense Ratios

They act as supplement to operation ratio. Operating expenses and sales volume are mutually related. Expense ratio is calculated by dividing net sales into each individual operating expense which includes selling, administrative and general expenses showing the part of net sales revenue that is consumed by the different operating expenses. These ratios represent a summary of changes in net sales and the expense items and are valuable in comparison of similar business or yearly operating data for some business. It should be noted that if an expense is a fixed amount as building tax, the ratio would decrease as the value of sales increases, but a variable expense, as commission of sales, will have the same percentage.

Net Profit Ratio

This ratio belongs to net income or profit after taxes to net sales. It shows the position of sales left to the owners after all costs, charges and expenses are deducted. It is calculated after adding non-operating income as interest or dividends on investments to operating profit on deducting non-operating expenses as loss on the sale of old assets, provision of legal damages from such profit. The ratio is used for measuring overall profitability and is useful to owners. It gives the idea of efficiency and profitability of business to some extent.

TEST OF OVERALL PROFITABILITY

Return on Shareholders Investment Concept

This is also known as return on proprietor's funds. It is the ratio of net profit to proprietors. It is total assets minus liabilities.

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Components. The investment of shareholders means all categories of share capital, capital reserves and accounts of appropriations' profits. We have to consider the average of the figures relating to shareholders' investments in the beginning and ending Balance Sheets.

As far as profits are concerned, they are to be seen from the point of view of the return to shareholders with the result that they should be arrived at after the payment of taxes and interest on long-term liabilities. It is so due to the fact that the income alone would be available to the shareholders for dividends.

Formula:

$$\text{Return on shareholders' investment} = \frac{\text{Net profit}}{\text{Shareholders©fund}}$$

Significance Return on shareholders investment or return on capital is an effective manner of the profitability of an enterprise. This ratio is one of the most important relationships in financial statement analysis. The realisation of a satisfactory net income is the major objective of a business, and the ratio of net profit to shareholders funds depicts the extent to which this objective is being attained.

The ratio of net profit to proprietors' funds that measures the average return on the total equity of the shareholders, should be compared with the ratios for other similar companies or the industry as a whole, to determine whether the rate of return is attractive. Still, a comparison of the profit ratios of two companies, in different industries is mostly of limited validity as margins and operating cost factors tend to differ widely among industries. The return on investment figure often provides a valid basis for inter-industry comparisons.

In forming an opinion regarding the prospective earning capacity of an enterprise, it is no less significant to know about the character of directors and management, the probable demand for company's products, the supply of raw materials, industrial conditions, over and above the information conveyed by the rate of return on capital.

Return on Equity Capital

Concept. Another aspect to be thought in the analysis of overall profitability is the ratio of return on equity which relates the profits available to equity shareholders to the amount of capital invested by them.

Another way of looking at the rate of 'return on equity capital is to divide the net profit available to equity shareholders by the number of outstanding equity shares in order to calculate earnings per equity share.

There are various interpretations of 'return on equity capital ' and the most important has been the one in which it is looked upon as return on total equity capital employed'. Here, net profits availability to equity shareholders are related to recorded claim of these residual claimants including the equity share capital, revenue reserves and appropriations of profit.

Components. For calculation, net profits are calculated after deducting the dividend due to preference shareholders, if there are any. If they have the right to take part in the further profits after a fixed rate of dividend paid to equity share holders, this will be deducted to reach at profits due to equity shareholders.

Formula:

$$\text{Rate of return on equity capital} = \frac{\text{Net profits - Dividend due to preference shareholders}}{\text{Equity share capital or Number of equity shares}}$$

Example:

$$\text{Rate of return on equity capital} = \frac{\text{Rs.2,00,000 - 1,00,000}}{\text{Rs.25,000}} \times 100$$

$$= \frac{\text{Rs.1,00,000}}{25,000} \times 100$$

$$= 4 \quad 100 = 400\%$$

$$\text{Earnings per equity share} = \frac{1,00,000}{4,000} \quad \text{Rs.25.}$$

Significance. The rate of return shows the percentage, the earned profit of the period and gives the amount of capital invested by equity shareholders. It is used to compare the performance of a company's equity capital with those of other companies, so that if two companies are alike in quality, are equally well known, have different rates of return on equity capital, and there is no indication of the future being in any way different from the past, the company with higher return in equity capital will be favoured by the investors and a greater market valuation will be given to its shares.

Trading on Equity

This term is used commonly for return on equity capital. This happens when capital other than that of residual owners or equity shareholders is used in the firm. It means to use both long-term and short-term debt, and all classes of preference share capital. The essence of trading on equity is the use of these funds at an explicit cost, while their use in the concern yields an explicit return in excess of such cost. All the concerns may be said to be trading on equity, but each generates a return on commitments of equity shareholders depending upon the extent to which outside funds have been used and the explicit cost of such funds.

Return on Capital Used

The owners invest money in a concern to get satisfactory return on their capital. This return is influenced by factors of the industry, the involved risks, inflation, rate of return on securities and fluctuations due to external economic conditions. The shareholder can measure the success of a firm in terms of profit related to capital used which can show the efficiency of the business.

Concept. The capital employed can be defined as including gross capital and net used. Again, it can include proprietors' net capital used. This depends on the purposes of the capital used. Gross capital employed includes the total assets of the business less its current liabilities. The term covers capital, capital reserves, revenue reserves including profit and loss account balance and long-term loans like debentures. There is controversy as to its inclusion under 'capital employed'.

Components. This includes fixed assets like land, building, plant, machinery, furniture and fittings and vehicles. The valuation is done on the basis of growth value, net value and replacement cost. Gross value is the original cost of the asset. Net value is the written down value. The replacement cost basis of valuation shows the revaluation fixed assets by assessing their current market values either by reference to reliable published index numbers or an evaluation of an expert. In calculating capital employed, the choice lies between the net value or the replacement cost of the assets with the latter steadily gaining ground due to a more realistic assessment of the financial position that it presents. In case replacement cost basis is adopted, it would call for the recalculation of the provisions for depreciation as charges in

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the profit and loss account would be based on the original cost of the assets. If any assets are useless for a time, it is considered advisable to exclude them from capital used.

Following points are important for calculation of capital employed.

(i) Though idle assets are excluded from capital employed, stand by plant and equipment essential to the running of a machinery should not be excluded.

(ii) Intangible assets like goodwill, patent and trade markers are generally excluded, unless they have potential sale value, as intangible assets should be written-off as quickly as possible.

(iii) Where investments are made outside the firm, they are to be excluded, but those made for the bonafide purposes of the business are included.

(iv) Fictitious assets like preliminary expenses, accounts of deferred revenue expenditures are excluded.

(v) All stocks-raw materials, work-in-progress and finished goods are included in capital employed, valuing by them on a consistent basis, at cost.

(vi) Normal trade debtors are included in capital employed after taking into account provisions for doubtful debts.

(vii) Any balance at bank in excess of the normal requirements of a business may be excluded.

There are differences of opinion regarding the calculation of 'capital employed'. These differences arise owing to the desire to introduce accuracy in the estimates of 'return on capital employed'. Some opine that figure of 'capital employed' must be such that it may fairly show the capital investment throughout the year and, hence, they bring in the concept of 'average capital employed'.

A business earns profits all through the year, and the same remain in the business, and only at the end of the year they are distributed as dividends, with the result that this factor has to be counted in the calculation of capital used, and this is done either by finding the simple arithmetic average of the total capital employed at the beginning and at the end of the year, or by adjusting half profits after tax and interest to capital, employed in the assumption that profits are equally earned throughout the year.

If 'net capital employed' has been counted from the asset side, half of the profits earned during the year are deducted so as to reach at average net capital employed, while net capital employed is being reckoned with the half of items on the liabilities side, of which profit and loss accounts is one, half of the profits earned during the year have to be subtracted for getting the figure of 'average net capital employed', but if profit and loss account is not one of the items on the liabilities side, the portion of profits is to be added for reaching 'average net capital employed'.

Still, if the concept used is one of gross employed, no such adjustments are necessary. Income or net profits for the purpose of counting return on capital employed, will be determined according to the base used-if gross capital is taken, profit should be what is earned by that capital. Hence, the figure of profit, as used in the calculation of capital employed, is the net profit with adjustments made for:

(a) any abnormal or non-recurring losses or gains.

(b) Depreciation based on the replacement cost of assets.

(c) Income from investments outside the business.

(d) As long-term liabilities are included in capital employed, interest on such liabilities should be added back to the 'net profits' for the sake of consistency. In case of 'gross capital employed', even interest on short-term liabilities, if any, should be added as such liabilities are part of 'gross capital employed'

(e) 'Net profits to be taken into consideration should be before the payment of income-tax so that income-tax paid, or provision for the same, made in accounts, has to be restored to the profits.

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This is so because tax has nothing to do with the earning capacity of the business, and is paid after the profits have been earned.

In this way, the profit is brought into line with that used for 'capital employed' for the sake of management planning and control. All these adjustments are made to net profits as 'return on capital employed' is a measure of the economic justification of a particular line for business requiring the net income to reflect the economic facts relating thereto. It should never be confused with 'return to shareholders', as is sometimes done, which is an entirely different concept.

Items Included in 'Capital Employed'

First Alternative

(a) Fixed assets
Land and buildings
Plant and machinery
Fixtures and furniture
Motor vehicles.
(b) Investments made in the business.
(c) Current assets-
Stock
Debtors less reserve for doubtful debts
Bank balance
Cash in hand
Less Current liabilities
Bank overdraft

Second Alternative

Issue share capital.
Capital reserves
Revenue reserves
Debentures

Significance. The concept of 'Return on capital employed' has been given attention in current years, particularly in the field of financial management', where it is used to ascertain whether a certain aim has been fulfilled or whether an alternative use of capital is justified. Again, it is also used as a basis for various managerial decisions.

In fact, the starting point of business budgeting should be the determination of a minimum rate of profit on capital investment which is then worked backwards for planning the detail of business operations. This is the minimum return expected on capital employed and in order to attract capital to a particular business, a fair return has to be paid. Then, the laying down of a minimum return is also essential from the point of view of making a correct choice of investments so that, if adequate return is not forthcoming in a particular time, the same may be discarded in the favour of a more lucrative alternative. There is hardly any criterion for determining the minimum return with reference to which return on capital investment may be judged. Return to capital employed is the only measure which can be said to show satisfactorily the overall performance of an undertaking from the standpoint of profitability – the benefits being obtained in the shape of income for the sacrifice involved in the form of capital invested. It enables

the management to show if the funds entrusted to it have been properly used or not. In this way, it can become an integral part of the budgetary control system in order that the management may be able to follow the progress being made and to take corrective action, if required.

ANALYSIS OF CAPITAL STRUCTURE

Capital Gearing Ratio

Concept. Capital gearing means to narrate the ratio between the equity share capital and fixed interest-bearing securities of a company. Where the holders of fixed income bearing securities have got a big position in the income of a business enterprise, it is said to be 'highly geared'. The situation is expressed most commonly where there is a small equity holding compared with fixed income bearing securities.

In this way, in view of the nature of capital gearing at the time of the commencement of a business, the amount of profits available for distribution after the maintenance of reserves must be estimated, at the same time taking into consideration the market rate of yields or investments in companies of a similar nature.

Significance. Capital gearing ratio belongs to the family of 'leverage' ratios and is important not only to prospective investors but also to the company. It must be planned carefully inasmuch as it affects the concern's capacity to maintain an even divided distribution policy during difficult trading periods that may come.

Again, its immediate effect may be to enable the company to pay higher equity dividends when there is only a narrow margin of profit, but its long range effects on the efficiency of a company are far reaching. Distribution policies and the building up of reserves, and a stable dividend policy, are all affected by company's gear ratio.

Though capital gearing ratio, together with the debt to equity ratio, are by far the most important means of the analysis of the capital structure, following ratios are also used to throw light on certain aspects of the capital structure.

(i) Total Investment to Long-term Liabilities This is calculated by comparing the share capital and loan capital. This makes a different approach to the method of financing the business and is based on the principle that there should not be too high a proportion of long-term liabilities.

(ii) Current Liabilities to Proprietors' Funds This ratio concerns the amount of current liabilities to proprietors' funds. It measures the amount of funds raised by the proprietors as against those raised by short-term borrowings. A high ratio shows that the firm will be slow in paying its bills as, if the owners have not put sufficient of their own funds in business, suppliers of long-term funds would be unwilling to expose themselves to the risks and the concern will have to recourse to short-term stop-gap financing to a large extent.

(iii) Ratio of Reserves to Equity Capital The ratio gives relationship between reserves and equity capital. It is very important as it shows the policy followed towards the growth shares. If a conservative policy regarding the distribution of dividend is followed, the ratio may be unduly high. It also expresses the extent to which value of equity shares has gone up by the ploughing back to profits.

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Sundry Measuring Devices

(i) Fixed Assets Turnover Some authors have put the use of the ratio of sales to fixed assets on the basis that as the investment in fixed assets is made for the ultimate purpose of producing sales, the ratio of sales to fixed assets is a measure of the achievement of that purpose. If the ratio is very high, it shows that the concern is overtrading on its assets, but, in case the ratio is low, it shows that the firm has an excessive investment in fixed assets and the financial manager must scrutinise request for extra capital asset purchases. Still, as sales are dependent on factors other than fixed assets-the ability, efficiency, and courtesy of salesman, the quality and style of goods, favourable markets, strategic location, demand creation-no direct relationship, that can be significantly measured by the ratio, can be established between sales and fixed assets.

According to Myers:

"It is usually not feasible to relate the stated amount of fixed assets with money value of sales, with results that are significant. Hence, the ratio is not recommended for general use".

(ii) Working Capital Turnover To examine the efficiency with which net working capital is utilised, many analysts determine the ratio of net sales to net working capital, i.e. the turnover of working capital. This is achieved by dividing the net working capital into net sales showing whether the business is being worked on a small or large amount of net working capital in relation to sales. Larger the net sales in comparison with net working capital, the less favourable the situation is likely to be, if the result and net working capital turnover has been made possible by the use of an excess amount of current credit. The real danger lies in the possibility of a decline in sales due to unforeseen circumstances, like cancellation of orders, strikes, depressions and competition.

A high working capital turnover may be the result of favourable turnovers of inventories, and receivables or may reflect inadequacy of net working capital, accompanied by low turnover of inventories and receivables. On the other hand, a low turnover of net working capital may be the outcome of an excess of net working capital turnover of inventories and receivables, a large cash balance or investment of working capital in the firm of temporary investments. In this way, in interpreting the working capital turnover, the analyst should exercise sufficient caution as the working capital turnover ratio is a composite of a number of relationships each one of which should be analysed cautiously to account for changes from year to year on between companies.

(iii) Ratio of Operating Profit to Total Operating Assets The profitability of an enterprise may be measured by relating the operating profit to the total operating assets used in the regular conduct of the business. The operating profit figure should not include other income and expenses, income tax or extraordinary items. The total operating assets figure should include all assets except long period investments and other assets not used in connection with, for depreciation must be deducted from the assets.

The ratio is an index of the economic productivity of the funds invested in the business and is an overall measure of the efficiency of business. It shows the earnings on assets independently of the sources of funds invested in them. Still, care must be taken in studying this ratio for different concerns because of the possible presence of uncomparable data arising due to variations in asset valuation and amortisation methods; differences in the composition of assets; income and expense items, absence of coincidence of accounting periods; and different depreciation and amortisation policies.

(iv) Total Assets Turnover This is calculated by dividing the value of total assets into that of net sales. A high ratio shows overtrading of fixed assets while a low ratio shows excessive investments-a symptom

of idle capacity. The traditional standard for the ratio is two times. Some people use cost of goods sold in the numerator instead of sales.

Formula:

(i) Current ratio $= \frac{\text{Current Assets}}{\text{Current Liabilities}}$

$= \frac{\text{Cash + bank balance + debtor + stock in trade}}{\text{Current Liabilites}}$

$= \frac{\text{Rs.1,50,000 + Rs.70,000 + Rs.25,000}}{\text{Rs.1,50,000}}$

$= \frac{12,45,000}{1,50,000}$

$=$ 2:1.

Though the ratio is very near the standard of 2:1 laid down for the current ratio, the fact has to be kept in view that very large part of current assets consists of stock which is the least liquid of current assets. Taking this fact into consideration, current ratio is not at all favourable.

(ii) Operating ratio $= \frac{\text{Cost of goods sold + Operating expenses}}{\text{Net Sales}}$

$= \frac{\text{Rs.5,00,000 + Rs.2,00,000}}{\text{Rs.14,00,000}}$

$= \frac{\text{Rs.7,00,000}}{\text{Rs.14,00,000}}$

$=$ 1:2.

This means that out of every Rs. 2 worth of sales, Re. 1 constitutes the cost of goods sold and operating expenses.

Cost of goods sold has been reached as follows:

	Rs.	*Rs.*
Operating Stock	1,00,000	
Purchases	5,00,000	
Incidental expenses	1,50,000	7,50,000
		50,000
Less Closing stock		7,00,000

ROLE OF RATIO ANALYSIS

Ratio analysis is basically useful to the same extent and in the same way, for financial analysis, as statistics are useful in the study of the numerical aspect of a problem. It simplifies, summarises and systematises as long array of accounting figures. Its chief contribution lies in bringing into bold relief the inter-relationship that exists between various segments of business as expressed through accounting statements, and in avoiding any distortions that may result from an obsolete study of accounting information.

(i) It is an instrument for diagnosis of the financial health of an enterprise. This it does by evaluating, in broader context, important aspects of the conduct of business like liquidity, solvency,

profitability, capital gearing. Such an evaluation enables conclusions to be drawn regarding the financial needs and the capabilities of business units that conclusions cannot be easily derived from the usual tenor of financial statements.

(ii) Again, the ratio analysis, can be of invaluable aid to management in the discharge of its basic functions of forecasting, planning co-ordination, communication and control. By an analytical study of the past performance of the business, it helps in predicting and projecting the future, it helps in communication by conveying information which is pertinent and purposeful, to those for whom it is meant, it promotes co-ordination by a study of the efficiency of the business. It promotes co-ordination by a study of the efficiency of the business, it paves the way for effective control of business operations by undertaking an appraisal of both the physical and monetary targets. Hence, ratio analysis becomes an integral part of budgetary control system.

(iii) An important point in connection with use of the ratio is that in numerous situations, a few ratios portray a certain aspect of the conduct of business. In this way, a credit manager, who has a large number of invoices flowing across his table each day, may limit himself to three ratios as evidence of whether the prospective buyer of goods would pay promptly-current ratio to ascertain the capacity of the buyer to meet his short-term obligations, debt to equity ratio to determine the quantum of proprietors' funds in the business and one of the profitability ratios to assess the future prospects of the concern. A sales manager will normally be interested in ratio on sales, selling costs and related aspects, while the production manager will be interested in ratios relating to the production function.

(iv) While using the ratios, it must always be kept in view that ratio-analysis is only a beginning and gives just a fraction of information needed for decision-making. Hence, information got from ratios must always be used in conjunction with that from other sources so as to ensure a comprehensive analysis.

(v) In a way, ratios are an attempt to delve in the past as financial statements, from which they are derived, are historical documents. On the other side, in modern business, it is more important to have an idea of the probable happenings in future, rather than of those in the past. From this viewpoint, ratios will have relevance only if they are able to give an inkling of the future, in no case should one be misled to believe that they reflect current conditions.

(vi) Ratios share with other statistical concepts all the limitations of the latter, determination of a proper standard for comparison, lack of the homogeneity of data, danger of fallacious conclusions if accounting data is torn from its context, susceptibilities of the accounting data to manipulation, and to that extent, ratio analysis becomes weak as a tool of financial analysis.

Limitations of Financial Statements

Financial statements are the result of the accounting process which begins with recording of transactions. Accounting process involves recording, classifying and summarising, but the profit or loss figure and financial position that is closed should not be taken to be an exact representation of the position. The financial statement is based on certain according concepts and conventions, which cannot be said to be error proof. The following are the important limitations of financial statements.

1. The information is historical in nature.
2. It is outcome of portray of the position in monetary terms. The profit or loss position exclude from their preview things which cannot be expressed or recorded in monetary terms

3. The statement portrays the position in monetary terms. The profit or loss position and the financial position exclude from their preview things which cannot be expressed or recorded in monetary terms.
4. The six of the units and the difference in the according procedures adopted by them have to be kept in mind, and they may not be reflected in the financial statement, but one has to enquire to them before analysing the statement.

Parties Interested in Financial Statements

1. Creditors, potential suppliers or others doing business with the company
2. Debenture – holders
3. Credit institutions like banks
4. Employees and trade unions
5. Important customers who make a long – standing contract with the company
6. Economics and investments analysis
7. Members of Parliaments, the Public Accounts Committee, and the Estimates Committee in respect of government companies
8. Taxation authorities
9. Other departments dealing with the industry in which the company is engaged, and
10. The Company Law Board.

Summary

Financial statements are account balances arranged in effective and significant order in such a manner that facts and figures depicted may be easily interpreted and used as grounds for decisions by all persons who are interested in the work of business. The financial statements reflect a combination of recorded facts, accounting conversions and personal judgements and the judgements and conventions applied affect them materially.

Thus, the nature of financial statements rests in that they are plain statements of true informed opinion, they rest on judgements and estimates without fancy or prejudice.

Recorded facts convey the data brought in statements that have been written in accounting records. Recorded facts are such data as the amount of cash on hand and in banks, due from customers fixed assets, cost amount payable to creditors. The cost or the price level of the data on accounting gives the fixed assets price. It does not convey the replacement cost. The balance sheet does not depict the financial position of the concern, as more price is substituted for the cost.

Some other factors affecting the financial position are not depicted in the body of the balance sheet as they have no place in the accounting records. These are covered by the footnotes to the balance sheets including unexecuted orders, purchase and sale contracts and commitments claims for tax refunds judgements, endorsements and guarantees.

Financial statements are the result of the accounting process which begins with recording of transactions. Accounting process involves recording, classifying and summarizing, but the profit or loss figure and financial position is closed and should not be taken to be an exact representation of the position. The financial statement is based on certain according concepts and conventions, which cannot be said to be error proof.

KEY CONCEPTS

- Accounting Ratio
- Balance Sheet
- Balance Sheet Ratio
- Composite Ratio
- Financial Analysis
- Financial Ratios
- Financial Statements
- Interpretation
- Turn-over Ratios

Review Questions

OBJECTIVE QUESTIONS

1. State whether the following statement are True or False.
   (a) Equity to fixed interest bearing securities is Acid Test Ratio.
   (b) Debt Equity Ratio is a solvency ratio.
   (c) Ratio analysis is a technique of Planning and Control.
   (d) A firm's ability to meet the interest charge and repayment dues on long-term obligation is referred to as its solvency.
   (e) Rate of return on capital employed is a Turnover Ratio
   (f) Acid test denotes liquidity
   (g) For Stock turn-over ratio, average stock is to be calculated.
   (h) A decreased stock turn-over ratio usually indicates expanding business.
   Ans. (a) False (b) True (c) False (d) True (e) False (f) True (g) True (h) False
2. The Current ratio of a company is 2:1. Which of the following suggestions would improve the ratio which would reduce it and which would not change it?
   (a) To pay a current liability
   (b) To sell a motor car for cash at a slight loss
   (c) To borrow money on an interest bearing promissory note
   (d) To purchase stock for cash
   (e) To give interest bearing promissory note to a creditor to whom money was owed on current account.
   Ans. (a) Improve the ratio (b) Reduce the ratio (c) No change in the ratio
3. Assuming the current ratio is true, state in each of the following cases, whether the ratio will improve or decline or will have no change.
   (a) Payment of a current liability
   (b) Purchase of fixed assets
   (c) Cash collected from customers
   (d) Bills receivable discounted
   (e) Issue of New shares
   Ans. (a) Improve (b) Decline (c) No change
4. Indicate the important accounting ratios that would be used by each of the following.
   (a) a long-term creditor interested in determining whether his claims are adequately secure
   (b) a bank who has been approached by a company for short-term loan/overdraft

(c) a shareholder who is examining his portfolio and who is to decide whether he should hold or sell his shares in a company.

Ans. (a) Debt Service Coverage Ratio (b) Current Ratio and Quick Ratio (c) Earning per share

DESCRIPTIVE QUESTIONS

1. What are the possible drawbacks of ratio analysis?
2. Comment: "Ratio analysis are the past estimate, it cannot give any future trend of business".
3. What do you understand by financial statements or reports?
4. What is the nature of financial statements and what are its limitations?
5. What do you know about the types of financial analysis?
6. What are the methods used in financial statements?
7. What are the test of overall profitability in your opinion?
8. What do you understand by the Return on shareholders investments?
9. What are the concept, components and significance of the Return or shareholders investment?
10. What do you mean by Return on equity capital?
11. What are the concept, components, significance of the return on equity capital.
12. What do you understand by trading on equity?
13. What do you understand by return on capital employed?
14. What are the concept, components and significance of return on capital employed?
15. What do you understand by analysis of capital structure?
16. What is capital gearing ratio?
17. What is the significance of analysis of capital structure?
18. What do you understand by total investment to long-term liabilities?
19. What do you mean by current liabilities to proprietors' funds?
20. What is the ratio of reserves to equity capital?
21. What are the sundry measuring devices?
22. What do you understand by fixed assets turnover, working capital turnover?
23. What is the ratio of operating profit to total operating assets?
24. What do you mean by total assets turnover?
25. What is the role of ratio analysis in profitability?
26. What do you understand from the concept, nature and limitations of financial statements?
27. How will you analyze and interpret financial statements?
28. What are the various types of financial analysis? Distinguish between them.
29. What are the methods and devices used in analyzing financial statements?
30. What are the utilities of comparative financial statements?
31. What do you understand from comparative balance sheet?
32. What do you know from the comparative income statement?
33. What are known as trend percentages? What is the method of its computation and evaluation?
34. What are common size statements? How are they computed?
35. What do you know by common size balance sheet and income statement?

PRACTICAL PROBLEMS

1. **From the following information prepare a Balance Sheet:**
   1. Current Ration – 1.75
   2. Liquid Rate – 1.25
   3. Stock Turnover Ratio (Cost of Sales/Closing Stock) — 9
   4. Gross Profit Ratio – 25 per cent

5. Debt Collection Period – 11/2 months
6. Reserves and Surplus to Capital – 2
7. Turnover to Fixed Assets – 1.2
8. Capital Gearing Ratio – 0.6
9. Fixed Assets to Net Worth – 1.25
10. Sale for the year Rs.12,00,000

	Rs.		*Rs.*
[Ans. Share Capital	5,00,000	Stock	1,00,000
Long-term Liabilities	3,00,000	Debtors	1,50,000
Reserve and Surplus	1,00,000	Cash and Bank balance	1,00,000
Current Liabilities	2,00,000	Balance Sheet Total	11,00,000
Fixed Assets	7,50,000		

2. You are given the following information pertaining to the financial statement of AYZ Ltd., as on 31 December, 2007. On the the basis of the information supplied, you are required to prepare the Trading and profit and loss A/C for the year ended and a balance sheet as on that date.

	Rs.		*Rs.*
Net current assets	2,00,000	Ratio of gross profit on turnover	25 per cent
Issued share capital	6,00,000	Net profit to issured shares capital	20 percent
Current Ratio	1.8	Stock Turnover Ratio (Cost of goods	
Quick Ratio (Ratio of debtors and		sold/closing stock)	5 times
bank balance to current liabilities)	1.35	Average Age of Outstandings	
Fixed Assets to Shareholder's Equity	80 per cent	for the years	36 ½ days

On 31 December, 2008, the current assets consisted only of Stock, Debtors and Bank Balance, Liabilities consisted of State Capital and Current Liabilities and Assets consisted of Fixed Assets and Current Assets.

	Rs.		*Rs.*
[Ans. Gross Profit	1,87,500	Stock	12,500
Net Profit	1,20,000	Bank balance	2,62,000
Current Assets	4,50,000	Fixed Assets	8,00,000
Current Liabilities	2,50,000	Balance Sheet total	12,50,000

3. Based on the following information of the financial ratios prepare Balance Sheet of Star Enterprises Ltd., as on December 31, 2005. Explain your working and assumptions.

Current Ratio	25
Liquidity Ratio	1.5
Net Working Capital	Rs. 6,00,000
Stock Turnover Ratio	5
Ratio of Gross Profit to Sales	20%
Turnover Ratio to Net Fixed Assets	2
Average Debt Collection Period	2.4 months
Fixed assets to Net Worth	0.80
Long-term debt to Capital and Reserve	7/25

[Ans. Fixed Assets – Rs. 10,00,000; Current Assets – Rs 10,00,000; Share Capital and Reserves – Rs.12,50,000; Long-term Deposits – Rs.3,50,000; Current Liabilities – Rs.4,00,000]

4. From the following information, prepare a summarized balance sheet as on 31st March, 2007:

(i) Working Capital	1,20,000
(ii) Reserves and Surplus	80,000

(iii)	Bank Overdraft	20,000
(iv)	Assets (fixed)-Proprietary Ratio	0.75
(v)	Current Ratio	2.5
(vi)	Liquidity Ratio	1.5

[Ans. Current Liabilities Rs.80,000; Current Assets Rs.2,00,000, Fixed Assets Rs.3,60,000; Stock Rs.1,10,000; Balance Sheet Total Rs.5,60,000]

4. Following are the ratios relating to the trading activities of an Organization:

Debtors' Velocity	3 Months
Stock Velocity	6 Months
Creditors' Velocity	2 Months
Gross Profit Ratio	20%

Gross profit for the year ended 31st December, 2006 was Rs.5,00,000. Stock at the end of 1996 was Rs.20,000 more than what it was at the beginning of the year. Bills payable and Receivable were Rs.36,667 and Rs.60,000 respectively.

You are to ascertain the figures of:

(a) Sales:
(b) Sundry Debtors;
(c) Sundry Creditors; and
(c) Stock.

[Ans. (a) Rs.25,00,000; (b) 5,65,000; (c) Rs.3,00,000; and (d) Rs.10,10,000]

5. From the following information, relating to a limited company, prepare a Statement of Proprietors' Funds:

(i)	Current Ratio	2
(ii)	Liquid Ratio	1.5
(iii)	Fixed Assets/Proprietary Funds	¾
(iv)	Working Capital	Rs.75,000
(v)	Reserves and Surplus	50,000
(vi)	Bank Overdraft	10,000

There were no long-term loans or fictitious assets.

All working must form part of your answer.

[Ans. Proprietors' Funds: Sources Rs.3,00,000; Applications: (a) Fixed Assets Rs.2,25,000. (b) Working Capital Rs.75,000]

6. From the following information relating to Wise Limited, you are required to prepare its summarized Balance Sheet:

(a)	Current Ratio	2.5
(b)	Acid Test Ratio	1.5
(c)	Gross Profit /Sales Ratio	0.2
(d)	Net Working Capital/Net Worth Ratio	0.3
(e)	Sales/Net Fixed Assets Ratio	2.0
(f)	Sales/Net Worth Ratio	1.5
(g)	Sales/Debtors Ratio	6.0
(h)	Reserves/Capital Ratio	1.0
(i)	Net Worth/Long – term Loan Ratio	20.0
(j)	Stock Velocity	2 Months
(k)	Paid up Share Capital	Rs.10 lakhs

[Ans. In Rs Lakhs: Fixed Assets Rs 15, Stock4, 4 Debtors Rs 5, Other Current Assets Re 1, Reserves Rs 10, Long-term Loans Re 1 and Current liabilities Rs 4]

7. Complete the following annual financial statements on the basis of ratios given below:

PROFIT AND LOSS ACCOUNT

Particulars	*Rs.*	*Particulars*	*Rs.*
To Cost of goods sold	6,00,000	By Sales	20,00,000
To Operating Expenses	—		—
To Earnings before Interest and Tax	10,00,000	By Earnings before Interest Tax	—
To Debenture Interest	—		—
To Income Tax			
To Net Profit			

BALANCE SHEET
as on 30th June, 2008

Liabilities	*Rs.*	*Assets*	*Rs.*
Net Worth:	—	Fixed Assets	—
Share capital	—	Current Assets:	—
Reserve and Surplus	—	Cash	—
10% Debentures	60,000	Stock	35,000
Sundry Creditors			

(i) Net Profit to Sales 5%
(ii) Current Ratio 1.5
(iii) Return on Net Worth 20%
(iv) Inventory Turnover (based on cost of goods sold) 15 times
(v) Share capital to reserves 4 : 1
(vi) Rate of Income tax 50%

[Ans. Operating Expenses Rs.11,90,000; EBIT Rs2,10,000; Income Tax Rs 1,00,000; Net Profit after Tax Rs 1,00,000; Fixed Assets Rs 5,70,000 Current Assets Rs 90,000; Net Worth Rs 5,00,000; Debentures Rs 1,00,000]

Analysis of Financial Statements

8. Following is the Profit and Loss A/c and Balance Sheet of A Limited for the year ended 31 December, 2008, and Balance Sheet as on that date. Calculate the different ratios, the comment on the financial position of the company.

Particulars		*Rs.*
Net Sales		3,00,000
Less: Cost of goods sold		2,58,000
Gross Profit		42,000
Operating Expenses:		
Selling	2,200	
General and Administration	4,000	
Rent of Office	2,800	9,000
Gross Operating Profit		33,000
Depreciation		10,000
Other Income:		23,000
Interest on Government Securities		1,500

Gross Income		24,500
Other Expenses:		
Interest on Bank Overdraft	300	
Interest on Debentures	4,200	4,500
Net Income before Tax		20,000
Tax @ 50 per cent on Net Income		10,000
Net Income after Tax		10,000

BALANCE SHEET
as on 31 December, 1998

Liabilities	*Rs.*	*Assets*		*Rs.*
Sundry Creditors	6,000	Cash		5,000
Bills payable	10,000	Investments (Government securities)		15,000
Outstanding Expenses	1,000	Sundry Debtors		20,000
Provision for Taxation	13,000	Stock		30,000
Total Current Liabilities	30,000	Total Current Assets		70,000
6% Mortgage Debentures	70,000	Fixed Assets	1,80,000	
7% Preference Shares	10,000	Less: Provision for Depreciation	50,000	1,30,000
Equity Shares	50,000			
Reserve and Surplus	40,000			
Total Claims on Assets	2,00,000			2,00,000

[Ans. Gross Profit Ratio 14 per cent. Net Profit Ratio (after considering interest on bank overdraft): 7.56 per cent, ROI 13.53 per cent. Stock Turnover Ratio 8.6, Debt Collection Period 24 days, Fixed Assets Turnover 2.3, Fixed Assets Ratio .76, Debt-equity ratio 70/1000 = 0.7. Current ratio 2.31

9. The following items appear in the accounts at 31 December, 2006 of Operations Ltd.:

Cash	48,600
Land and Buildings at Cost	8,00,000
Deposits and Payments in Advance	62,000
Stock	2,72,800
Trade Creditors	4,05,750
General Reserve	1,00,000
Debtors	5,23,000
Bills Receivable	22,600
Plant and machinery at cost less depreciation	5,44,000
Debentures – repayable 2000 (secured)	2,50,000
Bank Overdraft	52,000
Ordinary Stock. Rs 10 units	10,00,000
Profit and Loss A/c balance	2,17,000
Proposed ordinary stock Dividend for 2006, net	86,250
Trade investments	20,000
Advance payment of Tax	1,00,000
Provision for Taxation	2,64,000
Bills Payable	18,000
Net sales for the year 2006	21,82,400
Net Profit for the year 2006 before taxation and dividends	3,27,830

Note: The values of all fixed assets reflect current price levels and adequate depreciation has been provided.

You are required:

(a) to arrange the above items in the form of a financial statement to show the following accounting ratios, which should be stated: (a) return on capital employed; (b) stock: fixed assets; (c) current assets : current liabilities; (d) sales: debtors and bills receivable;

(b) to indicate briefly the significance of these ratios and how they may be used to compare the efficiency of the business with others in the same industry.

[Ans. Rations (a) ROI on shareholder' funds in 24.9 per cent. (b) 1 : 4.93, (c) 1.25 : 1, (d) 4 : 1]

[Hint. Working Capital Rs.2.03,000; Shareholders' Equity Rs 13,17,000]

10. India International Limited has been in existence for two years. The following particulars are extracted from its published accounts:

BALANCE SHEET

at year end

Liabilities	*1st Year Rs*	*2nd Year Rs*	*Assets*	*1st Year Rs*	*2nd Year Rs*
Equity Capital	1,00,000	1,00,000	Fixed Assets	2,08,000	1,98,000
Reserve	10,000	20,000	Stock	30,000	60,000
Profit & Loss A/c	14,000	2,000	Book Debts	40,000	80,000

(Contd.)

Liabilities	*1st Year Rs*	*2nd Year Rs*	*Assets*	*1st Year Rs*	*2nd Year Rs*
Loan	1,10,000	80,000	Cash at Bank	30,000	2,000
Bank Overdraft	—	20,000			
Creditors	30,000	90,000			
Provision for Taxation	34,000	13,000			
Proposed Dividend	10,000	15,000			
	3,08,000	3,40,000		3,08,000	3,40,000

PROFIT AND LOSS ACCOUNT

Liabilities	*1st Year Rs*	*2nd Year Rs*	*Assets*	*1st Year Rs*	*2nd Year Rs*
Interest on Loan	2,400	4,800	Balance b/d		14,000
Director' Remuneration	10,000	30,000	Profit for the year	80,400	60,000
Provision for Taxation	34,000	13,000			
Dividend		15,000			
Transfer to Reserve	10,000	10,000			
Balance c/d	14,000	2,000			
Total	3,08,000	74,800		80,400	3,40,000

Sales amounted to Rs 6,00,000 in the second year. Examine in detail from the point of (i) Profitability, (ii) Solvency and (iii) Sales. Make such other computations as seem expedient to you and write on overall internal analysis of this company.

[Ans.

	1st Year	2nd Year
Net Profit Ratio	11.73%	6.16%
ROI (based on Capital at end	30,08%	15.25%
Current Ratio	1.35	1.03

Stock Turnover	20	8.33
Debtors	15	6.25]

CASE UNDERSTANDING FINANCIAL STATEMENT

TTC TRANSPORTERS

On June 1, 2008, Jayaraj set up TTC Transporters for moving vegetables from Kodikanal to Madurai with a capital of Rs. 50,000. On the same day, he took a bank loan of Rs.2,50,000 for purchasing a small truck. The loan carries interest at 12 per cent per annum and is repayable in five equal yearly instalments beginning June1, 2009. Interest is to be paid along with each instalment. The loan agreement stipulates that if the profit before interest and income tax is less, then 3 times the interest expense, the interest rate will rise to 15 per cent in the following year or else the loan will have to be fully repaid. The bank requires financial statement for every year until the loan is fully repaid. The following is the trial balance of the business on May 31, 2009.

TTC TRANSPORTERS
Trial balance as on May 31, 2009

Account	*Debit*	*Credit*
Truck	Rs 2,50,000	
Spares	4,100	
Debtors	9,200	
Cash	67,810	
Prepaid Insurance	24,000	
Bank Loan		Rs 2,50,000
Creditors		3,410
Capital, Jayaraj		50,000
Service Revenue Earned		1,23,700
Salaries Expense	11,200	
Fuel Expense	49,800	
Rent Expense	11,000	
Total	4,27,110	4,25,110

On June 1, 2009, Jayaraj visited the bank to pay the first instalment of Rs 50,000. He gave the bank manager the financial statements for the year just ended. The manager looked at the statements and told him that the statements should be attested by a chartered accountant. Soon after, Jayaraj approached a chartered accountant who collected the following additional information.

(a) The truck has useful life of ten years and no scrap value in the end.
(b) The value of spares held on may 31, 2009 is Rs 3,500.
(c) Insurance for the truck covers the period of 24 months beginning June 1, 2008.
(d) Rent for May 2009 unpaid, Rs 1,000.
(e) Unpaid salaries, Rs 900.
(f) Services provided but bills not raised on customers, Rs 32,500.
(g) Income tax expense to be paid, Rs 6,000.

REQUIRED

Prepare the financial statements of TTC Transporters for the year ended May 31, 2009. Will the firm be required to pay a higher rate of interest in the following year?

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CHAPTER 22

Performance Measurement and Control

"Most companies' appraisal system remain constant over a long time and through a variety of strategic emphasis. However, when a company's strategy changes, its employee's behaviour need to change too"

—R. Schuler & Jackson

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *A Division: an Independent Profit Centre*
- *Quantitative Evaluation of a Division*
- *Measurement of Executive Performance*
- *Profit Performance Measurement*
- *Computing Divisional Investment*
- *Transfer Price*
- *Performance Appraisal in Public Sector Undertakings*

INTRODUCTION

The management control philosophy and devices will obviously depend upon the management culture—whether it is centralised or decentralised. In big companies, decentralisation will manifest in divisions which are run autonomously with only certain functions—finance, research, corporate planning, etc—centralised; the scale of production, the actual running of processes, marketing, pricing, etc, are all made the responsibility of the manager. In a centralised company, no major decision is left to the manager alone; The plans are laid down by Top Management inconsultation with the Manager. The Manager is expected only to conform to the plans and budgets.

Budget, thus assumes added importance in centralised companies. In such companies, management of various departments and divisions will be expected to formulate their plans for the future period and also frame the budgets accordingly. The top management will go over the plans and the budgets very carefully to see whether the promised performance can be improved and to see that there is no cushioning of expenses and underplaying of revenues Normally, managers under centralised managements are judged very strictly and if the net final results fall short of the budgeted or promised results, they will have to

account for the same. Therefore, it is usual and natural for the managers to underestimate revenues and overestimate expenses deliberately so that they can show a better performance and thus claim credit To a certain extent this is deliberately done, and therefore, the budgeting exercise becomes meaningless and even dysfunctional. Top managements realise this and, therefore, try to locate such practices and that is the reason why budgets in centralized managements are subject to a very close scrutiny and expenses and costs are kept under very strict control.

In a large company, whose head office is in the U.SA, the local manager does not have the power of creating even one single additional post of a clerk, the size of inventories of all types is determined beforehand and the management by the head office is expected to work so as not to have a large inventory.

It is obvious that in such cases management control comprises only in first very careful budgeting and, secondly, seeing that the performance is exactly according to the budget. There may be reasons and circumstances justifying such a control. It is specially justified when a company has got into difficulties for want of control and has to be revived. However, even if such controls are imposed, there is no reason why they should not be administered with flexibility. If the management can justify the departure from the budget, there should be no black mark against it. If actual circumstances are taken into account while appraising the performance of management, management will spend more time and attention on doing the work rather than on budgeting in such a manner that it will not be caught.

In the case of decentralised managements also, within the divisions, budgets will play the role as indicated above since authority cannot be decentralised all along the line, like it can be from the Managing Director to a divisional manager. But the appraisal of the people should be on the basis of: Did they do their best in view of the circumstances that actually existed? The appraisal and control over divisions enjoying autonomy, is entirely on a different basis which we shall now discuss.

A DIVISION—AN INDEPENDENT PROFIT CENTRE

The Division Finance Executives Studies in Business Policy No. 101 (New York National Industrial Conference Board, 161) define a division as:

"A company unit headed by a man fully responsible for the profitability of its operations, including planning, production, financial and accounting activities, and who usually, although not always, has his own sales force The division may be a unit of the parent company or it may be a wholly or partially owned subsidiary."

The main point emphasised in the definition given above is autonomy and independence. The divisional general manager who is responsible for all the affairs of the division, usually has full authority to conduct his operations including purchasing, engagement of labour, production, accounting, and control and sales. He is only responsible to the head office of the company for the efficient use of the resources placed at his disposal and that is normally measured through the quantum or rate of profits earned by his department during a period. As long as he produces the desired profits, there is little interference in his work.

The essence of autonomy, as regards a division, depends on the price which is fixed on the products or services of the division. We shall discuss this question a little later but it can be said straightaway that unless the price is fixed in an objective manner, it would not be possible to measure the profits earned by a division. For example, there are many Government-owned companies in India where the entire product is bought by Government in cost-plus-profit basis. In other words, Government pays a price calculated by adding a certain margin of profit to the cost. The profit earned by the company will be arbitrary; the figure can be changed simply by changing the profit margin or even by allowing costs to run high.

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True profit can be measured only if the products are transferred to Government at the prevailing market price. When one division sells goods to another division, the price should always be, for the purpose of determining the division's profit, that price which it can obtain by selling it to an outside customer. Similarly, the division which is purchasing the product of another division should not be forced to pay a price higher than that prevailing in the market If it is so forced, it will tantamount to transfer of a certain amount of profit to the other division, thus vitiating the profit picture of both It is not necessary that there must be a separate sales department in the division itself, what is necessary is that the product should be transferred to the other division at the market price and that the profitability of the division should be established separately.

Judged from the point of view of management control, it may be possible to divide even a small firm, not officially divided into divisions, into what may be called profit centres. Suppose a publishing house has its own press and gets its books printed at that press. To establish the profit of the press separately what is necessary is that the press manager should deal with the orders received as if these are from outside customers and should price his work on that basis. The firm as a whole should compute the cost of the books not on the basis of the cost of printing as actually incurred in its own press, but on the basis of what it would have been had the work been done outside. In this manner, the profits of the press work and the publishing work can be separated and the profitability of both established. If the publishing firm has its own sales depots, it can further have a separate profit centre for the depots by simply transferring the books to the depots on the same basis as for outside wholesalers. Thus, it is not necessary that there should be fully demarcated divisions, all headed by separate divisional managers. What is required is that the activity should be divided into its logical parts and the profitability of each part established separately. This can be done only if at each point of transfer, a market price is available. Where this is not available, it would not be possible to establish the profitability of each separate activity. For example, in a sugar mill, it will not be feasible to establish the profitability of crushing the sugarcane, for the simple reason that the price of juice is not available.

The divisional manager normally carries on research and development required for his needs unless the head office has centralised it. It should be noted that it is for the head office to decide what future course the company as a whole will take and hence, research is often centralised. In respect of capital budgeting, i.e., acquisition of fixed assets or an undertaking or for undertaking new manufacturing activities also, it is the head office which has the last say and no division is allowed to commit the company's funds for a long period even though they may have been earned by the division itself. This is not surprising since the course of capital budgeting will affect vitally the character and image of the company. Financial management in all its aspects is again fully centralised. This is not only to economise the use of funds but also to see that the image of the company in the market in respect of financial and dividend policies remains bright. Divisional managers are allowed to maintain a certain amount of cash for the purpose of carrying on day-to-day activities but, otherwise, cash management will be wholly centralised.

QUANTITATIVE EVALUATION OF A DIVISION

The objective for the company as a whole should never be lost sight of. The work of all the divisions must be conducted in such a manner that the work of no division comes in the way of the profitability of other divisions or the profitability of the company as a whole. If a division inflicts an expense or a loss on another division, it should be allowed to do so only if the profit earned by it exceeds the expense or the loss thus inflicted. This will ensure that the profit of the company as a whole will increase. The essence of control over divisions is that all divisions must be so motivated as to maximise the profit of

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the company and not merely of the division itself. The method of evaluation must be such and should be used in such a manner as to prevent a divergence between the objective of the company as a whole and that of the individual divisions. If this is not ensured, divisional managers will rather pursue their own objectives which may hurt the interest of the company as a whole.

Difficulty in Measurement of Executive Performance

It is undesirable to fix targets for performance in respect of divisional managers in quantitative terms only. A division's performance in various areas though not expressible in quantitative terms may contribute to the achievement of the organisation's objectives more liberally. For instance, the cordial personnel relationship within a division may contribute a great deal to the organisation's welfare productivity and hence profitability. Similarly certain achievements of a division may have a long-term impact, though in the short run, the impact may be marginal or nil. For instance, a regular upkeep and proper maintenance of plant and machinery may result in such equipments lasting longer. A saving in repairs and maintenance costs, on the other hand, may result in short-term profitability at the cost of long-term. Thus, the problems in measurement of executive performance are two-fold, viz., the difficulty of expressing in quantifiable terms certain objectives like quality control, safety, industrial peace, promptness, etc. The second one is to keep in view the long-term objective, while measuring the performance in the short run.

Most of the objectives ultimately will have their bearing on the profitability of the division. Hence, profitability is used as a measure of divisional performance.

Significance of Measurement

Measuring divisional manager's performance is important in the following ways:

(a) It directs top management's supervision and assistance where it is most needed and where it will be most productive.
(b) It indicates to the executive concerned the manner in which he ought to do his work—accomplishment of goals or objectives and also, along with it, the way in which these goals or objectives are achieved.
(c) It shapes the future executives team by indicating whom to promote, whom to retain and whom to remove
(d) It directs the activity of executives towards high scores on the aspects of performance on which they are measured and judged.
(e) It gives job satisfaction directly by letting the executives know how they are doing.
(f) It provides the objective factual foundation for sound executive compensation.

REQUIREMENTS FOR PROFIT PERFORMANCE MEASUREMENT

To measure in quantitative terms the performance of divisional managers, the following requirements are essential

(a) The profit centre, viz., the division should be clearly earmarked.
(b) A clear-cut system of transfer pricing should be prescribed so that one department does not become a burden on the other.
(c) There should be a foolproof, clear cut and uniform system of accounting to measure the profits.
(d) Realistic standards of profits and profitability should be evolved to compare against actuals.

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(e) There should be a system of rewards or executive compensation to provide incentives for the executives to attain higher levels of performance.

When an individual joins an organization, he has a certain amount of enthusiasm to prove his abilities and he sincerely wishes these abilities to be recognised. From time to time, he expects to be rewarded in one form or the other which may not necessarily be money. As a human being, he wishes to become a part of the organisation and get a feeling of belonging. He is willing to adapt himself to the organisation and becomes a part of its management process. This adaptation and involvement need to be fully recognised. Various measures have to be adopted to make this process easy and convenient for the individuals within the organization. Involvement of individuals at various levels in decision-making, build up of the work process, setting up norms of behaviour, etc, create a sense of satisfaction and achievement which normal monetary gains do not provide It may be pointed out here that abnormal monetary rewards cannot be sustained in any organisation.

To motivate an individual, there is a clear need for satisfying his human wants which have a number of aspects, such as, economic, social, moral, political, etc. Among these, generally the economic aspect predominates However, over a period of time this spectrum keeps on changing and some aspects become more important than others The top management in the organisation has to recognise changes and adopt ways and means to act in a manner that would motivate these working individuals to become a part of the organisation and derive satisfaction from various activities besides merely getting money for doing work The relative strength of various factors as well as their limitations must be fully recognised Economic, social, moral or political factors cannot replace each other but can be used to supplement each other giving a great advantage to the organisation The mix of forces working on an individual within an organisation is a changing one and can be conditioned by the policies of top management. Different individuals respond differently to various aspects. Some individuals respond differently at different times These differences arise due to a variety of reasons. To arrive at optimal behaviour of a number of individuals within an organization the top management has to work continuously and keep the problem of recognising changes in various needs of individuals within sharp focus. The ultimate point achieved is a compromise among the personal aspirations of all individuals within an organisation.

Method of Evaluation

(1) **Rate of Return.** Under this method, for each divisional manager a target rate of return on the capital placed at his disposal is determined beforehand and, later, this is compared with the actual rate of return. It is quite possible and is often the case that the target for one division may be different from that of others, taking into account the special circumstances of each case. For example, if a new venture has been created for the purpose It would obviously not be proper to expect the same rate of return in the initial years as is being earned by other well-established divisions. A division which enjoys a ready market and is otherwise in a growing industry should also be able to give much better results than a division which is in a static or declining industry.

The rate of return obviously should be connected with the firm's cost of capital but it is not that the rate of return must be equal to the cost of capital even for the firm as a whole. There is such a thing as opportunity cost and firms obviously should be able to earn from the use of funds at least that much as they would have earned by using the funds in some other manner Also, there will be a number of activities which will not bring any income. They involve only investment such as the investment on research and development on the company as a whole. Obviously, the divisions which produce goods and sell them should be able to earn such a rate of return as together with those, in which no income is being earned, will make the firm's yield acceptable to the management as well as to the outside world.

The profit on the basis of which the division's rate of return is to be calculated should be such, as will be under the control of the division even though the division's profit and loss account may also have items which have been apportioned out of the total relating control of the divisional manager and he should obviously not judge on the basis of profit after such apportionment Further, the incidence of income-tax is difficult to measure, as far as divisional manager is concerned. This is also beyond his control. Therefore, the profit on the basis of which the manager has to be judged, should be profit before tax and after taking into account only the controllable costs. Here is an example of a proforma of the statement in which the profit of the division should be computed.

DIVISIONAL INCOME STATEMENT

		Rs.	Rs.
Sales:	To outside customers	…	
	To other divisions at market value	…	
	Variable charges to other divisions for transfers not Priced at market value	…	—
Less:	Variable cost of goods sold and transferred		
	Variable divisional expenses	…	…
		—	—
	Variable Profit (loss)		
Add (deduct):	Fixed charges made to (by) other divisions for Transfers not priced at market value	…	
Less:	Controllable divisional overhead	…	
	Depreciation on controllable fixed assets	…	
	Property taxes and insurance on controllable fixed assets		
	Controllable Operating Profit:		
Add (deduct):	Non-operating gains (losses)	…	
Less:	Interest on controllable investment	…	
		—	—
	Controllable residual income before taxes	…	
Less:	Non-controllable divisional overhead	…	
	Central expenses chargeable to the division	…	
	Interest on non-controllable investment	…	
		—	—
	Net residual income before tax	…	
	Tax on income	…	
		—	—
	Net residual income after taxes	…	
		—	—

Limitations It may be presumed that the divisional managers who are able to reach the target in respect of the rate of return are considered efficient and that others, who are not able to meet the target figure, are considered as having not performed their task well. It is extremely important to remember, and the point will bear repetition, that a proper control system should motivate the individual managers suitably to submerge their own interests into the interest of the company as a whole and that they do nothing

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which will harm the company's present and future earning capacity. If divisional managers are judged purely and wholly on the basis of the actual rate of return compared with the standard set for them, there is the great danger that they may forget this most important maxim and damage the company's interest. It is common knowledge that should a firm or a division want to show higher profits or rate of return, it can easily do so. The following are some of the obvious ways:

(a) The basis of accounting may be changed, for example, if prices have been rising, a change in the method of valuation from LIFO to FIFO will lead to an increase in profit for the year concerned. Also a change in the method of depreciation may bring about the same result, especially in the first few years of the life of the firm. A change from the diminishing value method to the straightline method will increase the profits by a substantial figure.

(b) The divisional manager may not incur certain essential expenditure which is necessary for maintaining the health and the earning capacity of the firm. The absence of such expenditure may not show adverse results in the year or so but the avoidance of it may lead to a big increase in the profit. But, in later years, the profits are bound to fall because it will lead to a decline in the operating efficiency of the firm. Suppose the periodical overhaul is postponed by a year or so, thus avoiding the heavy expenditure; for the current year, the expenses on repairs and maintenance have been reduced to a large extent and, therefore, the profit will be at a higher figure. Later, however, this will lead to frequent breakdowns and interruption in production which will certainly lead to a fall in production, sales any profit. A similar result will follow if expenses on advertising and sales promotion are substantially reduced. Customer service is another item where reduction can be made with impunity as far as the short period is concerned but with very great damage in the long run. Another instance that can be given is using material of slightly inferior quality and thus effecting a good deal of saving in materials cost. Apart from deliberate manipulation of figures, these are some of the ways in which profits can be easily inflated. But surely these ways should not be adopted since it will lead to a big damage being done to the firm's operating efficiency and reputation.

The divisional manager may, from the very beginning, include in his budgets a good deal of expenditure which he expects to save later on; in accountants' language the divisional manager will pad his budgets and may get away with a target rate of return much lower than he can really earn. Later he will manage to show actually a higher rate of return and will thus win appreciation.

Since the rate of return is naturally the relationship of profit to capital employed, the divisional manager may also be induced to reduce the figure of capital employed by retiring assets which temporarily may not be required but which later on may be necessary. The divisional manager will be motivated to do so since he is most anxious to show a higher rate of return. It is another matter that after retiring or disposing of the asset concerned, in a few years time, the company may require the same asset again, and may have to pay a heavy sum of money for it.

Remedies. The remedies for the situation would be as follows:

(a) When budgets are being prepared, they should be most carefully gone through to see that they do not include inflated figures of cost or deflated figures of revenue. If this is not ensured, it will mean less than optimum effort being made by the divisional manager since he will then be merely aiming at bettering the rate of return shown by his budget and not at maximising it.

(b) When actuals are compared with budgets, one should see to it that the essential expenditure which is necessary for the health of the firm as a whole is being incurred. If desired, such essential expenditure may even be treated as uncontrollable profit, on the basis of which the rate of return is to be calculated, determined before such essential expenditure.

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(c) The capital base on which the rate of return is to be established should be as follows:

(i) The production facilities assigned to the division should be valued at their current economic value, i.e., the replacement cost less adjusted depreciation; the investment base should be reduced on an annual basis by the additional depreciation written-off.

(ii) Current assets and current liabilities should be computed on the basis of actual balances (including amount owed by and to other sister divisions) at the end of each month.

(iii) Cash should be included on the basis of the needs of the division rather than the actual balance lying with it. This is because finances will be centrally managed and usually cash requirements of divisions and surplus balances will be taken care of by the central finance management.

(iv) Above all, no divisional manager should be judged automatically and wholly or even substantially on the basis of the comparison of the actual rate of return and the standard. If a divisional manager is judged on the basis of the problems faced by him and the decisions taken by him to face them, ie., if the capability that he brings to bear on work is watched continuously, rather than the one time figure which is calculated at the end of the year, the divisional manager will have little temptation to artificially raise the rate of return. He will then concentrate on trying to do the very best and taking decisions in the interest of the company as a whole. This is what is required for maximisation of the long-term profitability of the company

To some extent, the remuneration of the divisional manager should be linked with the state of affairs of the company. This is ideally achieved through "stock options" which will be discussed a little later.

(2) **Residual Income.** As against the rate of return, which is merely the ratio between profit earned and the capital employed, the General Electric Company of U.S.A. has tried the system of profit expressed in money, over and above the minimum return on capital, which may be the cost of capital. It is observed that there can be a rather low profit but the rate of return can still be respectable; this, however, would be unsatisfactory since firms are after all concerned with the quantum of profits. The concept of "Residual Income" seeks to ensure that the total profit in rupees will be what management thinks to be proper. Suppose a firm employs a sum of Rs.10,00,000 and the cost of capital is 8%. The concept of residual income would mean that the divisional manager will have to earn at least Rs. 80,000 plus another amount which will be determined for him by head office in consultation with him; this amount would not be terms of percentage ratio but in terms of rupees

The rationale of this system has been expressed by Robert W. Lewis as follows:

"It seems that the acid test of an index should be its effectiveness in guiding decentralised management to make decisions in the best interest of the company overall, since operating managers' efforts naturally will be to improve the performance of their business in terms of the index used for evaluation. This test points up the particular weakness of rate of return and all other ratio indexes, such as per cent profit on sales. This weakness is the tendency to encourage concentration of improvement of the ratios rather than improvement in Dollar profits. This tends to retard incentive to growth and expansion because it dampens the incentive of the more profitable businesses to grow.

Further, this method focuses better on the attention of management on the total profit required to meet objectives of the firm in general and its financial management in particular. Of course, the amount of residual income can be different from one division to another, taking into account the special circumstances of each. Also, there will be departments or divisions which will not produce any profit or rather which will merely require expenditure, such as the research and development division of the company and also the central services provided by the company. The rate of return will still leave the ultimate

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profit to be earned a little hazy. It is possible that though each department has met the goal in respect of rate of return, the total profit earned by the company is not what it really aims at. The residual income method will ensure this.

A point made by Prof. Dearden is that when the rate of return is the goal, many divisional managers hesitate to enter into a transaction on which the profit will be less than the rate of return on the capital to be employed. This difficulty will be removed in this method since the divisional manager will think of the profit in terms of rupees. Suppose for a particular transaction, he is able to borrow from the bank at 9% and is able to earn a profit of 11% on the transactions involved, he will still be adding some profit and this is as it should be. But for the operations of the undertaking as a whole, he must keep in view the need of only such investment as will bring him at least the yield equal to the cost of capital.

However, this method is not radically different from that of the rate of return and is subject to almost all the pitfalls as the rate of return. The divisional manager, if he is hard pressed, may still take measures as will temporarily increase the profit but may damage the long-term interests of the company such as cutting down of customer service or postponing repairs and maintenance or reducing expenditure on advertising and sales promotion or research and development or even labour welfare. Further, he will naturally be motivated towards padding the budgets so that he is able to produce the target figure of profit without much difficulty. All this is likely to be the result if the divisional manager is judged wholly or substantially on the basis of the results shown by his profit and loss account. If he is automatically condemned on the size of profit being smaller than what was targeted for him or is automatically rewarded when it is the other way round, it will only be natural for the divisional manager to resort to this practice.

This should point to the need of judging the performance of the divisional manager not on the basis of numbers or tangible results shown by him for a year or so, but on the basis of what he has been really trying to do. In other words, the problems faced by him and the way he tackled them should be the main ingredient of the method of judging his performance and not merely the rate or the size of profit. It is really like a college professor making a judgement about one of his colleagues. Suppose the examination results of a class taught by him in a year are poor, nobody will condemn the teacher concerned, for examination results depend on so many variables. But, if the teacher was to be fired or heavily punished on the basis of the results, he will tend to lose sight of the real objective of education and will merely concentrate on ways and means whereby the students will obtain at least pass marks. A teacher should be judged on the basis of the amount of reading that he does relating to his subject, the thought that he applies and the research that he carries on and also the way he motivates his students to do better and better. If we want to produce good teachers this is how they should be judged. Exactly the same is the case with the divisional managers. If we want to have good divisional managers and want them to work in the long-term interest of the company, they should be judged not on the basis of a year's profit or so but on the basis of the way they are handling the problems they have already faced and are thinking of the future which the division or the company will face.

What is stated above should not be taken to mean that profits are irrelevant as a basis of judgment. Surely, if a company has not been making profits for years, it cannot claim that it is efficient; there may be extraneous circumstances but then to meet and mould the circumstances is one of the functions of management. In the same manner, if a divisional manager has not been able to meet the profit objective of his division for a number of years, there must be something wrong either with him or with the company and there must be a thorough enquiry. To take the analogy of the college teacher again, if the results of his students are constantly poor year after year, there must be something wrong somewhere, most probably with the teacher. In a nutshell, what one can say is that in the long run, over a number of years the financial position and the profits earned by the company or a division provide a fairly good

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measure of one's performance; but in the short run it would be unsafe to rely on these figures alone. In the short run, there are a number of factors which intervene and in the absence of consideration of these factors and the manner in which they were tackled, judgement would be faulty. It has to be remembered that the divisional manager should himself have a goal which is consistent with the company's own goals. This is described in Management Terminology as "Goal Congruence".

COMPUTING DIVISIONAL INVESTMENT

Whatever may be the method employed for management control, there will be need for a proper measurement of the investment base. According to Solomons, some of the questions to which answers must be found are the following:

(i) What does investment mean? Total assets? Net fixed assets? Gross fixed assets?
(ii) Should fixed assets be included at cost, net book value or at an appraisal value?
(iii) How should assets be shared by two or more divisions or held by the company as corporate assets (e.g., central research laboratory) be treated in computing the investment in one of the divisions? What about cash managed centrally or accounts receivables not recoverable divisionally?
(iv) Where inventories of some or all divisions are valued on LIFO basis, is any adjustment necessary when computing investment in a division?
(v) Should the investment base be as at the beginning, at the end, at an intermediate point or be the average?
(vi) What should be included in net income for rate of return purposes?
(vii) Should divisional return of investment be calculated before or after tax?

It is, of course, necessary that the answers to the above questions should be consistent year by year. As a broad observation, it is the amount of capital put in, rather than the amount that can be taken out, which is relevant. For more forward looking purposes of guiding the division's investment policy, the reported earnings cannot be useful as a guide. There are decisions in connection with which it is relevant to ask how much capital can be disinvested from a division Such decisions call for ad hoc computations.

The following are some recommendations:

(i) Total investment is best defined in most situations as total assets. To determine controllable investment, deduct controllable liabilities. The degree of autonomy is important for deciding the controllability of fixed assets.
(ii) Fixed assets should be included at cost. It is desirable to adjust the values of fixed assets by means of index numbers because of changes in the value of the rupee but this adjustment is seldom made.
(iii) Central corporate assets should not be allocated. However, assets centrally controlled but used by divisions should be suitably allocated.
(iv) Investment in a division, inventory (controllable) should be valued on LIFO basis— but any adjustment to make LIFO into FIFO should be treated as non-divisional.
(v) In case of quarterly calculations, the figures of investment in the beginning will do; but for longer periods average is best recommended.
(vi) For evaluation of managerial performance if the rate of return is to be used, the percentage of controllable operating profit to controllable investment is most appropriate. For evaluating overall performance of the division's business relationship between net residual income plus interest and total investment in the division is more suitable.

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(vii) The question of transfer prices should be settled in a manner which is acceptable to various divisional managers.

(viii) The pre-tax rate of return is more appropriate for judging the performance of the division's management, whereas the post-tax rate is more appropriate for judging division's business-to assess whether or not the business is worthwhile.

TRANSFER PRICE

One of the most important questions, where two or more interdependent departments are concerned is, what should be the price to be put on the goods or services transferred by one department to another? The transfer price must satisfy the following two criteria:

(i) It should help to establish the profitability of each division or department.

(ii) It should permit and encourage maximisation of the profits of the company as a whole rather than individual departments.

There are various possibilities in this regard to the computation of the transfer price. These are briefly discussed below:

(a) **At cost** The goods or services may be transferred to the transferee department on the basis of the actual costs incurred. For example, if there is a separate repairs and maintenance department, its services may be charged to various other departments on the basis of the cost incurred by this department in keeping the assets of the other departments in good working order. The drawback of this system is quite obvious—it cannot establish the efficiency of the department in rendering the service, since the whole of the costs of such a department will pass on to the other departments This method can be useful only where a market price cannot be otherwise determined. It should also be noted that prices can often be determined on the basis of market conditions even though there may be a certain amount of difficulty in this regard. Taking the repairs and maintenance example again, it is surely possible to ascertain what the price would have been had the job been done by an outside firm, though the quality of the service rendered and the promptness with which the work is completed are factors to be kept in mind. Because of specialisation which is a modern phenomenon, it is becoming possible for almost all types of services to have a market price placed on them.

Only in case of certain goods which undergo different processes, it becomes difficult to put a price on the completion of each process For example, if furniture is being made, it would be difficult to determine the market price on the completion of each operation or even a set of operations involved in the making of the furniture In such a case, there is no escape from charging out materials and service to other departments on the basis of cost. It should then be recognised that profit of the department concerned cannot be properly ascertained. No attempt should be made at this and the department should be treated as a cost centre and not a profit centre.

(b) **Cost plus a pre-determined margin of profit** This method is not much different from the method discussed above. It has almost all the drawbacks and, in addition, it splits up the profit of the firm into portions which are not really significant. The profits of individual departments can be easily increased or decreased by simply changing the margin of profit. An important shortcoming of this method may be that the transferee department considers the transfer price as the cost of the input; it may compute its own cost and also fix the selling price on the basis of such cost. This may mean that the price quoted is unduly high. Specially when there is a strong competition and in periods of slump, sales will be much hampered.

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In India, there are a number of companies which are owned by Government and which often work only for Government or for Government companies. The quotations by such companies are usually based on cost plus profit. Such companies are then bound to show a profit which cannot be useful for ascertaining the level of efficiency attained by these companies. It is in their interest to increase cost so that the amount of profit added will be higher than otherwise. They have no incentive to avoid losses and wastages. The proper thing to do in such a case will be to compute the costs by strictly eliminating all figures of abnormal losses or abnormal idle capacity. In this manner, it would not be possible for a company to pass on the losses or wastages also to the purchasing company or Government and, incidentally, even make a profit because of it—since the margin of profit will be added to the cost.

It may be possible to base the quotations on the basis of price which would have to be paid on the assumption that the product had been imported from abroad. It would also be possible to work out incentive contracts by which costs are estimated in advance and if costs increase above a certain level, only a portion of it is passed on to the contractee; if there is a saving in cost, the contractor keeps a large portion of the saving. However, the flat system of adding profit to cost to determine the transfer price is unsuitable for real management control. It would be better to base the control on budgets and standard costs.

(c) **Market price** This is the most suitable and commonly used system of transfer of goods and services from one department to another or from one company, under the same management, to another company. By this method, inefficiencies of one division or department cannot be passed on to the next division or department and similarly the next department or division or company cannot take advantage of the efficiency displayed by the one which produces the goods or services. If the quality of the goods or services available in the market is the same as the one produced by the transferor department or company, there will be no difficulty in arriving at the market price but often there is some difference. Also, when sale is made to a sister company or division, a good deal of selling expenses are avoided, e.g., debt collection charges. The market price should be adjusted for all these factors

Actually what is involved is that the buying department and the selling department should deal with each other as if they are independent outside parties, dealing with each other at an arm's length. If a transfer price is arrived at by these departments through such negotiations, it is likely that the price will be such as can be used to evaluate goods or services concerned. The essential requirement is that the buying department should be under no compulsion to buy from the sister department. Similarly, the selling department should also be under no compulsion to sell to the other department Usually, the prevailing market price is adjusted for two very obvious savings in costs-namely, the cost of collecting the debt and the cost of obtaining orders. To this extent, the buying department gains when it buys from a sister department without any loss to the selling department.

(d) **Marginal Cost** A question which may arise: what should be the course when there is a difference of opinion between the selling department and the buying department about the price? The selling department may insist on a price which the buying department is unwilling to pay on the ground that it can buy the same goods or services from outside at a lower price. The problem must be resolved by reference to the overall interest of the company, i.e., maximisation of the profit of the company rather than the profit of any individual department even if it means that the profit of an individual department would be lower than otherwise.

Suppose a department produces goods at a cost of Rs 10 per unit and wishes to sell to the other department at Rs. 11 per unit, whereas the buying department can obtain them from the market at Rs. 9 per unit. If purchase is made from the market at Rs. 9 per unit and the goods produced by the sister division are left unsold, there will clearly be loss to the company as a whole since cost of Rs. 10 per

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unit have been incurred and they are not being recovered—it would be another matter if these goods can be sold at Rs. 10 per unit or higher to some outsider. Suppose, the marginal cost of the goods comes to Rs. 7 per unit; then taking the company as a whole, there has been an error in purchasing goods at Rs. 9 per unit whereas the amount which can be saved by not producing the goods is only Rs. 7 per unit. If the company were to function as one unit, it would have definitely produced the goods and refused to buy from any outside source. There is no reason why this principle should be given up simply because, for the sake of convenience of management, the company has been split up into two or more divisions. The division which requires the goods must not buy these from outside unless the outside price is below marginal cost of producing the goods. Even from the point of view of proper pricing of the ultimate products, the principle of marginal cost cannot be ignored and it should be the marginal costs of the company as a whole, and not of any individual department. Therefore, for proper pricing decisions, it would be desirable that all transfers from one department to another should be made at marginal cost.

From the theoretical point of view also, marginal cost appears to be suitable. It is clearly the duty of all individual firms to expand their output to a point where marginal cost equals marginal revenue; in the same manner individual divisions, working independently and autonomously, should also expand their output to a point where again the marginal revenue and marginal cost are equal. Some firms make the best profit by working on this principle, individual departments and also make the best profit by following the same rule. Therefore, from the point of view of individual department as well as from that of the company as a whole, the transfer price should be based on the marginal cost principle

Finally, it may be mentioned that the adoption of a particular method depends upon the special circumstances. Market price cannot be adopted when a product at an intermediate stage does not have a market value. Cost price or cost-plus-profit may be ineffective for control purposes. Hence, a compromise has to be arrived at. Whatever be the method adopted, the overall interests of the company should not be jeopardised. The individual goal of a divisional manager should not be based at the cost of the corporate goal. In other words, there should be a perfect "goal congruence".

PERFORMANCE APPRAISAL IN PUBLIC SECTOR UNDERTAKINGS

Public sector in India has now expanded in all directions and every ministry of the Central Government as well as state governments are today expected to monitor and control a large number of major companies whose performance is of vital concern to the ministry and the operating company can be compared to that between the board of directors of a huge corporation and the top management of each unit under the corporation. On the one hand, the top management of Government companies are demanding managerial autonomy consistent with their entrepreneurial spirit, on the other, the enormous investments in public enterprises throw large burdens of responsibility on the Government as the investor to ensure that the investments are prudently handled.

As already emphasised, an appraisal of the performance of any enterprise depends upon the extent to which corporate objectives have been achieved. This means that in public sector undertakings also, the objectives have to be spelt out and actuals measured. The objectives can be classified as national objectives, corporate objectives and divisional or unit objectives All the above objectives should be on the same lines as in the case of private enterprise and should be properly co-ordinated. The national objectives of public sector undertakings have been spelt out by the then Prime Minister, Pandit Jawaharlal Nehru, at a seminar on the role of public sector undertakings in June 1966, as follows

1. To gain control of the commanding heights of the economy.

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2. To promote critical development in terms of social change and strategic value rather than primarily on consideration of profit.
3. To provide commercial surplus with which to finance economic development.

The Administrative Reforms Commission has made a recommendation regarding the objective of public sector enterprises which was accepted by the Government. The recommendation was as follows:

"Government should make a comprehensive and clear statement on the objectives and obligations of public sector undertakings. The statement should lay down the principles for determining the precise financial and economic obligations of the enterprise in matters such as creation of various reserves, the responsibilities of self-financing, the anticipated return on the capital employed, and the basis for working out national wage structures and pricing policies. These governing principles should be formulated in consultation with public sector enterprises. There should also be regular consultation between the government and the public sector enterprises to review the extent to which they can expect additional finance from government for their capital requirements and the amount of surpluses that are expected from the undertakings."

According to the working group on management information systems for public sector undertakings, the major emphasis in assessing public sector performance should be on 'resources management'. Entrepreneurial objectives, essentially, lay emphasis on value addition through effective resources management, in spite of having to meet certain additional burdens like social cost, price constraints (depending on the industry). Every enterprise needs to generate a surplus.

Public sector undertakings have also to be assessed on the basis of rate of return on capital employed. This aspect has been emphasised by the working group in the following words:

"Return on Investment (ROI) is an important measure of the performance of enterprise. In fixing the desirable ROI, the cost on social overheads like townships, schools, hospitals, etc., should be excluded. The expenditure on social overheads should be separately evaluated. The other key areas of performance (e.g., development of technology earning/savings of foreign exchange, employment creation, promotion of regional economic growth) which may at times act as constraints on optimum performance should be taken note of in setting the ROI and in evaluating the performance of the enterprise The group has laid considerable emphasis on the rate of return as the principal yardstick in judging the performance of a unit which should permit the companies to make greater and effective use of the autonomy in formulating corporate policies and strategies to achieve the agreed rate of return".

In this connection, the working group has cited the example of United Kingdom where the Treasury agrees with the nationalised industries in regard to the expected rate of return for a period of, say, 5 years, taking one year with another. Such a rate of return serves as a target for the management as well as the benchmark of appraisal.

While fixing rate of return on investment as the index of performance of a public sector concern, the Government will also have to see how the companies are performing in terms of the other expectations. These expectations can be enumerated as follows;

(a) Contribution to the development of technology in the country.
(b) Saving in foreign exchange.
(c) Improvement in Productivity.
(d) Better management of industry.
(e) Fuller utilisation of capacity.
(f) Avoidance of production loss due to industrial disputes.
(g) Development of ancillary feeder industries in the small-scale Sector.

In addition, while fixing the rate of return for an enterprise, the nature of social obligations and the competition that the company has to face should also be taken into account.

The most significant aspect of management control in public sector undertakings at present, is to emphasise on autonomy at the unit level. The working group has recommended the submission of quarterly or half-yearly reports and cutting down of redundant reports. The working group recommended that public enterprises may report only on a quarterly basis for performance covering key areas identified and agreed upon between the unit and the ministry.

The scheme of quarterly reporting is considered to be sufficient to meet the requirements of the Government. The quarterly performance reporting document should be accompanied by a short report from the chief executive on significant developments during the quarter and matters on which he needs the assistance of the ministry.

The working group has also suggested formats for reporting by public enterprises to ministries/ departments.

Important extracts from the report along with formats recommended are available in the publication entitled "Report of the Working Group on Management Information Systems" published by Information and Research Division of the Bureau for Public Enterprises, Ministry of Finance, Government of India.

If the employees are not made aware of how their performance is not meeting expectations, their performance will almost certainly not improve. Effective managers provide performance feedback to employees in a way that elicits positive behavioural responses. The following are the practicable yardsticks for measuring the performance.

- Feedback should be given frequently and not once a year.
- Create the right context for the discussion.
- Ask the employee to rate his performance before the session.
- Encourage the subordinates to participate in the session.
- Recognise effective performance through appreciation.
- Focus on solving problems.
- Focus feedback on behaviour or results
- Minimise criticism
- Agree to specific goals and set a date to review progress.

Summary

Management control comprises of very careful budgeting in the first place, and, secondly, ensuring that the performance is exactly according to the budget. Performance measurement will be effective only if - Feedback is be given frequently and not once a year; Create the right context for the discussion; Ask the employees to rate their performance before the session; encourage the subordinates to participate in the session; Recognise effective performance through appreciation; focus on solving problems; focus feedback on behaviour or results; minimise criticism; agree to specific goals and set a date to review progress. When an individual joins an organisation he has a certain amount of enthusiasm to prove his abilities and he sincerely wishes these abilities to be recognised. From time to time he expects to be rewarded in one form or the other which may not necessarily be money. As a human being he wishes to become a part of the organization and get a feeling of belonging. He is willing to adapt himself to the organization and becomes a part of its management process. This adaptation and involvement need to be fully recognized. Various measures have to be adopted to make this process easy and convenient for the individuals within the organization. Involvement of individuals at various levels in decision making, build up of the work process, setting up norms of behaviour, etc, create a sense of satisfaction and achievement which normal monetary gains do

not provide It may be pointed out here that abnormal monetary rewards cannot be sustained in any organization. This should point to the need of judging the performance of an employee not on the basis of numbers or tangible results shown by the employee for a year or so but on the basis of what he has been really trying to do. In other words, the problems faced by him and the way he tackled them should be the main ingredient of the method of judging his performance and not merely the rate or the size of profit. It is really like a college professor making a judgment about one of his colleagues.

Review Questions

OBJECTIVE QUESTIONS

1. Which of the following is/are the assumption of **McGregor's** Theory Y?
   a. The average human being learns under proper condition not only to accept but to seek responsibility
   b. The expenditure of physical and mental effort in work is as natural as play or rest
   c. External control and threat of punishment are not the only means of bringing about effort towards organizational objectives.
   d. Commitment to objectives is a function of the rewards associated with their achievement
   e. All of the above
2. When the intermediate market is perfectly competitive, interdependencies of divisions are minimal and there are no additional costs or benefits in using the market instead of transacting internally; the best transfer pricing will be based on
   a. Market price b. Total cost c. Marginal cost
   d. Standard cost e. Cost plus profit
3. When there is no external competitive market and the transfer represents a predominant part of the transferor division's business and the transferor division can meet the entire requirement of the transferee division then the transfer pricing can be based on
   a. Increase revenue, Increases cost, Decreases Investment
   b. Increase revenue, Increases cost, Increases Investment
   c. Increase revenue, Decreases cost, Decreases Investment
   d. Increase revenue, Decreases cost, Increases Investment
   e. Decrease revenue, Increases cost, Increases Investment.
4. An example of a profit center is the
   a. Painting department b. Sales department
   c. Company-owned restaurant in a fast food chain
   d. Reservation department e. Maintenance department
5. In order to foster goal congruence, a managerial accounting system uses
   a. Responsibility center b. Autonomy c. Decentralization
   d. A database e. Centralization
6. The return on investment can be defined as
   a. Capital invested divided by total sales
   b. Total sales divided by capital invested
   c. Profit divided by capital invested
   d. Total capital invested divided by profit
   e. Income divided by total sales.
7. Return on Investment (ROI) cannot be improved by
   a. Increasing sales b. Reducing expenses c. Reducing assets
   d. Increasing assets e. Both (C) and (D) above.

8. In evaluating a profit center or an investment center, top management should concentrate on
   a. Total sales b. Net income c. Return on investment
   d. Return on equity e. Profit percentages
9. The amount charged for goods and services exchanged between two divisions is best described as
   a. Residual prices b. Opportunity costs c. Standard variable cost
   d. Allocated fixed cost e. Transfer prices.
10. Other factors remaining constant, which of the following will not improve the return in investment?
   a. Increasing sales volume while holding fixed expenses constant
   b. Decreasing constant
   c. Increasing selling prices
   d. Decreasing assets
   e. None of the above.
11. The price that one division of a company charges to another division for goods or services provided is called the
   a. Standard price b. Market price c. Transfer price
   d. Outlay price e. Distress price.
12. The overall measures of financial performance of a division are
   a. Return on investment and cost of capital
   b. Residual income and cost of capital
   c. Residual income and return on investment
   d. Divisional income and capital invested
   e. Return on investment and capital invested.
13. Transfer prices should not be based on full cost as this results in sub-optimal decisions by the
   a. Selling division b. Buying division c. Personnel division
   d. Managerial level e. Competitive market.
14. The best way to improve the return on investment of any division would be to
   a. Increase sales margin
   b. Increase sales revenue and capital invested
   c. Decrease capital investment and increase capital turnover
   d. Increase sales margin and capital turnover
   e. Increase sales revenue and decrease capital turnover.
15. The most common measure of performance of investment center is
   a. Margin of safety b. Sales margin c. Return on investment
   d. Return on equity e. Capital turnover.
16. If a company has excess capacity, the appropriate transfer price is
   a. Additional outlay cost per unit plus opportunity cost per unit
   b. Additional outlay cost per unit plus sunk cost per unit
   c. Additional variable cost per unit only
   d. Additional variable cost per unit plus unavoidable fixed cost per unit
   e. Additional variable cost per unit plus fixed cost per unit.
17. In a perfect market the pricing strategy to be followed is
   a. Return on investment based pricing
   b. Full cost pricing
   c. Target pricing
   d. Differential cost pricing
   e. Standard cost pricing.

18. Which one of the following statements pertaining to the Return On Investment (ROI) as a performance measurement is **incorrect?**
    a. When the average age of assets differs substantially across segments of a business, the use of ROI may not be appropriate.
    b. ROI relies on financial measures that are capable of being independently verified while other forms of performance measures are subject to manipulation
    c. The use of ROI may lead managers to reject capital investment projects that can be justified by using discounted cash flow models.
    d. The use of ROI can make it undesirable for a skillful manager to take on trouble shooting assignments such as those involving turning around unprofitable divisions.
    e. The use of ROI can lead managers to emphasize divisional ROI over the profitability of the parent organization.
19. Which one of the following items would most likely be **not** incorporated into the calculation of a division's investment base when using the residual income approach for performance measurement and evaluation?
    a. Fixed assets employed in divisions operations.
    b. Land being held by the division as a site for a new plant
    c. Divisional inventories when divisional management exercises control over the inventory levels.
    d. Division accounts payable when divisional management exercises control over the amount of short-term credit used.
    e. Division accounts receivable when divisional management exercises control over credit policy and credit term.
20. When calculating ROI and residual income, what measure of invested capital is appropriate when the division manager has considerable authority in making decisions about all of the division's assets, including non-productive assets?
    a. Average total assets less average total liabilities
    b. Average non-productive assets
    c. Total assets less current liabilities
    d. Average total assets
    e. Total liabilities less average current assets.
21. Transfer prices should not be based on actual costs because
    a. Efficient producing divisions have higher costs of production
    b. Inefficient producing divisions have higher cost of production which would be passed on to buying divisions
    c. Producing divisions have no incentives to control costs
    d. Inefficient units with high costs of production have no opportunity for profit
    e. Both (b) and (c) above.
22. Consider the following statements about cost-based transfer prices
    i. A transfer price set at standard variable cost plus a mark-up provides an incentive to the producing division to make the transfer
    ii. Full-cost based transfer prices are good for the company as a whole because all costs are considered
    iii. Transfer prices should be based on standard costs rather than actual costs since the cost of inefficiency should not be passed on.

    Which statements) is (are) true
    a. Only (i) above
    b. Both (i) and (ii) above
    c. Both (ii) and (iii) above

d. All of (i),(ii) and (iii) above
e. Both (i) and (iii) above

23. In an investment center, the manager is accountable for
a. Costs only b. Cash flows only c. Investments only
d. Revenues and costs only e. Investments, revenues and costs.

24. Which of the following is/are **not** a general method for determining the transfer prices?
a. Cost-based transfer pricing b. Income-based transfer pricing
c. Market-based transfer pricing d. Negotiated transfer pricing
e. All of the above.

25. If the selling sub-unit is operating at full capacity and can sell everything produced either internally or externally, the transfer price of the product will be fixed up on the basis of
a. Negotiation between the divisions b. Market price c. Variable cost
d. Cost plus a mark-up e. Full cost pricing.

26. Which of the following transfer pricing methods will preserve the submit autonomy?
a. Cost-based pricing b. Negotiated pricing c. Variable-cost pricing
d. Full-cost pricing e. None of the above.

27. The price that one division of a company charges another division for goods or services provided is called
a. Market price b. Transfer price c. Outlay price
d. Distress price e. Captive price

28. In evaluating an investment center, top management should concentrate on
a. Rupee sales b. Net income c. Profit percentage
d. Return on investment e. Cost incurred.

29. investment center is the responsibility centre within an organization that has control over
a. Cash inflow and cash outflows of the entire organization
b. Costs
c. Revenue
d. Investment of funds
e. (b), (c) and (d) above.

30. Which of the following is **not** a disadvantage of shadow price?
a. The use of shadow price is incompatible with the philosophy of decentralization through divisionalisation
b. To derive the shadow price, one has to obtain the dual solution to the mathematical programming model developed for solving the production planning problem of the buying division
c. Assimilating the data and application of the model becomes a highly centralized affair.
d. Operating managers often do not understand and appreciate the concept of shadow price
e. Shadow price can be used only when the resources are available in plenty and are not scarce.

31. The price that one division of a company charges another division for goods or services provided is called
a. Market price b. Transfer price c. Outlay price
d. Distress price e. Captive price

32. Residual income is a measure of divisional performance of the
a. Cost center b. Profit center c. Investment center
d. Both (b) and (c) above e. All of (a), (b) and (c) above.

33. If the selling submit is operating at full capacity and can sell everything produced either internally or externally, the transfer price of the product will be fixed up on the basis of

a. Negotiation between the divisions
b. Market price
c. Variable cost
d. Cost plus a mark-up
e. Full cost pricing.

34. Which of the following is/are pre-requisites of effective divisionalization?
    i. The organization must have two or more units
    ii. The costs and revenues of each division can be measured separately
    iii. Each division is sufficiently independent of other divisions.
    iv. Top management should not interfere too much in divisional matters.
    a. Both (i) and (ii)
    b. Both (i) and (iii) above
    c. Only (i),(ii) and (iii) above
    d. Only (i),(ii) and (iv) above
    e. All (i),(ii),(iii) and (iv) above
35. Which of the following is **false** with respect to Return on investment (ROI) and Residual Income (RI)?
    a. In case of RI, there is a problem of defining the minimum required rate of return associated with various investment opportunities
    b. ROI can be readily employed for inter-divisional comparisons
    c. A project will be rejected under ROI method and accepted under RI method if the rate of return from such project is more than the minimum required rate of return but less than the current ROI
    d. RI is the rate of return which a division is able to earn above the minimum required rate of return on operating assets
    e. Under RI approach, the larger divisions will be expected to have more RI than the smaller divisions.
36. Which of the following is not an assumption of McGregor's Theory Y?
    a. Man will exercise self-direction and self-control in the service of objectives to which he is committed.
    b. The average human being learns under proper condition not only to accept but to seeks responsibility
    c. The average human being does not inherently dislike work
    d. Commitment to objectives is a function of the rewards associated with their achievements
    e. The capacity to exercise a relatively high degree of imagination, ingenuity and creativity in the solution of the organizational problems is narrowly distributed in the population
37. The executive management requires information about the
    a. Overtime payment
    b. Order booking
    c. Cash structure
    d. Shifts in consumer preference
    e. Fund flow

DESCRIPTIVE QUESTIONS

1. Explain in detail the performance appraisal system in public sector undertakings.
2. Write a brief note on centralised management.
3. Write short notes on
   (a) Rate of Return
   (b) Residual Income
4. What do you mean by 'Transfer Price'?
5. What are the requirements needed for Profit Performance Measurement?
6. State the significance of measurement of Performance of a manager.

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CHAPTER

23

Financial Statements Analysis: Accounting Ratios

"Financial statements analysis is largely a study of relationship among the various financial factors in a business as disclosed by a single set of statements and a study of the trend of these functions as shown in a series of statements"

—Myers

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *Current Ratio*
- *Acid Test Ratio*
- *Inventory Turn Over Ratio*
- *Debtors Turn Over Ratio*
- *Debt to Equity Ratio*
- *Proprietory Ratio*
- *Interest Coverage Ratio*
- *Debt Cash Flow Coverage Ratio*
- *Revenue Statement Ratio*
- *Operating Ratio*
- *Net Profit Ratio*
- *Return on Capital Employed*

INTRODUCTION

Ratio may be defined as a number expressed in terms of another number. It shows relationship of one figure with another figure. For example, current ratio shows relationship of current assets with current liabilities. The relationship may be expressed as a quotient or a rate or a percentage.

Individual figures of net profit or net loss shown by the profit and loss account and of the assets and liabilities shown by the balance sheet may alone not express the required information perfectly, i.e short-term financial position (or liquidity), long-term financial position, etc. required by outsiders and also by the internal management. The illustration of the total figure of current assets or current liabilities may alone not show or express the ability of the concern to meet its current obligations. However, study of current ratio throws light on the ability of the concern to meet its current liabilities. In this chapter, we may see various Ratios; which are useful to a Corporate Accountant.

CURRENT RATIO

Current Ratio, also known as working Capital Ratio, Solvency (short term ratio, Two to one ratio) shows the company's ability to meet its maturing current obligations. In other words, the ratio indicates the relation between the current assets and current liabilities. The formulation for the ratio is as follows:

Current Ratio = Current Assets/Current Liabilities

Where **1. Current assets normally include the following:** Cash in hand or at bank marketable securities (which may immediately be converted to cash), stock sundry debtors, bills of exchange (i.e bills receivables) prepaid expenses, etc. and

2. Current liabilities normally include the following: Bills of exchange (i.e bills payable) sundry creditors, outstanding and accrued expenses, income tax payable, bank overdraft etc. The current assets and current liabilities for the purpose of finding out current ratio should be properly valued. Provision against current assets should be deducted from the corresponding balance of the current assets.

Example:

Total Current Assets	Rs.	2,40,000
Total Current Liabilities	Rs.	60,000
Working capital	Rs.	1,80,000

Current Ratio = Rs. 2,40,000/Rs. 60,000 = 4:1.

Significance:

1. The above ratio indicates that for every Re.1 of current liabilities, there are Rs.4 of current assets.
2. From view-point of percentage current liabilities are only 25 % of current assets.
3. From view-point of rate, we may express that current assets are four times the current liabilities.
4. The above ratio indicates the ability of a business to meet its maturing current obligations.

We also say that the firm is able to pay its current liabilities even if it liquidates is current assets at 25% of their book value. This means that a company has a good margin of safety.

Generally, two-to-one ratio is referred to as a banker's rule of thumb standard liquidity for a business. However, this proportion may be treated as general trend. The standard proportion may differ from industry to industry and hence, the standard of liquidity for a particular business should be determined from the nature of that business, industry and quality or current assets.

ACID TEST RATIO

Acid Test Ratio is also called Quick Ratio or Liquid Ratio. It shows the relationship that exists between the liquid assets and liquid liabilities. The formulation for the ratio is as:

Acid Test Ratio = Liquid assets/Liquid Liabilities

Where **(1) Liquid Assets means Cash on hand and at Bank,** Sundry Debtors (after providing for bad and doubtful debts), securities which can easily be converted into cash and bills receivables.

Notes: Current assets like prepaid expenses and stock (work in progress, finished goods) are excluded from liquid assets.

(2) Liquid Liabilities (or quick liabilities) normally include the following: Sundry creditors, bills payable, income tax payable and outstanding expenses.

Notes: Bank overdraft is excluded from liquid (or quick) liabilities.

Example:

Total Liquid Assets:	Rs.	1,20,000
Total Liquid Liabilities:	Rs.	40,000

Acid Test Ratio = 3:1

Here also the amount of Liquid assets and Liabilities should be properly valued.

Significance:

(1) The above ratio indicates that for every Re. 1 of liquid liabilities, there are Rs.3 of liquid assets.

(2) From viewpoint of percentage, liquid liabilities are 33.33% of liquid assets.

(3) From viewpoint of rate, it may be expressed that liquid assets are three times of liquid liabilities.

(4) The above ratio indicates the ability of business to meet its short term debts out of short term assets.

Generally, one to one (i.e 1:1) is referred to as a rule of thumb standard of liquidity. In other words, a 100% Acid Test Ratio may be treated as a reliable one.

However, like current ratio (and also all other ratios), the acceptable standard for this ratio should depend upon the nature of the business, industry and quality of liquid.

The ratio is also known as "**Near Money Ratio**".

1. Inventory Turnover Ratio and 2. Debtors Turnover Ratio Explained.

INVENTORY TURNOVER RATIO

Inventory Turnover Ratio expresses the relation between the cost of goods sold during a given period and the average amount of inventory outstanding during the period.

The ratio is calculated as below:

Inventory Turnover Ratio = Cost of Goods sold/Average Inventory at Cost

Average inventory at cost = Opening inventory + Closing Inventory /2

Or More accurately = Opening Inventory + Inventory at the end of every month /13

Notes: Inventory turnover ratio may also be calculated as below:

ITR = Net sales/Average Inventory at Cost

ITR = Net sales/Average Inventory at Selling prices

Example: If average inventory is Rs.50,000 and the cost of goods sold is Rs.4,50,000. What would be the inventory turnover ratio?

Inventory turnover ratio = Rs.4,50,000/Rs.50,000 = 9 times.

Significance: The ratio indicates the "Velocity" of the movement of the merchandise through the business during the period covered by the ratio. Generally, a high ratio signifies the quick movement of the inventory and also the efficiency of inventory control. On the contrary, low ratio indicates the existence of slow-moving and obsolete stocks and also that the stocks consist of poor quality goods, which are not capable of being turned out rapidly. However, it should be noted that if one knows the inventory turnover ratio for the particular period, it would not be of much help to him. Unlike current ratio and acid test ratio (i.e liquid ratio) this ratio is not self explanatory in the sense that mere knowledge of a ratio throws light on the required information. We have also to see the following two aspects with a current year inventory turnover ratio:

1. Ratio for the preceding years and
2. Ratio of other concerns of the same industry.

Only after the knowledge of the above two aspects, one should evaluate the performance.

Generally, we may say that if the inventory turnover ratio is high, it either indicates good amount of sale with the same investment in inventory or the same level of sales with less investment in inventory. This shows efficiency of the management in inventory control. However, like other ratio this ratio also varies widely from one business to another.

DEBTORS' TURNOVER RATIO

Debtors Turnover Ratio shows outstanding amount (i.e uncollected accounts) by debtors in respect of number of days of sales. In other words, it shows how many day's credit is outstanding by debtors.

The formulation for the ratio is as follows:

Debtors Turnover Ratio = Trade Debtors/Sales per day

Where,

1. Trade debtors include trade debtors and trade bills receivable also. Obviously Reserve for Bad and Doubtful debts is not deducted from the total amount of trade debtors.
2. Sales per day (i.e daily sales) is arrived at as below:

Sales per day = Net sales/No. of working days

As regards number of working days, usually 360 days should be taken as base instead of 365 days. However, some accountants prefer to use 300 days only for the reason that the remaining 60 days may be taken as holidays (this seems to be a reasonable ground). More accurately, some consider that this figure of 300 days should again be reduced if the concern has a week of lesser working days.

Notes: Debtors Turnover Ratio may also be calculated as below:

Debtors Turnover Ratio = Trade Debtors ? Net sales No. of working days.

Example: Suppose net sales were Rs. 1,80,000 and the amount of debtors at the end of the year Rs. 33,000. Debtors turnover ratio would be:

1. Daily sales = Rs. 1,80,000/360 = Rs.500
2. Debtors Turnover Ratio = Rs. 33,000/Rs. 500 = 66 days

Debtors Turnover Ratio = Rs. 33,000/Rs. 1,80,000 360 days = 66 days

Significance: Debtors turnover ratio should be understood from the viewpoint of the period of credit allowed. For example, if the period of credit allowed to debtors in the above example is 30 days, then the above ratio (i.e 66 days) indicates over investment in accounts receivables. Such situation may be caused due to inefficient credit control procedures or inefficiency of the collection department . Like inventory turnover ratio, this ratio should also be compared with ratios for preceding years and also with ratios of other concerns in the same industry. However, besides the effectiveness of credit collection and sales departments, there are also other factors which may be responsible for change in the ratio. These factors should be fully investigated. These factors are listed below:

1. Changes in price
2. Strikes and lock outs
3. Special sales campaign at the end of accounting period
4. Changes in terms of sales
5. Effects of trade cycles etc.

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DEBT TO EQUITY RATIO

Debt to Equity ratio is also known as External-Internal Equity Ratio. The formula for the ratio is as below:

Debt to Equity Ratio = External Equities/Internal Equities

Where external equities represent outsiders' funds while internal equities represent shareholders' funds. Accordingly, debt to equity ratio may also be calculated as follows:

Debt to Equity Ratio = Outsiders' Funds/Shareholders' Funds.

Shareholders' Funds :Shareholders' funds include all types of capital and reserves and surplus.

Outsiders' Funds: Outsiders' Funds include current liabilities and long-term liabilities.

Significance: This ratio is very useful for analysis of long-term financial condition. Normally, the acceptable standard for this ratio is 1:1 (or 100%). This ratio signifies the excess of the proprietors' funds over outsiders' funds and thereby indicates the soundness of the financial structure of the business.

In connection with the Debt Equity Ratio, study of the following ratios should also be made :

1. Proprietary Ratio (or Capital Ratio)
2. Ratio of Fixed Assets and Proprietors' funds
3. Ratio of Current Assets to Proprietors' funds.

Let us understand the above ratios:

Proprietory Ratio

This ratio is calculated as below:

Proprietory Ratio = Proprietors' Funds/Total liabilities 100

Taking the same example = Rs. 1,65,000/Rs. 2,20,000 100 = 75%

Notes:

In this connection, let us also study the ratio of total liabilities to total assets.

Ratio of total liabilities to total assets = 100% Less Proprietory Ratio

= 100% – 75% = 25%

This may be verified as below:

Total Liabilities = Rs. 55,000/Total Assets = Rs. 2,20,000 100 = 25%

With knowledge of the above two ratios (i.e. Proprietory Ratio and the Ratio of total liabilities to total assets), we may also find out the Debt-Equity Ratio as below:

Debt Equity Ratio = 25:75 = 1:3

Ratio of Fixed Assets to Proprietors' Funds

This ratio is found out as below:

Ratio of fixed assets to Proprietors' Funds = Book value of fixed assets/Proprietors' Funds

Suppose book value of fixed assets is Rs. 1,32,000 and the proprietors funds are Rs. 1,65,000 the ratio in terms of percentage would be:

Rs. 1,32,000/Rs. 1,65,000 100 OR 80%

This ratio indicates the relationship of between the ownership funds (shareholders funds or Proprietors' funds or Net worth) and fixed assets. When former is higher than the latter and there are no other non-current assets, it shows that a part of the net working capital is supplied by the owners (i.e shareholders).

On the other hand, if the fixed asses are in excess of the proprietor's funds, it shows that fixed assets are partly owned by outside creditors or in other words, apart from the fixed assets that has been financed out of creditors' money. Thus, very high ratio reflects over-investments of shareholders' funds in fixed assets. In case of industrial undertakings, standard percentage of this ratio is 65%.

Ratio of Current Assets to Proprietors' Funds

The formulation for this ratio is as follows:

Current assets/Proprietors' Funds 100

Suppose, the value of current assets is Rs. 88,000 and the proprietors' funds are Rs. 1,65,000 the ratio in terms of percentage would be:

Rs. 88,000/Rs. 1,65,000 100 = 53.33%

This ratio shows percentage of shareholders' funds invested in current assets. This ratio should be used in conjunction with a ratio of fixed assets to proprietors' funds. If ratio of current assets to Proprietor's funds is higher than that of fixed assets to Proprietors' Funds, it is an indication of the financial strength of the company.

1. Interest Coverage Ratio and
2. Debt Cash Flow Coverage Ratio

Interest Coverage Ratio

This ratio is calculated by the following formula:

Interest coverage Ratio = Net profit Before Interest and Income-tax/Fixed Interest charges

Example:

i. Net profit before taxation but after interest Rs. 2,00,000

ii. Interest Rs. 20,000

Hence, Interest Coverage Ratio = Rs. 2,00,000 + Rs. 20,000/Rs. 20,000

Rs. 2,20,000/Rs. 20,000 = 11 times.

In case of an industrial undertaking, the standard measure lies in the fact that the interest charges should be covered six to seven times. This ratio is particularly very useful for outsiders like debenture holders and other creditors.

Debt Cash Flow Coverage Ratio

This ratio is also an interest coverage ratio based on the total cash flow (instead of net profit). It is calculated as below:

Debt Cash Flow Coverage Ratio (CFCD) = CF/[I + (SFD/1 – T]

Where

1. CFCD = Cash Flow Coverage of Debt
2. CF = Annual Cash flow before interest and taxes
3. I = Interest payments
4. T = Income Tax Rate
5. SFD = Sinking Fund Appropriations on debt

Illustration 1:

1. Net Income after Tax Rs. 1,00,000
2. Depreciation charged Rs. 8,000
3. Tax Rate 50% of net income
4. 5% Mortgage Debentures Rs. 1,50,000
5. Fixed interest charge Rs. 10,000
6. Sinking Fund Appropriation 5% of outstanding Debentures

Let us calculate cash to debt service ratio:

$$\text{CFCD} = \frac{\text{Rs.1,00,000} + \text{Rs.1,00,000} + \text{Rs.10,000} + \text{Rs.8,000}}{\frac{\text{Rs. 10,000} + \text{Rs. 7,500}}{1 \pm 0.5}}$$

Rs. 2,18,000/Rs. 25,000

8.72 times.

Let us also calculate the interest coverage ratio as mentioned in 1) for the above example.

Interest Coverage Ratio = Rs. 1,00,000 + 1,00,000 + Rs. 10,000/Rs. 10,000

= 21 times.

Thus, results shown by both the ratios differ from each other. CFCD ratio shows less coverage of interest as compared with the interest coverage ratio.

REVENUE STATEMENT RATIOS

Revenue Statement ratios mainly include the following ratios:

1. Gross Profit Ratio
2. Operating Ratio
3. Expense Ratios and
4. Net Profit ratio

Above ratios are very useful to measure the profitability of the business.

Gross Profit Ratio

This ratio is also called Turn-over Ratio". It shows the relationship of gross profit on sales to net sales. The ratio is expressed in percentage of gross profit to sales, and formulation for this ratio is as follows:

Gross Profit Ratio = Gross Profit/Net Sales

Net Sales: Net Sales = Total sales – Good returned by the customers

Example:

1. Total Sales Rs. 2,20,000
2. Goods returned Rs. 20,000
3. Cost of goods sold Rs. 1,60,000

Gross Profit Ratio = [Rs. 2,20,000 – Rs. 20,000 – Rs. 1,60,000/(Rs. 2,20,000 – Rs. 20,000)] 100

An increase in the percentage may be due to an increase in sale price of goods without corresponding increase in the cost of goods sold, decrease in cost of goods sold without corresponding decrease in the

sale price of goods, omissions of purchases, inflation of sales figures or opening stock valuation is lower than the closing stock.

A decrease in the percentage may be due to decrease in the sale price of goods without corresponding decrease in the cost of goods sold, an increase in the cost of goods sold without corresponding increase in the sale price, omissions of sales, valuation of a closing stock at a lower figure, or opening stock valuation is higher than the closing stock.

The ratio shows average mark-up obtained on products, in case of sale of more than one product. It is necessary to obtain the ratio for each product.

Operating Ratio

This ratio expresses the relationship of cost of goods sold plus operating expenses to Net Sales. Formulation for this ratio is as follow:

Operating Ratio = Cost of goods sold + Operating Expenses/Net sales

Operating Expenses Operating Expenses consist of

1. Selling and Distributions Expenses
2. Financial Expenses and
3. Administrative Expenses.

Example:

1. Cost of goods sold Rs. 1,60,000
2. Operating expenses Rs. 20,000
3. Net sales Rs. 2,00,000

Operating ratio would be calculated as

Operating ratio = Rs. 1,60,000 + Rs. 20,000/Rs. 2,00,000

Rs. 1,80,000/Rs. 2,00,000 100

Thus, this ratio shows the cost of goods sold plus operating expenses as a percentage of sales. In the above examples, operating costs are 90% of net sales. In other words, operating cost of every Re. 1 worth of new sales amount to 90 Paise.

The ratio indicates the operating efficiency of the company. Lower ratio indicates more favourable position. The yardstick for this measure should range from 75% to 85%.

Notes: At this stage, let us also study what is called operating profit ratio. Formulation for Operating Profit Ratio is as

Operating Profit/Net Sales 100

If operating profit is Rs.20,000 and net sales Rs. 2,00,000 the operating profit ratio would be:

Rs. 20,000/Rs. 2,00,000 100 = 10%

This ratio may also be arrived at as shown below:

Operating Profit Ratio = 100% Less Operating (Costs) Ratio

= 100% Less 90%

= 10%

The operating profit ratio shows the profitability of a business and its sales promotion. It also indicates the portion of sales which is left over after all current operating costs and expenses are met. Taking the above example, 10 paise per rupee sales are left over for the company.

Expenses Ratios

Expenses (or cost) ratios show relationship between operating cost and expenses on one hand and volume of sales on the other. In other words, these ratios express each element of cost and expense as percentage of sales. Thus, one may find out the effectiveness of each element. Important expenses ratios are named below:

Cost of goods sold to Net Sales

This ratio is determined as below:

Cost of goods sold to Net Sales Ratio = Cost of Goods sold /Net Sales 100

Notes: Ratio may also be calculated for each element of cost as below:

a. Material cost to sales
b. Labour cost to sales etc

Factory cost to Sales: This ratio shows factory cost as percentage of sales. Accordingly, the formulation would be:

Factory cost/Sales 100

4. Administration cost to sales
5. Selling and Distribution cost to sales
6. Bad Debts to Sales

Thus, expenses ratio shows the portion of new sales revenue which is consumed on account of various operating costs and expenses.

Net Profit Ratio

Net profit ratio expresses net profit as a percentage of sales. It is calculated as shown below:

Net Profit Ratio = Net profit/Net Sales 100

This ratio indicates the profitability and efficiency of the business. However, the ratio would be more useful if studied with operating ratio.

Notes: At this stage, it is important to differentiate between

1. Operating profit ratio and
2. Net profit ratio.

Operating profit ratio differs from the Net Profit Ratio in as much as it is calculated after adding non-operating expenses to the new profit and deducting non-operating income from the new profit.

Loss on the sale of assets, provision for legal damages etc., are examples of non-operating expenses which should be added to the figure of net profit to arrive at the operating profit and interest, dividends received on investments, net profit to arrive at the operating profit. Thus, obviously we may say that the new profit ratio takes into account the effect of non-operating income and expenses whereas the operating ratio does not.

i. Return on Proprietors' Funds and
ii. Return on Equity Capital

Return on Proprietors' Funds

Return on proprietors' funds (or shareholders' funds) is calculated as

Return on proprietors' funds = Net profit/Shareholders' funds

Proprietors' Funds: As mentioned earlier proprietors' funds consist of share capital (both equity capital and preference capital) and reserves and surplus. For the purpose of this ratio, average amount of shareholders' funds is taken. Average amount of shareholders' investment is calculated as

Shareholders' funds at the beginning of the year + Shareholders' funds at the end of the year/2

Net profit: Net profit for the purpose of this ratio means the profit arrived at after taxation on long-term liabilities.

Illustration 1: Part of a Balance sheet of XYZ Limited (i.e Liabilities side only)

TABLE 23.1

Liabilities	*Rs.*	*Amount Rs.*
Share Capital		
2,000 Equity shares of Rs.50 each	1,00,000	
500 5% Preference shares of Rs.50 each	25,000	1,25,000
General and Surplus		
General Reserve	40,000	
Reserve for Contingencies	15,000	
Capital Reserve	20,000	
Profit & Loss Appro. A/c	15,000	90,000

Net Profit for the year (after taxation and interest) was Rs.64,500. Let us calculate return on Proprietors' funds:

Proprietors' Funds: Rs. 1,25,000 + Rs. 90,000 = Rs. 2,15,000

Net Profit after taxation and interest: = Rs. 64,500

Return on Proprietors' funds

Rs. 64,500/Rs. 2,15,000 100 = 30%

Thus, Return on Proprietors' funds is 30% or 30 paise per rupee.

Return on Equity Capital

Significance: This ratio is very useful to measure overall profitability of the concern. It indicates an average return on equity capital and is calculated as

Net Profit – Dividend due

To

Return on Equity Capital = Preference shareholders/Equity share capital 100

Example: Taking the previous example, rate of return on equity capital would be

Rs. 64,500 – Rs. 1,250 (i.e Preference Dividend)/Rs.1,00,000 100

Rs. 63,250/Rs. 1,00,000 100 = 63.25%

Notes: Sometimes earning share may also be calculated. It is calculated as

Net profit less dividend due to preference shares/Total number of Equity shares

Rs. 63,250/Rs. 1,00,000 = Rs. 31.63 per equity share

Sometimes return is calculated on total equity capital employed. Total equity capital employed consists of equity share capital plus revenue reserves and appropriation of profits.

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As has been mentioned above net profit for the purpose of calculation of return on equity capital, should be arrived at after deducting dividend due to preference share holders. Moreover, if preference shares are participating preference shares, the participating dividend should also be deducted from the figure of net profit.

Significance: This ratio shows percentage return on equity capital or return per equity share. A high ratio may cause good marketable value of equity shares.

Meaning of Expression "return on capital employed" and advantages a business would derive by adopting the return on capital employed method for measuring the overall profitability of the business.

Return on Capital Employed

Return on capital employed is the ratio of adjusted net profit to capital employed it is expressed in percentage. The return on "capital employed" may be based on gross capital employed or net capital employed. Formulation for calculation of return on capital employed is as follows:

Profit/Net Capital Employed 100

With the above ratio indicating return on net capital employed, it is also better to calculate the return on Gross Capital Employed.

Let us discuss the components of the ratio:

Net Capital Employed

Net capital employed consists of total assets (i.e Fixed Assets, Investments and Current Assets) of the business less its current liabilities (i.e creditors, bank over draft etc). Thus

Net credit employed = Fixed Assets + Investments + Current Assets – Current Liabilities

Thus, Net Capital Employed = Fixed Assets + Investments + Working capital.

In other words, we may also express the Net Capital employed as below:

Net Capital Employed = Issued share capital + Capital Reserves + Revenue Reserves
+ Debentures and Long term Loans – Fictitious Assets.

Gross Capital Employed

Gross Capital employed consists of the Total Assets of a business. Thus, Gross Capital Employed = Fixed Assets + Investments + Current Assets.

The following important points must be kept in view for computing capital employed:

As regards Fixed Assets: Goodwill, Patents and Trade Marks should be excluded from capital employed. Fixed Assets should be taken either at their written down value or at replacement cost. If replacement cost is taken, provision for depreciation should be calculated accordingly.

As regards Investments: Investments made outside the business are excluded but those made in associated companies to increase earnings may be included.

As regards Current Assets:

Stocks: Stocks or raw materials, work-in-progress and finished goods should be valued at cost price and should be included in capital employed. Obsolete stocks are excluded.

Debtors: Amount of debtors should be included in capital employed after deducting there from a reasonable provision of bad and doubtful debts.

Cash and Bank Balances: Cash-in hand and at Bank should be included. However, any excess balance of cash at bank beyond normal requirements should be excluded. Bank overdraft should be included in the calculation of capital employed.

Preliminary expenses, deferred revenue expenditure etc. should be excluded and written-off to the profit and Loss account.

Adjusted Net Profit:

a. Add any abnormal or non-recurring losses.
b. Add interest on long term liabilities. Moreover, if return on gross capital employed is to be calculated, add interest on short term liabilities also.
c. Add Income tax paid and provision for income tax
d. Deduct additional depreciation based on the replacement cost.
e. Deduct income from investments outside the business.
f. Deduct any abnormal or non-recurring gains.

Significance:

Return Capital employed shows overall profitability of the business. At first minimum return on capital employed should be determined and then the actual rate of return on capital employed should be determined and compared with the normal return. Computation of Return on Capital Employed is of fundamental importance as it is based on two important components and determents profit and capital.

Advantages of Computing Return on Capital Employed:

1. It shows the overall performance of the business enterprise.
2. It helps in evaluating and controlling capital expenditure projects.
3. It helps in profit planning
4. It facilitates comparisons of the relative profitability of the various departments and the different types of products.
5. It determines whether an alternative use of capital has been justified.

Illustration 2: You are required to calculated Return on Capital employed from the following information:

ABCD Ltd.
Balance sheet as at 31st December, 2006.

TABLE 23.2

Fixed Assets	*Cost*	*Accumulated Depreciation*	*Net Value*	*Rs.*
Buildings	60,000	-	60,000	
Plant & Machinery	1,02,000	30,000	72,000	
	1,62,000	30,000	1,32,000	1,32,000
Investments:				
Outside the business			8,000	
In Associated Companies			2,000	10,000
Current Assets:				
Stocks			18,000	
Debtors		16,000		
Less: Provision for Bad debts	400	15,600		
Cash and Bank Balance		2,400	36,000	
Less: Current Liabilities:				1,78,000
Creditor	14,000			

The McGraw-Hill Companies

Taxation		6,000		20,000
Net Capital Employed				1,58,000
AUTHORISED AND Issued Share Capital:				
4,000 5% pref. Shares of Rs.10 each	40,000			
6,000 Equity Shares of Rs.10 each	60,000			1,00,000
Capital Reserve:				10,000
General Reserve				20,000
Profit & Loss Balance				14,000
			1,44,000	
5% Debentures				14,000
			1,58,000	

Additional information:

1. Additions to original costs of assets necessary to convert to replacement costs : Buildings Rs.10,000 Plant and Machinery 22,000
2. Accumulated depreciation on replacement cost of plant and machinery would amount to Rs.37,200
3. Obsolete stock amount to Rs.400
4. The profit as per Profit and Loss Account for the year 2006 is Rs.21,240.
5. Depreciation on plant and machinery charged during 2006 was Rs.10,400; Depreciation based on replacement cost for the year is ascertained as Rs.12,400.
6. Gain on sale of machinery Rs.1,600, Bad Debts recovered Rs.800 Amounts written off; Goodwill Rs.1,200. Income from investments outside the business Rs.800.

TABLE 23.3 Calculation of Capital Employed As on 1st December 2006

Fixed Assets	*Cost*	*Accumulated Depreciation*	*Net Value*	*Rs.*
Buildings	70,000	-	70,000	
Plant & Machinery	1,24,000	37,200	86,800	
	1,94,000	37,200	1,56,800	1,56,800
In Associated Companies				2,000
Current Assets:				
Stocks		18,000		
Obsolete Stocks		400	17,600	
Debtors		16,000		
Less: Provision for Bad debts		400	15,600	
Cash and Bank Balance			2,400	35,600
Gross Capital Employed				1,94,400
Less: Current Liabilities:				
Creditor			14,000	
Taxation			6,000	20,000
Net Capital Employed				1,74,400

Adjusted Net Profit

TABLE 23.4

Profit as per Profit & Loss A/c		21,240
Add: Goodwill written off		1,200
		22,440
Less Gain on sale of machinery	1,600	
Bade Debts Recovered	800	
Additional Depreciation	2,000	
Income from outside investments	800	5,200
		17,240

Return on Capital Employed:

a. (Profit/Net Capital Employed) 100 = (Rs.17,240/Rs.1,74,400) 100 = 9.89%

b. (Profit/Gross Capital Employed) 100 = (Rs.17,240/Rs.1,94,400) 100 = 8.87%

Notes: Net Capital employed may also be computed as below (i.e computation based on liability side)

TABLE 23.5

Capital, Reserves and Debenture		1,58,000
Add: Net Increase of Fixed Assets		24,800
		1,82,800
Less: Assets not to be included (Investments outside the business)	8,000	
Decrease in Stock	400	8,400
Net Capital Employed Rs.		1,74,400

Improvement of the Return on Capital Employed.

Return on capital employed may be improved by the following important steps:

1. Reduction in the amount of capital employed through economic uses of capital
2. Most profitable utilisation of fixed assets.
3. Rapid collection from the debtors
4. Improvement in inventory levels
5. Increase in profit by adopting the following ways
   a. Increases in sales either by increasing the sales prices or by increasing the sales volume or by both
   b. Reduction in the cost of production and other operating costs.

Notes: At this stage, it is important to note that basically the return on capital employed is the result of two important ratios (I) Profit margin ratio and (ii) Capital turnover Ratio. Accordingly, the basic formula for computation of return on capital employed is as:

Return on Capital employed = Profit /Sales Sales /Capital employed 100

To illustrate, if the profit is Rs.50,000 sales are Rs.5,00,000 and capital employed are 10,00,000 the return on capital employed would be:

Rs.50,000/Rs.5,00,000 Rs.5,00,000/Rs,10,00,000 100 =10% 50% = 5%.

Thus, obviously increase in sales or decrease in capital employed will increase the return on capital employed.

Illustration 3: The following are the summarised Profit and Loss Account of Hind Products Limited for the year ending 31st December 2006 and the Balance Sheet as on that date.

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TABLE 23.6 Profit and Loss Account

	Rs.		*Rs.*
To Opening Stock	99,500	By Sales	8,50,000
To Purchases	5,45,250	By Closing Stock	1,49,000
To Incidental Exps	14,250		
To Gross Profit	3,40,000		
	9,99,000		9,99,000
To operating		By Gross Profit	3,40,000
Expenses		By Non-operating Income interest 3,000	
Selling & Distribution	30,000		
Administrative 1,50,000		Profit on Sales of Shares 6,000	9,000
Finance 15,000	1,95,000		
To Non-operating Expenses			
Loss on Sales of Assets	4,000		
To Net Profit	1,50,000		
	3,49,000		3,49,000

TABLE 23.7 Balance Sheet

	Rs.		*Rs.*
Issued Capital		Land & Buildings	1,50,000
2,000 Equity shares of Rs.100 each	2,00,000	Plant & Machinery	80,000
Reserves	90,000	Stock in trade	1,49,000
Current Liabilities	1,30,000	Sundry Debtors	71,000
Profit & Loss a/c	60,000	Cash and Bank Balances	30,000
	4,80,000		4,80,000

From the above statement, you are required to calculate the following ratios and state the purpose they serve:

1. Current Ratio
2. Operating Ratio
3. Stock Turnover
4. Return on Total Resources
5. Turnover of fixed assets.

Current Ratio

Current Assets/Current Liabilities

Rs.1,49,000 + Rs.71,000 + Rs.30,000/Rs.1,30,000

Rs.2,50,000/Rs.1,30,000 = 1,923:1

The minimum of two-to-one- ratio is normally referred to as a banker's rule of thumb standard of liquidity for a business. In this concern, the ratio is near to the said standard. However, considering the composition of current assets in the business, the stock which is no doubt the least liquid of current assets form a substantial part of company's current assets. Therefore, the current ratio of 1,923 : 1 with a lesser liquid items may not be said to be favourable.

Operating Ratio:

Cost of Goods sold + Operating Expenses/Net Sales

= Rs.5,10,000 + Rs.1,95,000/Rs.8,50,000

= 0.83 : 1 (or 83%)

Cost of goods sold has been arrived at as below:

TABLE 23.8

Opening Stock	*Rs.*	*Rs.*
Opening Stock	99,500	
Add : Purchases	5,45,250	
Add : Incidental Expenses	14,250	6,59,000
Less : Closing Stock		1,49,000
		Rs.5,10,000

The ratio shows that 83% of net sales are absorbed by the cost of goods sold and operating expenses. In other words, we may say on the basis of this ratio that out of every Re. 1 worth of net sales, 83 paise constitute the cost of goods sold and operating expenses.

Normally, in case of manufacturing concerns, operating ratio is expected to touch a percentage of 75% to 85%.

Stock Turnover Ratio:

Cost of Goods sold/Average Inventory at Cost

= Rs. 5,10,00/Rs. 1,24,250

= 4.1 :1

Average Inventory at Cost:

Value of opening stock + Value of closing stock/2

Rs. 99,500 + Rs. 1,49,000/2 Rs. 1,24,250.

The ratio shows the velocity with which goods move through the business. For the concern under question, stock is turned over slightly more than four times on an average.

Return on Total Resources:

Net profit/Total Resources i.e total assets

= Rs. 1,50,000/Rs. 4,80,000

= 0.31 : 1 (or 31%)

The ratio indicates a return of 31% on total assets during the year 2006. In other words, we may say on the basis of this ratio that the company earned Rs.31 on every Rs.100 worth of total resources.

Return on Total Resources may sometimes be calculated on the basis of operating net profit instead of net profit.

Accordingly, Return on Total Resources would be:

Operating Net Profit/Total Resources i.e Total assets

= Rs. 1,45,000/Rs.4,80,000

= 0.302 : 1 (or 30.2%)

Notes: Operating Net Profit has been arrived at as below:

TABLE 23.9

		Rs.
Net Profit		1,50,000
Add: Non-Operating Expenses written back (i.e Loss on sales of assets)		4,000
		1,54,000
Less: Non-Operating Income excluded:		
Interest	Rs.3,000	
Profit on sale of shares	Rs.6,000	9,000
Operating Net Profit Rs.		1,45,000

As per the ratio of Operating Net Profit to total resources, the business has given a return of 30.2% on total resources during 2006. In other words, Rs.30.2 are earned on every Rs. 100 worth of total resources.

Turnover of Fixed Assets

Net Sales/Fixed Assets

= Rs. 8,50,000/Rs. 2,30,000

= 3.71:1

This ratio indicate that new sales amounted to Rs. 3.70 for every rupee worth of fixed assets.

Sometimes, fixed assets turnover ratio is the ratio of cost of goods sold to Fixed Assets.

Accordingly, Fixed Assets Turnover

= Cost of Goods sold/Fixed Assets = Rs. 5,10,000/Rs. 2,30,000 = 2.22 :1

thus, Fixed Assets turnover ratio based on cost of goods sold shows that for every one rupee invested in Fixed assets goods costing. Rs. 2.22 have been sold.

Notes: Total amount of fixed assets have been arrived at as below:

Land and Building	Rs. 1,50,000
Plant and Machinery	Rs. 80,000
Total	Rs. 2,30,000

Summary

Current ratio shows relationship of current assets with current liabilities. The relationship may be expressed as a quotient a rate or a percentage. Acid Test Ratio shows the relationship that exists between the liquid assets and liquid liabilities. Acid Test Ratio is also called Quick Ratio or Liquid Ratio. Inventory Turnover Ratio expresses the relation between the cost of goods sold during a given period and the average amount of inventory outstanding during the period. Debtors Turnover Ratio shows outstanding amount (i.e uncollected accounts) by debtors in respect of number of days of sales. In other words, it shows how many day's credit is outstanding by debtors. Debtors Turnover Ratio should be understood from the viewpoint of the period of credit allowed. Debt to Equity ratio is also known as External-Internal Equity Ratio. Proprietory ratio indicates the relationship of between the ownership funds (shareholders funds or Proprietors' funds or Net worth) and fixed assets. When former is higher than the latter and there are no other non-current assets, it shows that a part of the net working capital is supplied by the owners(i.e shareholders). On the other hand, if the fixed assets are in excess of the proprietor's funds, it shows that fixed assets are partly owned by outside creditors or in other words, a part of the fixed assets has been financed out of creditors' money. Thus, very high ratio reflects over-investments of shareholders' funds in fixed assets. In case of industrial undertakings, standard percentage of this ratio is 65%.

KEY CONCEPTS

- Accounting Ratio
- Balance Sheet
- Balance Sheet Ratios
- Composite Ratios
- Financial Analysis
- Financial Ratios
- Financial Statement
- Interpretation
- Profitability Ratio
- Turnover Ratios

Review Questions

OBJECTIVE QUESTIONS

1. The relationship between the budget number of working hours and the minimum possible working hours in a budget period is
   a. Efficiency ratio b. Activity ratio c. Calendar ratio
   d. Capacity usage ratio e. Capacity utilisation ratio
2. Financial analysis is the process for
   a. identifying strength of a firm
   b. identifying weakness of a firm
   c. identifying strength and weakness of a firm
3. Financial analysis can be made from
   a. Profit and loss account
   b. Balance sheet
   c. Items in profit and loss account and balance sheet by establishing relationship
4. Financial analysis is meant for the following category
   a. Trade Creditors
   b. Trade Creditors and Suppliers of long term debt
   c. Investors
   d. Management
   e. All the above categories
5. Which statement is wrong?
   a. Liquidity Ratio measures firm's ability to meet current obligations
   b. Activity Ratio reflects efficiency in utilising assets of the firm
   c. Management is not interested in valuing every aspect of firm's performance
   d. Accounting data is taken from financial statements
6. Calculate current ratio from the following data

Bank Overdraft	- Rs. 20,000
Cash	- Rs. 15,000
Outstanding expenses	- Rs. 10,000
Accrued Income	- Rs. 5,000
Stock	- Rs. 5,000

Prepaid expenses - Rs. 5,000

a. 2 :1 b. 1 : 1 c. 1.5 : 1

d. 1 : 1.5

7. Find out the missing figure if current ratio is 2 : 1

Work in Progress : Rs. 20,000
Bank Cash Credit : Rs. 5,000
Raw Materials : Rs. 10,000
Creditor : Rs. 4,000
Bills Payable : ?

a. Rs.10,000 b. Rs.9,000 c. Rs.12,000

d. Rs.6,000

8. Calculate Quick Ratio from the following:

Debentures : Rs. 10,000
Long term loan : Rs. 20,000
Cash : Rs. 15,000
Raw Materials : Rs. 6,000
Debtors : Rs. 5,000
Creditors : Rs. 5,000
Prepaid Expenses : Rs. 5,000

a. 3 : 1 b. 4 : 1 c. 2 : 1

d. 1 : 1

9. The ratio is a test of quantity but not quality

a. Quick Ratio b. Debt-Equity Ratio c. Current Ratio

d. Dividend Pay Out Ratio

10. A company can meet its financial obligations as and when they fall due if

a. Current Ratio is 2 : 1

b. Current Ratio is less than 2 : 1

c. More depends on composition of current assets rather than current ratio alone.

d. Current assets just cover current liabilities.

11. Calculate Net Working Capital

Cash : 5,000
Finished Goods : 12,000
Debtors : 20,000
Prepaid expenses : 3,000
Debentures : 4,000
Long-term loan : 5,000
Bank Cash Credit : 6,000
Creditors : 6,000

a. 24,000 b. 26,000 c. 21,000

d. 15,000 e. 20,000

12. Capital employed means

a. Net Worth b. Net Worth + Long term loans

c. Current assets + Current Liabilities d. Net Current Assets

13. Cost of goods sold includes

a. Depreciation b. Gross Profit c. Administrative expenses

d. Interest e. None

14. Debt Equity Ratio is
    a. Liquidity Ratio b. Solvency Ratio c. Profitability Ratio
    d. Activity Ratio
15. Calculate the inventory holding, in terms of days:
    Opening stock: 10,000
    Closing stock : 20,000
    Sales : 40,000
    Gross Profit: 10%
    a. 150 b. 30 c. 60
    d. 120
16. For calculating inventory ratio, the following information is more appropriate.
    a. Opening stocks b. Closing stocks c. Sales
    d. Gross Profit e. Average Stock

[Ans. 1-a; 2-c; 3-c; 4-e; 5-c; 6-b; 7-d; 8-b; 9-c; 10-c; 11-a; 12-b; 13-a; 14-b; 15-a; 16-e]

DESCRIPTIVE QUESTIONS

1. Explain the role of ratio analysis in the interpretation of financial statements. Examine the limitations of ratio analysis.
2. What is the need for financial analysis? How does the ratio analysis technique help in the financial analysis?
3. What are the ratios to be worked out to study the long term solvency of a concern?
4. State the formula to calculate the following accounting ratios:
    a. Quick Ratio or Liquidity Ratio
    b. Selling Expenses Ratio
    c. Debt Equity Ratio
    d. Debtors Ratio
    e. Gross-Profit Ratio
5. Write short notes on
    a. Proprietory ratio b. Debt-coverage ratio
    c. Profit Earning Ratio- P/E Ratio d. Yield Ratio
    e. Market value/Book Value of Shares
6. The four basic group of financial ratios are liquidity, leverage, activity and profitability. Explain their nature and indicate its principal uses.
7. Discuss the concepts regarding financial statements.

PROBLEMS

1. Rearrange the following statements in comparative form so as to bring out concisely and clearly for management purposes the significant changes in financial position :

TABLE 23.10 Balance Sheet as on 30th June 2003 and 2002.

	2003	*2002*		*2003*	*2002*
	Rs.	*Rs.*		*Rs.*	*Rs.*
Bank Overdrafts	28,640	-	Cash at bank	300	300
Sundry creditors	69,870	52,280	Cash in hand	-	25,820
Paid-up-capital	2,50,000	2,50,000	Trade debtors	1,22,480	1,08,270
Provision for depreciation	29,640	11,180	Machinery and equipment	1,86,240	1,12,710

Reserves	20,000	20,000	Goodwill	30,000	30,000
Provision for taxation	10,000	7,500	Prepayments	2,850	2,600
Profit and loss a/c			Stock in trade	93,770	89,480
Balance brought forward	28,220	23,660			
Net profit for the year	24,270	17,060			
	52,490	40,720			
Less: Dividends paid	25,000	12,500			
	27,490	28,220			
	4,35,640	3,69,180		4,35,640	3,69,180

2. Rearrange the Balance Sheet given below in a form which you think more suitable for analytical purpose and calculate the following:
   1. Working capital ratio
   2. Liquidity ratio
   3. Proprietory ratio.

TABLE 23.11

Liabilities		*Assets*	
Bank Overdrafts	38,000	Land and building	92,150
Sundry creditors	26,000	Cash in hand	250
Paid-up-capital	3,00,000	Trade debtors	1,25,050
Provision for depreciation	55,750	Machinery and equipment	1,28,600
Reserves	55,000	Goodwill	30,000
Provision for taxation	9,250	Prepaid expenses	1,500
Profit and loss a/c	6,750	Stock in trade	1,28,200
	5,05,750		5,05,750

3. A concern has current assets of Rs.4,20,000 and current liabilities of Rs.2,40,000. Taking each of the following transactions independently, compute the effect of the current ratio. Do not cumulate the results.
   a. New display cases are purchased for Rs.1,10,000 cash
   b. Rs. 80,000 merchandise purchased on trade credit
   c. Payment of Rs,60,000 is made on accounts payable.
   c. Accounts receivable Rs.50,000 are collected.
   d. Proprietor withdraws Rs.50,000
   e. Rs. 1,00,000 borrowed from a bank on a short term basis to repay a long term loan
   f. Allowance for depreciation is increased by Rs.40,000
4. What would be the immediate impact of the following actions on the profitability of a company:
   a. Issue new fully paid shares worth Rs.30,000 for cash.
   b. Capitalise reserves to the of Rs.60,000.
   c. Reduce selling commission by 3%.
   d. Remove two workers from service.
   e. Sale of a motor car for Rs.1,000 in cash. No reasons need be given for the answers.

5. The following summaries are prepared for you by the accountant of Adarsh Products Limited from the balance sheet of the company as at 31st December 2002 :

TABLE 23.12

	2002	*Previous year*		*2002*	*Previous year*
Share capital	*Rs.*		*Current liabilities*	*Rs.*	
Ordinary shares of Rs. 100 each	4,00,000	3,50,000	Creditors	1,97,000	45,400
Reserves and Surplus			Proposed dividend	20,000	12,000
Premium on shares	20,000	20,000	Provision for taxation	27,000	10,000
General reserves	70,000	50,000		2,44,700	67,400
Surplus in profit and loss a/c	12,500	7,500	Fixed assets (at cost)	4,70,000	3,71,100
Share holders' funds	5,02,500	4,27,500	Less : Depreciation	81,900	70,500
Current assets					
Stock in trade	1,70,500	81,400			
Sundry debtors	1,42,700	85,600			
Cash and bank balances	45,900	27,300			
	3,59,100	1,94,300		3,88,100	3,00,600

The following additional information is available from the company's books

i. The profit for the last year was Rs.46,000.

ii. Income tax Rs.9,000 was paid during the year in respect of the previous year and the balance was transferred to general reserve account

iii. The proposed dividend for the year 2001 was duly paid.

You are required to calculate the following ratios for the two years:

Current ratio

Liquidity ratio and

Return on proprietors' funds

Give your comments.

6. A firm has annual sales of Rs.1,20,000. The financial ratio composites of the most recent year are:

Sales to net worth	3 times	Net sales to inventory	4 times
Current debt to net worth	40%	Average debt collection period	42 days
Total debts to net worth	60%	Fixed assets to net worth	40%
Current ratio	3 times		

Required: On the basis of this information construct a proforma Balance Sheet

7. From the following information make out a Statement of Proprietors' Funds with as many details as possible:

1. Current ratio	2.5
2. Liquidity ratio	1.5
3. Proprietory ratio	0.75
4. working capital	Rs. 60,000
5. Reserves and surplus	40,000
6. Bank overdraft	10,000

there is no long-term of fictitious asset.

8. From the following information, you are required to prepare for the Board of Directors of X Ltd. a forecast Profit and Loss Account for the year ended 30th June, 2003 and Balance Sheet as at the date:

Paid up share capital	Rs. 10,00,000	Fixed assets on 1st July 2002	6,25,000
8 percent debentures	2,50,000	Bank overdraft on 1st July 2002	1,81,250

Production during the previous year was 60,000 units. It is expected that this level of activity would be maintained during the current year. The expected ratios of cost to selling price are : raw materials 60 percent, direct wages 10 percent, overheads (including debenture interest) 20 percent. Raw materials are in stock on an average two months, materials are in process (valued at cost of raw materials plus 50 percent of direct wages and overheads) on an average, one month. Finished goods are in stock on an average three months. Credit allowed by creditors is two months and credit given to debtors is three months. Selling price is Rs.25 per unit. You are informed that there is a regular production and sales cycle. Ignore tax.

9. The working capital of ABC Ltd has deteriorated in recent years and now stands as under:

TABLE 23.13

Current assets		*Current liabilities*	
Inventory	5,60,000	Creditors	4,90,000
Debtors	3,50,000	Bank loan	2,10,000
Cash	70,000		
Total	9,80,000	Total	7,00,000

a. Compute the current and quick ratios
b. A further bank loan of Rs.50,000 against debtors is under negotiation. Assuming the loan is received, calculate the revised current and quick ratios.
c. There is also a negotiation going on for discounting the debtors of Rs.3,50,000 for Rs.3,15,000 to a collection agency for immediate cash. Also obsolete stocks worth Rs.1,25,000 are being sold for Rs.80,000. Of the cash to be realised by the two transactions, the bank loan is proposed to be reduced to Rs. 1,00,000. Calculate the current ratio after the transactions are put through.

10. X Ltd has been operating for 2 years. The Balance Sheet and Profit and Loss Accounts for the two years are given below:

TABLE 23.14 Balance Sheet of X Ltd

	2003	*2004*		*2003*	*2004*
Liabilities	*Rs.*		*Assets*	*Rs.*	
Equity share capital	10,000	10,000	Goodwill	6,000	6,000
Reserves	2,000	3,000	Fixed assets (at cost)	14,000	16,000
Profit and loss a/c	3,000	2,000	Stock in trade	3,000	6,000
Bank Overdrafts	-	2,000	Sundry debtors	4,000	6,000
Secured loans	8,000	8,000	Cash on hand	3,000	-
Trade creditors	7,000	9,000			
	30,000	34,000		30,000	34,000

TABLE 23.15 Profit and Loss Account of X Ltd

	2003	*2004*		*2003*	*2004*
	Rs.			*Rs.*	
Transfer to reserve	2,000	1,000	Balance b/d	-	3,000
Director's remuneration	1,000	3,000	Profit for the year	7,000	5,000
Dividends	1,000	2,000			
Balance c/f	3,000	2,000			
	7,000	8,000		7,000	8,000

In 2003, sales amounted to Rs.60,000 and in 2004 Rs.50,000. Examine the details and analyse them in a manner which indicate the overall efficiency of the business and its financial position.

PRACTICAL PROBLEMS

11. Summarized data taken from the statements of a company are given below:

	Rs.
Net Sales	2,40,00,000
Net income from operations	60,00,000
Net income after interest and tax	30,00,000
Average total assets	1,20,00,000
Average shareholders' equity	80,00,000

Compute the rate of return for management and shareholder's purposes.

12. The capital of Everest Co.Ltd. is as follows:

	Rs.
9% preference shares of Rs.10 each	3,00,000
Equity shares of Rs.10 each	8,00,000
	11,00,000

The accountant has ascertained the following information:

Profit after tax at 60%	Rs. 2,70,000
Depreciation	Rs. 60,000
Equity dividend paid	20%
Market price per equity share	Rs. 40

You are required to state the following showing the necessary workings:

(a) The dividend yield on the equity share
(b) The cover for the preference and equity dividends
(c) The earnings per share
(d) The price-earning ratio
(e) The net cash flow

13. the following are the summarized profit and loss account of perfect Production Limited for year ending 31st December, 2004 and the balance sheet as on that date

BALANCE SHEET

	Rs		*Rs*
Issued capital:	2,000	Land and building	1,50,000
Equity share of Rs. 100 each	2,00,000	Plant and machinery	80,000
Reserves	90,000	Stock-in-trade	1,49,000
Profit and loss a/c	60,000	Sundry debtors	71,000
Current liabilities	1,30,000	Cash and bank balance	30,000
	4,80,000		4,80,000

PROFIT AND LOSS ACCOUNT

Opening stock		99,500	Sales(less retuen)		8,50,000
Purchases		5,45,250	Closing stock		1,49,000
Incidental expenses		14,250			
Gross profit		3,40,000			
		9,99,000			9,99,000
Operating expenses			Gross profit		
Selling and distribution	30,000		Non-operating income:		
Administrative expenses	1,50,000		Interest	3,000	
Finance expenses	15,000	1,95,000	Profit an sale of share	6,000	9,000
Non-operating expenses					
Loss on sale of assets		4,000			
Net profit		1,50,000			
		3,49,000			3,49,000

From the above statements, you are required to calculate the following ratios and state the purpose they serve: (1) Current ratio; (2) Operating ratio; (3) Stock turnover; and (4) return on total resources.

14. The following figures related to trading activities of Hind Trades Limited for the years ended 30th June

Sales	Rs.5,20,000
Purchases	3,22,250
Opening stock	76,250
Closing s tock	98,500
Sales returns	20,000

Selling and distribution expenses:

Salaries Rs. 15,300; Advertising Rs. 4,700; Traveling Rs.2,000.

Administrative expenses:

Salaries	Rs. 27,000	Depreciation	Rs. 9,300
Rent	2,700	Other charges	16,500
Stationary, postage etc	2,500	Provision for taxation	40,000

Non-operating income: Dividend on shares Rs. 9,000;
Profit on sale of share Rs. 3,000

Non-operating expenses: Loss on sale of assets Rs. 4,000

You are required to:

(1) Arrange the above figures in a form suitable for analysis

(2) Show separately the following ratios: (i) Gross profit ratio; (2) Operating Ratio; and (iii) Stock turnover ratio.

(3) State what an increase in gross profit ratio as compared with that for the previous year would indicate.

15. Re-arrange the following statement in a form suitable for analysis and calculate five ratios which are significant for analysis the financial trend of the business:

CONDENSED BALANCE SHEET

	2003	*2004*
Liabilities and capital	Rs	Rs
Creditors	20,000	16,000
Bills payable	12,750	6,500

Debentures	1,00,000	1,00,000
Reserve and appropriation account-balance	67,250	84,500
Paid up capital	1,00,000	1,00,000
	3,00,000	3,07,000
Assets		
Cash at bank	15,380	26,020
Trade debtors	11,260	11,710
Stock	56,160	49,460
Fixed assets		
Less: depreciation	2,17,200	2,19,810
	3,00,000	3,07,000
Sales	1,80,000	1,95,000

16. Following items appear in the accounts of Operations Limited as on 31st December, 2004

	Rs
Cash	48,600
Land and building at cost	8,00,000
Deposits and payments in advance	62,000
Stock	3,72,800
Trade creditors	4,05,750
General reserve	1,00,000
Equity shares of Rs. 100 each	10,00,000
Profit and loss account balance	2,17,000
Proposed equity dividend for 1968 (net)	86,250
Trade investments	20,000
Provision for taxation	1,24,000
Debtors	5,23,000
Bills receivable	22,600
Plant and machinery at cost Less depreciation	5,44,000
5% Debentures repayable (long term) Secured	2,50,000
Bank overdraft	52,000
Dividend reserve	1,40,000
Bills payable	18,000
Net sales for the year	21,82,400
Net profit for the year before taxation and dividends	3,27,830

The values of all fixed assets reflect current price level and adequate depreciation has been provided. You are required to arrange the items in the form of financial statement to show the following accounting ratios which should be stated: (a) Return on capital employed; (b) Stock : Fixed assets; (c) Current assets : Current liabilities; (d) Sales : Debtors and receivable.

You are also required to indicate briefly the significance of these ratios.

17. The following Balance Sheet of Hanuman Hosiery Co. Ltd. is presented to you by the Board of Directors of enterpretation and critical examination. Is it a concern of good financial position? Give the reason for the answer:

BALANCE SHEET as on 31st December, 2004

	Rs		*Rs*
Share capital:			
2,000 ordinary shares of Rs.15 each fully paid	30,000	Good will	12,000
		Patent rights	2,500
2,000 Preference shares of Rs.15 each fully paid	30,000	Land	4,000
Debentures (half of which are due for payment)	20,000	Machinery	20,000
Trade creditors	7,300	Debtors	5,000
Bills payable	1,000	Inventories	6,000
Receipts in advance	50	Investments-Govt. securities	22,000
Income-tax reserve	650	Discount on shares	1,500
Reserve fund	1,000	Cash in hand	11,000
Profit and loss account	1,000	Cash at bank	7,000
	91,000		91,000

18. The following information relates to the Rajasthan Manufacturing Company Limited. Balance Sheet items as at 31st December are:

	2003	2004
	(Rupees in thousands)	
Cash at bank	12	18
Bills receivable	61	69
Stock in trade	89	80
Expenses prepaid	4	6
Furniture & fixtures (net)	19	30
Building (net)	96	104
Land	16	16
Current liabilities	69	57
Equity shares of Rs. 1000 each	190	190
General reserve	38	76
Profit and loss items for the period ended 31st December:		
Net sales	320	329
Cost of goods sold	230	232
General & administrative exp.	27	32
Income tax	7	5

From the above information, compute the following ratios:

(a) Current Ratio;
(b) Inventory turnover ratio;
(c) Net sales to receivable ratio;
(d) Net income per share

Briefly analyse and interpret the above indicating favorable and unfavorable operating conditions.

19. The following is the summarised Balance Sheet of manufacturing company:

	As at… 31.12.05 (Rs. in lakhs)	As at 31.12.05 (Rs. in lakhs)	As at 31.12.05 (Rs. in lakhs)
Capital:			
7½ Preference shares of Rs.20 each	4.0	4.0	4.0
Ordinary shares of Rs.20 each	16.0	16.0	16.0
	20.0	20.0	20.0

Capital reserves:			
Share premium account	2.0	2.0	2.0
Revenue reserves & surplus	8.0	8.0	15.0
	30.0	30.0	37.0
Current liabilities:			
Trade creditors	4.8	5.6	6.0
Bank overdraft	—	—	2.0
Proposed dividends	1.1	1.1	1.1
	35.9	36.7	46.1
Fixed assets			
Land and building	8.0	8.0	8.0
Plant and machinery	11.0	11.0	20.0
Trade investments	5.0	5.0	5.0
Current assets:			
Stock	3.0	3.2	5.6
Debtors	4.0	4.4	7.4
Cash	4.9	5.1	0.1
	35.9	36.7	46.1
Sales	24.0	35.0	74.0

Required: (a) Explain how the increase in fixed assets shown in 2005 balance Sheet was financed. (b) Arrive at the net working capital for each of the three years and comment briefly on the trend. (c) Indicate by a ratio whether debtors as a whole are paying their dues more or less promptly over the years. (d) The management would like to know whether stocks held are adequate to the needs of the business over the three years. Work out the ratio in order to assist them.

20. A trade has taken stock at the following dates:

	Rs
1st January	1,00,000
31st March	2,50,000
30th April	50,000
30th June	1,00,000
31st October	1,20,000
31st December	1,00,000

He informs you that his sales for the year were Rs.10,00,000 and that the usual rate of gross profit on cost f goods sold is 33%

(a) State approximately how many times his stock is turned over each year on an average.

(b) At what figure would you estimate the stock on 15th August?

(c) Given the following additional information :

	Debtors	*Creditors*
31st March	2,00,000	1,20,000
30th June	1,80,000	80,000
30th September	1,70,000	1,10,000
31st December	2,40,000	90,000

Estimate the terms of credit allowed and received on an average.

(d) Assuming fixed assets appear in the books at Rs. 1,20,000. state the average Proprietor's equity taking a net working capital balance of Rs.20,000.

(e) Would you consider a profit of Rs.20,000 per annum reasonable assuming in arriving at this figure no remuneration has been charged for the proprietor who spends all his time is running the business?

21. Below is given the summarised Balance Sheet and Profit and Loss Account of Hero Private Limited for the year ended 31st March 2004

BALANCE SHEET as on 31st March 2004

Liabilities:	*Rs. In lakhs*	*Assets:*	*(Rs. In Lakhs)*
Share capital	4	Fixed Assets	11
(Rs.10 per share)		Liquid Assets	3
Reserves and surplus	3	Current Assets	5
Overdraft	4		
Current liabilities	8		
	19		19

PROFIT AND LOSS ACCOUNT for the year ended 31st March 2004

	Rs. In lakhs		*(Rs. In Lakhs)*
Opening stock	2	Sales(less retuen)	28
Purchases (less returns)	22	Closing stock	3
Expenses	3		
Net profit	4		
	31		31

You are required to make comments on the capitalisation of the company taking into account relevant ratios.

22. Circle the number of the correct answer:

(a) Buying merchandise for cash would (1) increase the gross profit percentage, (2) decrease the current ratio, (3) decrease the gross profit percentage, (4) increase the current ratio, (5) have no effect on current ratio.

(b) With a cost of goods sold of 75%, total operating expenses of 15% and other income (net) of 5% of sales final net income would be: (1) 5%, (2) 20%, (3) 10%, (4) 15%.

(c) With a current ratio of 2:1, buying merchandise on account would (1) increase current ratio, (2) decrease current ratio, (3) have no effect on current ratio, (4) decrease gross profit percentage, (5) increase gross profit percentage.

(d) All other factors remaining constant, increase in purchase returns and allowances would (1) increase gross profit percentage, (2) decrease gross profit percentage, (3) increase current ration, (4) decrease current ratio.

[Ans. (a) 5, (b) 4, (c) 2, (d) 1]

CASE 1

SUMATHI CORPORATION

The financial statements of Sumathi corporation for the latest period are presented below:

SUMATHI CORPORATION: Profit and Loss Account
For the Year Ended March 31,2008

Net Sales	Rs 7,30,000
Cost of Goods Sold	4,95,700
Selling and Administrative Expenses	87,200
Interest Expense	22,100
Profit before Tax	1,25,000
Income Tax (40%)	50,000
Profit after Tax	75,000

The management of the company is considering expansion of operations at a cost of Rs 2,00,000. The expansion will result in additional sales of Rs. 4,50,000 on which the profit before interest and tax is estimated to be Rs. 93,000. The expansion can be financed by sale of 10,000 equity shares at the current market price of Rs 20 or by debentures carrying interest at 12 percent per annum. Currently, the company has 7,500 equity shares of Rs. 10.

REQUIRED

1. Compute the earnings per share of the company after expansion for the equity financing and debt financing alternatives. Compare the results with the company's current earnings per share.
2. Compute the level of profit before interest and tax, at which the earnings per share under the equity financing plan.
3. What are the factors to be considered by the company for deciding on the appropriate financing alternative?

CASE 2

Below is given the Balance Sheet of Prospective Ltd. as at 31st March 2004 together with the Profit and Loss Account:

BALANCE SHEET as at March 31,2004

	Rs		*Rs*
Equity share capital	500	Trade investments	200
Dividend equalization reserve	70	Patents	30
General reserve	110	Land and building (at cost)	320
Profit and Loss A/c	190	Plant and machinery (at cost)	650
6% Debentures	250	Cash at bank	88
Bank overdraft	150	Stocks:	
Staff provident fund	80	Materials	90
Creditors	210	Finished Goods	160
Unpaid dividend	10	Work-in-progress	60
Proposed dividend	60		310
Provision for taxation	170	Sundry Debtors	230
Provision for depreciation	250	less:Reserve for Doubtful debts	8
			222
		Bill receivable	30
		Staff provident fund Investment	80
		Deposits with customs authorities	30
		Advance for purchase of Machinery	60
		Preliminary expenses	30
	2,050		2,050

PROFIT AND LOSS ACCOUNT for the year ending 31st March 2004

		Rs			*Rs*
Stock			Sales		2,000
Materials	90		Stock:		
Finished Goods	120		Materials	90	
Work-in-progress	40		Finished goods	160	
		250	Work-in-progress	60	

Purchase of materials		850		310
Wages	280		Dividend on investments	30
Power		40	Sales of scrap	8
Misc. factory Expenses		110		
Office salaries		80		
Miscellaneous expenses		90		
Selling and distribution Expenses		120		
Advertisement		80		
Preliminary expenses		5		
Debenture interest		15		
Depreciation:				
Plant	60			
Land and Building	120			
		72		
Provision for taxation		170		
Proposed dividend		60		
Balance of profit		126		
		2,348		2,348

You are required to present the information suitably summarized in single-column statements (vertical form) showing distinctly the following : (i) total capital employed; (ii) Shareholders' funds; (iii) Cost of goods sold; (iv) Gross profit; (v) net operating profit.

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CHAPTER

24

Management Reporting Systems

"Information is the life blood of management. The ultimate effectiveness of this information is itself dependent upon the form and timing of its presentation."

—Institute of Cost and Management Accountants, London.

LEARNING OBJECTIVES

After reading this chapter you will be able to understand

- *Objectives of Reporting*
- *Reporting Needs of Different Management Levels*
- *Types of Reports*
- *Principles of Reporting*
- *Modes of Reporting*
- *Uses of Reports by Management.*
- *Methods of Reporting*

INTRODUCTION

Feedback of communication is most important in planning and control procedure. Management must have a comparative knowledge between the actual profit performance and the objective. At the same time, a comparison of the past performance and the various influencing factors is also essential. Hence, the development of the system, or systems of reporting, is considered as part of accounting methods and is largely responsible for the change of outlook as well as approach to accounting methods.

A modern large scale business concern is welded into an efficient working unit by the link of communication between its different parts. This communication is through reports-oral, graphic or written-designed to provide specific information. However, oral reports are thought to be outside the gamut of reporting owing to their doubtful value.

Sir Winston Churchill recalls the firm rule established by him at the Admiralty to the effect that no policy of strategic decision was to be considered effective unless it was in writing.

Like management accounting, in all its ramifications, has developed most in U.S.A. Where, contrary to general impression, reporting system has been introduced in quite small business and, naturally, the complexity of the reporting system has grown *pari passu* with the increase in the scale of business. Though it is fully recognised that a highly developed team spirit can reduce the need of wading through

voluminous reports relating to the operation of the firm, the Americans seem to feel that a regular system of reporting is a better guarantee of efficiency and co-operation than reliance on personal qualities.

Objectives of Reporting

The main objective of reporting to management is to reach sound judgements on the basis of operating results. Another objective that is closely allied to this and is important in terms of efficiency, morale, and motivation, is to secure understanding and acceptance of the judgement by the people engaged in various aspects of the work of the concern. However, the latter purpose lies in the twilight zone between psychology, sociology, semantics, speech, language and graphic arts, as also newly evolving fields of organisation theory, group dynamics and human relations. Though these disciplines are important for the purpose of reporting, they can only be touched briefly, wherever necessary, in the consideration of the subject in management accounting.

REPORTING NEEDS OF DIFFERENT MANAGEMENT LEVELS

As the system of reporting has to meet the requirements of management at different levels, the approach to the reporting problem would vary according to the reporting level. If the reports for top management have to be comprehensive and concise, the reports to operating supervisors should be specific and concise as the daily routines of production and selling demand that the supervisor be a man of action rather than an analyst.

Generally, the reporting levels, with their reporting needs may be divided into following three broad categories:

(i) Top Management Level

The function of top management is to evolve proper plans, and to bring about a sound organisation with successful delegation of responsibility to subordinate executives with a view to secure an efficient utilisation of resources provided through investments. Development schemes are of special significance at the level of top management. Again, though top management may or may not be interested in making comparisons of actual performance in physical terms with the standards, it would certainly like to make comparisons between actual income expenditure and the budgeted figures for the same. Of particular importance is the projection of past behaviour into future which may help in planning for future action. In this way, the top management needs information to be finished at the basis of operational control and cost control.

In view of this, reports to top management must show if plans were sound, whether organisation was properly established and whether delegated responsibility has been effectively used. Consequently, the reporting system must enable management to make comparison, to review organisation and to appraise the effectiveness of subordinate executives.

Again, in order to facilitate the application of the principle of exception while reviewing departmental performances by top management, departmental reports should be summarised by totals only. It would then be possible for management to discover weak areas in a quick review and to study the details of particular reports where this seems necessary, instead of being forced to review all performances.

Moreover, in appraising plans for future action, management needs factual information concerning the matter at hand-marketing a new product, expansion of its foreign markets or the construction of a new plant. Hence, the writer of a planning reports needs information about company's own resources besides information about conditions, external to the organisation supplemented by imaginative judgment.

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(ii) Co-ordinating Executive or Middle Management Level

While top management is chiefly concerned with planning and organisation, the execution of plans is the function of co-ordinating executives who administer policies, direct operating supervisors and appraise their performances.

From this viewpoint, reports directed to co-ordinate executives should be such as to help them in administering policies and in appraising the performances of operating supervisors. Owing to the peculiar position of these executives in organisations' hierarchy, these reports are split up into two parts-those dealing with expenses incurred through the junior management and those dealing with expenses that are the direct responsibility of middle management. This is so because management should not be charged or credited with any item of income or expense over which it has either limited or no control. In this way, at the intermediate level of responsibility, it is essential that executives get reports relating only to the proper administration of their duties. Again, having a multiplicity of activities under them, the needs of middle management cannot simply be met through reports in physical terms to disclose performance so that money values have also to be used.

(iii) Operating Supervisors or Junior Management Level

This management level consists of foremen, superintendents who are interested more in physical performance than anything else. Then, operating supervisors would like to keep themselves abreast of daily working of the operations under their charge-products manufactured from the material and with the help of labour and facilities under them.

In the context of their needs, specific and detailed reporting is needed at the level of direct supervision. Operating supervisors should receive reports relating to the effectiveness of their operation showing planned performance, actual performance and variations from plans. In order that operating supervisors may be able to use their reports for the control of future operations, it is necessary that the reports give specific information about the department reported on. Reported facts supported by records of rework and scrapped material, provide both the supervising executive and his superior with a factual basis for taking corrective action. It is immaterial from the point of view of the operating executives whether the reports have been converted into money values or not. Apart from these, foreman or superintendent is interested in daily report and may even like to know the position shift by shift.

TYPES OF REPORTS

Accounting Reports can be divided from different views, their broad classification according to the fineness of details embodied therein is appropriate from the standpoint of financial reporting.

(i) Enterprise Report

This collects information about the concern as a whole and serves largely as a means of communication with the outsiders. It may be related to some specific activity or function of the enterprise, or its full operation in the aggregate. Balance Sheets, operating statements, income-tax returns, employment reports are some of the examples of this type of report. In fact, management discharges its custodial responsibilities through this type of report. As this report is intended to furnish information about various aspects of business in which diverse sections of people have different stakes, it is subjected to be careful, and often detailed, policying by independent bodies, like Central Board or Revenue, Company Law Administration, various sections of the Ministry of Labour, Institute of Chartered Accountants in India

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and also counterparts of these bodies in other countries. The object is to ensure that diverse interests have been properly reconciled in these reports. With the object of assuring outsiders of the authenticity of information contained in the reports, they are required to contain highly standardised information which is stereotyped and unimaginative. In this way, accomplishing a basic function, this report is the main subject of financial accounting.

(ii) Control Report

This report inter alia forms the subject matter of management accounting and is an important ingredient of control process. Though its sweep may be coterminus with the enterprise report, it is distinguished from the same in the matter of details about the operation of the undertaking on which it provides a finer focus. Hence, the information contained in the enterprises reports is elaborated in the control reports and is directed to a responsibility centre. The framework of this report is determined by the needs of undertaking.

It is prepared on the basis of company-developed standards, couched in its own terminology, related to responsibility centres and subserves decisional needs.

(iii) Investigative report

It is concomitant of control report inasmuch as, once an issue is highlighted through the use of control reports, a special purpose study results in an investigative report. Meant for a particular purpose, it contains a special message and deals typically with the causes and remedies of specific problems. Situations may arise when, despite the strenuous efforts of management, the results are not up to the standard and, therefore, the Controller or his representative may be asked to institute an inquiry or a special study of the problem by himself or in association with some other people. Such reports are intermittent and are so devised as to serve the specific needs of situation under consideration.

(iv) Budget Proposal Report

An offshoot of investigative report, budget proposal report only contains the proposals regarding the impact of facts revealed by investigate reports on production plan as well as profits and performance. It is the means of realigning an operation with the intended objectives after deviations have been brought to light and, therefore, it serves the correction phase of the managerial control cycle.

All these types of reports, specially the first three, are essential for the operation of the enterprise and they have their distinct spheres of importance. In this way, enterprise reports normally give insufficient details of the right kind to pinpoint problems while control reports, though sufficiently systematic and continuing to permit the spotting of trends and current developments cannot be burdened with the kind of detailed information needed for effective investigation. In spite of the distinctions between various types of reports, there is some overlapping of informational coverage between them, but this does not in any way affect their utility to management.

GENERAL PRINCIPLES OF REPORTING

These principles are a series of generalisations to be applied to the different levels of administrative authority. Reporting should be prompt; it should present a comparison of actual facts with a norm of performance; it should be consistent, and finally, it should be simple. In this way, the general characteristics of good reporting are:

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(i) Promptness

The importance of promptness in reporting cannot be over emphasised, i.e. the report should be prepared and issued before it becomes ancient history. There are cases where promptness in presentation is more important than any other of the general principles of reporting. As business executives need quick reports to carry on daily operations, very often the choice is between furnishing incomplete, and possibly incorrect data, in time or waiting until the veracity of information is verified. In cases where complete information is not needed for showing trends, reliability is at times sacrificed for speed in reporting. In order to get promptness, accounting executives can often improve their methods of collecting data thereby increasing the speed with which final information becomes available. The accounting process might be accelerated in following ways:

1. Establishment of a record-keeping system tailored to the report requirements.
2. Use of mechanical accounting devices to avoid clerical errors and to increase productivity.
3. Departmentalisation of accounting work to prevent bottle necks in reporting.
4. Training of employees to report extra-ordinary conditions when they are first observed.

(ii) Comparison

A report should be able to effect some comparisons. This can be possible if the information contained in the report is placed in some perspective and time is the most important factor providing such a perspective. In this way, comparisons are effected generally, over time and with a norm of performance.

Time comparisons like 'current month, last month and the same month of the last year' show trends and highlight deviations needing attention. The determination of seasonal and secular trend which is another aspect of the time perspective, allows prediction. Comparisons with the past, however, imply that past performance is being taken as the standard for judging the present but this is not necessarily true as objective, methods and business conditions never remain static.

(iii) Consistency

Closely related with the principle of comparison in reporting is the attribute of consistency because without it, there cannot be any proper comparison. Consistency envisages the presentation of the same information between different reporting periods. It is also necessary to present information in a consistent manner to the various operating levels of management, as very often, the same statistical data are complied in different ways for the upper and lower management levels. In order to get consistency, information embodied in the report should come from a common source. Then the person being reported on should have the same information as the executive to whom he reports.

(iv) Simplicity

Another necessity of reporting, simplicity, means the presentation of operating information in a clear manner by the elimination of extraneous data, the use of facts rather than quasi-interpretations and the use of graphs instead of statistical arrays whenever feasible. As is commonly understood, it does not mean the slurring over of details in as much as details are needed for proper management. Presentation of information in a clear manner needs exact and simple definitions of financial terms, precise use of technical terms and careful summarisation of operating results. Simplicity of reporting especially for top management can be attained by ruthless elimination of extraneous data through the use of schedules or through the preparation of separate reports dealing with the extraneous matter. The use of graphic devices specially makes it possible to show trends or deviations from established goals in a more striking form

than is possible either by tabulation or narration, though editorial comments also, at times, highlight the figures given in reports.

The use of facts rather than quasi-interpretations helps an operating executive supplying him with the hard facts based on books of accounts which can be used as guide to executive action.

There is another dimension to simplicity readability that is deemed to be of paramount importance. A non-accountant, and sometimes even an accountant, may overlook vital facts regarding operations if the figures are presented merely in a long column. The rounding of the figures to a significant point also aids in readability. Hence, paisas are irrelevant and can be dropped off, while in large companies even hundreds are approximated. The length of the report contributes much to readability. The report must, of course, be long enough to cover all significant points but not so long as it fails to sustain interest.

(v) Consideration of Cost

The cost of maintaining a system of reporting must be commensurate with the benefits derived from there so that the system may be able to earn its keep and may not become an unnecessary drag on the resources of an undertaking.

(vi) Correctness

Correctness does not mean absolute accuracy. Still the report must be correct within the margin of error allowed, otherwise management may lose faith in the reports.

(vii) Dovetailing of Reporting and Responsibility

As every report must be directed to a control point in order that an appropriate response can be produced, it becomes necessary that it must be addressed to a responsibility centre and must contain a message about events controllable at that point. A serious problem of reporting lies in tailoring the message content to a responsibility centre, at the same time permitting information pertaining to one level of responsibility to apparatus as details for a higher level of responsibility. Inasmuch as control reports are prepared periodically from routine procedures, the nature of the details must be preserved for special summaries either in the underlying document evidencing the event recorded (payroll summaries, sales slips) or by detailed entries in the ledgers that can be extracted for particular reporting purposed to cite with an example, whereas total direct labour, direct material and burden costs may be collected in individual ledger accounts and combined for inventory valuation purposes. Control reports for assembly department may reflect only the material labour and burden costs controllable by the assembly department foremen.

MODES OF REPORTING

Reports are prepared as statements, graphs, and ratios and formulae. So far as the statements are concerned, they may deal with any one or more of the following:

(i) Actuals against budgeted figures.
(ii) Comparative statements for a period of time.
(iii) Statistical analysis of a particular type of expenditure over a period of time

The information contained in the statements can also be presented by means of graphs that give a better visual view of the data of the long array of figures given in the statements.

As regards the ratios, they may be part of a statement prepared for other purposes or may form part of a separate statement for a specific purpose. Ratios are sometimes expressed as percentages also. A list of different types of ratios and percentages used for the purpose of reporting is cited here:

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(i) Current ratio	Current assets/current liabilities
(ii) Inventory turn over ratio	Cost of sales/average inventory as cost. (or) Net sales/average inventory at cost.
(iii) Collection ratio or receivables turn-over ratio	Net credit sales/average receivables.
(iv) Liabilities – to worth ratio	All liabilities/net worth (or) long term debts/net worth.
(v) Equity ratio	Total assets/Net worth.
(vi) Equity turnover ratio	Net sales/Net worth.
(vii) Working capital turnover	Net sales/Working capital
(viii) Operating ratio	Income statement items/Net sales. (a) Gross profit analysis. (b) Time-interest factor (c) Return on investment (d) Earnings per share (e) Percentage profit before taxes turnover. (f) Percentage profit after taxes on turnover.

At times, formulae are also used to throw light on some aspects of the operations of business especially the following:

(i) Return on capital employed.
(ii) Break-eve point
(iii) Profit volume ratio

Reports to the Board of Directors

As the directors are not interested in the daily management, their main interest lies in the overall working of the undertaking as highlighted by the profits. Hence, they are interested in the profits and loss account and the balance sheet which is usually given to the board. Over and above these, the following are also submitted to them for their personal reference:

(i) Statements giving details concerned with the items of profit and loss account and balance sheet which are of course prepared in a form that clearly brings out the comparison with the master budget and with the figures of the corresponding period in the previous year.
(ii) Statements are given to supplement the information contained in the profit and loss account and the balance sheet in its material particulars. At times, these statements are quite numerous with the result that a small booklet containing a series of statements is prepared for the board.
(iii) The board also likes to be enlightened in respect of return on capital employed which is very crucial for justifying the rationale of carrying on the business. Calculations are hence made to disclose these figures. Coupled with this is the interest of the board in certain ratios as gross profit ratio or a ratio of overheads to sales that throw light on the different aspects of the conduct of business. In some cases this might be carried to its farthest limit in the analysis of the individual heads of expense by placing them in relation to sales.
(iv) Statistics showing the trend of production and sales are given to the board as the working of an unit is dependent mainly on sales production and raw materials. These would enable the board to keep itself well informed of the position regarding availability of raw materials quantum of production number and value of orders received and sales effected.

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(v) A statement showing the general trend of costs is considered sufficient for the board as its interest in detailed costing is limited. This is done by indicating the favourable and unfavourable variances from the budget which is based on predetermined costs.

(vi) As expenditure on development research is generally undertaken under the direct responsibility of central management, and often the board of directors separate reports on this item are sent to the board.

(vii) A short report on the anticipated future results is also furnished to most of the boards of directors. In case the Board is interested only in long-term plans as happens in a number of cases, such a report is dispensed with.

(viii) Unlike the prevailing general impression, the board of directors does not consider cash reports of any special significance as it lies within the province of the Treasurer who carefully controls cash and securities. This centralisation of cash management has helped in streamlining the system with the consequence that sufficient finances are available whenever needed.

(ix) A study of number of cases has revealed that the Profit and Loss Account, Balance Sheet and other statistics furnished to the Board of Directors as the period to which they refer, already passes into history.

Consequently, the Board cannot use them effectively as a basis of any action for reversing an unfavourable trend, or for fully exploiting a favourable one. In view of this, it is considered expedient to sacrifice accuracy and precision for the sake of ensuring quick submission. Hence, a certain element of estimation is bound to creep in the reports of the Board.

Reports to Top Management

In large concerns where the delegation of responsibility has been pushed to the farthest possible limits, top management acts as a clearing house between the operating divisions and the board of directors. In general, the reporting at this level is divided into reports for transmission to the board of directors and reports to be considered by the top management concerning which no reference to the Board is necessary. As a number of persons at the central executive level are simultaneously on the board, there is bound to be some overlapping from the viewpoint of reporting of the functions of central authority and the board of directors especially where the board has more than half of its members from amongst those who belong to the top executive authority.

Being responsible for the performance of their own managerial functions, top executive managements are intersected more in the operational side of the undertaking than in the purely financial side. They acts as supervisors and advisors to all divisional or departmental heads. Top management lives up to this role by receiving reports of variances from the budgeted figures and these are very carefully studied and analysed.

Owing to the fact that the central executive authority is responsible for initiating policy, it has to advise the board as to what action should be taken on the reports submitted to it. In all this, greater emphasis is placed on the future than on the past with the result that the reports on this level must show this emphasis. In this way, budgetary control allows for the periodic revision of the budgets for immediate future on the basis of past performances so that the management may be able to exercise a more effective control. Reporting in such cases becomes a judicious blending of comments on past performances and the evaluation of the effect of such performance on future results.

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Reporting to Top Divisional Management

The chief difference between the top management and the divisional management is that the latter has to work within the framework of policy laid down by the company. In cases where the decentralisation of authority is not complete, some of the functions of divisional management would come under the jurisdiction of central authority and the procedure of reporting would differ accordingly.

From the viewpoint of divisional managements, operational reports might be divided into distinct five following categories:

(i) Report on Sales

These reports are simple and would show the sales expected, sales made, the difference between the two and also a comparison with the sales of the corresponding period of the previous year. Again the sales may be analysed also geographically and in such analysis transport would be an important element of cost which may need careful consideration. As the primary concern of the business is the net price received for its products, a report is given on the costs of selling such as commission paid or discount allowed. Sales may also be related to salesman. The question of credit also arises in the case of sales. Hence a report bringing out the trend of receivables and bad debts arising from sales has to be prepared.

(ii) Report on Purchases

Reporting on purchases is comparatively simple. The report on purchases must incorporate the trend of the prices of raw materials which is important from both short-range and long-term viewpoints. Still as purchases are usually made for a period of time report on them may be given at longer intervals than other items.

(iii) Report on Production

This mostly resets in physical terms-the number of hours the plant and equipment have worked, the number of hours that the labour has worked and total output. It also includes a study of idle time. Again production trends are studied and reported upon.

(iv) Reports on Costs

Each report has different elements of cost so that these elements are studied and compared in cost reports. In the case of reports on cost of production, a comprehensive summary is mostly prepared giving the labour, material and expense costs as also the spoilage of material idle time and usage of machinery. Report may also make use of standard cost for the purpose of comparison and conclusion.

(v) Reports on Financial and Office Management

Reporting on financial and office management involves reporting on items that do not form part of direct cost of production. Even if reporting on overhead expenditure is taken as part of production, and cost reports there would still remain, few types of expenses like interest which it is not possible to include in the normal production cost and hence, would have to be reported separately. Similar is the case with pending orders for scale and efficiency of divisional manager's or controller's office. Naturally, they have to be studied and reported upon separately. The term financial and office management includes a number of other items that does not find a place under any other report. In this way, statistics of a general nature would be covered by separating under this need.

Reports to Junior Management Level/Operative Management Level

At times known as Day-to-day Working Reports, these reports are meant for floor level workers. The chief differences between them and the reports to top management or middle management are:

(i) These reports are likely to be in physical terms only but may be in both physical and monetary terms.

(ii) These reports are prepared normally by the supervisor himself without any expert advice.

Some of these reports are almost in the form of a scrap of paper without any attempt being made to give them a format. There are cases when even a blackboard is used to show the production expected and production achieved. At times reports are given to workmen themselves. They help in infusing a certain amount of competitive spirit among the workers by comparing the output per man hour of different workers doing a similar job.

PREPARATION OF REPORTS

Looking at the various problems involved in management reporting, it is needful that the writer of reports must be qualified for his job. He must be a financial analyst and in that capacity must be well trained in the fundamentals of accounting, financial and management. He must be objective and must be able to communicate the results of his analysis in a manner that can lead to effective action. As the task of reporting effectively to management is, in the final analysis, a problem of communication, it is necessary that men entrusted with the task of preparing reports must be able to put across their ideas clearly and cogently.

Reports are prepared by the accounting staff attached to different parts of the concern. The controller prepares and advises on the reports at the central office level. The Divisional Controller and his establishment lay down the policy and outline the methods of the suitable reports that are made available to Plant Managers, Factory Managers and other authorities in need of such reports.

USES OF REPORTS BY MANAGEMENT

The importance of the system of reporting to management lies in the fact that it enables the management to 'feel the pulse of the undertaking' as it is at times called. There might be occasions when a particular report does not meet the requirements in a manner as is expected of it. Upon the emergence of such a situation, the report is either scrapped or readjusted to the needs. In this way, the system of reporting is not static, but is in a state of continuous development.

A good reporting system is a sensitive instrument in the hands of management keeping continuous record of the course of operations and giving instant warning in case anything untoward or unusual occurs.

This makes the employees feel that their work is constantly brought to the attention of management which, in its own turn, feels that it can reply on the reporting system to give notice of any need for its invention. In this way, high level management is left free to devote its undivided attention to questions of overall policy and future development.

The usefulness of reporting system to management falls broadly into two categories-future planning and review of past performances.

Reports dealing with forecast of conditions, under which planned operations would be carried out, are of great use in deciding on future policy. This applies to budgets, estimates on the production of single products or product lines and forecast of business conditions in general. As regards the problems

of capital outlay, the reporting system is relied on to provide estimates of savings or profits that serve as a guide for investment. Reports also, give a useful basis deciding a operating policy, Volume of sales or production, sale prices, qualities, design, production methods and stock policy.

Current reports enable management at all levels to keep itself abreast of past performance and developments and it can keep a check on individual operating levels. These reports give the answers to questions which are frequently arising: "What happened and where? Who was responsible? Why did things develop as they did?" The last question lies, by and large, outside the scope of accounting treatment. Still, despite this deficiency of accounting technique, the report must include acceptable explanations from the people on the job.

It is important to realise that reports and reporting methods are not, in themselves, a control. They are intended to give executives with a factual basis for the execution of their duties. The fact to be stressed is that it is not writer of reports who establishes policy, the report writer establishes and interprets facts from which polices are developed by operating executives.

METHODS OF REPORTING

Reports may be presented in the following form

(i) Verbal (oral)
This type of reporting takes place in seminars, conferences and group meeting.

(ii) This is the most common form of reporting to management. The various types of written reports are discussed below:

Kinds of Reports

Reports may be classified by their form, content and frequency. This is shown below:

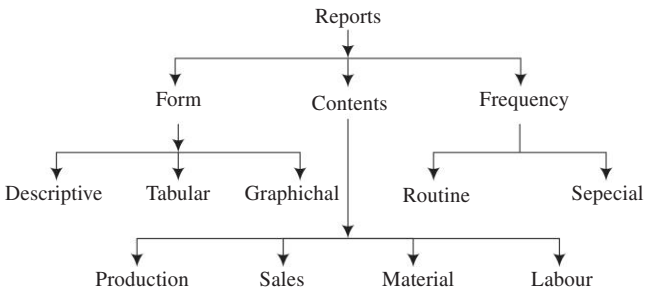


FIG 24.1

A report to be described fully must show its class under each category, that is, frequency, form and contents, *e.g.,* a special tabular sales report, a routine descriptive production report, etc.

The various types of reports are described below:

Descriptive Form

These are written in narrative or descriptive style. These should be in proper format with suitable headings, sub-headings and paragraphs. The language used in the report should be simple and clear. As these

types of reports do not make use of tables and diagrams, they are less effective as compared to reports using graphs and diagrams etc.

Tabular Form

In this type of reports, data is presented in the form of tables. Such tables may be designed to show comparison with budgeted or past performance. This form of reporting is usefully employed in presenting cost data, profit or loss, comparative profitability etc. Such reports are definitely more effective than descriptive reports because important figures may be written in bold type or may be underlined so as to attract the eye of the recipient.

Graphical Form

Factual information is often clearer and easier to understand if presented in graphical or pictorial form. This itself justifies the use of graphs in reports to management. Graphic presentation makes an otherwise dull and confusing data interesting and attractive and is considered to be the most appealing form of reporting. However, graphical form suffers from a limitation that graphs cannot be read to the degree of exactness to which they are drawn.

Types of Graphs and Diagrams

1. Bar Chart

Bar chart is a common type of chart in which bars of thick lines represent the magnitude of values, the longer the line, the higher is its magnitude. Vertical bars are generally preferred because they give a better look. Bar charts may be of the following types.

(a) Simple Bar Chart: These charts are used to depict only one variable.

TABLE 24.1 Represent the following data in a bar chart

Year	*Sales Rs.*
2004	4,00,000
2005	2,75,000
2006	4,50,000
2007	6,00,000

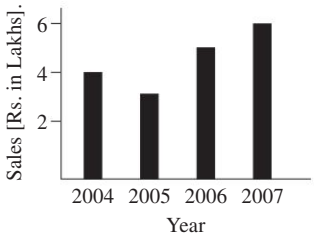


FIG 24.2 Simple Bar Char

(b) Multiple Bar Chart: In these charts, two or more set of inter-related data are represented. Multiple bars are used whenever a comparison between two or more related variables is to be made over a period of time.

TABLE 24.2 Represent the following data in a Multiple Bar Chart

Year	*Sales of TV sets*	*Sales of Music System*	*Sales of Transistors*	*Total Sales*
2004	4,00,000	3,00,000	2,00,000	8,50,000
2005	6,00,000	2,75,000	2,00,000	10,75,000
2006	6,50,000	2,00,000	2,50,000	1,20,000
2007	4,50,000	1,50,000	1,50,000	8,00,000

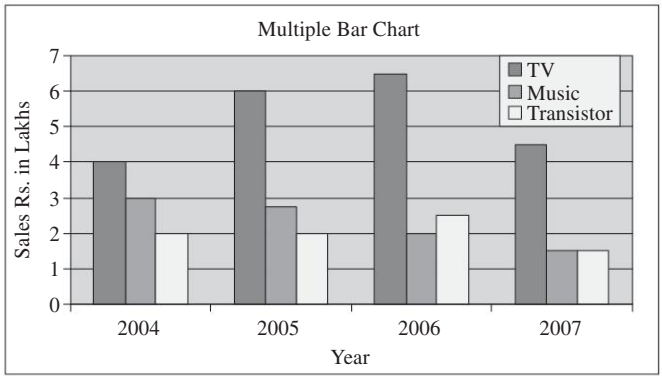


FIG 24.3

(c) Sub-divided Bar Chart: These charts are used to present such data which are shown in parts or which are the totals of various sub-divisions. The bars are sub-divided in the ratio of components, the portion of each component being coloured or shaded differently for the purpose of distinguishing between different components. Such charts may be used in reports to show analysis of cost or sales by their constituent elements.

TABLE 24.3 Represent the following data in a Sub-divided Bar Chart

Year	*Sales of TV sets*	*Sales of Music System*	*Sales of Transistors*	*Total Sales*
2004	4,00,000	3,00,000	2,00,000	8,50,000
2005	6,00,000	2,75,000	2,00,000	10,75,000
2006	6,50,000	2,00,000	2,50,000	1,20,000
2007	4,50,000	1,50,000	1,50,000	8,00,000

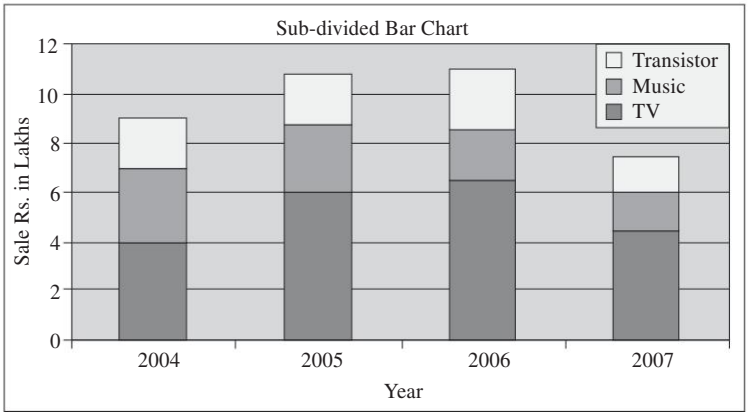


FIG 24.4

(d) Percentage Bar Chart: These are common size bars where length of the bars is kept equal to 100% and segments are cut in these bars to represent the components (in percentage) of an aggregate. Such bars have an added advantage of comparison on a relative basis.

TABLE 24.4 Represent the following data in a Percentage Bar Chart

Year	*2004*		*2005*		*2006*		*2007*	
	Rs	*%*		*%*		*%*		*%*
Sales of TV sets	4,00,000	45	6,00,000	52	7,00,000	58	5,00,000	62
Sales of Music System	3,00,000	33	3,50,000	31	2,00,000	17	1,50,000	19
Sales of Transistors	2,00,000	22	2,00,000	17	3,00,000	25	1,50,000	19
Total Sales	9,00,000	100	11,50,000	100	12,00,000	100	8,00,000	100

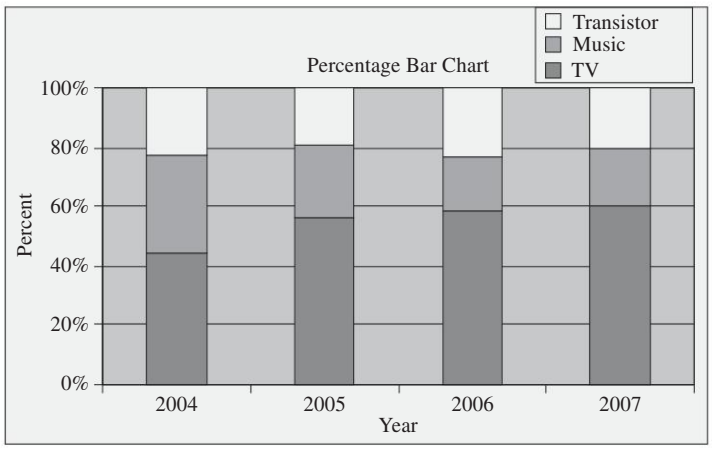


FIG 24.5

(e) Pie (or Circular) Charts: These are like percentage charts but these are presented as segments of a circle instead of components of a bar. Such charts show the relationship of parts to the whole. The angles at the centre of a circle equals 360^{o} and various segments of a circle are reduced in proportion to 360^{o}. Then these segments are measured on the circle with the help of a protractor.

In the following chart, the total cost constitutes the whole circle and the relative proportions of various components of total cost are shown by the size of the segments (data is assumed).

TABLE 24.5 Represent the following data in a Pie(or Circular) Chart

Product A	*%*
Material	48
Labour	24
Factory overhead	16
Adm overhead	5
S & D overhead	7
Total Cost	100

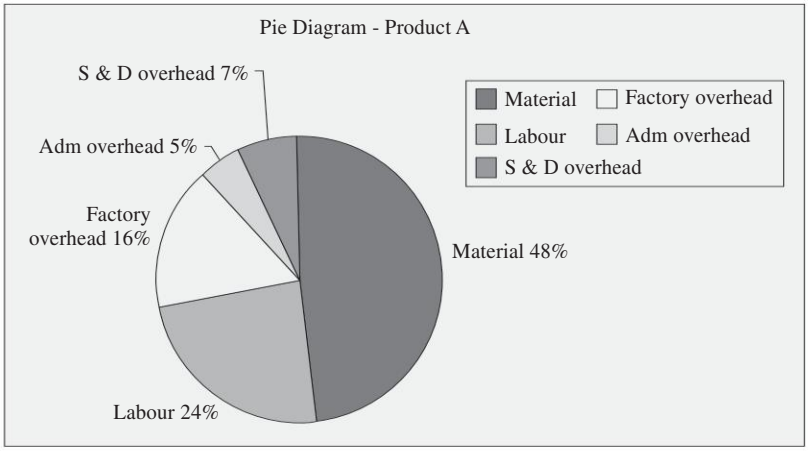


FIG 24.6

TABLE 24.6 Represent the following data in a Pie (or Circular) Chart

Product B	%
Material	51
Labour	18
Factory overhead	14
Adm overhead	9
S & D overhead	8
Total Cost	100

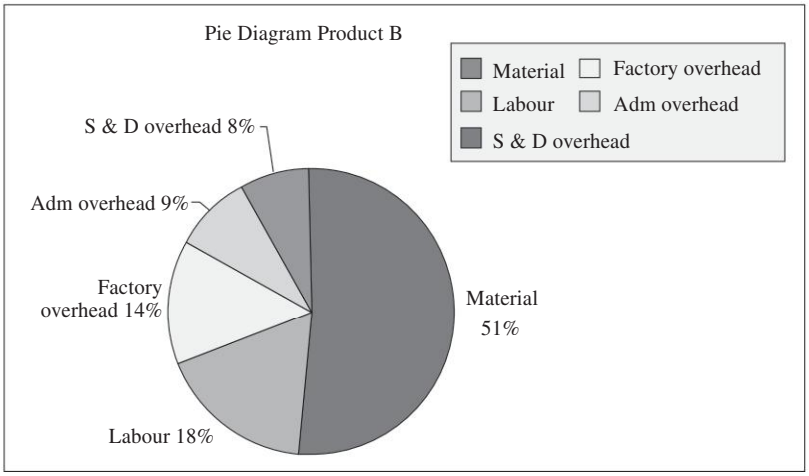


FIG 24.7

(f) Gnatt chart: This is a variant of the Bar chart in which bars are drawn horizontally. The Gnatt charts are widely used in industry for facilitating a comparison of actual performance with that budget. The thick lines in the chart indicate planned figures while thin lines show actual data.

TABLE 24.7 Represent the following data in a Gnatt (or horizontal bar) Chart

Year	*Sales of TV sets*	*Sales of Music System*	*Sales of Transistors*	*Total Sales*
2004	4,00,000	3,00,000	2,00,000	8,50,000
2005	6,00,000	2,75,000	2,00,000	10,75,000
2006	6,50,000	2,00,000	2,50,000	1,20,000
2007	4,50,000	1,50,000	1,50,000	8,00,000

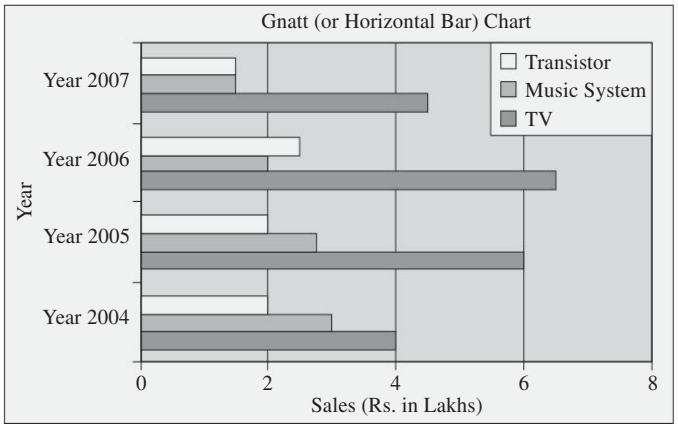


FIG 24.8

(g) Z chart: This chart depicts three curves on a single graph and on completion. These three curves take the shape similar to that of letter 'Z'. This is the reason why it is called a 'Z' chart.

The three curves display:

(i) The current figures for the period concerned
(ii) Cumulative amounts to the latest date.
(iii) The moving annual total or 'trends'.

(h) Break – Even and Profit-Volume Charts:

These charts show cost-volume-profit relationship indicating the break-even point, *i.e.*, a point at which sales revenue is equal to total cost where there is no profit and no loss.

Reports According to Contents

Reports on material:

(i) Material productivity report
(ii) Purchase department costs
(iii) Material price trends
(iv) Normal and abnormal loss of material
(v) Inventory Report
(vi) Supply Position Report

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(vii) Ratio of Materials consumed to cost of production
(viii) Material cost variance etc.

Reports on labour:

(i) Idle time report
(ii) Labour absenteeism report
(iii) Labour productivity report
(iv) Labour turn over report
(v) Labour cost variances
(vi) Over-time and shift working report
(vii) Ratio of direct wages to cost of production
(viii) Recruitment and training cost report, etc.

Reports on overhead:

(i) Reports on overhead absorption rates.
(ii) Overhead variances report
(iii) Administrative overhead report
(iv) Selling and distribution cost reports
(v) Research and development cost reports
(vi) Ratio of overhead to cost of production
(vii) Fixed and variable overheads reports
(viii) Repair and maintenance cost reports
(ix) Power cost report, *etc.*

Reports to production department:

(i) Reports on material consumption.
(ii) Reports on labour cost
(iii) Reports on overhead absorption
(iv) Cost of production of jobs
(v) Cost variances – material, labour and overhead
(vi) Machine utilisation and idle capacity
(vii) Labour utilisation, idle time, over-time with causes
(viii) Reports on labour turn-over and absenteeism
(ix) Spoilage, defective work, scrap and waste
(x) Material and labour cost per unit
(xi) Control ratios- ratio of various elements of cost to total production cost

Reports to sales department

(i) Sales analysis – product-wise, area-wise, salesman-wise, *etc.*
(ii) Sales variances
(iii) Market research activities
(iv) Cash collection reports
(v) Advertisement cost reports
(vi) Ratios like selling overhead to cost of sales *etc.*
(vii) Selling and distribution costs
(viii) Reports on bad debts and credit control

(ix) Warehousing and show room expenses report
(x) Analysis of orders received, executed and in hand.

Reports According to Frequency

As already stated, reports may be grouped into routine reports and special reports. Routine reports are submitted to management at predetermined time schedules. It is a usual practice to keep a time schedule for release of such reports. In many cases, routine reports are printed or cyclostyled, leaving blank columns to be filled in. The executive incharge of the reporting should keep a programme control chart and enter therein the reports released from time to time. Examples of Routine Reports are variance reports, inventory position reports, idle time and over-time reports, *etc.*

Special Reports

These reports are rendered on particular occasions when called for, and may require an investigation of the problem under study. Some of the problems on which special reports may be required are given below:

(i) Make or buy decision
(ii) Price fixation problem
(iii) Capital expenditure problem
(iv) Whether to buy or hire a machinery.
(v) Cost reduction schemes
(vi) Position of working capital
(vii) Changing the method of production
(viii) Comparative study of various channels of distribution

Summary

The main objective of reporting to management is to reach sound judgements on the basis of operating results to secure understanding and acceptance of the judgement by the people engaged in various aspects of the work of the concern. As the system of reporting has to meet the requirements of management at different levels, the approach to the reporting problem would vary according to the reporting level. In order to get promptness, accounting executives can improve their methods of collecting data thereby increasing the speed with which final information becomes available. In order to get consistency, information embodied in the report should come from a common source. Therefore, the person being reported on should have the same information as the executive to whom he reports. Another necessity of reporting, simplicity, means the presentation of operating information in a clear manner by the elimination of extraneous data, the use of facts rather than quasi-interpretations and the use of graphs instead of statistical arrays whenever feasible. Presentation of information in a clear manner needs exact and simple definitions of financial terms, precise use of technical terms and careful summarisation of operating results. A report to be described fully must show its class under each category, that is, frequency, form and contents, *e.g.,* a special tabular sales report, a routine descriptive production report, etc. The language used in the report should be simple and clear.

KEY CONCEPTS

- Management Information
- Management Ratio
- Current ratio
- Inventory turn over Ratio
- Collection ratio or receivables turn-over ratio
- Liabilities – To Worth ratio.
- Equity ratio
- Equity turnover ratio
- Working capital turnover
- Operating Ratio.
- Return on capital employed.
- Break-even point
- Profit-volume ratio

Review Questions

I. Objective Questions:

1. At the corporate level, the reports should be
   a. Detailed
   b. For control purpose
   c. Broader in scope and condensed in form
   d. Selective and summarised
   e. None of the above.
2. Corporate management is responsible for
   a. Working capital planning
   b. Selling goods or services in the market place
   c. Scheduling and monitoring individual jobs through shop floors
   d. Budget formulation, decision on routine capital expenditure, etc
   e. Strategic planning and financial monitoring of the firm.
3. Strategic planning can be best described as
   a. Statement of expected results expressed in numerical terms
   b. Complex set of goals, policies, procedures, etc
   c. Setting the corporate long-term objectives
   d. Setting the corporate short – term goals
   e. Spelling out specific required actions or non-actions allowing no discretions.
4. The information required for operating management include
   a. Capacity utilisation
   b. Rejections
   c. Overtime payments
   d. Both (b) and (c) above
   e. All of (a), (b) and (c) above.
5. Information for operations level should
   a. Never be on time
   b. Be approximate in nature
   c. Be in time and very exact in nature
   d. Be retrospective and provide a summary of many separate events
   e. None of the above.
6. The Management Information Systems should deliver reports that should
   a. Be in time
   b. Be accurate
   c. Be cost-effective
   d. Both (a) and (b) above
   e. All of (a), (b) and (c) above.
7. Exception reports are those reports that
   a. Highlight things that are out of control
   b. Are routine in nature
   c. Are produced regularly
   d. Both (b) and (c) above
   e. None of the above.
8. The most common trade-off in a decision situation between information is.

a. Sensitivity and relevance
b. Sensitivity and accuracy
c. Accuracy and relevance
d. Accuracy and timeliness
e. Relevance and timeliness.

9. Consider the following statements about relevant information
   i. For information to be relevant it must relate to the future
   ii. For information to be relevant it must differ among alternatives
   iii. For information to be relevant it must be completely accurate

   Which statement(s) is (are) true?
   a. Both (i) and (ii) above.
   b. All of (i), (ii) and (iii) above.
   c. Both (i) and (iii) above.
   d. Both (ii) and (iii) above.
   e. Only (i) above.
10. Top management requires information on
   a. Inventory position of stores
   b. Overtime payments
   c. Working capital
   d. Order bookings
   e. Technological advances and new product development.
11. In responsibility accounting system, managers are accountable for
   a. Incremental costs
   b. Differential costs
   c. Variable costs but not fixed costs
   d. Costs over which they have significant influence
   e. Opportunity costs.
12. The system of identification and communication that signals the manager when his attention is needed is known as
   a. Management by objective
   b. Management information system
   c. Management by exception
   d. Management control
   e. Responsibility accounting.
13. Which of the following information is required by the operating management?
   a. Changes in government policies
   b. Overtime payments
   c. Working capital
   d. Order bookings
   e. Return on investment.
14. Which of the following is/are the characteristic(s) of a corporate Management?
   a. The corporate management is responsible for strategic planning and overall financial monitoring of the firm
   b. The corporate management is responsible for executing various tasks within the framework of plans, programs and schedules
   c. The corporate management translates corporate strategy into programs.

d. The corporate management is concerned with tasks such as budget formulation, decision on routine capital expenditures, choice of product improvement etc..
e. Both (c) and (d) above.

15. The computed interest rate used in the residual income approach to perform evaluation can best be described as the
    a. Average return on investments for the company over the last several years
    b. Average return on investment set by the company's management
    c. Average lending rate for the year being evaluated
    d. Historical weighted-average cost of capital for the company
    e. Marginal after-tax cost of capital on new equity capital.
16. Which one of the following is **least** likely to be involved in establishing the standard costs for evaluation purpose?
    a. Budgetary accountants.
    b. Industrial engineers
    c. Top management
    d. Quality control personnel.
    e. Line management.
17. The system of identification and communication that signals the manager when his attention is needed is known as
    a. Management by objective
    b. Management information system
    c. Management by exception
    d. Management control
    e. Responsibility accounting.
18. Which of the following information is required by operating management?
    a. Changes in government policies.
    b. Overtime payments
    c. Working capital
    d. Order bookings
    e. Return on investment.

II. DESCRIPTIVE QUESTIONS

1. What are the different modes of reporting?
2. What is the process of providing reports to the board of directors?
3. What subjects are provided for reports to top management?
4. What are those operations which are reported to top divisional management?
5. What are the day-to-day working reports?
6. What process is followed for reports to junior management level?
7. How reports are prepared?
8. What are the general principles of reporting?
9. Write notes on:
   (a) Promptness, (b) comparison, (c) consistency, (d) simplicity, (e) correctness.
10. What are the various types of reports in accounting?
11. Write short notes on:
    (a) Enterprise report
    (b) Control report
    (c) Investigative report
    (d) Budget proposal report
12. What do you know about reporting to management?

13. How are the communications carried on?
14. What are the objects of reporting?
15. What are the reporting needs of different management levels?
16. How the communication is made to or by top management level?
17. What are the functions of co-ordinating executives or middle management level?
18. What responsibilities are assigned to operating supervisors or junior management level?

CASE I. GIRIDHAR CLOTHING COMPANY

The warehouse of Giridhar Clothing Company were destroyed in a fire that broke out on the night of May 7, resulting in extensive damage to the company inventories. Even in the best of times, the company did not maintain proper accounting records. In the past, a CA firm was engaged to prepare the financial statements based on information complied form the company's invoice files, correspondence and bank statements. inventory was last taken on March 31, the end of the last Accounting Period. Both purchases and sales were on FOB shipping point terms. While all purchases were on credit, there was a small amount of cash sales. There were no puchases or sales in transit on May 7. All cheques and cash received were deposited into bank everyday. Payments to suppliers and transporters were by cheques. Cash was withdrawn from bank for making specific cash payments for office and warehouse rent, insurance premimum and miscellaneous office and selling expenses. The following information was celled out from the company's records for the current period:

Purchase invoices filed in the folder marked 'Paid Purchase Invoices'	Rs 62,100
Freight invoices filed in the folder marked 'Paid Freight Invoices'	2,700
Sale invoices filed in the folder marked 'Paid Sale Invoices'	96,200
Pruchase invoices filed in the folder marked 'Unpaid Purchase Invoices'	11,000
Freight invoices filed in the folder marked 'Unpaid Freight Invoices'	400
Sale invoices filed in the folder marked 'Unpaid Sale Invoices'	3,500
Total of cheques issued for payments to suppliers and transporters	64,800
Total of cheques issued for making cash payments	8,100
Total of paying-in slips for deposits into bank account	97,400

The following information was available from the March 31 financial statements:

Merchandise inventory	Rs 17,200
Amounts due to suppliers for purchases	4,200
Amounts due from customers	2,900

Further examination of the folders revealed that all invoices pertaining to unpaid purchases and unpaid sales listed in the March 31 balance sheet were settled by April 15.

The insurance company's surveyor assested the damage to the inventories ar Rs 500 (net of estimated salvage of Rs 500), and would issue a cheque for the amount without any proof of loss. The insurance company was willing to consider a claim for a higher amount if 20 per cent of sales in the past two years.

REQUIRED

1. Prepare an estimate of the cost of inventory destroyed in the fire. Assume that the surveyor's estimate for salvage is reasonable.
2. What was the percentage of gross profit implicit in the insurance compnay's proposed settlement?
3. You are informed that selling prices went up by 2 per during the current period. How would your answer to 1 change in the light of this information?

CASE II. MURUGAN AUTOMOBILE COMPANY

Rajan Automobile Company manufactures a single automobile brake system for passenger car. The company has been performing well in recent years. The company uses the prerpetual inventory system and the FIFO method of inventory costing.

The 2005 internal management report of the company prepared earlier by the accounting department showed that the company earned an operating profit of Rs. 12,100. The final Profit and Loss Account due to be presented to the auditors reported an operating profit of Rs.9,500. When presented with the latter statement, Rajan, the company's Managing Director, was puzzled over the difference between the two profit figures. He told the company's controller, "It is hardly a month since you told me that we have made Rs. 14,100. Now you are saying that we earned much less than that. Surely, the company's accounting system is broken and it needs fixing before something like this happens next time".

The profit and loss account for the current years is as follows:

	2005
Net Sales	Rs 1,20,000
Cost of Goods Sold	
Beginning Inventory	35,200
Manufacturing Costs	88,000
Cost of Goods Available for Sale	1,23,200
Ending Inventory	17,600
Cost of Goods Sold	1,05,600
Gross Profit	14,400
Operating Expenses	4,900
Operating Profit	9,500
Income Tax @ 30 per cent	2,850
Net Profit	6,650

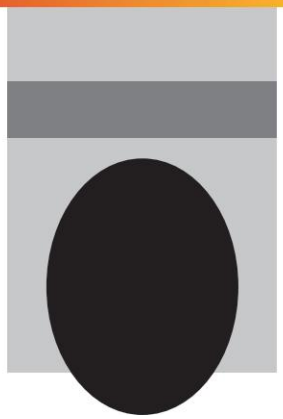
After a complete check of the management report, the financial statements and the transactions during the year, the controller concluded that there were no errors in any of them. He, however, remembered that the company used direct costing for internal reporting and wondered whether that was the source of the difference between the two profit figures. The controller collected the following additional information from the company's records.

	2005
Sales (units)	1,200
Sale Price per Unit (Rs)	100
Production (units)	1,000
Beginning Inventory (units)	400
Ending Inventory (units)	200
Manufacturing Costs:	
Materials per Unit (Rs)	60
Variable Conversion Cost (Rs)	15
Annual Fixed Production Overhead (Rs)	13,000
Normal Capacity (units)	1,000

REQUIRED

1. Compute the company's operating profit based the direct costing approach.
2. Explain the reason(s) for the difference between the operating profit reported in the company's profit and loss account and the amount computed in 1. Specify the condition(s) under which the two profit figures would differ.
3. Why, in your view, did the company follow different systems for internal and external reporting purposes? What are the relative merits and demerits of following the same method for both the purposes?
4. Can direct costing be used in external Financial Reports? Give a specific answer.

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Glossary
Terms Related to Accounting

Management Accountancy The profession whose members practise management accounting and the complex of principles, techniques and methods by means of which their expertise is put into effect.

1. Functions

1.1 **Management Accounting** The application of professional knowledge and skill in the preparation of accounting information in such a way as to assist management in the formulation of policies and in the planning and control of the operations of the undertaking.

1.2 **Cost Accounting** The application of accounting and costing principles, methods and techniques in the ascertainment of cost and the analysis of savings and/or excess as compared with previous experience or with standards.

1.3 **Costing** The ascertainment of costs.

1.4 **Cost audit** The verification of cost records and accounts and a check on the adherence to prescribed cost accounting procedures and the continuing relevance of such procedures.

2. The System

2.1 Link with Financial Accounts

2.11 **Interlocking accounts** A system in which the cost accounts are distinct from the financial accounts, the two sets of accounts being kept continuously in agreement or readily reconcilable.

Note: With the possible exception of certain special items of income and expenditure which are purposely treated in one set of accounts only, the same basic data are used in both sets of accounts.

2.12 **Integral accounts** A single set of accounts which provides both financial and management accounting information.

2.2 Basic Method

A method of costing which is devised to suit the methods by which goods are manufactured or services are provided (see Diagram 1).

2.21 Specific order costing The category of basic costing methods applicable where the work consists of separate contracts, jobs or batches, each of which is authorised by a specific order or contract (see Diagram 1).

2.211 **Job Costing** That form of specific order costing which applies where work is undertaken to customer's special requirements. As distinct from contract costing, each job is of comparatively short duration. The work is usually carried out within a factory or workshop where each job moves through the processes or operations as a continuously identifiable unit, although the term may also be applied to such work as property repairs carried out on the customer's premises (see Diagram 1).

Note: The method may also be used in the costing of internal capital expenditure jobs.

2.212 **Batch Costing** That form of specific order costing which applies where similar articles are manufactured in batches either for sale or for use within the undertaking. In most cases, the costing is similar to job costing (see Diagram 1).

2.213 **Contract costing** That form of specific order costing which applies where work is undertaken to customer's special requirements and each order is of long duration (compared with those to which job costing applies). The work is usually of a constructional nature. In general, the method is similar to job costing, although it has certain distinctive features (see Diagram 1).

2.22 Operation Costing The category of basic costing methods applicable where standardised goods or services result from a sequence of repetitive and more or less continuous operations or processes to which costs are charged before being averaged over the units produced during the period (see Diagram 1).

2.221 **Process costing** That form of operation costing (see 2.22) which applies where standardised goods are products (see diagram 1)

2.222 **Service costing** That form of operation costing (see 2.22) which applies where standardised services are provided either by an undertaking by a service cost centre within an undertaking. The method may be used where the service is not completely standardised but where it is convenient to regard it as such, and to calculate average costs per period in relation to the standardised unit of measurement, e.g., ton-mile in the cast of goods transport or patient-day in the cast of hospitals (see Diagram 1).

2.3 Superimposed Principles and Techniques Principles and techniques devised to suit the manner in which it is decided to present information to management (see Diagram 1).

2.301 **Absorption Costing** A principle whereby fixed as well as variable costs are allotted to cost units. The term may be applied where (a) production costs only, or (b) costs of all functions are so allotted (see Diagram 1).

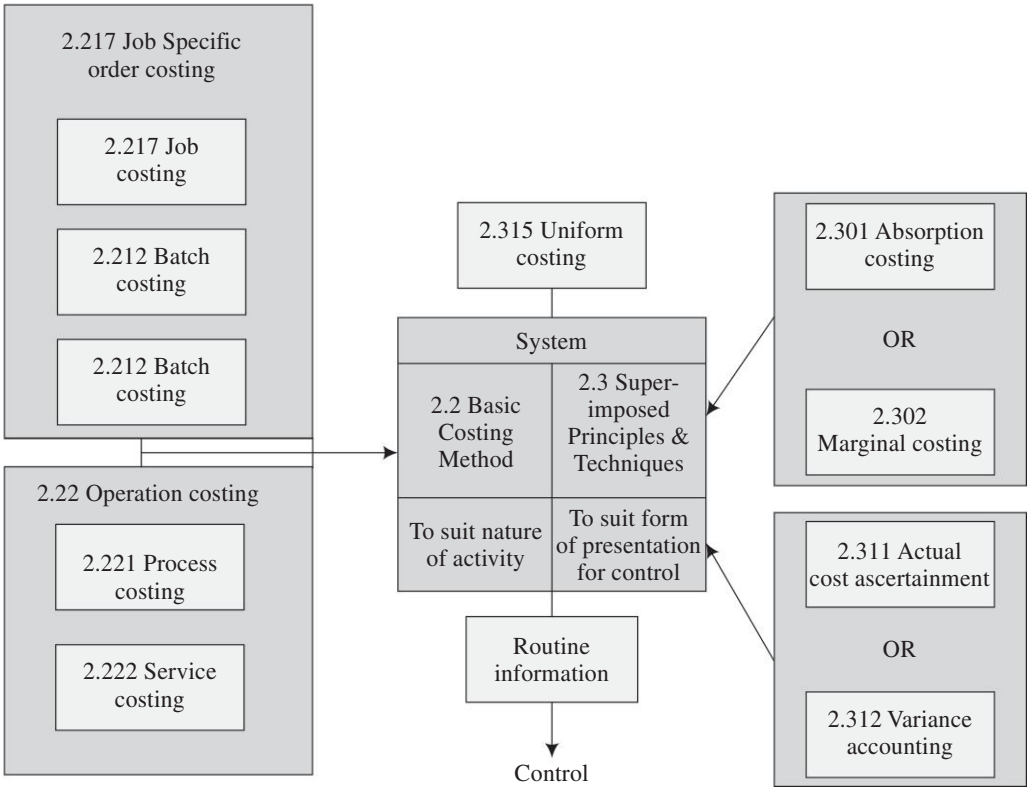


DIAGRAM 1 Management Accounting Methods, Principles and Techniques related to the routine system

2.302 **Marginal costing** A principle whereby marginal costs of cost units are ascertained. Only variable costs are charged to cost units, the fixed costs attributable to a relevant period being written off in full against the contribution for that period (see Diagram 1).

Note: It is recommended that the term be applied only where the routine system, the marginal principle (see 2.313 *differential costing*) is applied.

2.311 Actual Cost Ascertainment A principle whereby cost of cost centres and cost units are ascertained which, subject to certain approximation, are deemed to represent actual costs. (The term historical costing is often used to describe this concept but is not recommended because the word 'historical' may equally be applied to other concepts, e.g., statement of variances related to past events) (see Diagram 1).

2.312 Variance Accounting A technique whereby the planned activities of an undertaking are expressed in budgets, standard costs, standard selling prices and standard profit margins and the differences between these and the comparable actual results are accounted for. Management is periodically presented with an analysis usually commencing with the operating profit variance. The technique also includes the establishment of a suitable arrangement of accounts in the principal ledger (See Diagram 1).

2.312.1 **Standard Costing** The preparation of standard cost of products and services. See standard cost (3.24) and variance accounting (2.312).

2.312.2 **Budgetary Control** The establishment of budgets relating to the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy or to provide a basis for its revision.

Note: The term variance accounting is more appropriate where planned performances are expressed in standard costs per unit of product or service as well as in budgets, all being used in comparison with actual results.

2.312.3 **Variance Analysis** That part of variance accounting (2.312) which relates to the analysis into constituent parts of variances between planned and actual performance. (See Diagram 3 and definitions 3.4–3.47)

2.313 **Differential Costing** A technique used in the preparation of ad hoc information in which only cost and income differences between alternative courses of action are taken into consideration.

2.314 **Incremental Costing** A technique used in the preparation of ad hoc information where consideration is given to a range of graduated changes in the level or nature of activity. The additional costs and revenue likely to result from each degree of change are presented.

2.315 **Uniform Costing** The use by several undertakings of the same costing system, i.e the same basic costing methods superimposed principles and techniques.

2.4 Cost Allotment Procedures

2.41 **Cost allocation** The allotment of whole items of cost to cost centres or cost units.

2.42 **Cost apportionment** The allotment to two or more cost centres of proportions of common items of cost on the estimated basis of benefit received.

2.431 **Direct wages percentage rate** A rate calculated by dividing the estimated overhead cost attributable to a cost centre by the amount of direct wages expected to be incurred, or which would relate to working at normal capacity, and expressing the result as a percentage.

2.432 Direct Labour Hour Rate A rate calculated by dividing the estimated overhead cost attributable to a cost centre by the appropriate number of direct labour hours. This may be either the number of hours expected to be worked, or the number of hours which would relate to working at normal capacity.

2.433 **Machine Hour Rate** A rate calculated by dividing the estimated overhead cost attributable to a machine or group of similar machines by the appropriate number of machine hours. This may be either the number of hours for which the machine or group is expected to be operated, or the number of hours which would relate to working at normal capacity.

2.434 **Cost Unit Rate** A rate calculated by dividing the estimated overhead cost centre by either the number of cost units expected to be produced in that cost centre or by the number related to working at normal capacity.

2.435 **Standard Cost Rate** A rate calculated by dividing the expected overhead cost attributable to a cost centre by the predetermined quantity of the base to which the rate is applied.

2.44 Valuation of Stores Issues

2.441 **First in First Out Price (FIFO)** The price paid for the material first taken into the stock from which the material to be priced could have been drawn.

2.442 **Last in First Out Price (LIFO)** The price paid for the material last taken into the stock from which the material to be priced could have been drawn.

2.443 **Replacement Price** A price at which material could be purchased, identical to that which being replaced or revalued.

2.444 **Weighted Average Price** A price which is calculated by dividing the total cost of materials in the stock from which the material to be priced could be drawn, by the total quantity of material in that stock.

2.445 **Standard Price** A predetermined price fixed on the basis of specification of all factors affecting that price.

2.5 Accounting Period

2.51 **Costing period** A period in respect of which costs are ascertained. A typical costing period would be four or five weeks or a calendar month.

2.52 **Budget period** The period for which a budget is prepared and used.

2.53 **Control period** A period in respect of which comparisons are made between budgeted and actual results. It is usually the same as the costing period (see 2.51).

3. Values

3.1 Selling Price

3.11 **Standard selling price** A predetermined selling price which may be used in connection with variance accounting (see 2.312).

3.12 **Retention money** A sum of money representing an agreed proportion of a price for goods supplied or work completed, such proportion being withheld by the purchaser or contractee for an agreed period of time as security against failure by the supplier or contractor to fulfil his obligations under the terms of the contract.

3.13 **Transfer price** A price related to goods or other benefits transferred from one process or department to another or from one member of a group to another. The extent to which costs and profit are covered by the price is a matter of policy.

3.2 Cost

1. (as a noun) The amount of expenditure (actual or notional) incurred on, or attributable to, a specified thing or activity (see Diagram 2).
2. (as a verb) To ascertain the cost of a specified thing or activity.

Note. The word 'cost' can rarely stand alone and should be qualified as to its nature and limitations.

3.21 Elements of Cost The primary classification of cost according to the factors upon which expenditure is incurred, viz. materials, wages and expenses (see Diagram 2).

3.211 **Materials cost** The cost of commodities, other than fixed assets, introduced into products or consumed in the operation of an organisation (see Diagram 2).

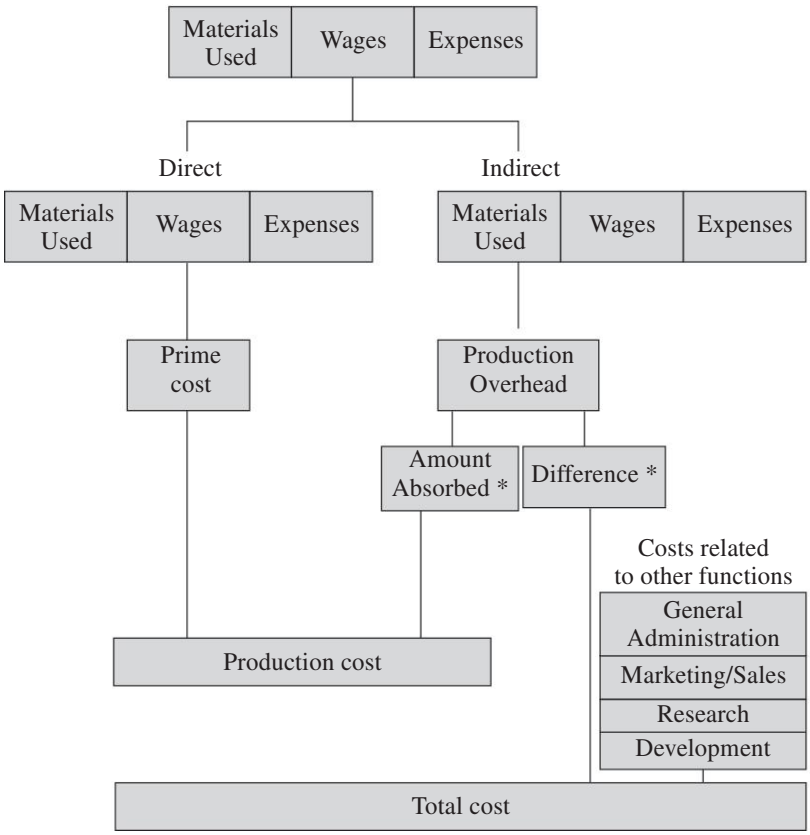
3.212 **Wages cost** The cost of employees' remuneration (see Diagram 2).

Note. For the specific purpose of individual enterprises, the term would require more precise definition. Some may prefer to classify salaries of managers and clerical staff as wages, whilst other may not. Some may prefer to treat holiday pay and employees contributions towards national insurance and pension funds as wages whilst others may not.

3.213 Expenses All costs other than materials and wages (see Diagram 2).

3.214 Prime Cost The total cost of direct materials, wages and expenses. The term prime cost is commonly restricted to direct production costs only and so does not customarily include direct costs of marketing or research and development (see Diagram 2 and definitions 3.214.1-3).

3.214.1 Direct Materials Cost The cost of materials entering into and becoming constituent elements of a product or saleable service (See Diagram 2, also 3.211, materials cost).



* *NOTE.* In the case of marginal costing, the amount of production overhead absorbed would relate to the variable category only.

DIAGRAM 2 Cost related to the production function (related to a typical manufacturing organisation)

3.214.2 Direct Wages Cost The cost of remuneration for employees' efforts and skills applied directly to a product or saleable service. (see Diagram 2).

3.214.3 Direct Expenses Costs, other than materials or wages, which are incurred for a specific product or saleable service (see Diagram 2).

3.215 Overhead The total cost of indirect materials, wages and expenses (see Diagram 2).

Note. The synonymous term burden is in common use in the U.S.A. and in subsidiaries of American companies in the U.K.

3.215.1 Indirect Materials Cost Materials cost other than direct materials cost.

3.215.2 Indirect Wages Cost Wages cost other than direct wages costs.

3.215.3 Indirect expenses Expenses, other than direct expenses.

3.215.4 Absorbed Overhead Overhead which, by means of absorption rates, is included in costs of specific products or saleable services.

3.215.5 Over-Absorbed Overhead The amount of by which overhead absorbed exceeds the amount of overhead incurred.

3.215.6 Under-Absorbed Overhead The amount by which incurred exceeds the overhead.

3.22 **Objective Costs**

3.221 **Costs of Major Functions**

3.221.1 **Production Cost** Prime cost (3.214) plus absorbed production overhead (see Diagram 2).

3.221.2 **Marketing Cost** The cost incurred in publishing and presenting to customers the products of the undertaking in suitably attractive forms and at acceptable prices, together with the costs of all relevant research work, the securing of orders and usually, delivery of the goods to customers (see Diagram 2 and 3.221.23, distribution cost). In certain cases, after-sales service and/or order processing may also be included.

3.221.21 **Selling Cost** That portion of marketing cost which is incurred in securing orders.

3.221.22 **Publicity Cost** That portion of marketing cost which is incurred in advertising and promotion as aids to the eventual sales of goods or services.

3.221.23 **Distribution Cost** That portion of marketing cost which is incurred in warehousing saleable products and in delivering products to customers.

Note. In more cases, particularly where consumer products are concerned, distributions is regarded as a part of the marketing function but in exceptional cases – for example, where heavy industrial equipment is supplied-distribution may be regarded as an extension of the production function.

3.221.3 **General Administration Cost** The sum of those costs of general management, and of secretarial, accounting and administrative services which cannot be directly related to the production, marketing research or development functions of the enterprise (see Diagram 2).

3.221.4 **Research Cost** The cost of seeking new or improved products, applications of materials or methods (see Diagram 2).

3.221.5 **Development Cost** The cost of the process which begins with the implementation of the decision to produce a new or improved product or to employ a new improved method, and ends with the commencement of formal production or that product or by that method (see Diagram 2).

3.222 **Cost Centre** A location, person or item of equipment (or group of these) in respect of which costs may be ascertained and related to cost units (see 3.225.1 cost unit).

3.222.1 **Process Cost Centre** A cost centre in which a specific process or a continuous sequence of operations is carried out.

3.222.2 **Production Cost Centre** A cost centre in which production is carried on.

3.222.3 **Service Cost Centre** A cost centre for the provision of a service or services to other cost centres.

Note. This term does not usually apply when the output of an organisation is a service, rather than goods.

3.223 **Budget Centre** A section of an organisation defined for the purposes of budgetary control.

3.224 **Profit Centre** A division of an organisation to which both expenditure and revenue are attributable and in respect of which profitability can be assessed.

3.225 **Cost of products**

3.225.1 **Cost Unit** A quantitative unit of product or service in relation to which costs are ascertained.

3.225.2 **Job** (Defined in relation to costing method) A cost unit which consists of a single specific order (see 2.211, job costing).

3.225.3 **Batch** (Defined in relation to costing method) A cost unit which consists of a group of similar articles which maintains its identity throughout one or more stages of production (see 2.212, batch costing).

3.225.4 **Contract** (Defined in relation to costing method) A cost unit which consists of a single contract (see 2.213, contract costing).

3.225.5 **Equivalent Units** A notional quantity of completed units substituted for an actual quantity of incomplete physical units in progress, when the aggregate work content of the incomplete units is deemed to be equivalent to that of the substituted quantity (e.g. 150 units 50 percent complete = 75 equivalent units). The principle applies when operation costs are being apportioned between work-in-progress and completed output.

Note The synonymous term 'effective unit' is not recommended.

3.225.6 **Net Realisable Value** (defined in relation to by-product) The estimated selling price (net of trade discounts but before deducting settlement discounts), less all attributable costs incurred after separation from the main product (see 3.225.7, by-product).

3.225.7 **By-product** A product which is recovered incidentally from the material used in the manufacture of recognised main products, such by-product having either a net realisable value (see 3.225.6) or a usable value, such value being relatively unimportant in comparison with the saleable value of the main products. By-products are usually subjected to further processing after separation from the main product.

Note Whilst definition of by-product, joint products, waste and scrap are offered in this Terminology, it is emphasised that a clear distinction between these terms is not always possible or even necessary. An item regarded as a by-product in one factory may be termed either a joint product or scrap in another. The use of common sense, with due regard to the circumstances in valuing the item and in treating it in the accounts, is more important than the term applied.

3.225.8 **Joint Products** Two or more products separated in the course of processing each having a sufficiently high saleable value to merit recognition as a main product (see Note under 3.225.7, by-product).

3.225.9 **Waste** Discarded substances having no value (see Note under 3.225.7, by-product).

3.225.10 **Scrap** Discarded material, having some recovery value, which is usually either disposed of without further treatment (other than reclamation and handling), or reintroduced into the production process in place of raw material (see Note under 3.225.7, by-product).

3.225.11 **Spoilage** Units of output which fail to reach the required standard of quality or specification. Such faulty units may be capable of rectification, and may be so corrected if the cost of doing so is less that the loss in value from allowing the fault to remain uncorrected. When it is uneconomic to rectify a fault, the article may be sold as sub-standard if it is still functionally sound; otherwise it may be disposed of as scrap.

3.225.12 **Production Cost of Sales** The production cost of the products sold during a specified accounting period.

3.225.13 **Total Cost of Sales** The total cost of production, marketing, general administration and research and development, attributable to the products or services sold a specified accounting period.

3.225.14 **Conversion Cost** The sum of the production costs of converting purchased materials into finished products, i.e., direct wages, direct expenses and absorbed production overhead.

3.225.15 **Added Value** The increase in market value resulting from an alteration in the form, location or availability of a product or service, excluding the cost of bought-out materials or services.

Note Unlike conversion cost, added value includes profit.

Fixed and Variable Costs

3.231 Period cost (see 3.232, fixed cost)

3.232 **Fixed cost** A cost which accrues in relation to the passage of time and which, within certain output or turnover limits, tends to be unaffected by fluctuations in volume of output or turnover. Examples are rent, rates, insurance and executive salaries.

3.233 **Variable Cost** A cost which, in the aggregate, tends to vary in direct proportion to changes in the volume of output or turnover.

3.234 **Variable Production Overhead** Overhead cost related to production which, in the aggregate, tends to vary in direct proportion to changes in the volume of output.

Note Factors other than the volume of physical output can influence the amount of variable production overhead, e.g., the number of persons employed, of the number direct labour hours worked or the number of machine hours. It is not, however, usually practicable to identify and measure these influences with sufficient precision to merit their acceptance as a basis for further analysing variable production overhead variance (3.442.3) (see Diagram 3).

3.233.2 **Variable Production Cost** The sum of prime cost (3.214) and variable production overhead (3.133.1).

3.233.3 **Variable Marketing Cost** A cost related to marketing (3.221.2) which, in the aggregate, tends to vary in direct proportion to changes in the volume of turnover.

3.234 **Semi-Variable Cost** A cost containing both fixed and variable elements, which is therefore partly affected by fluctuations in the volume of output or turnover.

3.235 **Marginal Cost** The variable cost of one unit of a product or a service, i.e a cost which would be avoided if the unit was not produced or provided.

Note. In this context a unit is usually either a single article or a standard measure such as the gallon (or litre) pound weight (or kilogram), etc. but may in certain circumstances be an operation, process or part of an organisation.

3.236 **Budget Control Basis** The nature of a cost (that is, variable, semi-variable or fixed) which determines the manner in which the budget cost allowance (3.237) is calculated.

3.237 **Budget Cost Allowance** The cost which a budget centre would be expected to incur in a control period (2.53), having regard to the budget control bases (3.236) which apply. This usualy comprises variable costs in direct proportion to the volume of production or service achieved, and fixed costs as a proportion of the annual budget, having regard to the spread, throughout the year, of benefits expected to be derived from the expenditure, rather than to the dates of payment. (*Standard allowance* is a synonymous term).

3.24 Standard Cost

A predetermined cost calculated in relation to a prescribed set of working conditions correlating technical specifications and scientific measurements of materials and labour to the prices and wage rates expected to apply during the period to which the standard cost is intended to relate, with an addition of an appropriate share of budgeted overhead. Its main purposes are to provide bases for control through variance accounting (2.312), for the valuation of stocks and work-in-progress, and in exceptional cases, for fixing selling prices.

3.241 **Standard Performance** The rate of output which qualified workers will naturally achieve without overexertion as an average over the working day or shift provided they adhere to the specified method and provided they are motivated to apply themselves to their work. (*Term No. 34001 in B.S. 3138, by kind permission of the British Standards Institute*).

3.242 **Standard Hour** A hypothetical unit pre-established to represent the amount of work which should be performed in one hour at standard performance (for full definition see Term No.35008 in B.S. 3138).

3.243 **Basic Standard** An underlying standard from which a current standard (3.244) can be developed.

3.244 **Current Standard** A standard established for use over a short period of time, related to current conditions.

3.245 **Expected Standard** The standard which it is anticipated can be attained during a future specified budget period.

3.246 **Normal Standard** The average standard which it is anticipated can be attained over a future period of time, preferably long enough to cover one trade cycle.

3.247 **Ideal Standard** The standard which can be attained under the most favourable conditions possible.

3.25 Miscellaneous Costs

3.251 Controllable or Managed cost Cost, chargeable to a budget or cost centre, which can be influenced by the actions of the person in whom control of the centre is vested.

Note It is not always possible to pre-determine responsibility, because the reason for deviation from expected performance may only become evident from subsequent investigation. For example, excessive scrap may arise from inadequate supervision or from some latent defect in purchased material.

3.252 **Non-controllable Cost** A cost chargeable to a budget or cost centre which cannot be influenced by the actions of the person in whom control of the centre is vested (see note the following definition of controllable cost: 3.351).

3.253 **Notional Cost** A hypothetical cost taken into account to represent a benefit enjoyed by the undertaking in respect of which no actual expense is incurred.

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3.254 **Opportunity cost** The value of a benefit sacrificed in favour of an alternative course of action.

3.3 Profit

The financial gain resulting from a transaction or combination of transactions, being the excess of sales revenue over related costs.

3.31 Contribution

i. **Contribution per unit** the difference between the selling price of a unit of product or service and its marginal cost (3.235)

ii. **Contribution in total** The difference between the sales value and the variable cost (3.233) of such sales.

3.32 Operating profit The profit arising from the normal activities of the business, such as the provision and sale of manufactured goods or services, before taking account of extraneous transactions such as those of a purely financial nature.

3.33 Net profit The profit remaining after all further expenses and/or losses have been deducted from the operating profit (3.32) and further revenues have been added. The profit of a business before distribution but after deducing from net sales all direct and indirect cost incurred in making those sales. Net profit can be stated before or after taxation.

3.34 Attributable Profit (on contracts) The amount of profit deemed to be attributable to the work completed at the accounting date after the due allowances have been made for maintenance and remedial costs and for any other non-recoverable increases in costs. (The allowances for the contingencies referred to would usually be based on a forecast of expected conditions, on which forecast both technical expertise and practical experience would be brought to bear).

THE OPERATING PROFIT VARIANCE AND ITS COMPONENT PARTS

The interrelationship of the following variances 3.4 to 3.442.3 inclusive, are illustrated by Diagram 3.

Variance analysis

Notes

(i) Where a numerical symbol is followed by letter A or M, the letter indicates if the term related to the absorption costing concept (A), or to the marginal costing concept (M). If neither letter follows the numerical symbol the term is common to both concepts.

(ii) The asterisked (*) terms are abbreviated. For the full versions see the definitions.

(iii) The analytical pattern shown below is theoretical and is intended to indicate general principles. It is emphasised that variance analysis, like all management accounting procedures, must be devised to suit the conditions prevailing within the particular enterprise.

3.4 Operating Profit Variance

The difference between budgeted and actual operating profit related to specific period. (See operating profit, 3.32).

Note. This variance would not be entered in a ledger account as budgeted operating profit does not appear there in.

Operating Profit Variance due to sales

3.41A. The difference between (a) the budgeted operating profit and (b) the margin between the actual sales and the standard cost of the those sales.

3.41M. The difference between (a) the budgeted contribution and (b) the margin between the actual sales and the standard variable cost of those sales (see contribution, 3.31).

Note This variance, and those which are part of it, would not be entered in a ledger account, as budgeted profit does not appear therein.

3.411 Operating profit variance due to selling prices. The difference between the standard and actual prices of the sales effected.

Operating Profit Variance due to Sales Volume

3.412A The difference between the budgeted and actual sales quantities, both being valued at standard unit operating profit margins.

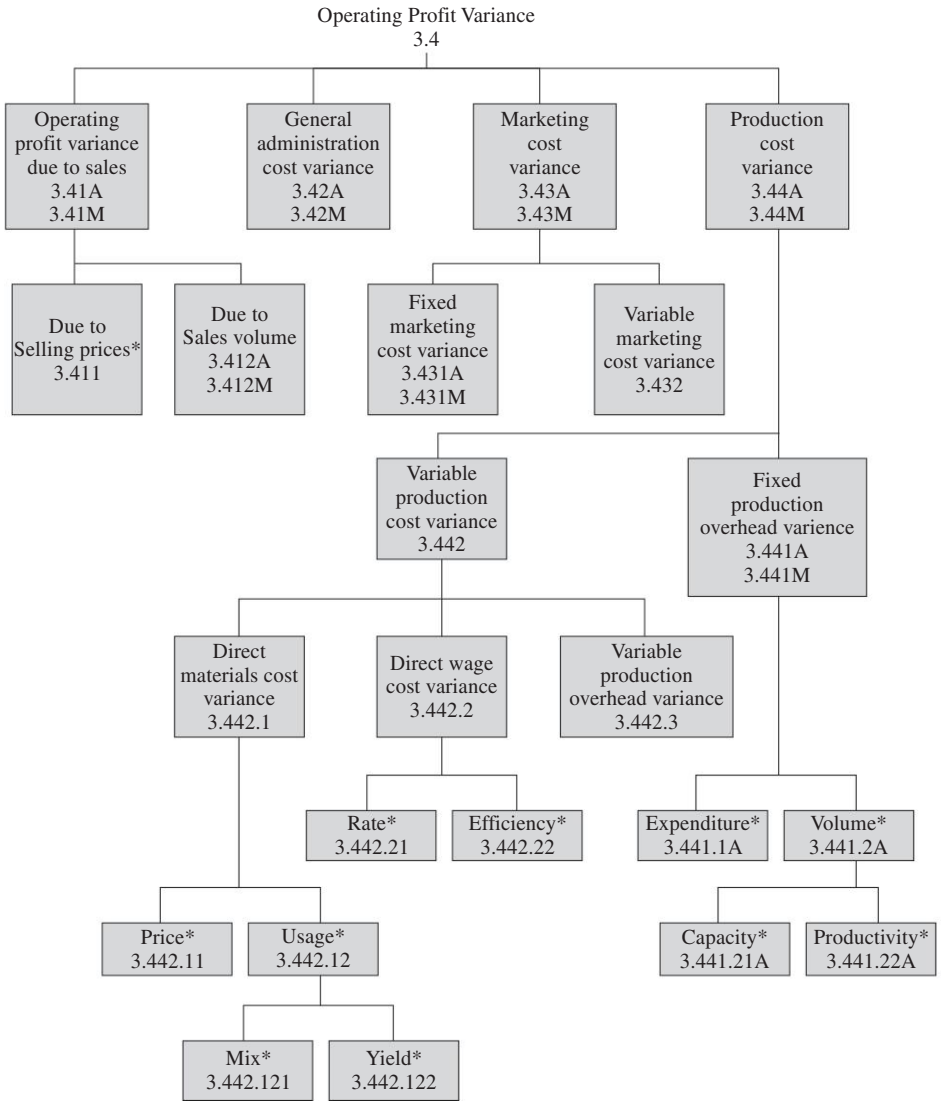


DIAGRAM 3

3.412M. The difference between the budgeted and actual sales quantities, both being valued at standard unit contribution margins (see contribution, 3.31).

General Administration Cost variance

3.42A. The difference between the total standard cost of general administration included in the total standard cost of the products sold and the actual expenditure incurred on general administration. Such expenditure would usually be deemed to be fixed in nature. If it is considered worthwhile, this variance can be analysed into expenditure and sales variances.

3.42M. The difference between the budget cost allowance (3.237) for general administration (3.221.3) for a specified control period (2.53) and the amount of actual expenditure attributed and charged to that period. This variance represents expenditure differences only (See footnote to 3.441.1 A).

Marketing Cost Variances

3.43A. The difference between the total standard cost of marketing (3.22.2) included in the total standard cost of the products sold and the actual expenditure incurred on marketing.

3.43M. The sum of fixed and variable marketing cost variances (3.431 M and 3.432).

Fixed Marketing Cost Variance

3.431A. The difference the standard cost of fixed marketing, overhead abosrbed in the cost of sales achieved, and the fixed marketing overhead attributed and charged to the period. If it is considered worthwhile, this variance can be analysed into expenditure and sales volume variances.

3.431.M. The difference between the budget cost allowances (3.237) for marketing for a specified control period (2.53) and the amount of actual fixed expenditure attributed and charged to that period. This variance represents expenditure, differences only (see footnote to 3.441.1A).

3.432 Variable Marketing Cost Variance The difference between the standard and actual variable marketing costs of the products actually sold (see also Diagram 3).

3.44 Production Cost Variance

3.44A. The difference between the standard cost of production achieved during period whether completed or not (see footnote) and the actual cost incurred on such (see 3.221.1 production cost).

Note The most typical form of industrial activity features a series of operations with quantities of unfinished work remaining in operation at the end of each costing period. Consequently, it is usually pointless to attempt to relate total costs of materials used and work done during a period to the completed output of the same period.

3.44M. The sum of the fixed production overhead variance (3.441M) and the production cost variance (3.442).

Fixed Production Overhead Variance

3.441.A. The difference between the standard cost of fixed overhead absorbed in the production achieved, whether completed or not, and the fixed overhead attributed and to that period (see footnotes to 3.44A and 3.441.1A).

3.441M. The difference between the budget cost allowance (3.237) for production for a specified control period (2.53) and the amount of actual fixed expenditure attributed and charged to that period. This variance represents expenditure differences only and so corresponds with 3.441A, the footnote to which should be referred to.

3.441.1A. *Fixed production overhead expenditure variance.* The difference between the budget cost allowance (3.237) for production for a specified control period (2.53) and the amount of actual fixed expenditure attributed and charged to that period.

Note. As many items of fixed overhead occur annually, or in relation to other periods of time which do coincide with control periods, the amounts attributed and charged to particular periods, as with the budget cost allowances, are based on accountancy decisions which take into account the spread throughout the year of benefits derived from the expenditure rather than the dates of payment (see also Diagram 3).

3.441.2A. Fixed Production Overhead Volume Variance That portion of the fixed production overhead variance which is the difference between the standard cost absorbed in the production achieved, whether completed, or not, and the budget cost allowance (2.237) for a specified control period (2.53).

3.441.21A. Capacity Variance That portion of the fixed production overhead volume variance which is due to working at higher or lower capacity than standard. Capacity is often expressed in terms of average direct labour hours worked per day, and the variance is the difference between the budget cost allowance (3.237) and the actual direct labour hours worked (valued at the standard hourly absorption rate).

3.441.22A. Fixed Cost Productivity Variance That portion of the fixed production overhead volume variance which is the difference between the standard cost absorbed in the production achieved, whether completed or not and the actual direct labour hours worked (valued at the standard hourly absorption rate).

3.442 **Variable Production Cost Variance** The difference between the standard variable cost of the production achieved, whether completed or not, and the actual variable cost incurred on such work.

Note: The most typical form of industrial activity features a series of operations, with quantities of unfinished work remaining in operation, at the end of each costing period. Consequently, it is usually pointless to relate total costs of materials used and work done during a period to the completed output of the same period.

3.442.1 **Direct materials cost variance** (a) When materials are charged to production at actual prices. The difference between the standard cost of direct materials specified for the production achieved, whether completed or not, and the actual cost of direct materials used see footnote to 3.442). (b) When materials are charged to production at standard proces. The sum of the price and usage variances (See also Diagram 3).

3.422.11. Direct Materials Price Variance (a) When materials are charged to production at actual prices. That portion of the direct materials cost variance which is the difference between the standard price specified and the actual price paid for the direct materials used.

(b) When materials are charged to production at standard price. That portion of the direct materials cost variance which is the difference between the standard price and the actual price paid for direct materials purchased during that period.

3.442.12 Direct materials usage variance That portion of the materials cost variance which is the difference between the standard quantity specified for the production achieved, whether completed or not, and the actual quantity used both valued at standard prices (see footnote to 3.442).

3.442.121 Direct Materials Mix Variance That portion of the direct materials usage variance which is the difference between the actual quantities of ingredients used in a mixture at standard price, and the total quantity of ingredients used at the weighted average price per unit of ingredient as shown by the standard cost sheet (41.33). (Applicable only when direct materials are physically mixed).

3.442.122 Direct Materials Yield Variance That portion of the direct materials variance which is the difference between the standard cost of the production achieved, whether completed or not and the cost of that production arrived at by multiplying the actual total quantity of ingredients used by the weighted average price per unit as shown by the standard cost sheet (Applicable only when direct materials are physically mixed). (See also Diagram 3).

3.442.2 Direct Wages Cost Variance The difference between the direct wages for the production achieved whether completed or not and the actual direct incurred (see fotenote 3.442.1).

3.442.21 Direct Wages Rate Variance That portion of the direct wages cost variance which is the difference between the standard rate of pay specified and the actual rates paid.

3.442.22 Direct Labour Efficiency Variance That portion of the direct wages cost which is the difference between the standard direct wages cost for the production achieved whether completed or not, and the actual hours at standard rate (plus incentive bonus, if any). (see footnote to 3.442).

3.45 Budget Revision Variance The difference between a basic and a revised standard cost, multiplied by the budgeted quantity for the period. It arises when an interim adjustment of standard cost is made without adjusting the budget, and it is required in order that the difference between budgeted and actual profit may be fully analysed.

Note This variance would not be entered in a ledger account as budgeted profit does not disappear therein.

3.443. Stock Valuation Revision Variance The difference arising when stock and progress which are evaluated at standard costs are revalued at new standard costs. This variance occurs particularly at the commencement of a new financial year.

3.47 Method Variance The difference between the standard costs of an operating formed by the standard method specified and the standard cost of the operation by the alternative method actually employed.

RATIOS CONCERNING PRODUCTION

These ratios may be calculated where quantities of goods produced or services can be expressed in terms of either standard direct labour hours or standard hours.

Each of the three ratios is related to a fixed overhead variance as shown in the Diagram 4.

3.5 Control Ratios

3.51 Ratios concerning production (see Diagram 4).

3.511 Production volume ratio. The number of standard hours equivalent to the production achieved, whether completed or not, divided (or expressed as a percentage of) by the budgeted number of standard hours (see Diagram 4).

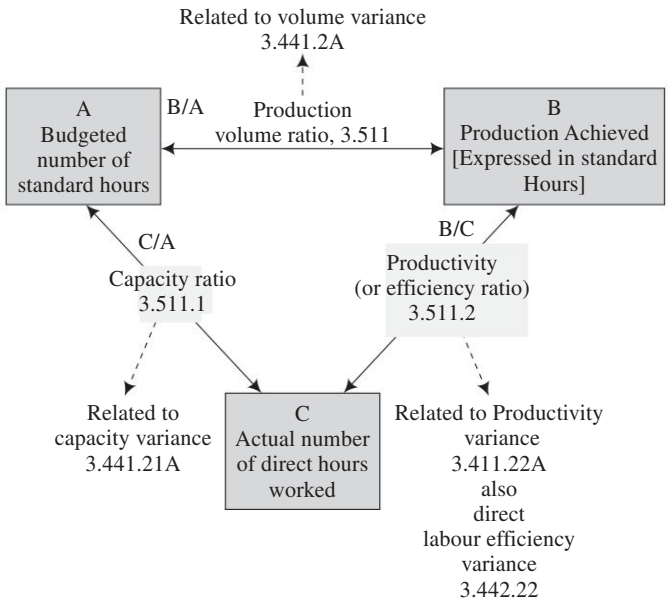


DIAGRAM 4

Notes

i. This ratio is related to the fixed production overhead volume variance (3.441.2A).

ii. The term activity ratio, is synonymous but it is not recommended, as the word 'activity' is capable of different interpretations.

3.511.1 Capacity Ratio The actual number of direct working hours divided by (or expressed as a percentage of) the budgeted number of standard hours (see Diagram 4).

Note. This ratio is related to the capacity variance (3.441.21A).

(a) Productivity (or efficiency) Ratio The standard hours equivalent to the production achieved, whether completed or not divided (or expressed as a percentage of) by the actual number of direct working hours (see Diagram 4).

Note. This ratio is related to the fixed cost productivity variance (3.441.22A) as well as to direct labour efficiency variance (3.442.22).

Ratios Concerning Profitability

3.521 Return on Capital Employed Ratio The relationship between the profit earned (usually before tax) and the capital employed in earning that profit. It is normally expressed as a percentage, which measures the efficiency with which the capital is employed.

The term primary ratio is often used as an alternative.

3.521.1 Profit to Sales Ratio The percentage which profit (before tax) bears to the values of sales.

3.521.2 Sales to Capital Employed Ratio The value of sales obtained for every £of capital employed.

3.522 Contribution to Sales Ratio The relationship, usually expressed as a percentage, between contribution and sales value.

Note. The abbreviation 'P/V ratio' is not recommended.

3.523 Margin of safety The excess of normal or actual sales over sales at break-even point (see 4.135, break-even chart). It may be expressed as a percentage of either normal or actual sales, whichever is selected for consideration.

ADDITIONAL INFORMATION

The additional cost are revenue likely to result from each degree of change are presented.

2.312 Uniform costing The use by several undertaking of the same costing system, i.e., the same basic costing methods superimposed principles and techniques.

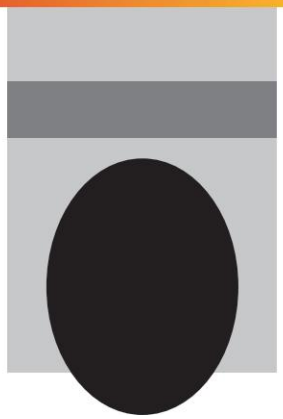
2.313 Cost allocation The allotment of whole items of cost to cost centres or units.

2.41. Cost Apportionment The allotment to two or more cost centres of proportions of common items of cost on the estimated basis of benefit received.

2.42. Overhead Absorption The allotment of overhead to cost units by means relates separately calculated for each cost centre. In most cases the rates are predetermined.

2.431. Direct Wages Percentage Rate A rate calculated by dividing

The McGraw-Hill Companies



Subject Index

Abnormal Effective 13.5
Abnormal Wastage 13.5
Absolute Liquidity Ratio 21.20
Accounting 1.1
Accounting Conventions 1.8
Accounting for Charges in Fixed Assets & Fixed Liabilities 18.14
Accounting for Investments 2.18
Accounting for Taxes 2.21
Accounting Modern Concept 1.4
Accounting period Concept 2.5
Accounting Policies 2.11
Accounting Principles 1.7
Accounting Standards 2.8
Accural Concept 2.5
Acid Test Ratio 21.19, 23.2
Acquisition of Fixed Assets 18.27
Acquisition of Investment 18.28
Activity Based Costing 13.10
Adjusted P & L Method 19.7
Administration Expenses 9.17
Advantage of Budget 20.15
Advantage of Cash Flow Statement 19.4
Advantage of Fund Flow Statement 18.5
Advantage of Standard Costing 16.9
Advantages of Costing 9.7
Analysis & Classification of Cost 9.21
Analysis of Flow of Funds 18.7
Analysis of Items of Outflow 18.26
Angle of Incidence 15.8
Annuity Method 7.5
Application of Accounting Policies 1.10
Application of pv Ratio 14.38
Applications of Funds 18.10
Ascertaining Costs 9.20
Ascertainment of CostM9.11
At Cost 22.11
Available & Unavailable Cost 9.23
Average Inventory at Cost 23.16

Balance heet 21.1, 4.5
Balance Sheet Method 19.8
Bank Reconciliation Statement 3.30
Basic Equation of M.C. 14.13
Basic Standard 16.2
Behaviour of Fixed and Variable Cost 15.7
Behavioural Classification 9.23
Bills Payable 3.27
Bills Receivable 3.27
Bonus Schemes 11.8
Budget Centre 20.4
Budget Committee 20.4
Budget Manual 20.5
Budget Period 20.6
Budget Proposal Report 24.4
Budgetory Control Organisation 20.32
Business Entity Concept 1.7
Buy or Loose Decision 14.16
By products 13.7

Calculation of Margin of Safety 14.42, 15.8
Calender Variance 16.15
Capacity usage Variance 16.15
Capital Budget 20.8
Capital Gearing Ratio 21.33
Cash Actual and National Concept of Funds 19.2
Cash Budget 20.9
Cash Discount 3.22

Causes and Disposition of Variance 16.28
Causes of Depreciation 7.3
Central Periods 20.6
Characteristics of Good Costing 9.7
Characteristics of Marginal Costing 14.2
Classification of Accounting Principles 2.2
Classification of Budget 20.16
Common Size Balance Sheet 21.14
Common Size Incomes Statement 21.15
Companisating Errors 3.45
Comparison 24.5
Comparison of Different Accounting 1.6
Comparitive Balance Statements 21.4
Comparitive Financial Statements 21.4
Comparitive Income Statements 21.8
Compertation of Trend percentages 21.10
Completed Contract Method 5.4
Computing Divisional Investment 22.10
Concept of Depreciation 7.2
Concept of Funds 18.2, 19.2
Concept of Inventory Control 6.3
Concept of Marginal Costing 14.2
Conservatism 2.6
Consideration of Cost 24.6
Consistancy 24.5, 2.6
Constructing Cash Flow Statement 19.3
Construction of Cash Budget 20.24
Construction of Fund Flow Statement 18.11
Contrast Costing 12.2
Contribution Chart 14.44
Contribution Ratio 15.8
Control Report 24.4
Controllable & Uncontrollable Cost 9.23
Controlling Costs 9.20
Correctness 24.6
Cost Accounting 1.11
Cost Concept 1.7
Cost Control & Reduction 9.6
Cost for Inventory Decision 6.8
Cost of Extra Work 12.11
Cost of Inventory 2.12
Cost of Production 9.22
Cost of Sales 9.22
Cost plus a predetermined Margin of Profits 22.11
Cost plus Contrasts 12.12
Cost Sheet 12.2
Cost System 2.7
Cost Variance 16.18
Cost Volume Profit Relationship 14.26
Current Liability to Proprietors Funds 21.33
Current Ratio 21.17, 23.2
Current Standard 16.2

Debt Cash Flow Coverage Ratio 23.6
Debt to Equity Ratio 21.24, 23.5
Debtor Turnover Ratio 21.22, 23.4
Departmentalisation of Overhead 10.9
Departments Control Labour Cost 11.2
Depreciation Accounting 2.15
Depreciation Fund Method 7.6
Depreciation Policy 7.12
Determination & Analysis of Costs 9.6
Determination of Funds from Trading Operation 18.13
Determination of Sales Mix 14.14
Determination of Standard Hour 16.8
Determining Selling Price 9.20
Different Methods of Costing 9.17
Difficulty in Measurement of Executive Performance 22.4
Diluted Earning per Share 2.20
Direct Cost 9.15
Direct Labour Cost 9.15
Direct Labour Hour Rate 10.7
Disadvantage of Costing 9.9
Disclosure of Accounting Policies 2.11
Discontinuance of Product Line 14.14
Discounting Operations 2.23
Division-Independent Profit Centre 22.2
Double Entry Systems 2.7
Dual Aspect Concept 1.8

Economic Lot Size 6.5
Effect of Error on Profit 3.52
Elements of Cost 9.4
Emerson's Efficiency Premium Scheme 11.10
Enterprise Report 24.3
Equipment Replacement Decision 14.15
Errors of Commission 3.42
Errors of Ommission 3.42
Errors of Principle 3.44

Essential of Effective Budgeting 20.18
Essential of Good Budgetary Control 20.4
Essentials of Cost Accounts 9.5
Executive or Middle Management Level 24.3
Expand or Contract 14.15
Expenditure Variance 16.15
Expense Ratio 21.28
Expenses Ratio Cost of Goods Sold to Net Sales 23.9

Factory Cost 9.22
Factory Cost to Sales 23.9
Factory Expenses 9.16
Factory on Cost 10.2
Factory Overhead Budget 20.8
Financial Accounting 1.10, 17.1
Financial Nature 2.1
First in First Out 6.18
Fixed Asset Turnover 21.34
Fixed Assets of Special Types 2.18
Fixed Budget 20.7
Flexible Budget 20.7
Full Disclosure 2.6
Functions of Accounting 1.5
Functions of Inventories 6.2
Functions of Management Accountant 17.2, 17.3
Fund Flow Statement 18.2
Funds 18.8

General principles of Reporting 24.4
Gnatt Bonus System 11.10
Going Concern Concept 1.7
Gross Capital Employed 23.11
Gross Profit Ratio 23.7

Halsey Plan 1.8
Historical Cost 7.12, 9.24
Honesty Rate Basis 10.6
HR Accounting Objectives 8.3
HR Value Accounting 8.8

Idle Time 11.11
Idle Time Variances 16.14
Impairment of Assets 2.26
Implementing HR Accounting System 8.8
Improvement of p/v Ratio 15.3
Income Statement 21.2
Indirect Cost 9.15
Indirect Materials 9.21
Insurance Policy Method 7.6
Intangible Assets 2.23
Inter process Profit 13.8
Interest Coverage Ratio 21.25, 23.6
International Accounting Standard 18.29
Interpretation of Financial Statements 21.3
Inventory Turnover Ratio 23.3
Investigative Report 24.4

Journal 3.6
Junior Management Level 24.3

Key Factor 20.6
Kinds of Reports 24.11

Labour 12.6
Labour Cost Variance 16.14
Labour Efficiency Variances 16.13
Labour Hours 9.26
Labour Mix Variance 16.14
Labour Rate Variances 16.13
Labour Standard 16.3
Labour Turnover 11.12
Labour Variances 16.13
Last in First Out 6.14
Level of Activity Planning 14.9
Limitation of Financial Statements 21.3
Limitations of Management Accounting 17.6

Machine Hours 9.26
Make or Buy Decision 14.14
Management Accounting 17.1
Manufacturing Budget 20.8
Margin of Safety 15.8
Marginal Cost 22.12
Marginal Cost Equation 15.2
Marginal Costing & Pricing 14.11
Market Price 22.12
Master Budget 20.9
Material Cost Variance 16.11
Material Mix Variance 16.12
Material Price Variance 16.11
Material Wage Variance 16.11
Material Yield Variance 16.12

Materiality 2.6
Meaning of Break Even Point 15.4
Meaning of Costs 9.20
Meaning of Fund Flow Statement 18.8
Meaning of Transaction 2.2
Measurement of Inventories 2.12
Mercantile Systems 3.2
Method of Inventory Control 6.10
Method of Maximum Limit 6.11
Method of Sales Estimate 6.12
Methods of Evaluation 22.5
Methods of Remuneration 11.6
Methods of Reporting 24.11
Mix of Sales 14.10
Modern Depreciation 7.11
Modes of Reporting 24.6
Money Measurement Concept 1.7
Motivational Aspects of Standards 16.5

Nature of Financial Statements 21.2
Nature of Inventories 6.2
Necessity of Cost Accounting 9.6
Need for Inventories 6.2
Net Capital Employed 23.11
Net Probability 20.6
Net Profit Ratio 21.28, 23.9
Nominal Account 2.8
Normal & Abnormal Cost 9.23
Normal Standard 16.3

Objective of Budget and Control 20.2
Objectives of Inventory Control 6.3
Objectives of Reporting 24.2
Office & Administration Budget 20.8
Operating Ratio 21.27, 23.8
Operational Outflow 18.26
Ordering Level 6.9
Organisation for Standard Costing 16.7
Other Outflows 18.29
Out of Pocket Cost 9.24

Percentage of Completion Method 5.4
Percentage on Direct Wages Basis 10.3
Percentage on Materials Method 10.2
Percentage on Prime Cost Basis 10.5
Performance Appraisal in Public Sector 22.13
Perpetual Inventories 6.13
Personal Account 2.7
Personnel Budget 20.8
Petty Cash Book 3.25
Piece Work Systems 11.7
Planning & Decision Making 9.6
Plant Utilisation Budget 20.8
Preparation of Budget Manual 20.34
Preparation of Reports 24.10
Preparation of Trail Balance 4.8
Price Variance 16.17
Prime Cost 9.22
Problem of Key Factor 14.12
Problem of Window Dressing 21.18
Producing Continuous Information 9.20
Product Cost 9.24
Production & Service Dept. 10.10
Production Budget 20.8
Production Method 7.5
Profit & Loss Account 4.4
Profit Chart 15.11
Profit on Uncompleted Contrasts 12.12
Profit Sharing Scheme 11.11
Promptness 24.5
Proprietory Ratio 21.24, 23.5
Purchase Account 3.6
Purchase Budget 20.8
Purchase Return 3.6
pv Ratio-Meaning 14.37

Quantitative Evaluation of a Division 22.3

Rate of Return 22.5
Ratio of Fixed Assets to proprietor Funds 23.6
Ratio of Reserves to Equity Capital 21.33
Raw Material Budget 20.20
Real Account 2.8
Realisation Concept 2.6
Reapportionment 9.25
Reducing Balance Method 7.5
Reducing Costs 9.20
Repayment of Capital 18.26
Replacement Cost of HR 8.5
Report on Costs 24.9

Report on Financial and Office Mgt 24.9
Report on Labour 24.17
Report on Material 24.16
Report on Overhead 24.17
Report on Production 24.9
Report on Purchase 24.9
Report on Sales 24.9
Report to Production Dept 24.17
Report to Sales Dept 24.17
Reporting needs of Different Management Levels 24.2
Reporting to Top Divisional Mgt 24.9
Reports According to Contests 24.16
Reports According to Frequency 24.18
Reports to Board of Directors 24.7
Reports to Top Mgt 24.8
Requirement for Profit Performance Measurement 22.4
Research Budget 20.8
Residual Income 22.8
Return on Capital Employed 23.11
Return on Capital used 21.30
Return on Equity Capital 21.29, 23.10
Return on Proprietors Funds 23.9
Return on Total Investments 23.16
Revaluation of Fixed Assets 2.18
Revenue Recognition 2.16
Revenue Statements Ratio 23.7
Rewards Valuation Model 8.9
Role of Contribution 14.4
Role of Management Accountant 17.3, 17.4
Role of Ratio Analysis 21.35
Rowan Plan 11.8
Rules of Double Entry Systems 2.7
Rules of Posting 3.12

Safety Stock 6.10
Sale Variance 16.16
Sales Account 3.6
Sales Budget 20.8
Sales Return 3.6
Schedules 21.2
Scope of Marginal Costing 14.24
Segment Reporting 2.19
Selling & Distribution Budget 20.8
Selling in New Market 14.15
Selling Overheads 9.17
Separate entity Concept 2.3
Setting Standard Costs 16.2
Shut down/Sunk Costs 9.24
Significance of Measurement 22.4
Simple Average Price 6.19
Simplicity 24.5
Single Entry System 2.7
Sources & Uses of Funds 18.30
Sources of Funds 18.9
Special Reports 24.18
Stages of Accounting 2.8
Stages of Double Entry Systems 3.5
Standard Cost and Actual Cost 16.4
Standard Cost and Estimated Cost 16.4
Standard Price Method 6.23
Steps in preparation of Fund Flow Statement 18.31
Steps involved in Sales Forecasting 20.37
Stock Turnover Ratio 23.16
Straight Line Method 7.4
Sub-Contrasts Cost 12.11
Subsidiary Books 3.18
Suspense Account 3.47
Systems of Accounting 2.7

Target Costing 12.17, 13.11
Taylor Piece Rate Plan 11.8
Technique of Preparing Fund Flow Statement 18.5
Tools of Management Accounting 17.5
Top Management Level 24.2
Total Asset Turnover 21.34
Total Investment to Long Term Liabilities 21.33
Trade Discount 3.22
Trading Account 4.2
Trading on Equity 21.30
Trail Balance 3.16
Transfer Price 22.11
Types of Accounting 1.6
Types of Financial Analysis 21.4
Types of Reports 24.3

Uncompleted Contracts 12.15
Units of Output 9.26
Usefulness of Cost Data 9.11
Uses of Cash Flow Analysis 19.20

Uses of Fund Flow Statement 18.33
Uses of Reports by Management 24.10
Utility of Cash Flow Statement 18.34
Utility of Management Accounting 17.4

Valuation of Inventories 6.13
Value Variance 16.29
Variance Analysis 16.10
Volume Efficiency Variance 16.16
Volume Variance 16.15

Weighted Average Price 6.20
Work-in Progress Account 12.12
Working Capital 18.11
Working Capital Turnover 21.34

Zero Base Budgeting 20.47