

1.1 INTRODUCTION

★ Business is an activity carried out with the intention of earning profits. A person carrying out business is interested in knowing basically two facts about his business:

- (a) What is the result of operations of the business activity? In other words, whether the business has resulted into the profit or loss? Excess of revenue over the expenses will be in the form of profits whereas excess of expenditure over the revenue will be in the form of loss.
- (b) Where the business stands in financial terms at any given point of time.

Providing the answers to the above questions is not possible unless the transactions relating to the business are recorded in a systematic manner. Here the process of accounting comes into the picture. According to American Institute of Certified Public Accountants, “Accounting is the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events which are of a financial character and interpreting the results thereof.” The process of recording the business transactions in a defined set of records, which in technical words are called as Books of Accounts, is referred to as Book Keeping. Accounting refers to the process of analysing and interpreting the information already recorded in the books of accounts with the ultimate intention of answering the above stated questions.

Preparing what are called as Financial Statements satisfies this intention. The financial statements prepared by the organization are basically in two forms:

- (a) Profitability Statement, which is the answer to the first question i.e., what is the result of operations of the business activity. Thus, profitability statement indicates the amount of profit earned or the amount of loss incurred.
- (b) Balance Sheet, which is the answer to the second question i.e. where the business stands in financial terms at any given point of time. Thus, balance sheet indicates the financial status of the business at any given point time in terms of its assets and liabilities.

The nature of these financial statements is discussed in details in the following pages:

Thus, the process of book keeping is more procedural and clerical in nature while the process of accounting is more managerial in nature. As such, the job of book keeping is entrusted to junior level employees, whereas the job of accounting needs more professional expertise.

Activity A:

Visit a small shop and observe their business activities. List down any three of the various observed transactions made by the business.

1.2 STREAMS OF ACCOUNTING

The process of Accounting gets split into three streams:

1. Financial Accounting
2. Cost Accounting
3. Management Accounting

Let us discuss the nature of these three streams of accounting in details.

1. Financial Accounting

Financial Accounting is the process of systematic recording of the business transactions in the various books of accounts maintained by the organization with the ultimate intention of preparing the financial statements there from. These financial statements are basically in two forms. One, Profitability Statement which indicates the result of operations carried out by the organization during a given period of time and second Balance Sheet which indicates the state of affairs of the organization at any given point of time in terms of its assets and liabilities. This nature of Financial Accounting indicates following characteristic features of Financial Accounting:

- (a) Financial Accounting considers those transactions, which can be expressed in terms of money. All those transactions which can not be expressed in terms of money, howsoever important they may be from business point of view, find no place in financial accounting and hence in financial statements. For example, assuming that the business of an organization is such that it is likely to be injurious to the health of local community. As such, there is a strong opposition from the local community for the company's carrying on the business at that location. This opposition is something, which cannot be expressed in terms of money and

hence finds no place in financial accounting and thus in financial statements though it is affecting the business operations of the organization to a very great extent.

- (b) Financial Accounting is referred to as the historical form of accounting. In other words, financial accounting is concerned with the recording of transactions, which have already taken place. No futuristic transactions and events, howsoever important and significant they may be from the business point of view, find any place in financial accounting and hence in financial statements.
- (c) In practical circumstances, financial accounting is more or less a legal requirement. In case of certain organizations like the company form of organization, banks, insurance companies etc., not only is it necessary to maintain the financial accounting records and prepare the financial statements there from, but it is also obligatory to get these financial statements audited by an independent Chartered Accountant. In some cases, there may not be direct legal requirement to prepare the financial statements, but indirectly it is necessary to prepare the financial statements. For example, if a partnership firm wants to file its Income Tax Return as per the provisions of Income Tax Act, 1961, preparation of financial statements is a must to ascertain the profits.
- (d) Financial Accounting is meant for those people who are external to the organization. In other words, financial accounting is basically meant for those people who are not a part of decision-making process regarding the organization. This class of people may consist of the people like investors, customers, suppliers, banks, financial institutions etc.

The information available from financial accounting, i.e. financial statement, is available at a delayed point of time. For example, Balance Sheets as on 31st March 2002 is available after 31st March 2002 is over. The various legal provisions also allow sufficient time lag for the preparation of financial statements. For decision-making purposes, immediate availability of financial data is a prerequisite, which is not satisfied by financial accounting. In this sense, financial accounting has this limitation. Further, as sufficient time is allowed for the preparation of financial statements, they are expected to be accurate.

- (e) Financial Accounting discloses the financial performance and financial status of the business as a whole. It does not indicate the details about the individual department or job or process inside the organization, the information that is more significant from the decision-making point of view. In this sense, financial accounting has the limitation.

- (f) Financial statements are essentially interim reports and cannot be the final ones. For example, in order to understand the correct profitability and correct position of the assets and liabilities of an organization, it will be necessary to stop the business operations, dispose off all the assets of the organization and liquidate all the liabilities. Obviously it is not feasible and practicable. In order to prepare the financial statements for a specific period, it may be necessary to cut off various transactions involving costs and incomes at the date of closing the accounts. This may involve personal judgments. Various policies and principles are required to be formulated and followed consistently for such cutting off of incomes and costs.
- (g) As the “going concern principle” is followed while preparing the financial statements, the various assets and liabilities are shown at the historical prices which may not necessarily represent the current market prices or the liquidation prices. This may also affect profitability due to the incorrect provision for depreciation on assets. This problem may be more critical during the periods of extreme inflation or depression.
- (h) The process of Financial Accounting gets largely affected due to the various accounting policies followed by the accountants. Even though, attempts are being made to bring in the uniformity in the various accounting policies followed by the accountants, still the accounting policies may differ from organization to organization. These accounting policies may differ basically in two fields:
- Valuation of Inventory
 - Calculation of Depreciation

The effect of these different accounting policies is discussed in the following units.

 **Activity B:**

Analyse a company’s Annual Report and evaluate its profitability, its policies related to Inventory, Depreciation and its financial status. List two or three points of your views.

2. Cost Accounting

Cost accounting is the process of classifying and recording of the expenditure in a systematic manner, with the intention of ascertaining the cost of a cost center with the intention of controlling the cost. The Institute of Cost and Management Accountants, London, has defined Cost Accounting as “the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability as well as the presentation of information for the purpose of managerial decision-making.” The above description of Cost Accounting reveals the following characteristic features of Cost Accounting:

- (a) Cost Accounting views the organization from the angle of individual components of the organization like a department, a job, a process etc. Cost Accounting is interested in ascertaining the profitability of these individual components of the organization.
- (b) Cost Accounting is operated with basically three objectives:
 - Ascertainment of cost and profitability with the help of various principles, methods and techniques.
 - Cost Control - This indicates the process of controlling the costs of operating the business.
 - Presentation of information to enable the managerial decision-making.
- (c) Cost Accounting is meant for those people who are internal to the organization. In other words, Cost Accounting is meant for those people who are the part of the decision-making process of the organization. The people who are external to the organization do not have any access to the cost accounting records. In fact, the basic objective of cost accounting is to facilitate professional decision-making process on the part of managers.
- (d) Cost Accounting is not a legal requirement. Maintenance of cost accounting records is not mandatory. However, the maintenance of cost accounting records may be a legal requirement in some exceptional cases. Section 209 (1) (d) if the Companies Act, 1956, makes it mandatory for companies falling under certain class of industries to maintain cost accounting records and also get them audited from an independent cost accountant (which is technically referred to as the “Cost Audit”).

- (e) Cost Accounting does not necessarily restrict itself to the historical transactions or historical events. Future transactions or events may find the place in cost accounting. In fact, each and every transaction, whether past or future, which is likely to have an impact on the business is of concern to the cost accounting.
- (f) As Cost Accounting is supposed to facilitate professional decision-making on the part of the manager, immediate availability of data is the prerequisite of cost accounting. As such, a hundred per cent accuracy is not insisted upon by cost accounting.

Activity C:

From the above concept, write about any two or three significant aspects of cost accounting in your own words.

3. Management Accounting

Management Accounting is the process of analysis and interpretation of financial data collected with the help of financial accounting and cost accounting, with the ultimate intention to draw certain conclusions there from, in order to assist the management in the process of decision-making.

Emergence of Management Accounting

In the olden days, when the size of business operations was small and the complexities involved were limited, financial accounting was considered to be sufficient. Financial accounting ultimately aims at preparing financial statements which are basically in two forms.

1. Profit and Loss statement, which is a period statement and relates to a certain period, usually one year. This tells about the result of operations, either profit or loss, arising out of the conduct of business operations during that period.

2. Balance Sheet, which is a position statement and relates to a particular point of time. This tells about the various properties held by the business (termed as ‘assets’) and obligations accepted by the business (termed as ‘liabilities’) as on a particular date.

The preparation of these financial statements was considered to be sufficient to serve the requirements of all the interested parties, both outsiders as well as insiders.

However, due to the increasing size and complexities of the business operations and specifically due to the segregation of ownership and management, it was realised that financial accounting was insufficient. This was specifically due to certain limitations of financial accounting:

- (a) Financial accounting considers only those transactions, which may be expressed in financial terms, either fully or at least partially. However, it ignores the fact that there may be other types of non-financial transactions, which may have a bearing on business operations, for example, the prestige of business, credit standing of business, efficiency and loyalty of employees, efficiency and intensity of management etc.
- (b) Financial accounting deals with the recording of past events and as such it is the post-mortem record of business transactions. For taking correct decisions regarding the business, the management may need, not only the past details but also the future events, and future events are not the subject matter of financial accounting.

As such, financial accounting and preparation of financial statements there from is no longer considered to be sufficient for a successful and smooth running of business. The analysis and interpretation of data available from financial accounting is also considered to be necessary which may not be directly available from financial accounting itself. Here Management Accounting comes into the picture. Management Accounting deals with the analysis and interpretation of financial data with the ultimate intention to draw certain conclusions there from, in order to assist the management in the process of decision-making. To conclude, it may be said that the role of management accounting has emerged due to the shortcomings of financial accounting.

Definition of Management Accounting

The Institute of Chartered Accountants of England and Wales has defined management accounting as “any form of accounting which enables a business to be conducted more efficiently”.

The management accounting team of the Anglo-American Council on Productivity has described the term Management Accounting as “the presentation of accounting information in such a way so as to assist management in the creation of policy and the day-to-day operation of an undertaking.”

American Accounting Association has defined the term Management Accounting as “the application of appropriate techniques and concepts in processing historical and projected economic data of an entity to assist management in establishing plans for reasonable economic objectives and in the making of rational decisions with a view towards these objectives.”

The various definitions of the term ‘Management Accounting’ reveal the following features of the same.

1. Management Accounting is a service function, which is concerned with providing various information to the management to facilitate decision-making and review the implementation of those decisions.
2. Management Accounting uses not only the historical data but may also use the data based on projections and forecasts for the purpose of evaluation of various possible alternatives.
3. Management Accounting assists the management in establishing plans to attain the economic objectives and in taking the proper decisions required, for the attainment of these objectives.
4. Management Accounting involves the application of various special techniques and concepts for the attainment of its objects. The techniques used in the process of management accounting are discussed in the following chapters.

Objects of Management Accounting

The above discussions reveal that the management accountant is an invaluable aid to the management for discharging the basic functions of planning, execution and control. This is done by:

1. Making available accounting and other data to enable the management to plan effectively.
2. Measuring the actual performance and reporting the same to the various levels of management to indicate the effectiveness of the organisational methods used.

3. Computation of deviation of actual performance from the plans and standards set.
4. Presenting to the management the operating and financial statements at reasonable intervals and interpreting the same to enable the management to take action/decisions regarding future policy and operations.

Scope of Management Accounting

After considering the various objectives that Management Accounting aims at, it can be noted that the scope of management accounting is much wider. It covers virtually every area and every aspect of business operations. However, to be more precise, the various areas covered by management accounting can be stated as below.

1. **Accounting:** It deals with the recording, summarising and analysing of various business transactions. The process of accounting may basically take two forms:
 - a) **Financial Accounting:** It deals with the recording of business transactions which are financial in nature. It aims at the preparation of what are called financial statements which may be in two forms. First, the balance sheet which tells about the state of affairs of the business in terms of the various assets and liabilities and second, the profitability statement which tells about the result of operations of the business which is the profit earned or loss incurred. The financial statements are mainly meant for the outsiders dealing with the business.
 - b) **Cost Accounting:** It deals with the recording of income and expenditure, ascertainment of cost and profitability and the presentation of information derived there from for the purpose of managerial decision-making. Thus, cost accounting is basically meant for the management to enable it to take decisions.
2. **Cost Control Procedures:** It deals with the various steps involved in the process of controlling the cost. Thus, in turn it may deal with the:
 - a) establishment of plans or budgets for the future.
 - b) comparison of actual performance with the planned or budgeted performance.
 - c) computation of variations between the planned and actual performance.
3. **Reporting:** It deals with the presentation of cost data, statistical data or any other information to the various levels of management. It may be required for the purpose of decision-making or for the purpose of fulfillment of various legal obligations.

4. **Taxation:** It deals with the computation of income as per the law, filing tax returns and making the tax payments.
5. **Audit:** It deals with devising the internal control systems and internal audit system to cover the various operational areas of business. In many cases, it may also deal with the management audit, which is the evaluation of the managerial performance.
6. **Methods and Services:** It deals with providing the management services and the management information systems. It also deals with the various methods of reducing the cost and improving the efficiency of accounting and other office operations and preparing and issuing the accounting and other operational manuals.

Disadvantages/Limitations of Management Accounting

In spite of the various advantages available from the management accounting in the era of ever increasing complex business operations, it suffers from some limitations,

- 1) The very wide scope of management accounting is a limitation by itself. It attempts to operate in a wide range of areas and it is quite possible that it may not be able to do proper justice to all of them.
- 2) In spite of the fact that management accounting provides the various details required for qualitative decision-making, thus attempting to avoid the possibility of intuitive decision making, in many cases in practice, the decisions are based upon the intuition of the decision maker rather than the scientific data available therefore.
- 3) The installation and operation of management accounting requires a very elaborate organizational structure and a large number of rules and regulations. It may make the management accounting system a costly proposition, which can be implemented only by large scale organizations.
- 4) Management Accounting system is still in the evolution stage and hence suffers from the various limitations which any system may face in the initial stages like the requirement of constant improvements of the techniques and uncertainty about the application of the system etc.
- 5) The installation and operation of management accounting system may call for the radical changes in the entire organizational structure, which may cause severe opposition and resistance from the existing personnel.

Activity D:

Do you find any similarity between financial accounting and management accounting? If so, why? How did the evolution of management accounting take place? Mention any two points.

1.3 FINANCIAL ACCOUNTING VS. COST ACCOUNTING

1. Financial Accounting is concerned about the calculation of profitability and the state of affairs of the organization as a whole with the help of preparation of the financial statements. Financial Accounting takes into consideration only the historical data which may not be of any use from the cost control point of view.

Cost Accounting may deal with the ascertainment of cost and calculation of profitability of the individual products, departments, branches and so on. Cost Accounting involves a much-detailed study of costs and profitability which takes into consideration not only historical data but also the future events and possibilities. As such, cost accounting proves to be a better proposition from the cost control point of view.

2. Due to the various statutory regulations, maintenance of financial accounting records and preparation of financial statements there from is more or less a legal requirement.

Maintenance of cost accounting records is not a legal requirement except in case of certain company form of organizations where maintenance of cost accounting records has been made compulsory as per the provisions of Section 209 (1) (d) of the Companies Act, 1956.

3. Financial Accounting primarily protects the interests of the outsiders dealing with the organization in various capacities like investors, suppliers, customers, banks, financial institutions, government authority etc.

Cost Accounting is primarily meant for the management to enable the same in discharging various functions in a proper manner like planning, execution, co-ordination and decision-making.

This relationship between Cost Accounting and Financial Accounting can be better explained with the help of the following illustration, which states the presentation of the profitability statement under both the sets of accounting.

(a) Financial Accounting

Profit and Loss Account for the year ended on 31st march 1990.

To, Material Cost	1,50,000	By Sales	5,00,000
To, Labour Cost	1,00,000		
To, Factory Expenses	50,000		
To, Gross Profit c/fd (40% of sales)	2,00,000		
	<u>5,00,000</u>		<u>5,00,000</u>
To, Administration Expenses	90,000	By Gross Profit B/fd	2,00,000
To, Selling Expenses	50,000		
To, Net Profit (12% of sales)	60,000		
	<u>2,00,000</u>		<u>2,00,000</u>

Activity E:

Change the figures and calculate the gross profit and net profit from the above illustration.

(b) Cost Accounting

	Products			
	Total	A	B	C
Material Cost	1,50,000	20,000	50,000	80,000
Labour Cost	1,00,000	15,000	30,000	55,000
PRIME Cost	2,50,000	35,000	80,000	1,35,000
Factory Expenses	50,000	20,000	10,000	20,000
FACTORY Cost	3,00,000	55,000	90,000	1,55,000
Administration Expenses	90,000	40,000	20,000	30,000
Selling Expenses	50,000	15,000	20,000	15,000
TOTAL COST	4,40,000	1,10,000	1,30,000	2,00,000
Profit	60,000	(-) 10,000	20,000	50,000
SALES	5,00,000	1,00,000	1,50,000	2,50,000
Profit % on sales	12%	-	13.33%	20%

Activity F:

Change the figures and calculate % of profit on sales from the above illustration.

1.4 FINANCIAL ACCOUNTING VS. MANAGEMENT ACCOUNTING

- For the purpose of extracting the data required for managerial decision-making, Management Accounting may use the information appearing in the financial statements. This information may be used as it is or it can be rearranged or regrouped if required. As such, financial accounting becomes a source of information for management accounting.
- Financial Accounting considers only the historical financial transactions and does not consider the non-financial transactions.

As Management Accounting aims at enabling the management to take the decisions about the future, it may consider future data as well as non-financial factors.

3. As stated earlier, due to the various statutory regulations, the maintenance of financial accounting records and preparation of financial statements therefrom, is more or less a legal requirement. Moreover, the format in which the financial statements are required to be prepared is also standardized.

Management Accounting is not at all a legal requirement. Management is free to install or not to install a management accounting system. Further, these systems have their own reporting formats.

4. As stated earlier, financial accounting primarily protects the interests of the outsiders dealing with organization in various capacities like investors, suppliers, customers, banks, financial institutions, government authorities etc.

The reports generated by management accounting are meant for the use by management for effective decision-making.

5. As stated earlier, the financial statements which are generated as a result of financial accounting, report the financial performance of the organization as a whole.

Reports generated by the management accounting may deal with the various parts of the organization. As such, management accounting reports may deal with the individual department or the individual product also.

6. The reports generated by financial accounting which are in the form of financial statements are available only after the relevant accounting period is over. For example, the Balance Sheet as on 31st March 2002 is available after 31st March 2002. As such, financial accounting data may not be available to the management for decision-making purposes. Moreover, as the financial accounting data is available after a time lag, the financial statements are required to be accurate.

In case of management accounting, more emphasis is on making the data available to the management as quickly as possible to facilitate the effective decision-making. If up-to-date information is not made available to the management for decision-making, management accounting will lose its utility. As such, accuracy is not the prerequisite of management accounting.

1.5 COST ACCOUNTING VS. MANAGEMENT ACCOUNTING

Cost Accounting and Management Accounting are similar to each other in many respects. Both the streams of accounting primarily aim at the effective decision making on the part of management. Both the streams of accounting are on an average not a legal requirement. The various techniques which are used by management accounting viz. Marginal Costing, Budgetary Control, Standard Costing, Uniform Costing etc. are basically regarded as the advanced methods of Cost Accounting. As such Cost Accounting may be considered to be a part of Management Accounting. Management Accounting is an extension of managerial aspects of cost accounting with the ultimate intention to protect the interests of the business.

1.6 TECHNIQUES OF MANAGEMENT ACCOUNTING

There may be various techniques with the help of which the basic functions of management accounting can be discharged. We will discuss the following techniques in details in the following chapters:

- Marginal Costing (Break Even Analysis)
- Budgetary Control
- Standard Costing
- Uniform Costing

1.7 SUMMARY

A business is an activity carried out with the intention of earning profits. The person carrying out the business is interested to know the expenses made, income earned, equity assets and liabilities etc., and all this information is maintained with the help of Financial Accounting. This unit covers the various aspects of comparison between Financial Accounting, Cost Accounting and Management Accounting. The emergence of Management Accounting, its scope, subject matter and advantages and disadvantages, helps one to understand the significance of management accounting in the era of ever increasing complex business operations.

1.8 KEY WORDS

Cost Accounting: Cost accounting is the process of classifying and recording of expenditure in a systematic manner, with the intention of ascertaining the cost of a cost center for the controlling of the cost.

Financial Accounting: Financial Accounting is the process of the systematic recording of the business transactions in the various books of accounts maintained by the organization, based on generally accepted accounting principles.

Financial Statements: This includes a profitability statement showing the result of operations of the business activity and the balance sheet indicates the financial status of the statement at a given point of time in terms of its assets and liabilities.

Management Accounting: Management Accounting is the process of analysis and interpretation of financial data collected with the help of financial accounting and cost accounting with the ultimate intention of drawing certain conclusions thereof in order to assist the management in the process of decision-making.

1.9 SELF-ASSESSMENT QUESTIONS

Q1. Explain the nature and characteristic features of Financial Accounting and Cost Accounting. How are they related to each other?

Q2. What do you mean by Management Accounting?

State the advantages and limitations of Management Accounting. How is Management Accounting related with other streams of accounting?

Q3. Cost accounting is not a legal requirement. Elucidate this statement.

Q4. Briefly discuss the emergence of Management Accounting.

Q5. Critically compare Management Accounting and Financial Accounting.

Q6. Answer whether the following statements are True or False:

- a) Financial accounting comprises of Profitability Statement and Balance Sheet.
- b) Audit deals with the devising of the internal control system and internal audit system to cover the various operational systems.

2.1 INTRODUCTION

As stated earlier, financial accounting is the process of recording the financial business transactions of the past and calculating the net result of these transactions, with the intention of communicating the same to the various persons dealing with the business in the external capacity. However, financial accounting is a technical process. Before we consider the technicalities of financial accounting, let us consider some of the fundamental issues relating to financial accounting.

2.2 ACCOUNTING PRINCIPLES

In order to bring uniformity to the recording of business transactions, the accountants follow certain basic procedures universally. These are referred to as the Accounting Principles. The Accounting Principles can be classified in two categories :

- a. Accounting Concepts
 - b. Accounting Conventions
- a. Accounting Concepts**

Accounting Concepts indicate those basic assumptions upon which the basic process of accounting is based. The following are the important Accounting Concepts :

i. Business Entity Concept

This accounting concept proposes that the business is assumed to be a distinct entity than the person who owns the business. The accounting process is carried out for the business and not for the person who owns the business. If there is a partnership concern carrying on the business in the name of M/s. XYZ & Co., where Mr. A and Mr. B are the equal partners, M/s. XYZ & Co. is supposed to be a separate entity from Mr. A and Mr. B. The financial statements prepared on the basis of accounting records are of M/s. XYZ & Co. and not of Mr. A or Mr. B individually. It should be noted in this connection that the business entity concept has nothing to do with the legal entity of the business. It applies to both, corporate organizations (which by themselves a separate legal entity from the owners) as well as non-corporate organizations, (which are not a legal entity separate from the owners).

ii. Dual Aspect Concept

This concept proposes that every business transaction has two aspects. However, the basic relationship between assets and liabilities which means that the assets are equal to the liabilities, remains the same. For example, if Mr. A starts the business by introducing the capital of Rs. 50,000, the assets and liabilities structure will be as below –

Liabilities		Assets	
Capital	50,000	Cash	50,000

Now, if Mr. A uses the cash to purchase the material worth Rs. 40,000, the assets and liabilities structure will change as below –

Liabilities		Assets	
Capital	50,000	Cash	10,000
		Stock in Trade	40,000
	50,000		50,000

If Mr. A sells the above material worth Rs. 40,000 for Rs. 45,000 on credit basis, the assets and liabilities structure will change as below –

Liabilities		Assets	
Capital	55,000	Cash	10,000
		Receivables	45,000
	55,000		55,000

iii. Going Concern Concept

This concept proposes that the business organization is going to be in existence for an indefinitely longer period of time and is not likely to close down the business in the shorter period of time. This affects the valuation of assets and liabilities. As such, the assets are disclosed in the Balance Sheet at cost less depreciation and not at the current market price. If the assets are to be disclosed in the Balance Sheet at the correct value, the current market price will be most suitable. However, as the business is likely to exist for an indefinitely longer period of time and as the assets are not likely to be sold off in the market in the near future, the market price becomes immaterial.

iv. Accounting Period Concept

Even if the Going Concern Concept proposes that the business is going to be in existence for an indefinitely longer period of time, in order to facilitate the preparation of financial statements on periodical basis, the indefinitely longer life span of the business is divided into shorter time segments, each one being in the form of Accounting Period. Profitability is computed for this accounting period (by preparing the profitability statement) and the financial position is assessed at the end of this accounting period (by preparing the balance sheet). It should be noted that the selection of accounting period may depend upon the various factors like characteristics of the business organization, tax considerations, statutory requirements etc.

v. Cost Concept

This concept proposes that the assets acquired by the organization are recorded at their cost of acquisition and this cost is considered for all the subsequent accounting purposes say charging of depreciation. This concept does not take into consideration current market prices of the various assets.

vi. Money Measurement Concept

This concept proposes that only those transactions and facts find the place in accounting, which can be expressed in terms of money. As such, all those transactions and facts which can not be expressed in terms of money (for example, the morale and motivation of the workers, credibility of the business organization in the market etc.) do not find any place in accounting and thus also in financial statements, though they may have a direct or indirect bearing on the business. This concept imposes severe restrictions on the kind of information available from the financial statements. In fact, this is one of the major drawbacks of financial accounting and financial statements.

vii. Matching Concept

This concept proposes that while calculating the profit for the accounting period in a correct manner, the expenses and costs incurred during the period, whether paid or not, should be matched with the revenues generated during the period. For example, if the accounting period ends on 31st March, the salaries for the month of March should be considered as the cost for the year ending on 31st March, even if they are actually paid for in the month of April. Otherwise, the calculation of the profits for the year ending on 31st March will go wrong as the income will be for 12 months, while the expenses will be for 11 months only.

Activity A :

List any two accounting concepts, with suitable examples, which you have come across in your day-to-day business transactions.

b. Accounting Conventions

Accounting Conventions indicate those customs and traditions that are followed by the accountants while preparing the financial statements. The following are the important Accounting Conventions :

i. Convention of Conservation

This convention is usually expressed as to “anticipate all the future losses and expenses, without considering the future incomes and profits unless they are actually realised.” This convention generally applies to the valuation of current assets and as such, the current assets are valued at cost or market price whichever is lower. The valuation of non-current assets is done at cost (as per the cost concept).

ii. Convention of Materiality

This convention proposes that, while accounting for the various transactions, only those transactions will be considered which have material impact on profitability or financial status of the organization and other insignificant transactions will be ignored. For example, if the organization purchases some postal stamps, some of which remain unused at the end of the accounting period. According to matching concept, the cost of such non-used postal stamps should not be considered as the item of cost. However as its impact on the overall profitability is likely to be negligible, the cost of non-used postal stamps may be ignored, treating the cost of purchases as the expenditure. Which transactions should be treated as material ones is a subjective concept and depends upon the judgment and knowledge of the accountant.

iii. Convention of Consistency

This convention proposes that the accounting policies and procedures should be followed consistently on a period-to-period basis so as to facilitate the comparison of financial statements on a period-to-period basis. If there is any change in the accounting policies and procedures, this fact, coupled with its effect on profitability, should be disclosed explicitly while preparing the financial statements.

Activity B :

To what extent you think these accounting conventions should be followed by accountants, in the process of maintaining the books of accounts?

2.3 SYSTEMS OF ACCOUNTING

a. Cash System of Accounting

In this system of accounting, expenses are considered to be expenses only when they are paid for, and the incomes are considered to be incomes only when they are actually received. This system of accounting is mainly used by the organizations established not for earning the profits. This system of accounting is considered to be defective in nature, as it may not represent the true picture of the profitability as well as of the state of affairs.

b. Mercantile or Accrual System of Accounting

In this system of accounting, expenses are considered as expenses during the period to which they pertain. Similarly, incomes are considered to be incomes during the period to which they pertain. When the expenses are actually paid for or when the incomes are actually received is not significant in case of Mercantile or Accrual System of Accounting. This system of accounting is considered to be more ideal, generally preferred by the accountants. However, as the time of physical receipt of cash is immaterial in this system of accounting, the Accrual System of Accounting may result into the unrealised profits being reflected in the books of accounts on which the organization may be required to pay the taxes too.

It will not be out of place to mention here that, as per the provisions of Section 209 of the Companies Act, 1956, all the company form of organizations are legally required to follow Mercantile or Accrual System of Accounting. Other organizations have a choice to select either of the systems of accounting.

Activity C :

Which system of accounting do you think is the most appropriate? Why?

2.4 GLOSSARY OF TERMS USED IN FINANCIAL ACCOUNTING

Assets – All the properties owned by the business are collectively referred to as the assets of the business.

Account – Account is the record of all the transactions pertaining to a person, asset, liability, income or expenditure, which have taken place during a specified period and shows the final net effect of all these transactions.

Balance Sheet – Balance Sheet is the summarized statement of what the business owns i.e. assets and what the business owes i.e. liabilities at any given point of time.

Bills Payable – Bills Payable indicates the amount payable to the suppliers for which the negotiable instrument in the form of Bill of Exchange is given to the suppliers.

Bills Receivable – Bills Receivable indicates the amount receivable from the customers for which the negotiable instrument in the form of bill of exchange is received from the customer.

Brought Forward – When the balances in the ledger account or cash/bank book of the previous year or previous period are entered in the current year's books of accounts, the balances are said to be Brought Forward.

Capital – Capital indicates the amount of funds invested by the owner of the business in the business.

Carried Forward – When the balances in the ledger account or cash/bank book of the current year or current period are to be transferred to the next year's books of accounts, the balances are said to be Carried Farward.

Cash Discount – Cash discount is the discount received from the suppliers or allowed to customers for making the early payment of dues. Cash discount is accounted for in the books of accounts. Cash discount received from the suppliers is revenue income and cash discount allowed to the customers is revenue expenditure.

Casting – Casting refers to the totaling of the books of accounts.

Credit Note – Credit note is an intimation sent to a person dealing with the business that his account is being credited for the purpose indicated therein.

Creditor – A creditor is a supplier to whom the business owes money for the goods or services bought from him on credit basis.

Credit Side – Credit side of the account is the right hand side of the account.

Debit Side – Debit side of the account is the left hand side of the account.

Debit Note – A debit note is an intimation sent to a person dealing with the business that his account is being debited for the purpose indicated therein.

Debtor – A debtor is a customer who owes money to the business for the goods or services supplied to him on credit basis.

Depreciation – The term Depreciation applies to fixed assets like Land, Buildings, Machinery, Furniture, Vehicles etc. The term indicates reduction in the value of fixed assets, which can arise either due to time factor or use factor or both. A detailed note on Depreciation Accounting is enclosed in the Annexure.

Drawings – Drawings indicates the amount of funds or goods withdrawn by the owner of the business for his personal use.

Entry – Entry means the record of a financial transaction in the books of accounts.

Folio – Folio refers to the page number of the book of original entry or the ledger.

Journal – Journal is the Book of Original Entry or the Book of Prime Entry where the financial transactions are recorded in the chronological order as and when they take place.

Ledger – Ledger is the book where the transactions of the similar nature are pooled together under one Ledger Account. Ledger or General Ledger as it is referred to in practical circumstances, maintains all types of accounts i.e. personal, real and nominal. Whichever transactions are recorded in the Journal or Subsidiary Books in a chronological order, the same transactions are posted in the Ledger, account wise.

Liabilities – All the amounts owed by the business to various providers of funds or services are collectively referred to as liabilities.

Narration – Narration is the summarized explanation or description of the financial transactions recorded in the books of accounts.

Posting – Posting refers to the process of transferring the transaction entered into the book or original entry or subsidiary book to the ledger account.

To credit – To credit an account means to make the entry on credit side of the account.

To debit – To debit an account means to make the entry on the debit side of the account.

Trade Discount – Trade discount is the discount received on purchases or the discount allowed on sales which is an adjustment with the basic purchase or sales price. Trade discount is not accounted for in the books of accounts. Purchase value or sales value is accounted for net of trade discount.

Voucher – Voucher is any documentary evidence to justify that a particular transaction has taken place. The voucher can be internal or external.

Activity D :

From the above given glossary, categorize any six items in the three types of accounts.

2.5 TYPES OF EXPENDITURE

For the purpose of accounting, the amount of money that is paid for is classified in three ways:

1. Capital Expenditure

Capital Expenditure indicates the amount of funds paid for acquiring the infrastructural properties required for doing business, which are technically referred to as Fixed Assets. Fixed Assets do not give the returns during the same period during which they are paid for. As such, benefits available from capital expenditure are long-term benefits. Hence, it will be wrong to consider the capital expenditure as expenses while calculating the profitability during a certain period. In technical words, capital expenditure never affects the Profitability Statement, except in case of Depreciation, which in simple words, indicates that part of the capital expenditure returns equivalent to which are received during the corresponding period.

2. Revenue Expenditure

Revenue Expenditure indicates the amount of funds paid during a certain period with the intention to receive the return during the same period. As such, the benefits available from revenue expenditure are received during the same period during which they are paid for. The entire amount of revenue expenditure affects the Profitability Statement.

3. Deferred Revenue Expenditure

Deferred Revenue Expenditure indicates the amount of funds paid, which does not result into the acquisition of any fixed asset. However, at the same time benefits from this expenditure are not received during the same period during which they are paid for. The examples of Deferred Revenue Expenditure are –

- a. Initial Advertisement Expenditure
- b. Research and Development Expenditure
- c. In case of company form of organization, Preliminary Expenses or Company Formation Expenses.

Principally, deferred revenue expenditure is not transferred to the profitability statement in the period during which they are paid for. As such, deferred revenue expenditure does not affect the profitability of the period during which it is paid for. It is transferred to the profitability statement (in technical words “written off to the Profitability

Statement") over the period over which benefits are received, by passing the adjustment entry. As such, deferred revenue expenditure affects the profitability only when they are written off to Profitability Statement. Till they are written off to the Profitability Statement, they are shown on the asset side of the Balance Sheet.

 **Activity E :**

Do you think that such a classification of expenditure would make the process of accounting easier? If so, why?

2.6 DOUBLE ENTRY BOOKKEEPING

The basic presumption made by the Double Entry System of Accounting is that every business transaction has two elements, which are, when the business receives something, it has to pay something. For example, if the business pays the telephone bill in cash, it gets the benefit of using the telephone, but at the same time the cash goes out. Similarly, if goods are sold to the customer for cash, goods of the business go out, but it receives the corresponding amount of cash. Accordingly, if Double Entry System of Accounting is followed, every business transaction affects two accounts. One account is debited, while another account is credited by the similar amount. Thus, the Double Entry System of accounting follows the principle of "every debit has a corresponding credit" and hence, total of all debits has to be equal to the total of all credits.

Double Entry System of Accounting proves to be advantageous due to certain reasons –

- a. It takes into consideration both the aspects of each business transaction.
- b. Arithmetical accuracy of the accounting records can be verified by preparing the trial balance.
- c. The correct result of operations can be ascertained by preparing the final accounts periodically.
- d. Correct valuation of assets and liabilities is possible at any given point of time by preparing the Balance Sheet.

Activity F :

In what way is the Double Entry Bookkeeping system of accounting advantageous in the maintaining of the books of accounts of a business concern? Practically, have you observed any field of concern following such a system of accounting?

2.7 TYPES OF ACCOUNTING

The various accounts for the purpose of financial accounting are classified under the following categories :

- 1. Personal Accounts :** These are the accounts of persons with whom the organization deals in various capacities. In practical circumstances, personal accounts may consist of the following types of accounts :
 - Accounts of the suppliers
 - Accounts of the customers
 - Bank / Financial Institutions
 - Capital Account

- 2. Real Accounts :** These are the accounts of assets and liabilities. In practical circumstances, real accounts may consist of the following types of accounts :
 - Land Account
 - Building Account
 - Machinery Account
 - Furniture Account
 - Vehicles Account

Deferred Revenue Expense

Real Accounts may also consist of the accounts of some intangible assets like –

- Goodwill Account
- Patents and Trade Marks Account

3. Nominal Accounts : These are the accounts of incomes or expenses. In practical circumstances, nominal accounts may consist of the following types of accounts :

- Salary Account
- Wages Account
- Printing and Stationary Account
- Insurance Account
- Telephone Expenses Account
- Interest paid or Received Account
- Commission paid or Received Account

* Deferred Revenue
Expense Written Off

Activity G :

Analyse a company's income statement and balance sheet. Classify any five items to put under each heading.

2.8 RULES OF DOUBLE-ENTRY BOOKKEEPING

While entering into various financial transactions in the records maintained by the organization, the following basic rules for accounting are followed –

- a. In case of personal accounts – debit the receiver, credit the giver
- b. In case of real accounts – debit what comes in, credit what goes out
- c. In case of nominal accounts – debit all the expenses, credit all the incomes

2.9 DEPRECIATION ACCOUNTING

Depreciation can be defined as a permanent, continuous and gradual reduction in the book value of a fixed asset. Normally, all the fixed assets except land, depreciate in value, rendering the asset useless after the end of a certain specific period. The following may be stated as the main causes of depreciation.

- 1) **Use factor:** The fixed assets depreciate because they are used for the purpose they are meant for. It is applicable in case of tangible assets like machinery, furniture, office equipments etc.
- 2) **Time factor:** The fixed assets depreciate due to the passage of time.
- 3) **Obsolescence:** It is the reduction in the value of fixed assets, say a machine, due to its suppression at a date before it is completely worn out. It may take place due to new inventions, modifications or improvements.

Need for Depreciation Accounting :

According to the nature of fixed assets, these are those assets which may be used for the business purposes over a certain number of future accounting periods and the benefit received from them is spread over the said number of future accounting periods. According to the matching principle of accounting, the costs incurred during an accounting period are required to be matched with the benefits or revenues earned during that period. Hence, it is necessary to distribute the cost of a fixed asset, less the scrap or salvage or realizable value, after the useful life of the fixed asset is over, in such a way so as to allocate it as equitably as possible to the periods during which the benefits are received from the use of fixed assets. This system or procedure is called depreciation accounting. Thus the depreciation accounting is necessary for two main purposes.

- a) To ascertain due profits by correctly matching the various costs and expenses incurred with various incomes and revenues earned during various accounting periods.
- b) To represent the value of a fixed asset on the balance sheet at its unexpired cost i.e. at book value less depreciation. If the depreciation is not provided, the asset may appear in the balance sheet at an overstated amount.

It may also be noted in this connection that the depreciation forms a part of cost for arriving at the profits, which can be distributed, to the owners of the business in the form of dividend. By providing the depreciation, the amount of distributable profits is reduced and retained in the business, which can be utilized for the replacement of the asset at the end of its economic life.

Activity H :

How does depreciation affect the profitability of a business concern? Do you think that depreciation should be charged against profit?

2.10 METHODS FOR CALCULATING DEPRECIATION

There may be various methods available for calculating the amount of depreciation to be charged to Profit and Loss Account. Amount of depreciation is a function of various factors.

(1) Time, (2) Usage, (3) Time and Usage, (4) Time and Cost of maintaining the fixed assets. (5) Provision of funds for replacing the assets.

As such, the various methods available for charging the depreciation can be described as below.

(1) Straight Line Method :

According to this method, the amount of yearly depreciation is calculated as below.

$$\frac{\text{Cost of asset} - \text{Estimated scrap value}}{\text{Estimated life in years}}$$

E.g. C = Cost of Asset Rs. 1,10,000

Estimated scrap value

(At the end of life of the asset) Rs. 10,000

Estimated life 10 years

$$\begin{aligned}\therefore \text{Yearly depreciation} &= \frac{\text{Rs. } 1,10,000 - \text{Rs. } 10,000}{10} \\ &= \text{Rs. } 10,000\end{aligned}$$

The benefit of this method is that an equal amount of depreciation is charged every year throughout the life of the asset, making the calculation of depreciation and of the cost comparison easy. The main drawback of this method is that the amount of depreciation in later years is high when the utility of the asset is reduced.

(2) Written Down Value (Reducing Balance) Method :

According to this method, the depreciation is provided at a predetermined percentage, on the balance of cost of asset after deducting the depreciation previously charged (usually termed as written down value).

E.g. Cost of asset	Rs.	1,10,000
Estimated scrap value	Rs.	10,000
Cost of asset subjected to depreciation	Rs.	1,00,000
Rate of depreciation		10%

The amount of depreciation is calculated as shown below.

Year	Balance Cost of Assets Rs.	Depreciation Rs.	Written Down Value - WDV Rs.
1	1,00,000	10,000	90,000
2	90,000	9,000	81,000
3	81,000	8,100	72,900
4	72,900	7,290	65,610
5	65,610	6,561	59,049

The rate of depreciation to be charged is calculated according to the following formula.

$$D = 1 - \sqrt[n]{\frac{R}{C}}$$

where n = number of years

 R = Residual / Scrap Value

 C = Cost of the asset

The main benefit of this method is that it recognizes the fact that in the initial years of life of

the asset, the repairs and maintenance cost is less which goes on increasing gradually with the progressing life of asset. According to this method, the higher amount of depreciation in the initial years and a gradual decrease therein is counterbalanced by the lower amount of repairs and maintenance cost in the initial years and a gradual increase therein. It should be noted here that the written down value can never become zero.

(3) Production Unit Method :

According to this method, depreciation is provided at a predetermined rate per unit which in turn is calculated on the basis of total number of units to be produced during the life of the asset.

E.g. Cost of the machine	Rs. 1,10,000
Estimated scrap value	Rs. 10,000
Estimated number of units to be produced	50,000
. . . Rate of depreciation per unit	$= \frac{\text{Rs. } 1,10,000 - \text{Rs. } 10,000}{50,000}$
	= Rs. 2 per unit

If in a particular year, 7,000 units are produced, the depreciation to be charged will be :

$$7,000 \text{ units} \times \text{Rs. } 2 \text{ per unit} = \text{Rs. } 14,000.$$

This method gives more stress on usage factor rather than time factor. Higher the number of units produced, higher is the amount of depreciation and vice versa.

(4) Production Hour Method :

This method is similar to the production unit method except that instead of number of units to be produced during the life of asset, number of hours for which the asset is expected to work are taken into consideration.

E.g. Cost of the machine	Rs. 1,10,000
Estimated scrap value	Rs. 10,000
Estimated number of hours	25,000
. . . Rate of depreciation per hour	$= \frac{\text{Rs. } 1,10,000 - \text{Rs. } 10,000}{25,000}$
	= Rs. 4 per hour

If in a particular year, the machine works for 2,500 hours, the depreciation to be charged will be :

$$2,500 \text{ hours} \times \text{Rs. } 4 \text{ per hour} = \text{Rs. } 10,000$$

(5) Joint Factor Rate Method :

According to this method, the depreciation is provided partly at a fixed rate on time basis and partly at a variable rate on usage basis.

E.g. Cost of the machine	Rs. 1,00,000
To be depreciated on time basis over life of the machine i.e. 10 year	Rs. 50,000
Estimated number of units to be produced	50,000

Depreciation :

(a) On time basis	-	$\frac{\text{Rs. } 50,000}{10 \text{ years}}$	= Rs. 5,000 per year
(b) On usage basis	-	$\frac{\text{Rs. } 50,000}{50,000 \text{ units}}$	= Re. 1 per unit

If in a particular year, the machine produces 6,000 units, the depreciation to be charged will be :

Time basis	Rs. 5,000
Usage basis 6,000 units x Re. 1	Rs. 6,000
	<hr/> <u>Rs. 11,000</u>

(6) Revaluation Method :

According to this method, the asset is revalued periodically. The amount of depreciation for that period is the difference between the cost of the asset at the beginning of the period and the amount of revaluation at the end of the period.

This method of charging the depreciation is extensively used for the assets like livestock, patterns etc.

(7) Renewal Method :

According to this method, the full cost of the asset is charged as depreciation during the period in which the asset is renewed. No depreciation is charged in between the period. This method of charging can be used if the asset is of small value and is renewed frequently.

Activity I :

As per your evaluation, which is the most appropriate method of depreciation that a business concern should follow? Why?

2.11 PRACTICAL CONSIDERATIONS RELATING TO DEPRECIATION

1. In spite of the fact that there are various methods available for calculating depreciation, the final choice of the method depends upon the individual organization. It should be noted that Income Tax Act, 1961, which is a very important piece of legislation applicable to all types of business organizations, recognizes only one method for calculating the depreciation i.e. Written Down Value method. The rates at which the depreciation is to be calculated is also specified in the Income Tax Act, 1961. If the organization wants to calculate the depreciation on some different basis or at some different rates, it can do so for financial accounting purposes. However, for calculating the tax liability, the depreciation has to be calculated on Written Down Value basis and that too at the specified rates.
2. The company form of organization to whom the provision of Companies Act, 1956 apply, are required to calculate the depreciation as per the provisions of Schedule XIV of the Companies Act, 1956. The salient features of Schedule XIV of the Companies Act, 1956 can be stated as below :
 - a. Schedule XIV of the Companies Act, 1956 provides that the company can calculate the depreciation by using either Written Down Value method or Straight Line method. The companies are given the choice to select between these two

methods. The actual choice of the method may depend upon the effect on the profitability of the company. If the company wants to change the method of calculating the depreciation, this amounts to a change in the accounting policy. Any change in the method of calculating the depreciation has to be effected with retrospective effect from the date of incorporation of the company. The company is required to disclose the fact of change in the method of calculating the depreciation while preparing its financial statements along with the effect of change in the method of calculating the depreciation.

- b. The rates at which the companies are required to calculate the depreciation are also specified in Schedule XIV. For this purpose, the fixed assets are classified in various categories. The broad categorization of the fixed assets is as below :

- Buildings - Factory buildings as well as administration buildings
- Plant and Machinery
- Furniture
- Vehicles
- Computer Installations

The rates for calculation of depreciation are as below -

Nature of the Fixed Assets	WDV	SLM
Buildings - Factory	10%	3.63%
Buildings - Administrative	5%	1.63%
Plant and Machinery	15%	4.75%
Furniture	10%	6.33%
Vehicles	20%	9.5%
Computer Installations	40%	16.21%

- c. If during the financial year, any addition has been made to any asset or any asset has been sold, the depreciation on such an asset will be calculated on a pro rata basis from the date of such addition or upto the date on which such an asset has been sold.

There are some of the questions which are normally raised in respect of the nature of depreciation.

(1) Is Depreciation a cost?

Yes, depreciation is a cost because of the obvious reasons—that it reduces the profitability and it is a charge against the profit. At the same time, it should also be noted that it is a non-cash cost as it is never paid or incurred in cash.

(2) Does Depreciation generate funds for replacement of assets?

If the depreciation is provided under the Sinking Fund Method or Endowment Policy Method, sufficient funds may be available, at the end of life of the asset, equivalent to the original cost of the asset. As such, it can be said that these two methods make available the funds equivalent to the original cost of the asset at the end of the life of the asset. However these funds may not be sufficient to replace the asset due to the increased price of the same. Other methods of charging the depreciation do not directly generate the funds required for replacing the assets. The fact that the assets are depreciated to the extent of almost the entire of the original cost of the same, does not indicate that the funds are available for the replacement purpose. However depreciation may be viewed from one more angle. It is a charge to profits which reduces the profits which can be distributed among the shareholders by way of dividends, thus conserving the business funds in the business itself. This may be considered to be a very indirect way of interpretation that the depreciation involves a source of funds.

Activity J :

Do you think that the company form of organisation has to comply with the Income Tax Act, 1961, in relation to depreciation?

2.12 SUMMARY

Accounting as a field of study in its developmental process, has evolved a theoretical framework consisting of principles over a period of time. These principles enjoy a wide measure of support of the accounting profession; that is why they are known as Generally Accepted Accounting Principles (GAAP).

This unit covers the process of recording the business transactions on the basis of Accounting Principles, classified in two categories, Accounting Concepts and Accounting Conventions. Accounting concepts indicates basic assumptions and accounting conventions indicate the customs and traditions to be followed by the accountants while preparing the Financial Statements. There are two systems of accounting followed in the process of maintaining the books of accounts, called Cash System of Accounting and Mercantile or Accrual System of Accounting. For the purpose of accounting, the amount paid as expenditure in the business is classified as, Capital Expenditure Revenue Expenditure, and Deferred Revenue Expenditure. This unit also includes the various terms used in Financial Accounting. The basic presumption made by the Double Entry System of Accounting is that every business transaction has two elements. If the Double Entry System of Accounting is followed, every business transaction affects two accounts. One account is debited, while another account is credited. While entering the various financial transactions in the records maintained by the organisation, the rules of personal, real and nominal accounts are followed.

For the purpose of correct valuation of assets, depreciation is charged on the cost of acquisition of assets and shown in the Financial Statements. Depreciation is a permanent, continuous and gradual reduction in the book value of fixed assets. Depreciation accounting is necessary so as not to show the assets at an overstated amount. There are various methods available for calculating the amount of depreciation to be charged to Profit and Loss account, based on Time, Usage, and provision of funds for replacing the assets. Finally, depreciation is charged for the purpose of tax liability.

2.13 KEY WORDS

Accounting Principles: Comprise accounting concepts and conventions. Concepts imply basic assumptions and Conventions indicate customs and traditions followed by accountants.

Depreciation: Is a permanent, continuous and gradual reduction in the book value of fixed asset.

Double Entry Bookkeeping System: Follows the principle of “every debit has a corresponding credit” and hence, total of all debits has to be equal to the total of all credits.

Methods of Depreciation: Various methods are available for calculating the amount of depreciation to be charged to Profit and Loss Account. Amount of Depreciation is a function of Time, Usage, and Cost of maintaining the fixed assets and Provision of funds for replacing the assets.

Systems of Accounting: Cash System of Accounting and Mercantile or Accrual System of Accounting.

Types of Expenditure: For the purpose of accounting, the amount of money that is paid in the business is classified as: **Capital Expenditure** which indicates the amount of funds paid for acquiring the infrastructure properties required for doing the business that are technically referred to as Fixed Assets. **Revenue Expenditure** indicates the amount of funds paid during a certain period with the intention to receive the return during the same period. **Deferred Revenue Expenditure**, indicates the amount of funds paid which does not result into the acquisition of any fixed asset Glossary of terms used in Financial Accounting:

Types of Accounts: Various accounts for the purpose of Financial Accounting gets classified into, Personal Accounts- are the accounts of persons with whom the organisation deals in various capacities, Real Accounts- are the accounts of assets and liabilities, Nominal Accounts-are the accounts of incomes or expenses.

2.14 SELF-ASSESSMENT QUESTIONS

- Q1. What are the various accounting principles? Explain the various accounting concepts and conventions used in financial accounting.
- Q2. Distinguish between the following pairs of terms :
 - Cash Basis of Accounting and Accrual Basis of Accounting
 - Revenue Expenditure and Capital Expenditure
 - Written Down Value Method and Straight Line Method of Depreciation
 - Depreciation as per Companies Act and Income Tax Act
- Q3. What do you mean by depreciation? What are the objectives for calculating it? Explain the various methods for calculating depreciation.
- Q4. Write an essay on “Depreciation”.
- Q5. Answer whether True or False:
 - a) Convention of Materiality proposes that only those transactions will be considered which have a material impact on profitability or the financial status of the organisation.

3.1 INTRODUCTION

This unit explains the accounting treatment followed as a process of recording the past financial business transactions with the help of Journal, Ledger, and preparation of Financial Statements showing the various calculations to present the net results of the business. The objective of preparing the books like Journal, Ledger is to communicate the net results to various parties dealing with the business.

3.2 JOURNALIZING

Journalizing refers to the process of recording the business transaction in the Journal that is referred to as the Book of Original Entry or the Book of Prime Entry. The various transactions are entered in the journal in the chronological order, as and when the transactions take place.

The Journal may look as stated below :

Journal

Date	Particulars	L.F.	Debit – Rs.	Credit – Rs.
a	b	c	d	e
	Account (To be Debited) – Dr. To, Account (To be Credited) Narration			

The Journal may be subdivided in the following five columns :

- Date** – It refers to the date on which a particular transaction has taken place.
- Particulars** – It refers to titles of the account to be debited or credited. Title of the account to be debited starts from the extreme left and the abbreviation “Dr.” is written to the extreme right of the same column on the same line. Title of the account to be credited is entered on the next line preceded by the words “To” leaving some space from the extreme left. In the same column on the next line, brief description of the transaction is written which is referred to as “Narration”. The narration conventionally starts with the wording “Being”.
- L.F.** – This is the abbreviation of Ledger Folio. This column refers to the page number of the ledger. The nature of Ledger is discussed in the following paragraphs.
- Amount Debited** – The amount to be debited is stated in this column.
- Amount Credited** – The amount to be credited is stated in this column.

Illustration

Journalize the following transactions in the books of Mr. Amit Sen –

- a. Mr. Sen commenced business with cash Rs. 10,000, Machinery Rs. 10,000, Buildings Rs. 30,000 and Furniture Rs. 15,000.
- b. Installed and paid for Neon Sign Board at a cost of Rs. 1,000
- c. Mr. Sen borrowed Rs. 25,000 from his wife and the same were deposited by him in bank to open an account.
- d. Mr. Sen purchased goods for Rs. 7,000 for cash.
- e. Mr. Sen purchased goods worth Rs. 10,000 from Mr. Rao on cash @2% Cash Discount.
- f. Sold goods to Ramdas worth Rs. 15,000 against cash after allowing 5% Trade Discount.
- g. Paid Rs. 1,995 to Mr. Rajesh for purchases of goods after allowing 5% Cash Discount on the invoice.
- h. Sent a cheque of Rs. 1,000 to Chief Minister's Fund as Mr. Sen's personal contribution.
- i. Placed an order for goods worth Rs. 2,000 with M/s Archana Traders.
- j. A personal table fan worth Rs. 450 brought in the office for office use.

Solution**In the Books of Mr. Amit Sen**

Date	Particulars	L.F.	Debit – Rs.	Credit – Rs.
	Cash A/c Machinery A/c Building A/c Furniture A/c To, Capital A/c (Business started with cash, machinery, building and furniture)	Dr. Dr. Dr. Dr. Dr.	10,000 10,000 30,000 15,000 65,000	
	Advertisement A/c To, Cash A/c (Being paid for neon sign board installed)	Dr.	1,000	1,000

Date	Particulars	L.F.	Debit - Rs.	Credit - Rs.
	Bank A/c To, Loan from Mrs. Sen A/c (Being the amount borrowed from Mrs. Sen to open account with the bank)	Dr.	25,000	25,000
	Purchases A/c To, Cash A/c (Being paid for cash purchases)	Dr.	7,000	7,000
	Purchases A/c To, Cash A/c To, Discount Received (Being purchases worth Rs. 10,000 after getting 2% cash discount)	Dr.	10,000	9,800 200
	Cash A/c To, Sales (Sold goods worth Rs. 15,000 after allowing trade discount of 5%)	Dr.	14,250	14,250
	Purchases A/c To, Cash A/c To, Discount Received (Paid Rs. 1,995 for goods purchased after getting 5% cash discount)	Dr.	2,100	1,995 105
	Drawings A/c To, Bank A/c (Being donation paid to Chief Minister's Fund as Mr. Sen's personal contribution)	Dr.	1,000	1,000
	No Journal Entry will be passed, as the transaction is not a financial transaction.			
	Furniture A/c To, Capital A/c (Being the personal table fan brought for office use)	Dr.	450	450

Activity A:

What are your experiences while journalizing? What is the role played by the rules of accounting while journalizing transactions?

3.3 COMPOUND JOURNAL ENTRY

If similar transactions take place on the same day and the same account is either debited or credited, instead of passing different journal entries, it can be accounted for by passing a compound journal entry. It avoids duplication and makes the journal less bulky.

Illustration

Mr. A commenced the business with cash Rs. 10,000, Machinery worth Rs. 25,000 and the Computer worth Rs. 50,000. The transaction will be journalized as below –

Date	Particulars	L.F.	Debit – Rs.	Credit – Rs.
1.4.2002	Cash A/c	Dr.	10,000	
	Machinery A/c	Dr.	25,000	
	Computer A/c	Dr.	50,000	
	To, Capital A/c (Commenced business with cash, machinery and computer)			85,000

3.4 SUBSIDIARY BOOKS

If the volume of transactions is very large, recording all the transactions in the Journal may prove to be a voluminous job. Hence, the transactions of the similar nature may be entered into a separate Subsidiary Book and the net effect of the similar transactions may be transferred into the main records.

In the practical circumstances, following subsidiary books are used very frequently :

- a. **Cash Book** – This records all the cash transactions i.e., Cash Receipts and Cash Payments. In some cases, Cash and Bank Book may be maintained which records Cash as well Bank Receipts and Cash as well as Bank Payments.

The Cash and Bank Book may look as below –

Date	Particulars	L.F.	Cash	Bank	Date	Particulars	L.F.	Cash	Bank
------	-------------	------	------	------	------	-------------	------	------	------

- b. **Purchases Register or Purchases Day Book** – This records all the credit purchases transactions.

Date	Name of the Supplier	L.F.	Invoice No.	Amount
------	----------------------	------	-------------	--------

Note : “L.F.” stands for Ledger Folio Number which indicates the Page Number in the Creditors’ Ledger as the Control Ledger. The term Control Ledger is discussed in the following paragraphs.

- c. **Sales Register or Sales Day Book** – This records all the credit sales transactions.

The Sales Register may look as stated below –

Date	Name of the Customer	L.F.	Invoice No.	Amount
------	----------------------	------	-------------	--------

Note : “L.F.” stands for Ledger Folio Number which indicates the Page Number in the Debtors’ Ledger as the Control Ledger. The term Control Ledger is discussed in the following paragraphs.

- d. **Purchases Returns Register** – This records the transactions of return of goods to the suppliers from whom purchases were made on credit basis.

The Purchases Return Register may look as stated below –

Date	Name of the Supplier	L.F.	Debit Note No.	Amount
------	----------------------	------	----------------	--------

Note : “L.F.” stands for Ledger Folio Number which indicates the Page Number in the Creditors’ Ledger as the Control Ledger. The term Control Ledger is discussed in the following paragraphs. The Debit Note stands for an intimation sent to the supplier at the time of returning the goods which informs the supplier that his account is being debited on account of goods returned to him.

- e. **Sales Returns Register** – This records all the transactions of return of goods by the customers to whom sales were made on credit basis.

The Sales Return Register may look as stated below –

Date	Name of the Customer	L.F.	Credit Note No.	Amount
------	----------------------	------	-----------------	--------

Note: “L.F.” stands for Ledger Folio Number, which indicates the Page Number in the Debtors’ Ledger as the Control Ledger. The term Control Ledger is discussed in the following paragraphs. The Credit Note stands for an intimation sent to the customer at the time of accepting the returned goods, which informs the customer that his account is being credited on account of goods returned by him.

- f. **Journal Proper** – This records all the residual transaction, which cannot be entered into any other subsidiary book.

The transactions, which can be entered in the Journal proper, are –

- Opening Entries
- Closing Entries
- Rectification Entries
- Adjustment Entries

Activity B :

Have you ever been through subsidiary books of any of concern? List any four of these separately and try to differentiate between the transactions which have to be entered in each of them.

3.5 LEDGER POSTINGS

If the Journal or Subsidiary Books are the books which record the transactions in the chronological order, the Ledger is the book where transactions of a similar nature are

pooled together under one Ledger Account. Ledger or General Ledger as it is referred to in practical circumstances, maintains all types of accounts i.e. personal, real and nominal. Whichever transactions are recorded in the Journal or Subsidiary Books in chronological order, the same transactions are posted account-wise in the Ledger. Thus, a ledger account can be defined as the record of all the transactions pertaining to a person, asset, liability, income or expenditure which have taken place during a specified period and shows the net effect of all these transactions at the end. As such, the transactions are first entered into the Journal or Subsidiary Book when they take place and from there they are transferred to Ledger and this process is called as Ledger Posting.

The Ledger Account may be maintained in two ways –

Type I

Dr. Cr.

Date	Particulars	Folio	Rs.	Date	Particulars	Folio	Rs.

Type II

Date	Particulars	Folio	Debit	Credit Rs.	Balance Rs.

3.6 CONTROL LEDGERS

In practical circumstances, if the transactions of purchases and sales are very large, it may not be feasible to carry the accounts of all the suppliers and customers in the Main or General Ledger. In such cases, apart from the Main Ledger or General Ledger, the Control Ledgers can be maintained. Control Ledgers carry the individual accounts whereas the Main Ledger or General Ledger records the consolidated effect of the individual transactions. As such, the balance shown by the consolidated account in the Main Ledger or General Ledger has to tally with the balances in the individual ledger accounts maintained in the control ledger. In practical circumstances, control ledgers may be maintained for the following purposes –

- Sundry Debtors
- Sundry Creditors
- Advances to Staff

3.7 BALANCING OF LEDGER ACCOUNTS

To ascertain the net effect of all the transactions recorded in the Ledger Account, the account is required to be “balanced”. Balancing of Ledger Account involves the following steps :

- a. Take the total of both sides of the Ledger Account.
- b. Calculate the difference between totals of both the sides.
- c. If the total of debit side is heavier, place the difference on the amount column of credit side by writing “By Balance c/fd”. If the total of credit side is heavier, place the difference on the amount column of debit side by writing the “To Balance c/fd”. If the balance appears on the credit side, the account will be considered to have Debit Balance. If the balance appears on the debit side, the account will be considered to have Credit Balance.
- d. After balance is placed on the appropriate side, ensure that totals of both the sides match with each other.

Illustration

Machinery Account

Date	Particulars	Folio	Rs.	Date	Particulars	Folio	Rs.
01.04.01	Balance b/fd		25,000	31.03.02	Depreciation		10,000
10.04.01	Bank		70,000	31.03.02	Balance c/fd (Balancing figure)		85,000
			95,000				95,000

Steps explained –

- a. Before considering the Balancing Figure, the total of debit side is Rs. 95,000 and the total of credit side is Rs. 10,000. As such, the debit side is heavy.
- b. Difference between both the sides is Rs. 85,000.
- c. As the debit side is heavy, the difference of Rs. 85,000 is put on the credit side.

Activity C :

Now, with the help of your imaginary figures, you will be able to balance an account based on the above information.

3.8 TRIAL BALANCE

Trial Balance is the summary of all the balances in all the accounts listed in the General Ledger and Cash / Bank Book of an organization at any given date. Tallying of the Trial Balance is the evidence of the fact that all the transactions have been properly posted in the General Ledger. As such, tallying of Trial Balance generally ensures the arithmetical accuracy of the process of Ledger Positing.

Format of Trial Balance

Trial Balance as on 31st March 2002

Name of the Account	Debit	Credit

For the preparation of Trial Balance, all the accounts in the General Ledger need to be balanced to ascertain the closing balance. Similarly, the cash book / bank book is also required to be balanced to ascertain the closing balance. Accounts having the debit balance are shown on the debit side whereas the accounts having credit balance are shown on the credit side. Generally, accounts of the assets will have debit balance and hence will be shown on the debit side. Generally, accounts of all liabilities will have a credit balance and hence will be shown on the credit side. Generally, accounts of all the expenses will have a debit balance and hence will be shown on the debit side. Generally, accounts of all the incomes will have credit balance and hence will be shown on credit side.

Activity D :

Trial Balance is the basis for the preparation of final accounts. Is this true? How?

3.9 PREPARATION OF FINAL ACCOUNTS FROM TRIAL BALANCE

Preparation of financial statements is the basic objective of financial accounting. These financial statements are basically in two forms –

- a. **Profitability Statement** – This financial statement is referred to as “Profit and Loss Account” in more technical language. The purpose of this financial statement is to disclose the result of operations of the business transactions during a given period of time. As such, by nature, profit & loss account is a period statement which relates to a specific duration of time. Hence, profit and loss account is always referred to as “Profit and Loss Account for the year ended on 31st March 2002.”
- b. **Balance Sheet** – The purpose of this financial statement is to disclose the financial status of the organization in terms of its assets and liabilities at any given point of time. Thus, in simple language, Balance Sheet is a listing of the assets and liabilities of an organization at any given point of time. Whichever sources are used by an organization for raising the required amount of funds, create an obligation or liability for the organization and whichever ways the funds are used or applied by an organization create the properties or assets for the organization. Hence, in practical circumstances, the liabilities are referred to as “Sources of Funds” and the assets are referred to as “Application of Funds”. As such, by nature, the Balance Sheet is a positive statement in the sense that it relates to a specific point of time or date. Hence, the Balance Sheet is always referred to as “Balance Sheet as on 31st March 2002.”

Profit and Loss Account

As stated earlier, Profit and Loss Account is prepared to disclose the result of operation of the business transactions during certain duration of time. In technical language, profit and loss account may have the following four components –

- a. **Manufacturing Account** – This part of Profit and Loss Account discloses the result of manufacturing operations carried out by the organization. The final result disclosed by the Manufacturing Account is the Cost of Production incurred by the organization. Following is the specimen of Manufacturing Account.

Manufacturing Account for the year ended on 31st March 2002

Particulars	Amount	Particulars	Amount
Opening Stock		Closing Stock	
Raw Material		Raw Material	
Work in Progress		Work in Progress	
Purchases of Raw Material		Cost of Production	
Carriage Inward		(Transferred to Trading Account)	
Wages Paid			
Power and Fuel			
Consumable Stores			
Manufacturing Expenses			
Depreciation on Production Assets			
Total		Total	

- b. **Trading Account** – This part of Profit and Loss Account discloses the result of trading operations carried out by the organization. The final result disclosed by the Trading Account is the Gross Profit earned by the organization. Following is the specimen of Trading Account.

Trading Account for the year ended on 31st March 2002

Particulars	Amount	Particulars	Amount
Opening Stock		Sales (Net of Sales Returns)	
Finished Goods			
		Closing Stock	
Cost of Production		Finished Goods	
(Brought from Manufacturing A/c)			
Gross Profit			
Total		Total	

- c. **Profit and Loss Account** – This part of Profit and Loss Account discloses the final result of business transactions of the organization. The final result disclosed by the Profit and Loss Account is the Profit After Tax (PAT) earned by the organization. Following is the specimen of Profit and Loss Account.

Profit & Loss Account for the year ended on 31st March 2002

Particulars	Amount	Particulars	Amount
Administrative Expenses		Gross Profit b/fd	
Office Salaries			
Postage & Telephone		Other Income	
Traveling & Conveyance		Discount Received	
Legal Charges		Commission Received	
Office Rent			
Depreciation		Non-Trading Income	
Audit Fees		Interest Received	
Insurance		Rent Received	
Repairs & Renewals			
		Abnormal Income	
Selling & Distribution Expenses		Profit on the sale of assets	
Advertisement			
Carriage Outward			
Free Samples			
Bad Debts			
Sales Commission			

Particulars	Amount	Particulars	Amount
Financial Expenses			
Interest & Bank Charges			
Other Expenses			
Loss on the sale of assets			
Salary to Working Partners			
Interest on Capital			
Provision for Taxation			
Net Profit after Taxes			
(Transferred to Capital Account)			
Total			Total

d. Profit and Loss Appropriation Account – This part of Profit and Loss Account, which is mainly applicable to company form of organization, discloses the manner in which the PAT earned by the organization is appropriated. The amount of profit not appropriated or retained is transferred to Reserves and Surplus in the Balance Sheet. Following is the specimen of Profit and Loss Appropriation Account.

Profit & Loss Appropriation Account for the year ended on 31st March 2002

Particulars	Amount	Particulars	Amount
Dividend Paid		Profit After Tax b/fd	
Transferred to Reserves		Amount withdrawn from Reserves	
Balance transferred to Balance Sheet			
Total			Total

Balance Sheet

As stated earlier, the purpose of preparing the Balance Sheet is to disclose the financial status of the organization in terms of its assets and liabilities at any given point of time. As such, the Balance Sheet has two sides –

- A. Liabilities
- B. Assets

A. Liabilities :

Credit balances in all the Personal and Real Accounts appear on Liabilities side. Following items may appear on the liabilities side –

a. Capital

Capital indicates the amount of funds contributed by the owners of the business to the requirement of funds of the business. As owner of the business is considered to be a separate entity than the business itself, any amount contributed by the owner is a liability for the business. Similarly, any amount of profit earned in the past which is not distributed to the owner also belongs to the owner and becomes a part of the capital.

b. Long Term Liabilities

This indicates the liabilities, which are to be paid off over a longer span of time, say, 5 to 10 years. In practical circumstances, it may consist of long-term loan borrowed from banks or financial institutions.

c. Current Liabilities

This indicates the liabilities which are supposed to be paid off within a very short span of time, say, one year. In practical circumstances, it may consist of the flowing items –

1. Sundry Creditors – Amounts payable to the suppliers of goods and/or services.
2. Advances received from customers – This amount may not be paid back to the customers. It gets adjusted with the final selling price. Till it is adjusted with the selling price, it appears as a current liability.
3. Outstanding Expenses – This amount indicates the expenses already incurred during the relevant period but not paid for.
4. Income Received in Advance
5. Liability for taxes

B. Assets :

Debit balances in all the Personal and Real Accounts appear on the Asset side. Following items may appear on the assets side –

a. Fixed Assets

As stated earlier, fixed assets indicate the value of infrastructural properties

acquired by the business where the benefits are likely to be received over a longer duration of time. Fixed assets are the assets which are not supposed to be sold, but they are supposed to be used to do the business to earn profits. Some of the fixed assets which can be found in practical circumstances are Land, Building, Machinery, Furniture, Vehicles, Computers etc.

b. Investments

This indicates the amount of funds invested by the organization outside the business.

c. Current Assets

Current Assets are the assets which are likely to be converted in the form of cash or likely to be consumed during the normal operating cycle of the business within a very short span of time, say, one year. The purpose of holding the current assets is to sell the current assets or use them during the normal course of operations. Current assets change their form very frequently while doing the business. Some of the current assets which can be found in practical circumstances are Stock, Sundry Debtors, Cash & Bank Balances, Prepaid Expenses etc.

Following is the specimen of Balance Sheet.

Balance Sheet as on 31st March 2002

Capital & Liabilities	Amount	Assets & Properties	Amount
Capital		Fixed Assets	
		Land	
Long Term Liabilities		Building	
Loan from Bank		Machinery	
		Furniture	
Current Liabilities		Vehicles	
Sundry Creditors		Computers	
Advance from Customers			
Outstanding Expenses		Investments	
Income Received in Advance			
		Current Assets	
		Stock	
		Sundry Debtors	
		Cash Balance	
		Bank Balance	
		Prepaid Expenses	
Total			Total

3.10 ADJUSTMENTS

While preparing the final accounts from the Trial Balance, it should be remembered that the Trial Balance might not reflect all the transactions which have an impact on profitability for the relevant period or the state of affairs of the organization on a particular date. As such, before preparing the final accounts, the effect of such transactions needs to be considered. The same is done by passing the Adjustment Entries. Thus, the effect of Adjustment Entries is yet to be reflected in the Trial Balance. As such, according to the Double Entry principles, the Adjustment Entries always have two effects. Following are some of the main adjustment entries made while preparing the final accounts from the Trial Balance.

a. Closing Stock

This indicates the amount of stock in hand on the date of Balance Sheet. The basic principle on which the closing stock is valued is at cost or market price whichever is less. Accordingly, the first effect of the closing stock is that it is shown on the credit side of Manufacturing and/or Trading Account and the second effect is that it is shown on Balance Sheet Asset side. The Journal Entry passed for this is –

Closing Stock A/c Dr.

To, Trading Account

b. Depreciation

This indicates the reduction in the value of fixed assets due to wear and tear. As the basic cost of the fixed assets is not transferred to the profit and loss account, this adjustment is necessary to reflect the cost for the use of fixed asset during the year. Accordingly, the first effect of the adjustment for depreciation is that the amount is debited to profit and loss account, reducing the profit or increasing the loss and the second effect is that the corresponding amount is reduced from the value of fixed asset in the balance sheet. In other words, the value of fixed assets in the Balance Sheet is the net of depreciation. The Journal Entry passed for this is –

Depreciation A/c Dr.

To, Fixed Asset A/c

c. Outstanding Expenses

This indicates the amount of expenses pertaining to the relevant period which are not paid during the said period. According to the Matching Principle of Accounting, income

for a certain period needs to be compared with the expenses for the same period, whether it is paid for or not. Accordingly, the first effect of this adjustment is that the corresponding amount of expenses are increased reducing the profit or increasing the loss and the second effect is that the corresponding amount is shown as Current Liability on the Balance Sheet liabilities side. The Journal Entry passed for this is –

Expenses A/c Dr.

To, Outstanding Expenses A/c

d. Prepaid Expenses

This indicates the amount of expenses pertaining to the next period which are paid in advance during the relevant period. According to the Matching Principle of Accounting, income for a certain period needs to be compared with the expenses for the same period. Accordingly, the first effect of this adjustment is that the corresponding amount of expenses are reduced, thus increasing the profit or reducing the loss. The second effect is that the corresponding amount is shown as current asset on the asset side of the balance sheet. The Journal Entry passed for this is –

Prepaid Expenses A/c Dr.

To, Expenses A/c

e. Accrued Income

This indicates the amount of income for the current period which is not received during it. According to the Matching Principle of Accounting, income for a certain period needs to be compared with the expenses for the same period. Accordingly, the first effect of this adjustment is that the corresponding amount of income is increased, thus increasing the profit or reducing the loss and the second effect is that the corresponding amount is shown as Current Asset on the Balance Sheet Asset side. The Journal Entry passed for this is –

Accrued Income A/c Dr.

To, Income A/c

f. Income Received in Advance

This indicates the amount of income for the next period which is received during the current period. According to the matching principle of accounting, the income for a certain period needs to be compared with the expenses for the same period.

Accordingly, the first effect of this adjustment is that the corresponding amount of income is reduced, thus reducing the profit or increasing the loss and the second effect is that the corresponding amount is shown as Current Liability on the Balance Sheet Liabilities side. The Journal Entry passed for this is –

Income A/c Dr.

To, Income received in advance A/c

g. Bad Debts

This indicates the unrecoverable amount from the customers on account of credit sales made to them. If the customer is not likely to pay the amount due from him, the same is written off as Bad Debts. Accordingly, the first effect of this adjustment is that the amount of bad debts is debited to the profit and loss account, thus reducing the profits or increasing the losses and the second effect is that the amount of Sundry Debtors is reduced. The Journal Entry passed for this is –

Bad Debts A/c Dr.

To, Sundry Debtors

h. Provision for Doubtful Debts

Provision for doubtful debts is necessary due to the possibility that all the customers to whom the credit sales have been made may not pay the entire amount. Accordingly, the first effect of this adjustment is that the amount equivalent to the provision for doubtful debts is written off to profit and loss Account and the second effect is that the corresponding amount is reduced from the Sundry Debtors in the balance sheet. It should be noted that if the provision for bad and doubtful debts is to be maintained at a certain percentage of Sundry Debtors and if the provision to some extent has already been made in the books of account, the differential amount only needs to be debited to profit and loss account. The Journal Entry passed for this is –

Provision for Doubtful Debts A/c Dr.

To, Sundry Debtors A/c

i. Provision for Discount on Debtors

In some cases, it is necessary to allow a cash discount to the customers for making an early payment. As the amount of debtors who are likely to avail of the cash discount is not known in advance, a provision is made in the books of accounts for the discount

to be allowed to debtors. Accordingly, the first effect of this adjustment is that the amount equivalent to the provision for discount on debtors is written off to Profit and Loss Account and the second effect is that the corresponding amount is reduced from the Sundry Debtors in the Balance Sheet. The Journal Entry passed for this is –

Provision for Discount for Debtors A/c Dr.

To, Sundry Debtors A/c

j. Interest on Capital

In order to calculate the profit earned by the organization properly, in some cases interest may be provided on the amount of capital introduced by the proprietor or partner in the business. It may not be out of place to mention here that in the case of partnership firms, interest on capital is considered to be an allowable expenditure for calculating the tax liability as per the provisions of Income tax Act, 1961 if it is payable to the Working Partners at the rate which is not exceeding 12% p.a. Accordingly, the first effect of this adjustment is that the amount of Interest on Capital is debited to Profit and Loss Account, thus reducing the profits or increasing the losses and the second effect is that the corresponding amount is credited to the Capital Account of proprietor or partner. The Journal Entry passed for this is –

Interest on Capital A/c Dr.

To, Capital A/c

k. Drawings

This represents the amount of cash or value of goods withdrawn by the proprietor or partner for personal use. If the amount is withdrawn in cash, the same may be entered in the books of accounts regularly and thus will be reflected in the trial balance. However, the value of goods withdrawn by the proprietor or partner may be required to be considered by way of adjustment. Accordingly, the first effect of this adjustment is that the amount of sales will be increased, thus increasing the profits or reducing the loss and the second effect is that the corresponding amount will be debited to the capital account of the proprietor or partner. The Journal Entry passed for this is –

Drawing / Capital A/c Dr.

To, Sales A/c

L Deferred Revenue Expenditure Written Off

This represents that part of Deferred Revenue Expenditure, returns equivalent to which are received during the current period. Accordingly, the first effect of this adjustment is that the deferred revenue expenditure written off will be debited to Profit and Loss Account, thus reducing the profit or increasing the loss and the second effect is that the corresponding amount will be reduced from the Asset side of the Balance Sheet. The Journal Entry passed for this is –

Deferred Revenue Expenditure Written Off A/c Dr.

To, Deferred Revenue Expenditure A/c

It should be noted that Deferred Revenue Expenditure Written Off Account is a Nominal Account whereas Deferred Revenue Expenditure Account is a Real Account.

m. Abnormal Loss due to fire etc.

In some cases, the organization incurs the loss of stock due to some abnormal events like fire, earthquake etc. Accordingly, the first effect of this adjustment is that the Trading Account is credited with the cost of goods lost due to fire, earthquake etc. and the corresponding amount is debited to Profit and Loss Account as Loss due to Fire Account. The Journal Entry passed for this is –

Loss due to Fire Account Dr.

To, Stock Destroyed Account

In some cases, the stock held by the organization is insured with the Insurance Company. After the abnormal event like fire or earthquake takes places, the insurance company settles the claim, either in full or in part. The actual loss incurred by the organization is to the extent of difference between the cost of goods destroyed and the amount of claim settled by the insurance company. In such event, the amount of claim settled by the insurance company is debited to the Insurance Company's Account and only the net amount of loss is debited to Profit and Loss Account. The Journal Entry passed for this is –

Insurance Company A/c Dr.

Loss due to Fire A/c Dr.

To, Stock Destroyed A/c

n. Goods Distributed as Free Samples

This represents the value of goods distributed as free samples as a part of the sales promotion effort of the organization. This is in the form of advertisement. Accordingly, the first effect of this adjustment is that the amount of goods distributed as free samples is debited to Profit and Loss Account, thus reducing the profits or increasing the losses and the second effect is that the amount of Sales is increased thus increasing the profit or reducing the loss. The Journal Entry passed for this is –

Advertisement A/c Dr.

To, Sales A/c

o. Goods sent on approval basis

Goods sent to the customers on approval basis should not be treated as the sales till the goods are finally approved by the customers or the period as agreed upon by both the parties is over. This is due to the fact that the property in the goods is not transferred until the said period is over. If the amount of such goods sent on approval basis is treated as the sales, the effect of this entry needs to be reversed. At the same time, the closing stock needs to be increased by the cost of such goods sent on approval basis.

p. Commission payable to the manager

In some cases, commission is payable to the manager as a percentage of profit earned by the business. The calculation of this commission may be made in two ways –

- As a percentage of profit before charging such commission to Profit and Loss Account.
- As a percentage of profit after charging such commission to Profit and Loss Account.

In both cases, the amount of profit needs to be calculated before the commission, and then the amount of commission is calculated based upon the methods to be used for calculating the same. The journal Entry passed for this is –

Commission A/c Dr.

To, Commission Payable A/c

Activity E :

While preparing the final accounts, why do we need to make adjustments in the books of accounts at the end of a financial accounting year?

3.11 SUMMARY

This unit discusses the various books maintained by a business. Journalizing refers to the process of recording the business transaction in the journal that is referred to as the Book of Original Entry or the Book of Prime Entry. The various transactions are entered in the journal in chronological order, as and when the transactions take place. Subsidiary books are the additional books, which assist the business entries made in the journal. Among these, the Cash Book is considered as both, journal and ledger together. The ledger accounts and classifies the various business transactions with the help of the control ledgers to facilitate the business and the people dealing with it. Trial Balance is a statement prepared in order to know the arithmetical accuracy of the books maintained through which errors can be detected and rectified. With the help of trial balance financial statements consisting of the income statement, the balance sheet is prepared. These financial statements depict the status of assets and liabilities, affecting the financial soundness of the business.

3.12 KEY WORDS

Adjustments: While preparing the final accounts from the Trial Balance, it should be remembered that the Trial Balance might not reflect all the transactions, which have the impact on profitability for the relevant period or the state of affairs of the organization on a particular date. As such, before preparing the final accounts, the effect of such transactions needs to be considered. Passing the Adjustment Entries does the same. Thus, the effect of Adjustment Entries is yet to be reflected in the Trial Balance. As such, according to the Double Entry principles, the Adjustment Entries always have two effects.

Financial Statements: Consist of Profit and Loss Account and Balance Sheet. Profit and Loss Account discloses the final result of business transactions of the organization. The final result disclosed by the Profit and Loss Account is the Profit After Tax (PAT) earned by the organization. Balance sheet shows the assets owned and liabilities incurred by a business. The purpose of preparing the Balance Sheet is to disclose the financial status of the organization in terms of its assets and liabilities at any given point of time.

Journalizing: Refers to the process of recording the business transactions in the Journal that is referred to as the Book of Original Entry or the Book of Prime Entry.

Subsidiary Books: Are the additional books which assist the Journal. The books are, Cash Book, Purchases Day Book, Sales Day Book, Purchases Returns Book, Sales Returns Book, Bills Receivable Book, Bills Payable Book and Journal Proper.

Trial Balance: Is the summary of all the balances in all the accounts listed in the General Ledger and Cash / Bank Book of an organization at any given date. Tallying of the Trial Balance is the evidence of the fact that all the transactions have been properly posted in the General Ledger. As such, tallying of Trial Balance generally ensures the arithmetical accuracy of the process of Ledger Posting.

4.1 INTRODUCTION

The Institute of Cost and Management Accountants, London, has defined Cost Accountancy as “the application of Costing and Cost Accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability as well as the presentation of information for the purpose of managerial decision making.” The analysis of the above definition reveals the following facts:

- (1) Cost Accountancy is a science, art and practice of a Cost Accountant. Science indicates the possession and the application of relevant systematic knowledge. Art indicates the skill and ability of the cost accountant. Practice indicates a continuous effort on the part of the cost accountant.
- (2) The terms costing and cost accounting should not be confused with each other. Costing indicates the process of ascertaining the costs, which can also be done arithmetically. Cost accounting indicates the process of recording the costs in a formal and systematic manner, with the intention of preparing statistical data therefrom to ascertain the cost.
- (3) The objects of Cost Accountancy can be threefold.
 - (a) Ascertainment of cost and profitability with the help of various principles, methods and techniques.
 - (b) Cost control – This indicates the process of controlling the costs of operating the business. This process, in turn, involves the following stages. To plan the operations (which can be done by the establishment of budgets and standards), execute the plans, measuring the actual performance, comparison of planned and actual performance, computing the variations between planned and actual performance and taking the decisions to maintain favorable variations or to remove unfavourable variations.
 - (c) Presentation of information to enable managerial decision making. Unless and until the results of any study or action are presented correctly to the person who takes the decision in respect of the same, the study has no meaning.

4.2 CONCEPT OF COST CENTER

Cost Center is defined as a location, person, or item of equipment (or a group of these) in or connected with an undertaking, in relation to which costs may be ascertained and used for the purpose of cost control. Correct identification of a cost center is a pre-requisite for

the successful implementation of the cost accounting process as the costs are ascertained and controlled with respect to the cost centers. Similarly, correct identification of cost center facilitates the fixation of responsibility in a correct manner. For example, a person in charge of a cost center may be held responsible for the proper functioning and cost control in relation to that cost center. As cost centers facilitate this control function, in many cases, they are termed as ‘Responsibility Centers’. There may not be any fixed principle for deciding the number and size of cost centers. It depends upon the nature and size of the organisation, the expenditure involved, requirements of management from the cost control point of view and so on. However, the following pattern of classification may be followed to decide the type of the cost centers.

(1) Impersonal and Personal Cost Centers :

An impersonal cost center consists of location or item of equipment (or group of these). For example, a region of sales, a branch, a department, a grinding machine and so on. A personal cost center consists of a person or a group of persons. For example, finance manager, sales manager, works manager and so on.

(2) Production and Service Cost Centers :

A production cost center is the one where the production activity is carried on. For example, a machine shop, a paint shop, an assembly shop, and so on.

A service cost center is the one which assists the production activity. For example, the store department, the internal transport department, the labour office, the maintenance department, the accounts/costing department, and so on.

4.3 DIFFERENT TYPES OF COST

The term ‘cost’ indicates the amount of expenditure (actual or notional) incurred on or attributable to, a given thing.

The term cost can be viewed from various angles.

(1) Direct and Indirect Cost :

Direct Cost indicates that cost which can be identified with the individual cost center. It consists of direct material cost, direct labour cost and direct expenses. It is also termed as Prime Cost.

Indirect Cost indicates that cost which cannot be identified with the individual cost center. It consists of indirect material cost, indirect labour cost and indirect expenses. It is also termed as overheads. As it is not possible to identify these costs with individual cost centers, such identification is done in the indirect way by following the process of allocation, apportionment and absorption. (It is discussed in detail in the following units).

(2) Fixed, Variable and Semi-Variable/Semi-Fixed Cost :

Fixed cost indicates that portion of total cost which remains constant at all the levels of production, irrespective of any change in the later. As the volume of production increases, per unit fixed cost may reduce, but not the total fixed cost.

Variable cost indicates that portion of the total cost which varies directly with the level of production. The higher the volume of production, the higher the variable cost and vice versa, though per unit variable cost remains constant at all the levels of production.

Semi-variable or semi-fixed cost indicates that portion of the total cost which is partly fixed and partly variable in relation to the volume of production.

(3) Controllable Cost and Uncontrollable Cost :

Controllable cost indicates that cost which can be controlled by a specific number of person(s) in the organisation. For example, a person in charge of a responsibility center may be in the position to control the costs in relation to that responsibility center.

Uncontrollable cost indicates that cost which cannot be controlled by a specific number of person(s) in the organisation. For example, the costs relating to one responsibility center cannot be controlled by a person who is in-charge of another responsibility center.

It should be noted here that a clear-cut distinction between controllable and uncontrollable costs may not be possible. The cost which is controllable for one person may not be controllable by another one. In fact, no cost is completely uncontrollable. The degree of controllability varies in relation to a particular individual and a level of management. In a very broad sense, it can be said that the variable costs are controllable at the lower level of management while fixed costs are controllable at the top level of management.

(4) Normal Cost and Abnormal Cost :

Normal Cost indicates that cost which is normally incurred at a certain level of output under normal circumstances.

Abnormal cost indicates that cost which is normally not incurred at a certain level of output under normal circumstances.

Activity A :

Mention the various costs and try to relate any two different costs to each other.

4.4 SUMMARY

Cost Accountancy is the application of Costing and Cost Accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability as well as the presentation of information for the purpose of managerial decision-making. Costing indicates the process of ascertaining the costs, which can also be done arithmetically. Cost accounting indicates the process of recording the costs in a formal and systematic manner with the intention of preparing statistical data there from to ascertain the cost. The objects of Cost Accountancy are to ascertain the cost and profitability with the help of various principles, methods and techniques. Cost control indicates the process of controlling the costs of operating the business. Cost Center is defined as a location, person, or item of equipment (or a group of these) in or connected with an undertaking, in relation to which costs may be ascertained and used for the purpose of cost control. There are different types of costs like direct and indirect costs, fixed and variable costs, nominal and abnormal costs, etc., and special costs like opportunity cost, differential cost, sunk cost, which are helpful in decision making. It's equally important to decide installing a costing system in an organisation depending on the nature of product, nature of the organisation and manufacturing process.

4.5 KEY WORDS

Cost Accountancy: Is the science, art and practice of a cost accountant. Science indicates the possession and the application of relevant systematic knowledge. Art indicates the skill and ability of the cost accountant. Practice indicates a continuous effort on the part of the cost accountant.

Cost Control: This indicates the process of controlling the costs of operating the business.

Cost Center: Cost Center is defined as a location, person, or item of equipment (or a group of these) in or connected with an undertaking, in relation to which costs may be ascertained and used for the purpose of cost control.

Cost: Indicates the amount of expenditure (actual or notional) incurred on or attributable to, a given thing.

4.6 SELF-ASSESSMENT QUESTIONS

Q1. Explain the nature of Cost Accounting.

Explain the factors which need to be considered for installing a costing system for a medium-sized engineering organisation.

Q2. Write short notes on :

- a) Cost Center
- c) Direct and Indirect Cost
- b) Opportunity Cost
- d) Fixed and Variable Cost

Q3. State the following, whether true or false.

- a) Cost Accountancy is a science, art and practice of a Cost Accountant.
- b) Differential cost indicates increased or decreased cost due to the increased or decreased volume of operations.
- c) Indirect Cost indicates that cost which can be identified with the individual cost center.
- d) Fixed cost indicates that portion of total cost, which remains constant at all levels of production, irrespective of any change in the latter.
- e) Sunk cost indicates the historical cost which is incurred in the past.

5.1 INTRODUCTION

In case of a typical manufacturing type of operation, the activity may consist of conversion of raw material in the form of finished goods with the help of labour and other services and selling the finished goods in the market to earn the profits. In order to interpret the term cost correctly and to ascertain the cost with respect to the centres, the cost attached with the manufacturing process may be subdivided into what is known as Elements of Cost.

5.2 ELEMENTS OF COSTS

Broadly there can be three elements of costs:

(A) Material :

This is the cost of commodities and materials used by the organization. It can be direct or indirect.

Direct Material indicates that material which can be identified with the individual cost center and which becomes an integral part of the finished goods. It basically consists of all raw materials, either purchased from outside or manufactured in-house.

Indirect Material indicates that material which cannot be identified with the individual cost center. This material assists the manufacturing process and does not become an integral part of finished goods. The examples of this type of material may be consumable stores, cotton waste, oils and lubricants, stationery material etc.

(B) Labour :

This is the cost of remuneration paid to the employees of the organisation. It can be direct or indirect.

Direct Labour Cost indicates that labour cost which can be identified with the individual cost center and is incurred for those employees who are engaged in the manufacturing process.

Indirect Labour Cost indicates that labour cost which cannot be identified with the individual cost center and is incurred for those employees who are not engaged in the manufacturing process but only assist in the same. The examples of this type of cost are wages paid to foreman/storekeeper, salary of works manager, Accounts/Personnel department salaries etc.

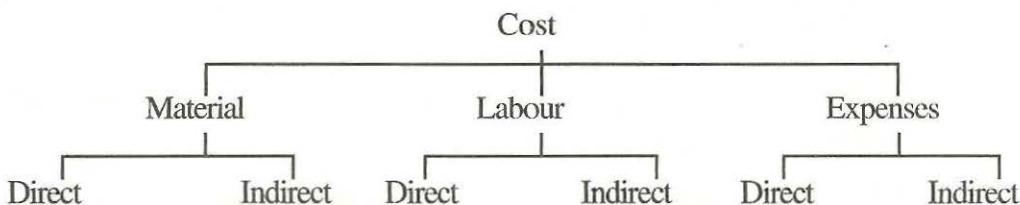
(C) Expenses :

This is the cost of services provided to the organisation (and the notional cost of assets owned). It can be direct or indirect.

Direct Expenses are those expenses, which can be identified with the individual cost centers. Examples of these expenses are hire charges for machinery / equipment required for a particular job, cost of defective work for a particular job etc.

Indirect Expenses are those expenses, which cannot be identified with the individual cost centers. The examples of these expenses are rent, telephone expenses, insurance, lighting etc.

The above elements of cost can be shown as below.



The aggregate of Direct Material Cost, Direct Labour Cost and Direct Expenses is termed as 'Prime Cost'.

The aggregate of Indirect Material Cost, Indirect Labour Cost and Indirect Expenses is termed as 'Overheads'.

Overheads :

As discussed above, the aggregate of Indirect Material Cost, Indirect Labour Cost and Indirect Expenses is termed as 'Overheads'. For the proper interpretation and presentation of cost, the term overheads may be further classified as below.

- Factory Overheads (Also termed as production/works/manufacturing overheads.)
- Office and Administration Overheads.
- Selling and Distribution Overheads.

(a) Factory Overheads :

These overheads consist of all overhead costs incurred from the stage of procurement of material till the stage of production of finished goods. They include:

- Indirect Material such as consumable stores, cotton waste, oil and lubricants etc.
- Indirect Labour Cost such as wages paid to the foreman/storekeeper, works manager's salary etc.
- Indirect Expenses such as carriage inward cost, cost of factory lighting/power expenses, rent/insurance/repairs for factory building/machinery, depreciation on factory building or machinery etc.

(b) Office and Administration Overheads :

These overheads consist of all overhead costs incurred for the overall administration of the organization. They include:

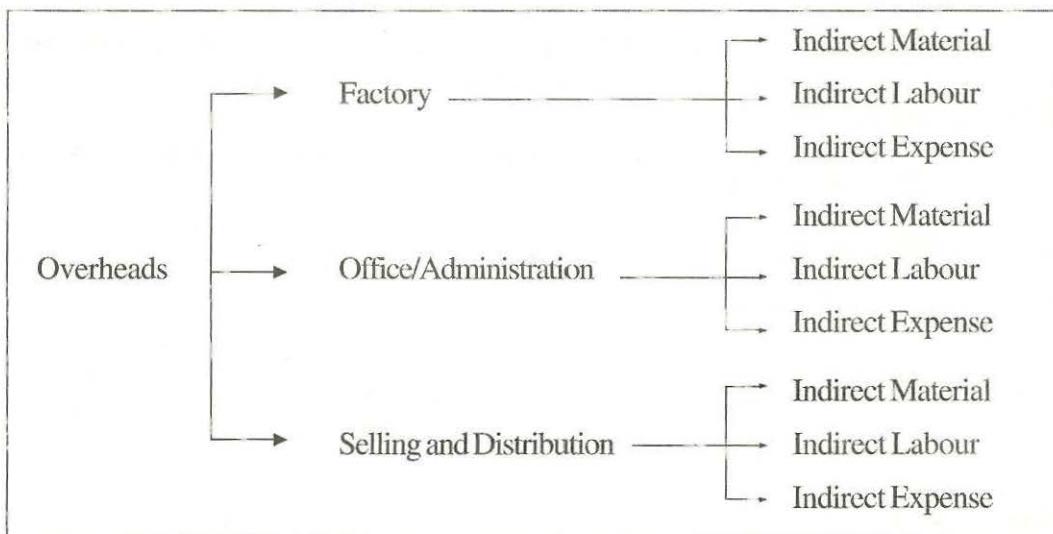
- Indirect Material such as stationery items, office supplies etc.
- Indirect Labour cost such as salaries paid to Accounts and Administration staff, Directors' remuneration etc.
- Indirect Expenses such as postage/telephone, rent/insurance/repairs/depreciation on office building, general lighting, legal/audit charges, bank charges etc.

(c) Selling and Distribution Overheads :

These overheads consist of all overhead costs insured from the stage of final manufacturing of finished goods till the stage of sale of goods in the market and collection of dues from the customers. They include :

- Indirect Material such as packing material, samples etc.
- Indirect Labour like salaries paid to sales personnel, commission paid to sales manager etc.
- Indirect Expenses like carriage outwards, warehouse charges, advertisement, bad debts, repairs and running of distribution van, discount offered to customers etc.

The above classification of overheads can be shown as below :



Activity A :

Hope that you have followed the various elements of cost. Identify a manufacturing/trading organization, differentiate the various costs and list them accordingly.

5.3 COST SHEET/COST STATEMENT

The various elements/components of the cost as discussed above can be presented in the form of a statement, popularly known as 'Cost Sheet' or 'Cost Statement'. The cost sheet may be prepared separately for each cost center and may have the columns like, cost per unit or cost of previous period etc.

A Proforma cost sheet is shown below:

Direct Material Cost

Direct Labour cost

Direct Expenses

PRIME COST

Add : Factory Overheads

FACTORY/WORKS COST

Add : Office and Administration Overheads

TOTAL COST

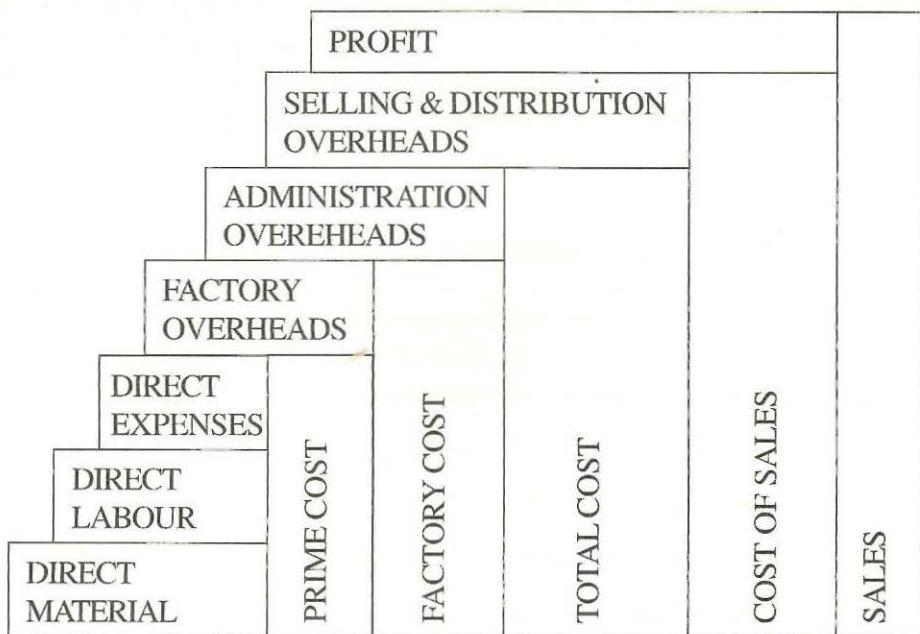
Add : Selling and Distribution Overheads

COST OF SALES

Add : Profit

SALES

The above relationship among the various elements of costs can be explained in a better way with the help of following diagram.



Note :

The difference between sales and factory/works cost is termed as ‘Gross Profit’ and the difference between sales and cost of sales is termed as ‘Net Profit’ or ‘Operating Profit’. As such, the difference between Gross Profit and Office and Administration Overheads and Selling and Distribution may be different from the ‘Net Profit’ or ‘Operating Profit’. This Net Profit may be different from the net Profit as disclosed by the financial statement in the form of Profit and Loss Account. This is due to the fact that the Profit and Loss Account considers the various non-operating incomes/expenses or incomes/expenses of purely financial nature (as discussed below) while they may be ignored by the cost statement.

(a) Non-operating/Financial Incomes :

These represent incomes which arise not as a part of regular operations of the organisation. For example, profit on the sale of assets/investment, dividend received, windfall income etc. Due to these, the operating profit as per cost statement may be less than profit as per Profit and Loss Account.

(b) Non-operating/Financial Expenses :

These represent expenses which arise not as a part of regular operations of the organisation. Such expenses may be in the form of those incurred as a result of policy. For example, a loss on the sale of assets/investment, good-will/ preliminary expenses written off, provision for income tax, interest paid, the dividend paid etc. Due to these, the operating profit as per the cost statement may be more than the profit as per Profit and Loss Account.

As such cost structure may also be presented as below.

Sales	
Less :	Factory/Works Cost
	<hr/>
	Gross Profit
Less :	Office and Administration Overheads
	<hr/>
	Selling and Distribution Overheads
	<hr/>
	Operating Profit
Less :	Non-Operating/Financial Expenses
Add :	Non-Operating/Financial Income
	<hr/>
	Net Profit (As per Profit and Loss Account)

5.4 SUMMARY

The activity consists of conversion of raw materials into finished goods with the help of labour and other services. Various elements of cost help to interpret the cost correctly and ascertain the cost with respect to the centers. Elements of cost, includes all direct and indirect material, labour, expenses. The various elements of the cost are presented in the form of a statement known as Cost Sheet or Cost Statement. The Cost Sheet may be prepared separately for each cost center. The Cost Sheet shows Gross Profit, Operating Profit, etc.

5.5 KEY WORDS

Cost Sheet: The various elements/components of the cost is presented in the form of a statement, popularly known as ‘Cost Sheet’ or ‘Cost Statement’. The cost sheet may be prepared separately for each cost center and may have the columns like cost per unit or cost of previous period etc.

Elements of Costs: Includes all direct and indirect material, labour, expenses covering overheads.

Expenses: Is the cost of services provided to the organization (and the notional cost of assets owned). It can be direct or indirect.

Labour: Is the cost of remuneration paid to the employees of the organization. It can be direct or indirect.

Material: Is the cost of commodities and materials used by the organization.

Overheads: Is the aggregate of Indirect Material cost, Indirect Labour cost and of Indirect Expenses.

6.1 INTRODUCTION

Material cost is the first and probably the most important element of cost. In the case of specific types of industries, say cement, sugar, chemicals, iron and steel etc., the materials cost forms a very significant portion of the overall cost of production.

The term material refers to all commodities which are consumed in the production process. The materials which can be consumed in the production process can be basically classified as:

- (i) Direct Materials
- (ii) Indirect Materials

The meaning of both these terms has already been discussed. The basic objective of cost accounting i.e. ascertainment of cost and control of cost is equally applicable to material cost as well. The ascertainment of material cost is made from basically two documents i.e. the invoice of the supplier of material and material requisition slip specifying material issued from stores department to production department. However, a whole lot of organisational procedures are also involved in the process, which affects the material cost, either directly or indirectly. For example, purchases from improper sources of supply may be expensive, non-availability of material in time may result into hold ups and so on. As such, a proper study of the various procedures involved in case of the movement of materials and a proper control thereon enables an organisation to exercise the control on a sizeable manufacturing cost.

6.2 STAGES IN THE MOVEMENT OF MATERIAL

The movement of material may involve the following stages.

- (a) Procurement of materials.
 - (b) Storing the material till it is required for consumption.
 - (c) Issue of the material for consumption.
- (A) **Procurement of Materials:** Though the practices may differ from organisation to organisation, normally, the process of purchasing the materials involves the following stages.

(1) **Purchase Requisition:** It is an indication given to the purchases department to purchase certain material. It is issued either by the storekeeper (in respect of material required for regular production purposes) or by production department (in respect of special materials required). Following particulars must appear in purchase requisition.

- (i) **Material to be purchased:** It should be clearly specified. To make it more specific, in addition to the description of the material required, the code number should also be specified.
- (ii) **When it is required:** Unless the material is required for regular production purposes (when the storekeeper himself will place the purchase requisition as soon as it reaches the ordering level), purchase requisition should mention the last date by which the material is required. Ideally, the material should be purchased whenever the market for the same is favourable.
- (iii) **How much to be purchased:** Purchase requisition should state the quantity of the material required. Before deciding the quantity of material to be purchased, the principle which should be kept in mind is that there should not be any overstocking or understocking of materials, as both these situations involve costs.

Overstocking may have following consequences:

- Blocking of working capital.
- Risk of deterioration of quality and obsolescence.
- More storage facilities.
- Additional Insurance Cost.
- More material handling and upkeep.
- Risk of breakage/pilferage etc.

Understocking may have following consequences:

- Production holdups, resulting into disturbed delivery schedules.
- Frantic eleventh hour purchases which may result into unfavourable prices and quality.
- Payment for idle time to workers.

Before deciding the quantity to be purchased, consideration will have to be given to the following factors also:

- (i) Quantity already ordered.
- (ii) Quantity reserved. It may happen that a particular quantity, though in hand, might have been reserved for a particular job which is not available for other purposes. In such cases, this quantity is such, as if it is not in stock.
- (iii) Funds availability: Amounts which are kept aside for drawing up purchase budget should be considered.

The purchase requisition should be signed by Head of the Department drawing the same.

A standard form of Purchase Requisition is as shown below:

PURCHASE REQUISITION					
To: Purchase Department		From : Department No. : Date :			
Please purchase the material stated below.					
Sr. No.	Description	Code No.	Quantity Required	Quantity on hand	Remarks
Signed by: Storekeeper Approved by					
For the use of Purchase Department only					
Date	P.O. No.	Name of Supplier		Delivery Date	Remarks
Signed: Purchase Manager					

(2) Selection of Source of Supply:

For this purpose, the purchase department may call for the quotations from the prospective suppliers of a certain type of material. In practice, following types of quotations may be called for:

- (a) **Single Tender:** It is addressed to only one selected source when there is only one source of supply available.
- (b) **Limited Tender:** It is addressed to a limited number of suppliers known to be reliable sources on the basis of data maintained by the purchase department.
- (c) **Open Tender:** It is open to all who can supply specified quality and quantity of the required material. Tenders are called by giving advertisements in the newspapers, journals etc.
- (d) **Global Tender:** Anybody from any part of the world can respond to these tenders.

To discourage unreliable and unwanted sources from quoting, some tender deposit may be insisted upon.

Comparative Statements:

After receiving the tenders as stated above, a comparison has to be made among the various available sources so that the best possible source can be selected. All the offers are tabulated in a comparative statement. The authority which is authorised to accept the tender should be specified. The criteria for selecting the final source of supply may depend upon the terms of offer which can be compared in respect of price offered, quality, other terms (like Sales Tax, Octroi, Freight etc.), terms of delivery, terms of payment, guarantee offered by the supplier, goodwill of the supplier etc. Lowest quotation may not necessarily be the best quotation.

(3) Purchase Order:

The contractual obligation between the supplier and purchaser starts from purchase order. It is drawn in favour of the supplier by the purchase department. It may specify a number of facts.

- Material to be supplied (Description as well as code numbers and quality).

- Quantity to be supplied.
- Price and other terms (for example, excise duty, sales tax, octroi, insurance, packing and transportation etc.).
- Cash and trade discount.
- Instructions in respect of delivery.
- Guarantee clause.
- Liquidated damages clause.
- Escalation clause.
- Inspection clause.
- Method of settlement of disputes.
- Details in respect of letters of credit, import license etc.
- Details in respect of interest payable in the event of late payment of dues.

Ideally, purchase orders should be serially numbered. Normally, four or five copies of Purchase Orders are drawn, to be distributed as below:

- One to Supplier.
- One to User Department.
- One to Stores Department.
- One to Accounts/Costing Department.
- One with Purchase Department.

A standard form of Purchase Order is as shown below:

PURCHASE ORDER

No. –
 Date –
 Requisition No. –
 Date –

Please supply the following material on such terms and conditions as stated therein.

Description	Code No.	Quantity	Rate Rs.	Value Rs.	Delivery Date	Remarks

Delivery: Goods to be delivered at –

Extra as applicable –

Excise Duty

Sales Tax

Packing Charges

Insurance

Terms of payment

For _____ (Purchasing Company)

Purchase Manager

(4) Receipt and Inspection: After material is received from the supplier, the quantity received actually, is compared with quantity ordered. Variations, if any, are taken up with the supplier again. Excess material received may be dealt with in any of the following ways:

- Accept all the material received.

- Accept the material ordered and return the excess to the supplier. Before accepting, material may be subjected to inspection. The extent of inspection may vary from material to material.

(5) **Checking invoice and accounting for purchases:** The supplier's invoice received for the supply of material is subjected to scrutiny before a voucher is passed for the same for making the entry in the books of accounts. For this purpose, the supplier's invoice may be compared along with the following documents.

- Purchase Order.
- Goods Received Note.
- Inspection Report.

If the quantity and/or rate as per purchase order and invoice match with each other, the invoice of the supplier is passed for making the entry in the books of accounts. If the quantity and/or rate as per purchase order and invoice differ from each other, the difference is adjusted by raising a debit or credit note in favour of the supplier.

(B) **Storing and Issue of Material:** After the material is received, inspected and approved, the process of storing comes into operation which deals with storing the material in good condition till it is required for use by production departments and issuing the same whenever required.

As far as the movement of the material from the stores point of view is concerned, there can be basically four types of movements.

- 1 Receipt of material.
- 2 Issue of material
- 3 Return of material from Production Department to Stores Department.
- 4 Transfer of material.

(1) **Receipt of Material:** Usually the receipt of material is accompanied by delivery challan given by the supplier. On receipt of the material, quantity received is checked with the quantity ordered by the Stores Department. The received material may be inspected, before acceptance either by separate inspection department or by Stores Department itself. A document known as Goods

Received Note or Goods Received Report (GRN or GRR) is prepared to record the details of the material received. The usual form in which GRN or GRR is prepared is as below:

GOODS RECEIVED NOTE						
			No. Date			
S. No.	Description	Code	Qty. Recd.	Qty. Accepted	Qty. Rejected	Remarks
Prepared by		Received by		Inspected by		Store Keeper

It may be prepared in quadruplicate to be distributed as follows:

- One copy to Purchases Department for comparing with purchases order and approving the invoice of the supplier.
- One copy to Accounts Department for making the payment of supplier's invoice.
- One copy to Costing Department for pricing and entering in stores record.
- One copy to be retained by Stores Department.

Ideally, GRN/GRR should be serially numbered in order to locate the material which is physically received but for which invoice is not received.

Discrepancies in material receipts:

The material physically received when compared with material ordered as per the purchase order may reveal certain discrepancies which may take any of the following forms.

- (1) Quantity received in excess.
- (2) Quantity received in short.
- (3) Quantity received of different quality.

Excess quantity received may be retained and accepted, if required, with the approval of the purchase department. Alternatively, if it is not accepted, it may be returned to the supplier with Goods Returned Note. The usual form in which Goods Returned Note is prepared is as below:

GOODS RETURNED NOTE		
To:	No.	Date:
Following material supplied by you vide your D.C. No. _____ and Invoice No. _____ against our Purchase Order No. _____ is being returned to you for the reasons stated below:		
Description	Quantity	Reasons
Signature		

Usually, three copies of Goods Returned Note are prepared to be distributed as below:

- One copy to the Supplier.
- One copy to the Purchase Department.
- One copy to be retained by the Stores Department.

Excess Quantity Accepted: If excess quantity is already billed in the invoice, it will be approved and paid. If not, either the supplier may be asked to give a supplementary invoice or credit note may be issued to the supplier for amending the amount.

Excess Quantity Returned: If excess quantity is already billed in the invoice, debit note may be issued to the supplier for amending the amount.

In case the quantity received is short, purchase department may take up the case with the supplier or carrier or insurer as per the terms of purchases. If quantity short supplied is billed in the invoice, invoice is suitably amended and debit note is issued to the supplier.

If quantity received is of different quality and is rejected in inspection, it can either be retained or returned. It may be retained by accepting some mutually decided concessional

price. The variation in prices may be adjusted by issuing either the credit note or debit note in favour of the supplier.

(2) Issue of Material: Here, the issue of material refers to issue of material from stores department to production department. The material should not be issued from the stores unless a proper authority in writing is produced before the stores department. Usually, this authority is in the form of Material Requisition Note or Material Requisition Slip.

The normal contents of this note/slip are:

- Number and date (Ideally, they should be serially numbered).
- Department demanding the material.
- Description and code of material demanded.
- Quantity of material demanded.
- Signature of authority approving the demand.
- Signature of the person receiving the material.

Normally one note/slip is prepared for requisitioning a single item of material.

The usual form in which it is prepared is as below:

MATERIAL REQUISITION NOTE					
Production/Job Order No.			No.		
Bill of Materials No.			Date:		
			Department:		
Description	Code	Qty.	Unit	Cost (for costing Dept. only)	
				Rate per unit	Amount Rs.
Authorised by	Issued by	Received by		Entered and Valued by	

Normally, it is prepared in three copies. Two copies to Stores Department which in its turn passes one copy to Costing Department for pricing while second copy is retained by the Stores Department. One copy is for demanding department.

(3) Return of Material:

There can be some situations, when material once issued to production departments is returned back to the stores. It can happen in the following circumstances.

- (a) Material issued in excess of requirement.
- (b) Scrap or defective work arising out of the production processes.

Under these circumstances, a document in the form of Materials Returned Note is prepared, which is to record return of unused materials. The usual form in which this document is prepared is as below:

MATERIALS RETURNED NOTE					
Production/Job Order No.				No.	
Bill of Materials No.				Date:	
				Department:	
Description	Code	Qty.	Unit	Cost (for costing Dept. only)	
				Rate per unit	Amount Rs.
Authorised by		Received by		Posted by	

As far as the valuation of the returned material is concerned, it may be treated as the fresh receipt of the material or alternatively, it may be treated as the negative(minus) issues.

- ### (4) Transfer of Materials:
- In some situations, considering the urgency for the requirement of the material, it may be necessary to transfer the material from one production/job order to another. Such transfer of material is usually accompanied by preparing a document in the form of Material Transfer Note. The usual form in which this document is prepared is as below:

MATERIAL TRANSFER NOTE				
			No.	
			Date:	
From.....Dept.	To.....Dept.			
Production/Job	Production/Job			
Order No.	Order No.			
Description	Code No.	Qty.	Cost (for costing Dept. only)	
			Rate per unit	Amount Rs.
Authorised by	Received by		Entered by	

Transfer of materials does not result into any fresh issue of material. However, material transfer notes will have to be valued and considered in order to compute the material cost as per the job orders and production orders.

Activity A:

Visit a manufacturing organization and list any three of the various documents involved in the movement of raw material of the organization.

6.3 PROPER CONDUCT OF STORAGE FUNCTION

As discussed earlier, the proper conduct of storage function requires that material should be properly stored in a good condition till it is required for use by production departments and should be issued whenever required. This proper conduct is ensured by what is known as “Perpetual Inventory System”. The aims of the perpetual inventory system are two fold.

- (1) Recording receipts and issues in such a way so as to know at any time, the stock in hand, in quantity and/or value, without the need of physical counting. This aim is achieved by maintaining what is called as Bin Card and Stores Ledger.
- (2) Continuous verification of physical stock at regular intervals.

Bin Card

It is only a quantitative record of receipts, issues and closing balance of an item of material. Separate bin card is maintained for each item of material. The usual form in which a bin card is maintained is as below.

BIN CARD					
Description				Maximum level	
Code No.				Minimum level	
Location/Unit				Reorder level	
Date	Document No.	Receipt	Issue	Balance	Remarks

Entries in receipts column are made on the basis of Goods Received Note or Material Returned Note. Entries in issues column are made on the basis of Material Requisition Note. After every entry of either receipts or issues, the balance quantity is calculated and recorded so that the balance can be known at any point of time. The levels indicated on bin card enable the stores department to keep a watch on balance and replace the material as soon as it reaches the reorder level.

Ideally, the bin card should be placed along with the material. But it may not be possible in all the cases, so the bin cards are placed at a centrally located place but within stores department only.

Stores Ledger

Like the Bin Card, it is maintained for the recording of all receipts and issue transactions of material, but with the exception that it records not only the quantities received or issued or in stock but also the financial expressions of the same. The usual form in which the stores ledger is maintained is as follow:

STORES LEDGER										
Description					Maximum level					
Code No.					Minimum level					
Location/Unit					Reorder level					
Date	Document No.	Receipts			Issues			Balance		Remark
		Qty.	Rate	Rs.	Qty.	Rate	Rs.	Qty.	Rate	Rs.

By summing up the amounts appearing in the ‘issues’ column of stores ledger, one can get the cost of material issued to Production Department which forms the ‘Material Cost’.

As in case of bin card, separate store ledger sheets are maintained in case of each item of material. The stores ledger sheets are maintained either in loose form or in bound book form.

Bin Card vs. Stores Ledger:

If the stores ledger is having all the information mentioned in a bin card plus some additional information is also available, the next question which arises is why is it necessary to maintain both bin card and stores ledger simultaneously as it will be only duplication of work. In the situations of computerized inventory accounting system, maintenance of bin card and stores ledger simultaneously can be avoided. However, in the situations of manual inventory accounting system, it will be ideal to maintain bin card and stores ledger simultaneously due to the following reasons.

- (1) Bin card is maintained by stores department while stores ledger is maintained by costing department.

- (2) Bin card is not an accounting record but only a quantity record and as such is not concerned with the financial implications of stores transactions.
- (3) Maintenance of stores ledger provides a second check on maintenance of bin cards.

Reconciliation of Bin Card and Stores Ledger:

As the source documents for the entries in Bin Card and Stores Ledger are the same, the closing balances disclosed by both of them should match with each other. But in practice, they may not match due to the following reasons.

- (1) Arithmetical error in calculating balance.
- (2) Non-posting of a certain document' in either of these documents.
- (3) Posting on wrong bin card or stores ledger sheet.
- (4) Treating receipts transaction as issue transaction or vice versa.

If the closing balance as per bin card and stores ledger is not matching, the very purpose of maintaining these two documents simultaneously will be defeated. As such, it is necessary to reconcile both balances at regular intervals by keeping all the postings upto date. If the balances as on a particular day are not matching, all the previous transactions should be checked to locate differences.

Activity B:

Assume that you have been to a materials department of an organization and list any two documents which are prepared while the material is in the storing stage. State the purpose of each of these documents.

6.4 VALUATION OF MATERIAL MOVEMENTS

As discussed above, the stores ledger considers not only the movement of material in terms of quantity but also in terms of its financial implications. As such, it is necessary that all the possible movements of material are valued properly and are expressed in terms of money. We will consider this problem under the following heads.

- (a) Valuation of receipts.
- (b) Valuation of issues.
- (c) Valuation of returns from production department to stores department.

(a) Valuation of receipts:

Valuation of receipts is a relatively easy task, as the invoice or bill received from the supplier of the material is available as a starting point. Following propositions should be considered for this purpose.

- (1) The price as billed by the supplier will be the valuation of the receipts. The trade discount is deducted from the basic price and all other amounts as billed by the supplier are added, like excise duty, sales tax, octroi duty, transport/insurance charges, etc. There are different opinions in respect of the treatment of cash discount. One opinion says that cash discount should be ignored, being purely of a financial nature, while valuing the receipts, while another opinion says that it should be considered while valuing the receipt of the material.
- (2) In some cases, more than one item of material is included in one single bill and some costs are jointly incurred for all the items of material. Such joint costs may be distributed on the basis of the basic price of the material.
- (3) In case of the imported material, the cost of the material consists of a basic price (which may be stated in foreign currency and should be converted in Indian Rupees), customs duty, clearing charges, transport charges, octroi duty, etc. In some cases, the point of receipt of imported material and the point of making the payment of invoice amount may be different. As such, the rate of foreign currency may be different at the time of payment of the customs duty and at the time of payment of the invoice amount. In such cases, the rate of exchange existing at the time of making the payment of invoice amount should be considered for valuing basic cost of material imported.

Illustration:

The particulars relating to a 1,200 kgs. of a certain raw material purchased by a company during June, were as below:

- (a) Lot prices quoted by suppliers and accepted by the company for placing the purchase order.

Lot up to 1000 kgs.	@ Rs. 22 per kg.	For Supplies to Factory
Between 1000 - 1500 kgs.	@ Rs. 20 per kg.	
Between 1500 - 2000 kgs	@ Rs. 18 per kg.	

- (b) Trade Discount 20%.
- (c) Additional charge for containers @ Rs. 10 per drum of 25 kgs.
- (d) Credit allowed on return of containers @ Rs. 8 per drum.
- (e) Sales Tax at 10% on raw material and 5% on drums.
- (f) Total freight paid by the purchaser Rs. 240,
- (g) Insurance at 2.5% (on net invoice value) paid by the purchaser.
- (h) Stores Overheads applied at 5% on total purchase cost of material.

The entire quantity was received and issued to production:

The containers are returned in due course. Draw up a suitable statement to show:

- (a) Total cost of material purchased.
- (b) Unit cost of material issued to production.

Solution:**(a) Statement showing cost of purchases**

Basic Cost	Rs.	Rs.
1,200 kgs x Rs. 20/kg.	24,000	
Less: Trade Discount @ 20%	4,800	
		19,200.00

Container Cost:

48 Drums x Rs. 10/Drum	480.00
	19,680.00

Sales Tax:

10% on Rs. 19,200	1,920.00
5% on Rs. 480	24.00
	1,944.00
	21,624.00

Other charges

Insurance 2.5% on Rs. 21,624.00	540.60
Freight	240.00
	22,404.60

Less: Credit for drums returned

Rs. 8 per Drum x 48 Drums	384.00
TOTAL COST	22,020.60

Add: Stores Overheads 5%	1,101.03
	23,121.63

(b) Unit cost for valuation of issues

$$\frac{\text{Rs. } 23,121.63}{1,200 \text{ kgs.}} = \text{Rs. } 19.268/\text{kg.}$$

Illustration:

The particulars related to the import of Sealing Ring made by AB & Co. during December 85 are given below.

- (a) Sealing Ring 1,000 pieces invoiced @ £ 2 CIF, Bombay Port.

- (b) Customs Duty was paid @ 100% on invoice value (which was converted to Indian Currency by adopting an Exchange Rate of Rs. 17.20 per £)
- (c) Clearing charges: Rs. 1,800 for the entire consignment
- (d) Freight charges: Rs. 1,400 for transporting the consignments from Bombay Port to Factory premises.

It was found on inspection that 100 pieces of the above material were broken and therefore rejected. There is no scrap value for the rejected part. No refund of the broken material would be admissible as per the terms of contract. The management decided to treat 60 pieces as normal loss and the rest 40 pieces as abnormal loss. The entire quantity of 900 pieces was issued to production.

Calculate:

- (a) Total cost of material.
- (b) Unit cost of material issued to production.

Also state briefly how the value of 100 pieces rejected in inspection will be treated in costs.

Solution:

Total Cost of Material

(1) Invoice Price	Rs.
UK £ - 1,000 pieces x £2 = £ 2,000 - £ 2,000 x Rs. 77.2 per UK £	154,400
(2) Customs Duty @ 100%	154,400
(3) Clearing Charges	1,800
(4) Freight charges	1,400
Total Cost	<u>312,000</u>

As loss of 40 pieces is considered as abnormal loss, it will be transferred to Costing Profit and Loss Account.

$$\therefore \text{Abnormal Loss} = \frac{\text{Rs. } 312,000}{1,000 \text{ pieces}} \times 40 \text{ pieces}$$

$$= \text{Rs. } 12,480$$

Balance of the cost (i.e. Rs. 312,000 - Rs. 12,480 = Rs. 299,520) includes the cost of units treated as normal loss i.e. 60 pieces.

This cost will be borne by good pieces.

$$\therefore \text{Unit cost of good pieces} = \frac{\text{Rs. } 299,520}{900 \text{ pieces}} \\ = \text{Rs. } 332/80$$

(b) Valuation of Issues:

This is a more complex process than the valuation of the receipts. It is because of this reason that the material may be issued out of the various lots which might have been purchased at various prices. As such, a problem may arise as to which of the receipt prices should be used to value the material requisition notes. Various methods may be used for this purpose, main methods of which may be discussed as below.

- (i) **First In First Out (FIFO):** Under this method, the price of the earliest available lot is considered first and if that lot is exhausted, the price of the next available lot is considered. It should be remembered that the physical issue of the material may not be made out of the said lots, though it is presumed that it is made out of these lots as stated above.

Illustration:

Following transactions have taken place in respect of a material during March 1990.

Date:

- 1 Opening Balance 500 units @ Rs. 6 per unit.
- 5 Purchased 100 units @ Rs. 7 per unit.
- 7 Issued 400 units.
- 9 Purchased 300 units @ Rs. 8 per unit.
- 19 Issued 250 units.
- 22 Issued 50 units.
- 25 Purchased 300 units @ Rs. 7.50 per unit.
- 30 Issued 250 units.

Prepare the Stores Ledger assuming that the issues are valued on FIFO basis.

Stores Ledger										
Description/Code No.				Maximum level Minimum level Re-order level						
Date	Particulars	RECEIPTS			ISSUES			BALANCE		
		Qty. Rs.	Rate Rs.	Rs.	Qty. Rs.	Rate Rs.	Rs.	Qty. Rs.	Rate Rs.	Rs.
1	Op. Bal.							500	6	3,000
5	GRN No.	100	7	700				500 } 6 }	7 }	
7	MRN No.				400	6	2,400	100 } 6 }	7 }	3,700
9	GRN No.	300	8	2,400				100 } 6 }	7 }	1300
								100 } 7 }	8 }	
					100 } 6 }	7 }		300	8	3700
19	MRN No.				100 } 7 }	8 }	1700	250	8	2,000
22	MRN No.				50	8				
25	GRN No.	300	7.5	2,250	50	8	400	200	8	1,600
30	MRN No.				200 } 8 }			200 } 8 }	7.5	3850
					50 } 7.5		1975	250	7.5	1,875

Value of closing stock is Rs. 1,875 which considers latest available market price of the material.

The advantages of this method are as below:

- (a) It is simple to operate.
- (b) It considers the valuation of closing stock at the current market prices.
- (c) It can be conveniently applied if transactions are not too many and the prices of the material are fairly steady.

The objections raised against this method are that:

- (a) Calculations become complicated if the lots are received frequently and at varying prices.
- (b) Costs may be wrongly presented if the price of different lots of material is being used for pricing issues to various batches of production.
- (c) In case of varying prices, the pricing of issues does not consider current market prices.

(ii) Last In First Out (LIFO):

Under this method, the price of the latest available lot is considered first and if that lot is exhausted, the price of the lot prior to that is considered. Here also, it should be remembered, that the physical issue of the material may not be made out of the said lots, though it is presumed that it is made out of the lots as stated above.

Illustration:

Following transactions have taken place in respect of a material during March 1990.

Date:

- 1 Opening Balance 500 units @ Rs. 6 per unit.
- 5 Purchased 100 units @ Rs. 7 per unit.
- 7 Issued 400 units.
- 9 Purchased 300 units @ Rs. 8 per unit.
- 19 Issued 250 units.
- 22 Issued 50 units.
- 25 Purchased 300 units @ Rs. 7.50 per unit.
- 30 Issued 250 units.

Prepare the stores ledger assuming that the issues are valued on LIFO basis.

Stores Ledger										
Description/Code No.					Maximum level					
Unit					Minimum level					
Location					Re-order level					
Date	Particulars	RECEIPTS			ISSUES			BALANCE		
		Qty.	Rate Rs.	Rs.	Qty.	Rate Rs.	Rs.	Qty.	Rate Rs.	
1	Op. Bal.							500	6	3,000
5	GRN No.	100	7	700				500	6	3,700
7	MRN No.				100 } 7 }		2,500	200	6	1,200
9	GRN No.	300	8	2,400				200 } 300	6 } 8 }	3,600
19	MRN No.				250	8	2,000	200 } 50	6 } 8 }	1,600
22	MRN No.				50	8	400	200	6	1,200
25	GRN No.	300	7.5	2,250				200 } 300	6 } 7.5 }	3,450
30	MRN No.				250	7.5	1,875	200 } 50	6 } 7.5 }	1,575

Value of closing stock is Rs. 1,575 which consists of 200 units valued at Rs. 6 per unit which happens to be the earliest available price of the material i.e. price of the opening balance available.

The advantages of this method are as below:

- (a) It is simple to operate.
- (b) The cost of materials issued considers fairly recent and current prices. The prices quoted on this cost fairly represent the real cost.
- (c) It can be conveniently applied if transactions are not too many and prices of the material are fairly steady.

The objections raised against this method are as below:

- (a) Calculations become complicated if the lots are received frequently and at varying prices.
- (b) Costs may be wrongly presented if the price of different lots of material is used for pricing issues to various batches of production.
- (c) In case of falling prices in the market, this method may give wrong results.

(C) Average Price Method:

Both the above methods i.e. FIFO and LIFO, consider the exact or actual cost for valuing the issue of material. However these methods may prove to be disadvantageous if the transactions are too many and are at varying prices. In such cases, instead of considering the exact or actual cost, average cost may be considered to lessen the effect of variation in prices, either upward or downward.

E.g. Assume a situation as below:

Mar. 1	-	Received	-	1500 units @ Rs. 10	-	Rs. 15,000
Mar. 15	-	Received	-	1600 units @ Rs. 30	-	Rs. 48,000

On March 20, 1800 units were issued to production.

If FIFO method is followed to price the issues, the issues will be valued as below.

1500 units @ Rs. 10 per unit	Rs. 15,000
300 units @ Rs. 30 per unit	Rs. 9,000
	<u>Rs. 24,000</u>

The issues will be considerably under-valued and closing stock will be considerably over valued, as compared to the current market prices.

If LIFO method is followed to price the issues, the issues will be valued as below.

-1600 units @ Rs. 30 per unit	Rs. 48,000
200 units @ Rs. 10 per unit	Rs. 2,000
	<u>Rs. 50,000</u>

The closing stock will be considerably under valued as compared to the current prices.

To lessen the effect of such drastic price variation, both on the valuation of issues as well as of closing stock, instead of considering the actual/exact price of Rs. 10 per unit or Rs. 30 per unit, average price may be taken into consideration.

There are mainly two ways in which average prices may be considered.

- (1) **Simple Average Method:** Under this method, the simple average of the prices of the lots available for making the issues is considered for pricing the issues. After the receipt of new lot, a new average price is worked out. It should be remembered in this connection that, for deciding the possible lots out of which the issues could have been made, the method of First In First Out is followed.

Illustration:

Following transactions have taken place in respect of a material during March 1990.

Date:

- 1 Opening Balance 500 units @ Rs. 6 per unit
- 5 Purchased 100 units @ Rs. 7 per unit.
- 7 Issued 400 units.
- 9 Purchased 300 units @ Rs. 8 per unit.
- 19 Issued 250 units.
- 22 Issued 50 units.
- 25 Purchased 300 units @ Rs. 7.50 per unit.
- 30 Issued 250 units.

Prepare the stores ledger assuming that the issues are valued on a Simple Average basis.

Stores Ledger										
Description/Code No.					Maximum level					
Unit					Minimum level					
Location					Re-order level					
Date	Particulars	RECEIPTS			ISSUES			BALANCE		
		Qty.	Rate Rs.	Rs.	Qty.	Rate Rs.	Rs.	Qty.	Rate Rs.	
1	Op. Bal.							500	6	3,000.00
5	GRN No.	100	7	700				600	6.5	3,900.00
7	MRN No.				400	6.5	2,600.00	200	6.5	1,300.00
9	GRN No.	300	8	2,400				500	7.25	3,625.00
19	MRN No.				250	7.25	1,812.50	250	7.25	1,812.50
22	MRN No.				50	7.25	362.50	200	7.25	1450.00
25	GRN No.	300	7.5	2,250				500	7.375	3,687.50
30	MRN No.				250	7.375	1,843.75	250	7.375	1,843.75

This method is suitable if the material is received in uniform quantity. If the material quantity of each lot varies widely, this method may lead to wrong results.

(2) **Weighted Average Method:** As stated above, the simple average method of valuation of issues may lead to wrong results, if the quantity of each lot of material received varies widely. Eg. Assume the following situation.

Mar. 1 Received 100 units @ Rs. 10	Rs. 1,000
Mar. 10 Received 5,000 units @ Rs. 30	Rs. 1,50,000
	<u>Rs. 1,51,000</u>

On March 20, 4800 units were issued to production. As both the lots are possible lots for making the issue, the average of prices of both the lots will be taken into account if simple average method is considered. Hence, per unit issue price will be -

$$\frac{\text{Rs. } 10 + \text{Rs. } 30}{2} \quad \text{i.e. Rs. } 20$$

As such, the issue quantity will be priced at: 4,800 units x Rs.20 i.e. Rs. 96,000, which will be incorrect, as considering the quantity of issue, the price of the material received on March 10 should get more weightage.

To overcome this drawback of simple average method, weighted average method may be used which considers not only the price of each lot but also the quantity of the same.

Though this method involves considerable amount of clerical work, in practice, this method proves to be very useful in the event of varying prices and quantities. In practice, the calculation of weighted average rate proves to be very simple. The products of quantity and price divided by the total quantity of all lots, just before the issue, gives the unit price in respect of the subsequent issues.

Illustration:

Following transactions have taken place in respect of a material during March 1990.

Date:

- 1 Opening Balance 500 units @ Rs. 6 per unit
- 5 Purchased 100 units @ Rs. 7 per unit.
- 7 Issued 400 units.
- 9 Purchased 300 units @ Rs. 8 per unit.
- 19 Issued 250 units.
- 22 Issued 50 units.
- 25 Purchased 300 units @ Rs. 7.50 per unit.
- 30 Issued 250 units.

Prepare the Store Ledger assuming that the issues are valued on Weighted Average Basis.

Stores Ledger										
							Maximum level			
							Minimum level			
							Re-order level			
Date	Particulars	RECEIPTS			ISSUES			BALANCE		
		Qty.	Rate Rs.	Rs.	Qty.	Rate Rs.	Rs.	Qty.	Rate Rs.	Rs.
1	Op. Bal.							500	6.00	3,000
5	GRN No.	100	7	700				600	6.16	3,700
7	MRN No.				400	6.16	2,467	200	6.16	1,233
9	GRN No.	300	8	2,400				500	7.27	3,633
19	MRN No.				250	7.27	1,817	250	7.27	1,816
22	MRN No.				50	7.27	363	200	7.27	1,453
25	GRN No.	300	7.5	2,250				500	7.41	3,703
30	MRN No.				250	7.41	1,851	250	7.41	1,852

- (d) **Highest In First Out:** This method assumes that the stock should always be shown at the minimum value and hence the issues should always be valued at the highest value of receipts. For example, assume a situation as follows.

Mar. 1 Purchased 100 units @ Rs. 12

Mar. 5 Purchased 125 units @ Rs. 18

Mar. 10 Purchased 75 units @ Rs. 15

On March 20, 120 units are issued to production and they will be valued at Rs. 18 per unit being the highest price. This method is not very popular. It always overvalues the issues and undervalues the closing stock. This method may be useful in case of the organisations dealing with monopoly products which is a rare possibility.

- (e) **Market Price:** Under this method, market price is considered to be the base for the pricing the issues. In this case, market price may be treated as the latest purchase

price, realisable price or replacement price. This method is used mainly in respect of obsolete stock items or non-moving stock items.

The defect in respect of this method is that the price concessions obtained in respect of bulk purchases are not reflected in the cost of material.

(f) Specific Price:

If the material is purchased against a specific job or production order, the issue of material is priced at actual purchase price.

This method can be adopted if the purchase prices are fairly stable.

(g) Standard Price:

This is the normal or ideal price which will be paid in the normal circumstances, based on the basis of estimated market conditions, transportation costs and normal quantity of purchases. Any issue of material will be priced at standard prices irrespective of actual prices. This enables the simplification of accounting system with reduced clerical work and also enables to decide the efficiency of purchase department.

 **Activity C:**

As you are in the materials department, prepare a list of any three different methods for valuing the material issues.

(c) Valuation of Returns:

This indicates the material returned by the production department to stores department

The way in which the returned material may be valued can be as below:

(a) At the same price at which issued:

The original price of issue will be a base for valuing the returns for which original material requisition note will be the base.

(b) At the current price of issues:

The method which is followed for valuing the issue on the same date is considered for valuing the returns.

This will avoid the clerical efforts, but at the same time the track of original issue of material can't be maintained.

Treatment of shortages:

In some cases, the physical verification of stock may reveal that the physical stock is less than the stock as per the stores ledger. The valuation of this shortage is done as if it is an issue of material. The treatment given to the valuation of shortages in Cost Accounts depends upon the nature of the shortage i.e. Normal Shortage or Abnormal Shortage.

6.5 INVENTORY CONTROL

The object of inventory control is to reduce the investment in the inventory without affecting the efficiency in the area of production and sales. It should be remembered that the object is not only to reduce the investment in inventory. If that would have been the object, no organisation would have maintained inventory of any kind, thereby making the investment in the inventory as Nil. However, that is not the ultimate object as it is likely to affect the production and sales function adversely. For example, if a sufficient stock of raw material is not available, the production activity is likely to be interrupted. If sufficient stock of finished goods is not available, it may not be possible for the organisation to serve the customers properly and they may shift to the competitors. The object of inventory control is to avoid the situation of over investment as well as under investment. The level of inventories should be maintained at the optimum level.

Techniques of Inventory Control:**(1) Economic Order Quantity:**

It indicates that quantity which is fixed in such a way that the total variable cost of managing the inventory can be minimised. Such cost basically consists of two parts. First, Ordering Cost (which in turn consists of the costs associated with the administrative efforts connected with preparation of purchase requisitions, purchase enquiries, comparative statements and handling of more number of bills and receipts) Second, Carrying Cost i.e. the cost of carrying or holding the inventory (which in turn consists of the cost like godown rent, handling and upkeep expenses, insurance,

opportunity cost of capital blocked i.e. interest etc.) There is a reverse relationship between these two types of costs i.e. if the purchase quantity increases, ordering cost may get reduced but the carrying cost increases and vice versa. A balance is to be struck between these two factors and it is possible at Economic Order Quantity where the total variable cost of managing the inventory is minimum.

It is possible to fix the Economic Order Quantity with the help of mathematical formula. The following assumptions may be made for this purpose.

Let Q be Economic Order Quantity.

- A be Annual Requirement of material in units.
- O be cost of placing an order (which is assumed to remain constant irrespective of size of order.)
- C be cost of carrying one unit per year.

Now, if A is the annual requirement and Q is the size of one order, the total number of orders will be A/Q and the total ordering cost will be $-A/Q \times O$

Similarly, if the size of one order is Q and if it is assumed that the inventory is reduced at a constant rate from order quantity to zero when it is repurchased, the average inventory will be $Q/2$ and the cost of carrying one unit per year being C, the total carrying cost will be $Q/2 \times C$.

Thus, Total Cost = Ordering Cost + Carrying Cost

$$= \frac{A}{Q} \times O + \frac{Q}{2} \times C$$

The intention is that the value of Q should be such that the total cost should be minimum. Hence, taking the first derivative of the equation with respect to Q and setting the result to zero,

$$\frac{dO}{dq} = AO \left(-\frac{1}{Q^2} \right) + \frac{C}{2} = 0 \quad \text{OR}$$

$$Q = \sqrt{\frac{2 \times A \times O}{C}} \quad \text{Where}$$

Q = Economic Order Quantity

A = Annual Requirement in Units

O = Cost of Placing an Order

C = Cost of Carrying One Unit Per Year

Illustration:

A manufacturer uses 200 units of a component every month and he buys them entirely from outside supplier. The order placing and receiving cost is Rs. 100 and annual carrying cost is Rs. 12. From this set of data, calculate Economic Order Quantity.

Solution:

$$\begin{aligned} EOQ &= \sqrt{\frac{2 \times A \times O}{C}} \\ &= \sqrt{\frac{2 \times 2400 \times 100}{12}} \\ &= 200 \text{ units} \end{aligned}$$

In some cases, the carrying cost may be expressed as an annual percentage of the unit cost of purchases, in which case, the calculation of Economic Order Quantity takes the following form.

$$EOQ = \sqrt{\frac{2 \times A \times O}{C \times i}} \text{ Where}$$

A = Annual Requirement in units

O = Cost of placing an order

C = Unit purchase price

i = Carrying cost expressed as a percentage of unit purchase price.

Illustration:

From the Following data, work out the EOQ of a particular component.

Annual Demand : 5000 Units

Ordering Cost : Rs. 60 per Order

Price per Unit : Rs. 100
 Inventory carrying Cost : 15% on average inventory,

Solution:

$$\text{EOQ} = \sqrt{\frac{2 \times 5000 \times 60}{15\% \text{ of } 100}} = \sqrt{\frac{6,00,000}{25}} = \sqrt{40,000}$$

= 200 units

The total cost of managing inventory will be

$$\text{Ordering Cost} = \frac{5000}{200} \times 60 \text{ i.e. } 25 \times 60 \quad \text{Rs. 1,500}$$

$$\text{Carrying Cost} = \frac{200}{2} \times 15\% \text{ of } 100 \quad \text{Rs. 1,500}$$

(Based on average inventory) Rs. 3,000

Now, the next question is whether the purchases in Economic Order Quantity really reduce the total cost of managing inventory to the minimum. We can verify this using the trial and error method, by considering the above results.

1	2	3	4	5
Order Quantity	No. of Orders A/Q Rs.	Ordering Cost A/Q x O Rs.	Carrying Cost Q/2 x Ci Rs.	Total Cost
50	100	6,000	375	6,375
100	50	3,000	750	3,750
200	25	1,500	1,500	3,000
250	20	1,200	1,875	3,075
1,000	5	300	7,500	7,800
1,250	4	240	9,375	9,615
2,500	2	120	18,750	18,870

It can be observed from the above, that the order size of 200 units proves to be the most economic one in terms of minimum total cost. If the purchases are made in any other way, the same may not necessarily result into the minimum total cost.

$$1) \text{ Col. } 2 = \frac{500}{\text{Col. } 1} \quad [\text{5000 is Annual requirement}]$$

$$2) \text{ Col. } 3 = \text{Col. } 2 \times 60 \quad [60 \text{ is Ordering Cost}]$$

$$3) \text{ Col. } 4 = \frac{\text{Col. } 1}{2} \times \frac{15}{100} \times 100 \quad [\frac{15}{100} \text{ is Carrying Cost}] \\ 100 \text{ is Unit Price}$$

$$4) \text{ Col. } 5 = \text{Col. } 3 + \text{Col. } 4$$

Illustration:

Kapil Motors purchase 9,000 motor spare parts for its annual requirements, ordering one-month usage at a time. Each spare part costs Rs. 20. The ordering cost per order is Rs. 15 and the carrying charges are 15% of the average inventory per year. You have been asked to suggest a more economical purchasing policy for the company. What advice would you offer and how much would it save the company per year?

Solution:

Present Policy:

$$\text{Number of Orders} = \frac{\text{Annual Requirement}}{\text{Order size}}$$

$$= \frac{9000}{750} = 12$$

$$\text{Ordering Cost} = 12 \times 15 = 180 \quad \dots(1)$$

$$\text{Carrying Cost} = \frac{\text{Order Size}}{2} \times \text{Cost Price} \times \text{Carrying cost in \%}$$

$$= \frac{750}{2} \times 15\% \text{ of Rs. } 20 \\ = 375 \times 3 = 1,125 \quad \dots(2)$$

$$\text{Total Cost i.e. } 1 + 2 = 180 + 1125 = 1305 \quad \dots(3)$$

Proposed Policy:

To purchase in Economic Order Quantity

$$EOQ = \sqrt{\frac{2 \times A \times O}{C \times i}}$$

$$= \sqrt{\frac{2 \times 9000 \times 15}{15\% \text{ of } 20}} = 300 \text{ units}$$

Now, the revised total cost will be

$$\text{Number of Orders} = \frac{9000}{300} = 30$$

$$\text{Ordering Cost} = 30 \times 15 = 450 \quad \dots(4)$$

$$\text{Carrying Cost} = \frac{300}{2} \times 15\% \text{ of } 20 \quad \dots(5)$$

$$= 150 \times 3 = 450$$

$$\text{Total Cost i.e. } 4 + 5 = 450 + 450 = 900 \quad \dots(6)$$

Thus, purchases in Economic Order Quantity will result into the yearly saving of Rs. 405 (i.e. Rs. 1305 - Rs. 900)

(2) Fixation of Inventory Levels:

Fixation of various inventory levels facilitates the initiating of proper action in respect of the movement of various materials in time so that the various materials may be controlled in a proper way. However, the following propositions should be remembered.

- (i) Only the fixation of inventory levels does not facilitate the inventory control. There has to be a constant watch on the actual stock level of various kinds of materials so that proper action can be taken in time.

- (ii) The various levels fixed are not fixed on a permanent basis and are subject to revision regularly.

The various levels which can be fixed are as below.

(1) Maximum Level:

It indicates the level above which the actual stock should not exceed. If it exceeds, it may involve unnecessary blocking of funds in inventory. While fixing this level, following factors are considered.

- (i) Maximum usage.
- (ii) Lead time.
- (iii) Storage facilities available, cost of storage and insurance etc.
- (iv) Prices for the material.
- (v) Availability of funds.
- (vi) Nature of the material. For example, if a certain type of material is subject to Government regulations in respect of import of goods etc., the maximum level may be fixed at a higher level.
- (vii) Economic Order Quantity.

(2) Minimum Level:

It indicates the level below which the actual stock should not reduce. If it reduces, it may involve the risk of non-availability of material whenever it is required. While fixing this level, the following factors are considered:

- (i) Lead time.
- (ii) Rate of consumption.

(3) Re-order Level:

It indicates that level of material stock at which it is necessarily to take the steps for procurement of further lots of material. This is the level falling in between the two

extremes of maximum level and minimum level and is fixed in such a way that the requirements of production are met properly till the new lot of material is received.

(4) Danger Level:

This is the level fixed below minimum level. If the stock reaches this level, it indicates the need to take urgent action in respect of getting supply. At this stage, the company may not be able to make the purchases in a systematic manner, but may have to make rush purchases which may involve higher costs of purchases.

Calculation of Various Levels:

The various levels can be decided by using the following mathematical expressions.

- (1) **Re-order Level:** Maximum Lead Time x Maximum Usage
- (2) **Maximum Level:** Reorder Level + Reorder Quantity - (Minimum Usage X Minimum Lead Time).
- (3) **Minimum Level:** Reorder Level - (Normal Usage x Normal Lead Time.)
- (4) **Average Level:** Maximum Level + Minimum Level.
- (5) **Danger Level:** Normal Usage x Lead-time for emergency purchases.

Note: It should be noted that the expression of the Reorder Quantity in the calculation of Maximum Level indicates Economic Order Quantity.

Illustration:

Two components X and Y are used as follows.

Normal usage	-	50 units per week each.
Minimum usage	-	20 units per week each.
Maximum usage	-	75 units per week each.
Reorder quantity	-	X - 400 units Y - 600 units
Recorder period	-	X - 4 to 6 weeks Y-2 to 4 weeks

Calculate for each component:

- a) Reorder level
- b) Minimum level
- c) Maximum level
- d) Average stock level.

Solution:

(1) Reorder Level:

Maximum Lead time x Maximum Usage

$$X = 6 \text{ weeks} \times 75 \text{ units} = 450 \text{ units}$$

$$Y = 4 \text{ weeks} \times 75 \text{ units} = 300 \text{ units.}$$

(2) Minimum Level:

Reorder Level - (Normal Usage x Normal Lead-time)

$$X = 450 \text{ units} - (50 \text{ units} \times 5 \text{ weeks}) = 200 \text{ units.}$$

$$Y = 300 \text{ units} - (50 \text{ units} \times 3 \text{ weeks}) = 150 \text{ units}$$

(3) Maximum Level:

Reorder Level + Reorder Quantity - (Minimum Usage x Minimum Lead-time)

$$X = 450 \text{ units} + 400 \text{ units} - (25 \text{ units} \times 4 \text{ weeks}) = 750 \text{ units.}$$

$$Y = 300 \text{ units} + 600 \text{ units} - (25 \text{ units} \times 2 \text{ weeks}) = 850 \text{ units.}$$

(4) Average Stock Level:

$$\frac{\text{Minimum Level} + \text{Maximum Level}}{2}$$

$$X = \frac{200 \text{ units} + 750 \text{ units}}{2} = 475 \text{ units}$$

$$Y = \frac{150 \text{ units} + 850 \text{ units}}{2} = 500 \text{ units}$$

As stated above, the expression of the Reorder Quantity in the calculation of Maximum level indicates the Economic Order Quantity. Hence, in some cases, it may be necessary to decide the Economic Order Quantity before fixing the inventory levels.

Illustration:

Shriram Enterprises manufactures a special product 'ZED'

The following particulars are collected for the year 1986.

- (a) Monthly demand of ZED - 1000 units
- (b) Cost of placing an Order - Rs. 100
- (c) Annual carrying cost per unit - Rs. 15
- (d) Normal Usage 50 units per week
- (e) Minimum Usage 25 units per week
- (f) Maximum Usage 75 units per week
- (g) Re-order period 4 to 6 weeks

Compute from the above:

- (1) Economic order Quantity
- (2) Re-order Level
- (3) Minimum Level
- (4) Maximum Level
- (5) Average Stock Level

Solution:**(1) Economic order Quantity:**

$$= \sqrt{\frac{2 \times A \times O}{C}}$$

A = Annual Requirement

O = Ordering cost per cost

C = Carrying cost per unit per year

$$\therefore EOQ = \sqrt{\frac{2 \times 12000 \times 100}{15}}$$

$$= 400 \text{ units}$$

(2) Reorder Level:

Maximum Lead Time x Maximum Usage.

$$\therefore 6 \text{ weeks} \times 75 \text{ units} = 450 \text{ units}$$

(3) Minimum Level:

Reorder Level - (Normal Usage x Normal Lead time)

$$\therefore 450 \text{ units} - (50 \text{ units} \times 5 \text{ weeks}) = 200 \text{ units}$$

(4) Maximum Level:

Reorder Level + Reorder Quantity - (Minimum Usage X Minimum Lead-time)

$$\therefore 450 \text{ units} + 400 \text{ units} - (25 \text{ units} \times 4 \text{ Weeks}) = 750 \text{ units}$$

(5) Average Stock Level:

$$\frac{\text{Minimum Level} + \text{Maximum Level}}{2}$$

$$\therefore \frac{200 \text{ units} + 750 \text{ units}}{2} = 475 \text{ units}$$

There may be one more way in which the various inventory levels may be fixed and for this determination of the safety stock (also called as minimum stock or buffer stock) is essential. Safety stock is that level of stock below which the actual should not be allowed to fall. The safety stock may be calculated as -

(Maximum Usage X Maximum Lead-time) less

(Normal Usage X Normal Lead-time)

According to this method, the various inventory levels as discussed above may be fixed as below.

(1) Minimum Level:

It is equal to safety stock.

(2) Maximum Level:

It can be calculated as - Safety Stock + EOQ.

(3) Reorder Level:

It can be calculated as:

Safety Stock + (Normal Usage x Normal Lead-time)

(4) Average Stock Level:

It can be calculated as -

$$\begin{aligned}
 & \frac{\text{Minimum Level} + \text{Maximum Level}}{2} \\
 = & \frac{\text{Safety Stock} + \text{Safety stock} + \text{EOQ}}{2} \\
 = & \frac{\text{Safety Stock} + \text{EOQ}}{2}
 \end{aligned}$$

Illustration:

You have been asked to calculate the following levels for Part No. 007 from the information given hereunder:

- (a) Re-ordering level, (b) Maximum level
- (c) Minimum level, (d) Danger level,
- (e) Average level.

The ordering quantity is to be calculated from the following data:

- (i) Total cost of purchasing relating to the order Rs. 20.
- (ii) Number of units to be purchased during the year 5,000
- (iii) Purchase price per unit including transportation costs Rs. 50.
- (iv) Annual cost of storage of one unit Rs. 5.

Lead times:	Average	... 10 days
	Maximum	.. 15 days
	Minimum	.. 6 days
	Maximum for emergency purchases	... 4 days

Rate of consumption:

Average	.. 15 units per day
Maximum	.. 20 units per day

Solution:**Working Notes:**

- (a) Calculation of Safety Stock:

$$(\text{Maximum Usage} \times \text{Maximum Lead-time}) - (\text{Normal Usage} \times \text{Normal Lead-time})$$

$$= (20 \text{ units} \times 15 \text{ days}) - (15 \text{ days} \times 10 \text{ days})$$

$$= 300 \text{ units} - 150 \text{ units}$$

$$= 150 \text{ units.}$$

(b) Calculation of EOQ:

$$\sqrt{\frac{2 \times A \times O}{C}} \text{ Where}$$

A = Annual requirement

O = Ordering cost per order

C = Carrying cost per unit per year.

Hence,

$$\text{EOQ} = \sqrt{\frac{2 \times 500 \times 20}{5}}$$

$$= 200 \text{ units.}$$

(1) Reordering Level:

It can be calculated as -

$$\text{Safety Stock} + (\text{Normal Usage} \times \text{Normal Lead-time})$$

$$= 150 \text{ units} + (15 \text{ units} \times 10 \text{ days})$$

$$= 150 \text{ units} + 150 \text{ units} = 300 \text{ units.}$$

(2) Maximum Level:

It can be calculated as -

$$\text{Safety Stock} + \text{EOQ}$$

$$= 150 \text{ units} + 200 \text{ units} = 350 \text{ units.}$$

(3) Minimum Level:

It is equal to Safety Stock

$$= 150 \text{ units.}$$

(4) Danger Level:

Normal Usage X Lead-time for emergency purchases

$$= 15 \text{ units} \times 4 \text{ days} = 60 \text{ units}$$

(5) Average Stock Level:

It can be calculated as

$$\text{Safety Stock} + \frac{\text{EOQ}}{2}$$

$$= 150 \text{ units} + \frac{200}{2} \text{ units} = 250 \text{ units}$$

(3) Inventory Turnover:

Inventory turnover indicates the ratio of materials consumed to the average inventory held. It is calculated as below:

$$\frac{\text{Value of material consumed}}{\text{Average inventory held}} \quad \text{where}$$

Value of material consumed can be calculated as:

Opening Stock + Purchases - Closing Stock.

Average inventory held can be calculated as:

$$\frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

Inventory turnover can be indicated in terms of number of days in which average inventory is consumed. It can be done by dividing 365 days (a year) by inventory turnover ratio.

Illustration:

From the following data for the year ended 31st December, 1986, calculate the inventory turnover ratio of the two items and put forward your comments on them.

	Material A	Material B
	Rs.	Rs.
Opening Stock 1.1.86	10,000	9,000
Purchases during the year	52,000	27,000
Closing Stock 31.12.86	6,000	11,000

Solution:

$$\text{Inventory Turnover Ratio} = \frac{\text{Value of material consumed}}{\text{Average Inventory held}}$$

$$\begin{array}{lcl} \text{Material Consumed} & = & \text{Opening Stock} & 10,000 \\ & & + \text{Purchases} & + 52,000 \\ & & - \text{Closing Stock} & - 6,000 \\ & & & \hline & & 56,000 \end{array}$$

	Material A	Material B
Inventory Turnover	$= \frac{56,000}{8,000}$	$\frac{25,000}{10,000}$
	= 7	2.5

	Material A	Material B
Inventory Turnover Period	$= \frac{365}{7}$	$\frac{365}{2.5}$
	= 52 days	146 days

A high inventory turnover ratio or low inventory turnover period indicates that maximum material can be consumed by holding minimum amount of inventory of the same, thus indicating fast moving items. Thus high inventory turnover ratio or lower inventory turnover period will always be preferred.

Thus, a knowledge of inventory turnover ratio or inventory turn over period in case of various types of material will enable the reduction of the blocked up capital in undesirable types of stocks and will enable the organisation to exercise proper inventory control.

(4) ABC Analysis:

This technique assumes the basic principle of “Vital Few Trivial Many” while considering the inventory structure of any organisation and is popularly known as “Always Better Control”. It is an analytical method of inventory control which aims at concentrating efforts in those areas where attention is required most. It is usually observed that, in practice, only a few numbers of items of inventory prove to be more important in terms of amount of investment in inventory or value of consumption, while a very large number of items of inventory account for a very meager amount of investment in inventory or value of consumption. This technique classifies the various inventory items according to their importance. For example, a class consists of only a small percentage of a total number of items handled, but are most important in

nature. B Class items include relatively less important items. C Class items consist of a very large number of items which are less important. The importance of the various items may be decided on the basis of following factors.

- (i) Amount of investment in inventory.
- (ii) Value of material consumption.
- (iii) Critical nature of inventory items.

An example of ABC Analysis can be given as below.

Class	No. of items	% of total No. of items	Value/ Consumption Rs.	% of Value/ Consumption to Total Value
A	300	6	5,60,000	70
B	1500	30	1,60,000	20
C	3200	64	80,000	10
	5000	100	8,00,000	100

In order to exercise proper inventory control, A Class items are watched very closely and control is exercised right from initial stages of estimating the requirements, fixing minimum level/lead-times, following proper purchase/ storage procedures etc. Whereas in case of C Class of items, only those inventory control measures may be implemented which are comparatively simple, elaborate and inexpensive in nature.

$$\text{Working Note: } A = \frac{560000 \times 100}{8,00,000} = 70\%$$

Advantage of ABC Analysis:

- (a) A close and strict control is facilitated on the most important items which constitute a major portion of overall inventory valuation or overall material consumption and due to this the costs associated with inventories may be reduced.
- (b) The investment in inventory can be regulated in a proper manner and optimum utilisation of the available funds can be assured.
- (c) A strict control on inventory items in this manner helps in maintaining a high inventory turnover ratio. However, it should be noted that the success of ABC analysis depends mainly upon correct categorisation of inventory items and hence should be handled by only experienced and trained personnel.

(5) Bill of Materials:

In order to ensure proper inventory control, the ‘basic principle to be kept in mind is that proper material is available for production purposes whenever it is required. This aim can be achieved by preparing what is normally called as “Bill of Materials”.

A bill of material is the list of all the materials required for a job, process or production order. It gives the details of the necessary materials as well as the quantity of each item. As soon as the order for the job is received, bill of materials is prepared by Production Department or Production Planning Department.

The form in which the bill of material is usually prepared is as below:

BILL OF MATERIALS						
No.	Date of Issue		Production/Job Order No.			Remarks
S. No.	Description of Material	Code No.	Qty.	For Department Use only		
				Material Requisition No.	Date	Quantity demanded

The functions of bill of materials are as below:

- (1) Bill of material gives an indication about the orders to be executed to all the persons concerned.
- (2) Bill of material gives an indication about the materials to be purchased by the Purchases Department if the same is not available with the stores.
- (3) Bill of material may serve as a base for the Production Department for placing the material requisitions ships.
- (4) Costing/Accounts Department maybe able to compute the material cost in respect of a job or a production order. A bill of material prepared and valued in advance may serve as a base for quoting the price for the job or production order.

(6) Perpetual Inventory System:

As discussed earlier, in order to exercise proper inventory control, perpetual inventory system may be implemented. It aims basically aims at two facts:

- (1) Maintenance of Bin Cards and Stores Ledger in order to know about the stock in quantity and value at any point of time.
- (2) Continuous verification of physical stock to ensure that the physical balance and the book balance tallies.

The continuous stock taking may be advantageous from the following angles:

- (1) Physical balances and book balances can be compared and adjusted without waiting for the entire stocktaking to be done at the year-end. Further, it is not necessary to close down the factory for annual stocktaking.
- (2) The figures of stock can be readily available for the purpose of periodic Profit and Loss Account.
- (3) Discrepancies can be located and adjusted in time.
- (4) Fixation of various levels and bin cards enables the action to be taken for the placing the order for acquisition of material.
- (5) A systematic maintenance of perpetual inventory system enables locating the slow and non-moving items and to take remedial action for the same.
- (6) Stock details are correctly available for getting the insurance of stock.

Activity D:

Visit the stores department of any organization and try to identify two to three various inventory control techniques used in that organization.

6.6 SUMMARY

Material Cost is the first major component of cost in any organization, particularly a manufacturing organization. As such, identifying the material cost with the individual cost center is necessary. Identification of material cost with the individual cost center depends upon the various stages in the movement of material. Among various stages in the movement of material, valuation of various material movements plays a very significant role, because the cost calculations depend upon the valuation of material movements. Valuation of receipts of material does not create much of the problems in reality as there is a third party document available for the same i.e. invoice given by the supplier. Valuation of issues poses a problem in reality, as this movement of material is within the organization. As such, valuation of issues has to be done based upon various accounting assumptions like FIFO, LIFO, Simple Average, Weighed Average etc.

As material cost constitutes a major component of cost, exercising a proper control is necessary. For exercising proper control over inventory cost, an organization may be having various techniques available to it like Economic Order Quantity (EOQ), Fixation of Inventory Levels, ABC Analysis, Bill of Materials etc.

6.7 KEY WORDS

ABC Analysis: This is the technique for classifying inventory items according to their significance. This enables the management to concentrate its attention on the most significant inventory items.

Bill of Materials: This is the listing of all the inventory items which are required for the execution of a job. This statement may be prepared by the Production Department or the Design Department. Bill of Materials is the statement which is significant in the process of price fixation as well as cost control.

Comparative Statement: This statement helps the organization decide the final source of supply after alternative sources of supply are generated by limited tender situation or open tender situation or global tender situation.

Economic Order Quantity: This indicates the quantity in which material purchases should be made so that the costs associated with the inventory are at a minimum.

First In First Out: This accounting assumption proposes that the material coming in for the first time is issued for the first time. Under this calculation, material issues are valued at the old rate whereas closing stock is valued at the current rate.

Last In First Out: This accounting assumption proposes that the material received for the last time is issued for the first time. Under this calculation, material issues are valued at the current rate whereas the closing stock is valued at the old rate.

Simple Average Method: This accounting assumption considers the simple average of the rates of the material lots out of which material issues could have been made. This method reduces the extremity in the situation of material price variation. However, this method ignores the lot size.

Weighted Average Method: This accounting assumption is the best method for valuing material issues. In this accounting assumption, both the lot sizes as well as the prices of the lot are given weightage.

6.8 ILLUSTRATIVE PROBLEMS

- (1) The following informative is extracted from the Stores ledger in respect of Material X

Opening Stock Nil

Purchases

Jan. 1 100 @ Re. 1 per unit

Jan. 20 100 @ Rs. 2 per unit

Issues

Jan. 22 60 for Job W 16

Jan. 23 60 for Job W 17

Complete the receipts and issues valuation by adopting the First In First Out, Last In First Out and Weighted Average method. Tabulate the values allocated to Job W 16 and 17 and the closing stock under the methods aforesaid.

Solution:

- (a) **Valuation of receipts:** (For all methods)

Jan. 1	100 x 1.00	=	Rs. 100
Jan. 20	100 x 2.00	=	Rs. 200
	<u>200 units</u>		<u>Rs. 300</u>

7.1 INTRODUCTION

Labour Cost is another important element of cost in the manufacturing cost. It is an important element of cost even though the production is material- intensive. The basic factor which gives rise to the labour cost is the remuneration paid to the workers. However, the objective of cost-accounting (i.e. cost ascertainment with respect to the individual cost center and cost control) cannot be fulfilled properly unless and until the functions performed by the related departments are properly considered. These functions can be stated as below:

- (1) **Personnel Department:** This ensures the availability of correct workers to perform the jobs which are best suited for them. This is done by selecting and training them properly. This department may also be involved with the maintenance of records of job classification/ wage rates payable to workers, preparation of wages sheet and procedural aspects of wage payment.
- (2) **Time Keeping Department:** This is concerned with the recording of workers' time. This is not only for the purpose of wage calculations but also for the purpose of cost analysis and apportionment of cost over various jobs. The main functions performed by this department are time keeping and time booking.
- (3) **Cost Accounting Department:** This department accumulates and classifies cost data with respect to labour cost from the analysis of wages sheet and presents the reports to management to facilitate the control over labour cost.

7.2 METHODS TO ASCERTAIN LABOUR COST

The starting point for ascertaining the labour cost is in the form of Time Keeping and Time Booking.

Time Keeping:

This is the process of recording the attendance time of the workers. It is the responsibility of Time Keeping department which may function as a separate department in some cases, or else may function as the part of Personnel Department. Attendance time recording may be necessary as the payment of wages may depend on the attendance. Even when the payment of wages does not depend on the time attended, say in case of piece rate payment, the recording of time attended may be necessary from the following angles.

- (1) To maintain discipline.

- (2) Though the regular wages may not depend upon the time attended, in some cases, the other payments like overtime wages, dearness allowance etc. may be linked with the attendance.
- (3) The fringe benefits like Pension, Gratuity on retirement, Provident Fund etc. may depend on the continuity of service which will be available only if time attended is recorded properly.
- (4) Attendance records may be required for research and other purposes.

Methods of Time Keeping:

For the purpose of time keeping, various methods may be followed, though the selection of the method may depend upon the nature of the organization and policy of management. The main methods may be stated as below:

(1) Hand-Written Method:

Under this method, the names of the workers are recorded in the attendance register with provision of various columns for various days. The attendance of the worker may be recorded either by calling out his name or by a physical check. Alternatively, the workers themselves may sign in the attendance register.

This method, though simple, has become outdated. This method can also result in malpractices with the collusion between workers and time keeping/ personnel department. Also recording of late coming, overtime, short leave etc. may involve more clerical work and may be subject to errors.

(2) Token or Disc Method:

Under this method, each worker is allotted an identification number and a disc or token bearing that number. Immediately before the scheduled opening time, all the tokens/discs will be placed at the factory gate. Every incoming worker will take out his token and drop it in a separate box or hang it on a separate board. The tokens/ discs not removed will indicate that the said worker is absent. Similar procedure is followed while the workers leave the factory. In addition to the physical handling of tokens/ discs, it will be required to record the attendance time separately.

Though it is an improved method, as compared to manual/handwritten method, it is also subject to errors, mistakes and frauds. Further care should be taken to see that a worker does not remove the disc/token of his absent fellow in addition to his own.

(3) Time Recording Clock Method:

Under this method, every worker is allotted an individual ticket number and a clock card which bears that ticket number. The cards are placed on two racks on either side of the time recording clock denoting separately 'In' rack and 'Out' rack. At opening time, all the cards are placed in the 'Out' rack. On arrival, the worker takes out his own card, puts it in the slot available on the time clock recorder which punches the time on that card, and places the card in the 'In' rack. All the cards, left in the 'Out' rack indicate absent workers. At the time of departure, he removes the card from the 'In' rack, gets it punched and places it in the 'Out' rack.

Though, this method involves heavy capital outlay initially, it has certain advantages also.

- (1) It is economical in the sense it avoids clerical work involved in manual/handwritten method.
- (2) It is clean, safe and quick and has printed records to avoid disputes.
- (3) Chances of fraudulent entries being made can be avoided.

Time Booking:

The ultimate aim of costing is to decide the cost of each cost center. As such, the recording of time attended is not sufficient. Equally important is to record the time spent for individual cost centers. This process is in the form of time booking. The methods followed for this purpose, may be considered as below:

(a) Daily time sheets:

Under this method, each worker is provided with a daily time sheet on which the time spent by him on various jobs/work orders is expected to be mentioned. If the worker works on various jobs in a particular day, the daily time sheets move along with the worker. The entries on the same may be made by the worker himself or by the foreman.

This method may be conveniently used if the worker works on various jobs of short duration, say in the case of maintenance jobs.

This method is disadvantageous in the sense that it involves a considerable amount of paper work. The form in which the daily time sheets may be prepared is as below:

DAILY TIME SHEET

Name of Employee				
Employee No.		Date:		
Job No.	Dept.	Time Record		Time taken
		ON	OFF	
Checked by		Cost office reference		

(b) Weekly Time Sheets:

Under this method too, one sheet is allotted to each worker but instead of recording the work done for only a day, a record of time for all the jobs during the week is made. These types of time sheets are useful for intermittent types of jobs like building or construction work. It involves a comparatively less amount of paper work. The form in which the weekly time sheets may be prepared is as below.

WEEKLY TIME SHEET

Name of Employee			Week ending on...				
Employee No.							
Day	Job No.	Time		Time taken	Standard	Rate	Amount
		On	Off				
TOTAL							
Checked by		Cost office reference					

(c) Job Card:

Under this method, the details of time are recorded with reference to the jobs or production/work orders undertaken by the workers rather than with reference to individual workers, and this facilitates the computation of labour cost with reference to jobs or production/work orders. There may be two ways in which job card may be maintained.

- (1) According to first method, each job or production/work order is allotted a number. When a worker takes up a job, the time of starting and finishing the job is entered on the card meant for that worker. The summary of this card states the total time taken by that worker for that job. In order to compute the total time booked for the job as a whole, all cards of all the workers with respect to that job are required to be analysed. The form in which this card may be prepared is as below.

JOB CARD

Name of Employee		Job No.			
Employee No.					
Day	Time ON	Time OFF	Time Taken	Standard	Rate Rs.
FRI					
SAT					
SUN					
MON					
TUE					
WED					
Checked by				Cost office reference	

- (2) According to this method, a job card is prepared for each job production/work order accepted by the organization for execution. It describes the various operations/stages involved in the execution of the job. Time taken by the various workers to complete the job is entered on the card. This provides the information about the time taken by various workers to complete a particular job.

The form in which this card may be prepared is as below.

JOB CARD WITH OPERATIONS						
Job No.			Drawing No.			
Job Description						
Operation	Employee No.	ON	OFF	Time taken	Rate	Amount
Cutting		1				
		2				
Drilling		1				
		2				
Grinding		1				
		2				
Painting		1				
		2				
Assembly		1				
		2				
		3				
TOTAL						
Checked by				Cost office reference		

(d) Reconciliation of the time attended and the time booked:

If a combined time and job card is maintained, the problem of reconciliation will be relatively simple as both the details will be available on the same card. In other cases, at the end of the wage period or at a shorter interval also, the total time attended has to be compared with the time booked on job cards on the various jobs. If the time booked as per the job cards, is less than the attendance time, this indicates the idle time during which the worker has not done any work, though he was present in the factory.

 **Activity A:**

How do the time keeping and time booking forms of ascertaining the labour costs differ? Mention any two differences.

7.3 METHODS OF REMUNERATING THE WORKERS

Remuneration to workers indicates reward for labour and services. The remuneration may be paid in monetary terms (which in turn may be in direct or indirect form) or non-monetary terms. The remuneration paid in the monetary form may be by way of basic wages or salaries and other allowances and may be paid either on time basis or on work basis. However, payment of only basic wages or salaries may not be sufficient enough to induce the workers to work efficiently, hence they may be remunerated in the form of some incentives. In case of remuneration in non-monetary form, the workers may not receive anything in the form of money, but they may get facilities which induce them to stay with the organization. It may be in the form of the provision of health or welfare or recreational facilities, provision of working conditions and so on. We will discuss these methods of remuneration under the following heads.

- (1) Remuneration on Time Basis i.e. Time Rate System.
- (2) Remuneration on Work Basis i.e. Payment by Results.
- (3) Incentive/Bonus Systems.
 - (a) Individual Incentive Systems
 - (b) Group Incentive Systems.
- (4) Indirect monetary remuneration
 - (a) Profit sharing
 - (b) Co-partnership
- (5) Non-monetary incentives

7.4 PRINCIPLES OF A GOOD WAGE PAYMENT SYSTEM

- (1) As a general rule, if the efficiency of the workers can be measured in objective terms, the wages receivable by a worker should be in conformity with his efficiency. Otherwise an efficient worker is likely to be demotivated in working efficiently. At the same time, the standards fixed to measure the efficiency of a worker should be normal, which a normal worker under normal conditions can attain.
- (2) The wage payment system should be clearly defined and communicated to the workers leaving no scope for any ambiguity. At the same time, a good wage payment system should be simple to understand and easy to operate.
- (3) No upper limit should be imposed on the wages which can be earned by an efficient worker.
- (4) A good wage payment system will not punish the workers for matters beyond the control of the workers. For example, workers should not be punished in terms of reduced wages due to circumstances like machinery breakdown, power failures etc.
- (5) A good wage payment system should be reasonably permanent in nature. Frequent changes in the same should be avoided. If any changes are proposed to be made in the system of wage payment, they should not be thrust upon the workers by force, but should be implemented by having mutual discussions with, and due approval from, the workers.
- (6) The wage payment system should be properly tied up with quality control procedures to ensure that the workers are paid only for good quality production.
- (7) The basic objective of the wage payment system should be to get the maximum cooperation from the workers, improve the morale and productivity of the workers and to minimize the cost of supervision and labour turnover.
- (8) The wage payment system should take into consideration the external obligations to which the organization may be subject to. These obligations may be in the form of various statutes like Minimum Wage Act and the agreement entered into with the workers and so on.

(A) Time Rate System:

Under this, a worker is paid on the basis of time attended by him. He is paid at a specific rate irrespective of the production achieved by him. The pay rate may be fixed on a daily, weekly, or monthly basis.

This type of remuneration system is helpful in the following circumstances:

- (a) If the output of the worker is beyond his control, for example, his speed depends upon the speed of a machine or the speed of other workers.
- (b) If the output can't be measured or the standard time can't be fixed, for example, maintenance work.
- (c) If close supervision is possible.
- (d) If quality, accuracy and precision in work is of prime importance, as in artists and ad-agency people.

The time rate system of remunerating the workers is useful due to the following features:

- (a) Useful for highly efficient and highly inefficient workers.
- (b) Easy for calculations.
- (c) Easy to understand for the worker.
- (d) Assurance of minimum wages.

The time rate system has one most important disadvantage attached to it that the efficiency of the worker is disregarded while paying remuneration to him. To avoid this difficulty, some variations as discussed below can be applied in practice.

(i) High Wage Plan:

Under this system, timely wage rate of the workers may be fixed at a level which is higher as compared to wages paid to workers in the same industry or locality. Suitable working conditions are provided. Correspondingly, a high standard of efficiency is expected from the workers.

Those who are not able to come up to the standard are taken off the scheme.

(ii) Differential Time Rate:

Under this method, different hourly rates are fixed for different levels of efficiency. Up to a certain level of efficiency, normal day rate is applicable which gradually increases as efficiency increases. This can be illustrated as below:

Up to 80% efficiency	:	Re. 1.00 per hour (Normal Rate)
80% to 90% efficiency	:	Rs. 1.25 per hour
90% to 100% efficiency	:	Rs. 1.40 per hour
101% to 125% efficiency	:	Rs. 1.50 per hour

(B) Payments by results:

Under this system, workers are paid according to the production achieved by them. In many cases, time attended is not material. These methods can be reclassified as below.

(a) Straight Piece Rate System:

Under this method, each job, production or unit of production is termed as a piece and the rate of payment is fixed per piece. The worker is paid on the basis of production achieved irrespective of the time taken for its performance. Thus, the earnings of the worker can be computed as: Wages = No. of units produced x Piece Rate per unit. This method can be suitably applied if the production is of standard or repetitive nature. It can't be applied if the production can't be measured in suitable units.

It can be seen that the crux of this method is to decide the time required to complete a piece. The fixation of this time should be done in such a way that within that much time, a normal worker can complete the piece. This can be done either on the basis of previous experience or on the basis of time and motion study.

(b) Piece Rate With Guaranteed Time Rate:

Under the straight piece rate system, the remuneration of a worker depends upon the production achieved. If the production is less due to some factors beyond his control, he is likely to be penalised. To remove this difficulty, it may be decided that he will be paid on a time rate if his piece rate earnings fall below time rate earnings, so that the worker is assured of minimum earnings on a time basis. However, if this guaranteed time rate payment is too high, the incentive to increase output to get piece rate payment is less.

(c) Differential Piece Rate System:

Under this system, higher rewards are guaranteed to more efficient workers. The piece rates are fixed in such a way that normal piece rate is paid for work performed within and upto the standard level of efficiency. If efficiency exceeds the standard, payment at higher piece rate is made.

This can be illustrated as below:

Up to 83% efficiency - Normal Piece Rate.

Up to 100% efficiency - 10% above normal piece rate.

Above 100% efficiency - 30% above normal piece rate.

This method offers more inducement to the workers to work more efficiently and earn higher wages. But it is complicated to understand and expensive to operate.

Following systems use this principle of differential piece rates.

(1) Taylor Differential Piece Rate System:

This was introduced by F.W. Taylor. It provides two piece rates, a low piece rate for output below standard and a high piece rate for output above standard and does not provide for any guaranteed time rate payment. For example, if the standard output is 10 units and piece rate is Re. 1 per unit, the total wages are:

- (i) If actual hourly output is 8 units i.e. below standard, the piece rate is say 80% of normal piece rate i.e. Re. 0.80. Hence total wages are 8 units x Re. 0.80 = Rs.6.40.
- (ii) If actual hourly output is 12 units i.e. above standard, the piece rate is say 120% of normal piece rate i.e. Rs. 1.20.

Hence, total wages are 12 units x Rs.1.20 = Rs. 14.40.

The basic defect with this system is that even though the efficiency of the worker is below standard even marginally, he is punished heavily and even though the efficiency of the worker is above standard even marginally, he is benefited to a very great extent.

(2) Merrick Differential Piece-rate System:

To remove the defect existing in case of Taylor's System which heavily punishes the worker who produces below standard, the Merrick System provides for three piece rates. For example,

Efficiency	Piece rate
Up to 83%	Normal
Up to 100%	110% of normal piece rate
Above 100%	130% of normal piece rate

It should be noted that under this method also, no guaranteed time rate payment is provided.

Illustration:

The following particulars relate to a company.

Piece Rate-	6 paise per unit. Production of the workers
M -	125 units per day
N -	80 units per day
O -	150 units per day

Standard production per day 120 units.

Calculate the wages of the workers on the basis of Merrick's Differential piece rate system, when basic piece rate is guaranteed below the standard and workers get 108% of the basic piece rate between 100% and 120% of the basic piece rate above 120% efficiency.

Solution:

Calculation of total wages:

(a) Worker M:

Actual production 125 units i.e. 104% efficiency.

∴ Applicable piece rate - 108% of normal i.e. 6.48 paise per unit.

∴ Total wages: $125 \text{ units} \times 6.48 \text{ paise} = 810 \text{ paise i.e. Rs. 8.10}$

(b) Worker N:

Actual production 80 units i.e. below the standard.

∴ Applicable piece rate: basic piece rate i.e. 6 paise per unit

∴ Total wages: $80 \text{ units} \times 6 \text{ paise} = 480 \text{ paise i.e. Rs. 4.80}$

(c) Worker O:

Actual production 150 units i.e. 125% efficiency.

∴ Applicable piece rate - 120% of normal i.e. 7.20 paise per unit.

∴ Total wages 150 units x 7.20 paise = 1080 paise i.e. Rs. 10.80

(3) Gantt Task Bonus System:

This system is a combination of time rate and piece rate and provides for minimum time rate payment. A high task or standard is set. The wage structure may be fixed as below.

Output below standard - Minimum time rate payment.

Output at standard - Time wages plus some increase in wage rates.

Output above standard - High piece rate for the entire output.

(C) Individual Incentive Systems:

In case of time rate systems, the losses due to inefficiency of workers or benefits due to efficiency of workers are suffered or enjoyed by the employer alone. Similarly, in the case of piece-rate systems, the losses due to inefficiency of workers or benefits due to efficiency of workers are suffered or enjoyed by the worker alone. (The employer may be indirectly affected in the form of increased or decreased per unit overheads.) The incentive systems differ from both these systems in such a way that the financial advantages arising out of the efficiency of workers are enjoyed by both employer as well as workers. There are various systems by which incentives may be paid to workers. We will consider following main systems.

(a) Halsey Premium System:

Under this system, if the actual time taken is equal to or more than the standard time, the worker is paid at the time rate. If actual time is less than the standard time, the worker, in addition to time wages for hours actually worked, gets a bonus payment. The bonus is equivalent to the wages for the time saved in the decided percentage to be shared with the employer. The percentage allowed to worker may vary from 30% to 70% (usually 50%). The total wages payable to the worker under this system can be computed as below:

$$AH \times HR + \frac{(SH - AH) \times HR}{2} \quad \text{Assuming 50% - 50% sharing}$$

Where - AH - Actual hours
 SH - Standard hours
 HR - Hourly rate

(b) Halsey - Weir Premium System:

This system is a deviation of Halsey Premium System only with the exception that the ratio of sharing between the worker and the employer is fixed as 1/3: 2/3. The computation of total wages is the same as in case of Halsey Premium System, except the change in this ratio.

(c) Rowan Premium System:

Under this system also, guaranteed time rate payment is made. The amount of bonus paid is a percentage of hourly rate which is in proportion to the time saved. The total wages payable to the workers under this system can be computed as below:

$$AH \times HR + \frac{SH - AH}{SH} \times AH \times HR$$

Where AH - Actual Hours
 SH - Standard Hours
 HR - Hourly Rate

Comparative study of Halsey and Rowan System:

A comparative study of total wages under both these systems reveals that if time saved is less than 50% of the standard time. Rowan system assures more wages than those under Halsey system. But if time saved exceeds 50% of the standard time, Halsey system proves to be more beneficial. In Rowan System a less efficient worker gets the same bonus as a more efficient worker. As such, the Rowan System may be implemented in case of loose fixation of standards. The fall in bonus as time saved increases, offsets the damage done by loose standards.

Illustration:

The following are the particulars given to you.

Standard time .. 10 hours

Time rate .. Re. 1 per hour

Prepare a comparative table under Halsey Premium System and Rowan Premium System, if time taken is 9 hours, 8 hours, 6 hours, 5 hours 4 hours and 3 hours. Also calculate the amount of total wages and labour cost per hour under two methods. What conclusions do you draw from the table?

Solution:

Hours taken	Halsey Premium system Wages = Actual Hours x Hourly rate + 1/2 (Time Saved x Hourly rate)	Rowan Premium system. Wages = Actual Hours x Hourly rate + Time Saved/Time Allowed Actual Hours x Hourly rate
(a) 9	Wages = $9 \times 1 + 1/2 (1 \times 1)$ = Rs. 9.50	Wages = $9 \times 1 + (1/10 \times 9 \times 1)$ = Rs. 9.90
(b) 8	Wages = $8 \times 1 + 1/2 (2 \times 1)$ = Rs. 9	Wages = $8 \times 1 + (2/10 \times 8 \times 1)$ = Rs. 9.60
(c) 6	Wages = $6 \times 1 + 1/2 (4 \times 1)$ = Rs. 8	Wages = $6 \times 1 + (4/10 \times (6 \times 1))$ = Rs. 8.40
(d) 4	Wages = $4 \times 1 + 1/2 (6 \times 1)$ = Rs. 7.00	Wages = $4 \times 1 + (6/10 \times (4 \times 1))$ = 6.40
(e) 3	Wages = $3 \times 1 + 1/2 (7 \times 1)$ = Rs. 6.50	Wages = $3 \times 1 + (7/10 \times (3 \times 1))$ = Rs. 5.10

Activity B:

Assume that you are in a labour incentive organization. List any two of the various Time Rates and Payment by Results wage systems followed, and distinguish between them.

Conclusion:

It can be concluded from the above table that so long as the time saved is less than 50% of standard time, the total wages are more under the Rowan Premium system than under Halsey Premium System. If the time saved is more than 50% of standard time, the Halsey system proves to be more beneficial in terms of the total wages.

7.5 WAGES PAYMENT SYSTEMS

Indirect Monetary Remuneration:

This may take the following two forms.

(a) Profit Sharing:

According to this method, the workers are entitled to share in profits earned by an organisation, in addition to the regular wages, at a specified percentage. The legal provisions in this regard are enacted by way of Payment of Bonus Act, 1965. According to the provisions of this Act, all the employees drawing a monthly remuneration of Rs. 2,500 or less are entitled to a bonus at the minimum rate of 8.33% of wages of the subject to the maximum ceiling of 20 % of the wages. It should be noted that the statutory requirement of the payment of bonus does not depend on the profit earned necessarily, as the bonus is payable even though there are no profits. It is also worth noting that the statutory requirement of payment of bonus is the specific percentage of the wages or salaries paid to the workers and hence remains unaffected by any changes, either upwards or downward, in the profits earned by the organisation.

(b) Co-partnership:

According to this method, the workers are granted ownership rights in the operations of the organisation by which the workers are in the position to control the affairs of the organisation. In corporate organisations, it may be in the form of offering the shares of the company to the workers (which in corporate language is referred to as Employees' Stock Option Plans – ESOPs) or granting of loans to the workers to buy company's shares, according to which the workers get the voting rights to control the affairs of the company. The workers get a dividend on the shares as bonus. With the help of this method, the morale of the workers is increased. However, certain objections are raised against this method. First, the increase in earnings is too small. Second, the shareholding of the workers is too small to control the affairs of the company. Third, the workers are not rewarded according to individual efficiency.

Non-monetary Incentives:

The intention of these incentives is to attract better workers, retain the existing workers, encourage loyalty, reduce labour turnover, and provide better working conditions to workers and so on. Various benefits as stated below may be granted to the workers, either free or at reduced rates, remaining amount being contributed by the workers.

- (1) Health and safety services.
- (2) Education and training to workers and their children.
- (3) Canteen facility.
- (4) Pension, superannuation fund etc.
- (5) Loans at reduced rate of interest.

Activity C:

Between the monetary and non-monetary system of incentives, which would you find more beneficial in motivating the employees in the organization? Why?

7.6 IMPORTANT TERMS IN CASE OF LABOUR COST

A) Labour Turnover:

In every business organisation, the process of employees leaving the organisation and new workers being recruited is a normal feature. Labour Turnover indicates this change in the labour force showing a highly increasing or highly decreasing trend. Labour turnover showing a sharp increasing trend may involve the reduction in labour productivity and increasing costs. Too low a labour turnover trend may be due to inefficient workers who would not like to leave the organisation.

Causes of labour turnover:

The causes of labour turnover can be broadly classified as below:

(a) Avoidable Causes:

- (1) Dissatisfaction with job.
- (2) Dissatisfaction with remuneration.
- (3) Dissatisfaction with working conditions.
- (4) Dissatisfaction with hours of work.
- (5) Relationship with supervisors and workers.

(b) Unavoidable Causes:

- (1) Betterment/Personal.
- (2) Illness or accident.
- (3) Move from locality.
- (4) Discharge.
- (5) Marriage.
- (6) Retirement.
- (7) Death.
- (8) National service.

Costs of Labour turnover:

The cost of labour turnover may be classified under two headings.

(a) **Preventive Costs:**

These refer to all the costs which may be incurred by the organisation to keep workers happy and discourage them from leaving the job. This, in turn, may include the costs like:

- (1) Cost of Personnel Administration - To maintain good relations with the workers.
- (2) Cost of medical services- To keep the workers and their families in healthy condition, as healthy workers are an asset to the organisation, contributing towards higher efficiency and productivity.

- (3) Costs of welfare activities - To give facilities like transport, canteen etc.
- (4) Other incentive schemes like pension, provident fund, superannuation fund, Bonus etc.

(b) Replacement Costs:

These refer to the costs incurred for recruitment and training of new workers and the resulting losses, wastages and reduced productivity due to the inefficiency and inexperience of new workers.

This in its turn may include the costs like-

- (1) Inefficiency of new workers.
- (2) Cost of selection and placement.
- (3) Training costs.
- (4) Loss of output due to delay in getting new workers
- (5) Increased spoilage and defectives.
- (6) Cost of tools and machine breakages.

Measurement of Labour turnover:

There are three methods for measuring the labour turnover.

(1) Separation Method

Under this method, it is computed as:

$$\frac{\text{No. of Separations in a period}}{\text{Average no. of workers}} \times 100$$

(2) Replacement Method

Under this method, it is computed as

$$\frac{\text{No. of Replacements in a period}}{\text{Average no. of workers}} \times 100$$

(3) Flux Method

Under this method, it is computed as -

$$\frac{\text{No. of separations} + \text{No. of replacement}}{\text{Average no. of workers}} \times 100$$

Activity D:

Explain the term 'cost of labour turnover', and mention any two methods for measuring the same.

Illustration:

From the following data given by Personnel Department, calculate the labour turnover rate by applying:

- (a) Separation Method
- (b) Replacement Method
- (c) Flux Method

No. of workers on pay-roll

At the beginning of the month 900

At the end of the month 1,100

During the month, 10 workers left, 40 persons were discharged and 150 workers were recruited. Of these 25 workers are recruited in the vacancies of those leaving while the rest were for an expansion scheme.

Solution:

Calculation of Labour Turnover

(1) Separation Method

$$\frac{\text{No. of separations in a period}}{\text{Average No. of workers}} \times 100$$

$$= \frac{50}{1000} \times 100 = 5$$

∴ Monthly Turnover Rate: 5%

$$\text{Annual Turnover Rate: } 5 \times \frac{365}{30} = 60.83\%$$

(2) Replacement Method:

$$\frac{\text{No. of replacements in a period}}{\text{Average No. of workers}} \times 100$$

$$= \frac{25}{1000} \times 100 = 2.5\%$$

Monthly turnover Rate: 2.5%

$$\text{Annual Turnover Rate: } 2.5 \times \frac{365}{30} = 30.42\%$$

(3) Flux Method:

$$\frac{\text{No. of separations} + \text{No. of replacements}}{\text{Average No. of workers}} \times 100$$

$$= \frac{50 + 25}{1,000} \times 100 = 7.5\%$$

Monthly Turnover Rate: 7.5%

$$\text{Annual Turnover Rate: } 7.5 \times \frac{365}{30} = 91.25\%$$

Working Notes:

Average number of workers is calculated as -

$$\begin{aligned} & \frac{\text{No. of workers at beginning} + \text{No. of worker at end}}{2} \\ &= \frac{900 + 1,100}{2} \\ &= 1,000 \end{aligned}$$

(B) Idle Time:

It indicates the time for which wages are paid to the workers but during which no production is obtained. To exercise proper control on idle time, causes of the same should be analysed properly and studied from its controllability point of view.

The causes of idle time can be analysed as below:

(a) Productive causes:

These can be further classified as:

- (i) Due to machine breakdown.
- (ii) Power failures.
- (iii) Waiting for tools, work or raw materials.
- (iv) Waiting for instructions.

These causes are supposed to be controllable causes and can be controlled if planned properly.

(b) Administrative causes:

Some idle time may be caused due to administrative decisions. E.g. the organisation is having excess machine capacity or during the depression period, it is not having sufficient work to be performed, but it has decided not to get rid of trained workers temporarily. As such cost of idle time is accepted.

(c) Economic causes:

Economic causes may be of seasonal, cyclical or industrial nature. For example, if the product manufactured is of a seasonal nature, for the other periods of the year, the capacity may remain unused, unless there is some other product to take care of the slack season introduced. In case it is not possible to make alternate use of such idle capacity, some idle time is unavoidable. In case of cyclical causes, the causes are similar to seasonal fluctuations but these causes are beyond the control of management.

Treatment of idle time cost:

If idle time payment is normal and controllable, it should be classified as overheads. If it is possible to allocate the same to some department, it should be allocated and absorbed in the production department cost.

If idle time is normal and uncontrollable, the labour rates should be suitably modified. For example, if the time attended is 8 hours, but the time booked is only 7.5 hours and labour cost is Rs. 1.5 per hour, the hourly labour rate should be computed as -

$$\frac{8 \text{ hours} \times \text{Rs. } 1.5}{7.5 \text{ hours}} \quad \text{i.e. Rs. } 1.60$$

If idle time payment is uncontrollable and abnormal, it should not be considered as a part of manufacturing cost but should be written off to Costing Profit and Loss Account.

 **Activity E:**

What do you mean by idle time?

(C) Internal Control Problems in Labour Cost:

In today's world, labour is one of the most important factors of production, and contributing to a very great extent to the cost of production. As such, it will be the intention of every organisation to have proper control on the labour cost. The implementation of various Internal Control Procedures indicate the following of all those methods and procedures

which ensures fluent and smooth running of the operations of the organisation and also of achieving protection of assets, prevention of errors and frauds, proper recording of information whenever necessary.

The cost of labour may be high due to the various reasons stated below:

- (1) Excess staffing - Having more staff than the requirement.
- (2) Lack of experienced and efficient personnel.
- (3) Excessive remuneration pattern - Settlement of the wage rates or piece rates on higher side which may not be justified on the basis of the efficiency of the workers.
- (4) Clerical errors or fraudulent practices taking place in the area of time keeping, computation of wages payable, procedure for payment of wages to the workers etc.
- (5) Idle time or unusual overtime wages.
- (6) Increase of spoilage due to lack of proper supervision and inspection.
- (7) High labour turnover.

After locating the reasons for increasing labour costs, attempts can be made to keep the same in control after following various internal control measures as discussed below.

- (1) To avoid the problem of excess staffing, the employment of the workers should be made only after the receipt of labour placement requisition from the concerned department. After the receipt of this requisition, it should be seen, whether it is possible to meet the requirement of said department with the help of existing staff only or at least by transferring the existing excess staff in other departments. Before proceeding with the actual process of selection of the staff, care should be taken to decide in advance about the nature of work which may be assigned to the individual employee.
- (2) To ensure that correct personnel is employed to work in the correct places, care should be taken to analyse the requirements of the job and then to select the personnel which suits these requirements. This process may be in the form of 'job evaluation.'

Selection of the proper personnel may not be enough. To train the selected personnel to extract maximum of their efficiency is equally necessary.

- (3) The problem of setting the excessive rate structure in the form of higher time rate or piece rates or bonus rates may be avoided by setting the standards in the most scientific manner. For this purpose, the techniques like time and motion study, work study etc. may be implemented.

- (4) To avoid the clerical errors or fraudulent practices in the areas of wage sheet preparation or wage payments, a proper internal check procedure may be implemented, so that the work of one person is properly checked by another person. For this, the following steps may be taken:
- (a) Time recording clock should be installed, wherever possible. Proper supervision is required to ensure that one person punches his own card only.
 - (b) The terms of remuneration should be set and made known to the workers in very clear terms.
 - (c) Proper internal checks should be executed while preparing the wages sheets. The cashier should not be allowed to handle the wages sheets and the person preparing the sheets should not be allowed to prepare the wage packets. Personnel officer/manager should check and authorize the wages sheets.
 - (d) The wages should be paid to workers after they are properly identified. The wages should not be paid to any other person, unless proper authorization letter is produced in exceptional circumstances.
 - (e) Distribution of wages should be made in all the departments at a time so as to avoid the possibility of one person being present at two places.
- (5) Existence of idle time should be properly analyzed according to controllability. The causes of controllable idle time should be attempted to be avoided.

If it is necessary to work overtime, it should be properly authorized and should be paid and accounted for properly. Care should be taken to see that proper returns are obtained for making overtime wages payment.

- (6) If the labour cost is higher due to spoilage of work, which in turn may be due to lack of proper supervision or inspection, it is a cost which can very well be controlled by having proper supervision or inspection.
- (7) The causes of labour turnover should be analysed according to normality. All the avoidable causes of labour turnover should be paid proper attention to. Higher trends of labour turnover add to the costs in mainly two ways. It reduces the labour productivity and at the same time, increases the costs. If the workers have the grievances which are of avoidable nature, say dissatisfaction with remuneration or other benefits or working hours or working conditions or job itself or relations with the fellow workers or the supervisors, attempts can be made to avoid those causes of labour turnover.

7.7 SUMMARY

Labour Cost is an important element of cost in the manufacturing cost. It is important element of cost even though the production is material-intensive. The basic factor which gives rise to the labour cost is the remuneration paid to workers. Ascertaining the labour cost is in the form of Time Keeping and Time Booking. Time Keeping is the process of recording the attendance time of the workers, and for the purpose of time keeping, various methods may be followed, like the Hand-Written Method, Token-Disc method, Time Recording Clock Method etc. Time Booking is to record the time spent for individual cost centers. Methods followed in this are, daily time sheets, weekly time sheets, and Job card etc. Remuneration to workers indicates the reward for labour and services. The remuneration may be paid in monetary terms (which in turn may be in a direct form or indirect form) or non-monetary terms. The remuneration paid in the monetary form may be by way of basic wages or salaries and other allowances and may be paid either on time basis or on work basis. However, payment of only basic wages or salaries may not be sufficient enough to induce the workers to work efficiently; hence they may be remunerated in the form of some incentives. The methods of remuneration are on time basis, i.e. Time Rate System, on work basis like Payment by Results, Incentive /Bonus Systems, Indirect Monetary remuneration and non-monetary incentives. In every business organisation, the process of employees leaving the organisation and new workers being recruited is a normal feature. Labour Turnover indicates this change in labour force showing a highly increasing trend or highly decreasing trend. Labour turnover showing sharp increasing trend may involve the reduction in labour productivity and increasing costs. In today's world, labour is one of the most important factors of production, and contributes to a very great extent to the cost of production. As such, it will be the intention of every organisation to have a proper control on the labour cost. The implementation of various Internal Control Procedures indicates all those methods and procedures which ensures fluent and smooth running of the operations of the organisation and also of achieving protection of assets, prevention of errors and frauds, proper recording of information whenever necessary.

7.8 KEY WORDS

Bookkeeping: To ascertain the Labour cost, it's important to record the time spent for individual cost centers. This process is in the form of time booking. Daily, weekly time Sheets, and Job Card are the methods of book keeping.

Labour Turnover: Indicates changes in labour force, showing a highly increasing trend or highly decreasing trend. Labour turnover showing a sharp increasing trend may involve the reduction in labour productivity and increasing costs.

Methods of Remuneration:

- (1) Remuneration on the Time Basis i.e. Time Rate System: under this, a worker is paid on the basis of time attended by him. He is paid at a specific rate irrespective of the production achieved by him. The pay rate may be fixed on daily basis, weekly basis or monthly basis. This includes the high wage plan and differential time rate system.
- (2) Remuneration on Work Basis i.e. Payment by Results: under this system, workers are paid according to the production achieved by them. In many cases, the time attended is not material. Straight Piece Rate System, Piece Rate with Guaranteed Time Rate, Differential Piece Rate System etc. fall under this category.
- (3) Incentive/Bonus Systems: includes Individual Incentive Systems, and Group Incentive Systems. The incentive systems differ from both these systems in such a way that the financial advantages arising out of the efficiency of workers are enjoyed by both employer as well as workers. There are various systems by which the incentive may be paid to workers. This includes the Halsey Premium plan and the Rowan Premium plan.
- (4) Indirect monetary remuneration: includes Profit sharing, According to this method, the workers are entitled to share in profits earned by an organisation, in addition to the regular wages, at a specified percentage and Co-Partnership, According to this method, the workers are granted ownership rights in the operations of the organisation by which the workers are in position to control the affairs of the organisation.
- (5) Non-monetary incentives: Under this, workers are given various benefits in the form of better working conditions, health and safety services etc., either free or at reduced rates.

Time Keeping: Ascertaining the Labour cost is in the form of time keeping. This is the process of recording attendance time of the workers in the organisation. It is the responsibility of Time Keeping Department, which may function as a separate department in some cases or else may function as part of Personnel Department. Attendance time recording may be necessary as the payment of wages may depend on the attendance. The Hand-Written Method, Token or Disc. Method, Time Recording Clock Method, are methods of time keeping.

8.1 INTRODUCTION

It has already been discussed that the term ‘cost’ can be basically classified as Direct Cost and Indirect Cost. Direct Cost indicates all those costs which can be identified with the individual cost centre and indirect cost indicates all those costs which cannot be identified with the individual cost centre. The totals of indirect costs are termed as overheads.

8.2 OVERHEAD CLASSIFICATION

There are various ways in which the overheads can be classified:

(1) Element-wise Classification :

As the cost can be basically classified as per the Elements of Cost—that is, material cost, labour cost and expenses, the indirect cost i.e. overheads may be classified as per the elements of cost. This classification of overheads takes the form of:

- (a) Indirect Material
- (b) Indirect Labour
- (c) Indirect Expenses.

The meaning and the type of expenses included in this classification have already been discussed in the chapter on Cost Sheet.

(2) Function-wise Classification:

Under this classification, the overheads are classified according to the functions they perform. This classification of overheads takes the form of:

- (a) Factory Overheads (also termed as production or works or manufacturing overheads)
- (b) Administration Overheads.
- (c) Selling and Distribution Overheads. The meaning and the type of expenses included in this classification have already been discussed in the chapter on Cost Sheet.

(3) Variability-wise Classification :

- (i) **Fixed overheads :** These overheads indicate the costs, which remain unaffected by variations in volume of output. For example, rent, insurance on building, salary to administrative staff, etc. Per unit cost of overheads may reduce as the volume of output increases but the total overheads remain constant.
- (ii) **Variable overheads :** These overheads indicate the costs, which vary directly in proportion to volume of output. For example, Consumable stores, nuts/bolts, loose tools etc. Per unit cost of overheads remains the same but total overheads may increase or decrease as per volume of output.
- (iii) **Semi-variable overheads :** These overheads indicate those, which are neither fixed nor variable in nature. These may remain fixed at certain levels of activity while may vary proportionately at other levels of activity. For example, maintenance cost, power, electricity, supervision cost etc.

(4) Controllability-wise Classification :

Under this classification, the overheads are classified according to their controllable nature. This classification takes the form of:

- (a) Controllable overheads.
- (b) Uncontrollable overheads. This classification has already been discussed.

(5) Normality-wise Classification :

Under this classification, the overheads are classified according to the fact as to whether the overheads are normally incurred at a certain level of output under normal circumstances. This classification takes the form of:

- (a) Normal overheads.
- (b) Abnormal overheads.

This classification has already been discussed.

It should be noted in this connection, that the above classification refers to the classification of same amount of overheads in different forms to suit the individual requirements. For example, for the purpose of preparing the cost statement, overheads may be classified according to functions while for the purpose of marginal costing applications, overheads may be classified according to variability

 **Activity A :**

List any four of the classification of overheads, which you think are effective.

8.3 PROCEDURE FOR CHARGING OVERHEADS

The basic aim of costing is to find out the cost of each cost centre. The cost of each cost center can be either the direct cost or the indirect cost. The direct cost can be identified with the individual cost centre and hence poses no difficulties. To charge the indirect costs i.e. overheads to the individual cost centers is the major problem. For this, the following procedure may be followed.

(A) Allocation/Primary Apportionment :

There can be some overheads which are incurred for the company as a whole, as, for all the departments, Production as well as Service departments. To identify the common costs with the individual departments is the first stage problem. This can be solved in two ways.

- (1) If at all it is possible to identify some overheads with the individual departments they should be identified by following the procedure of allocation of overheads.

For example, wages paid to the maintenance department workers can be obtained from the wages sheet and can be allocated to the maintenance department. Similarly, the cost of indirect material can be allocated to individual departments by pricing material requisition slips.

- (2) It may not be possible in all the cases to allocate the overheads, i.e. in case of common expenses for the entire factory. In this case, they can be apportioned among the various departments on some suitable basis, i.e. to all production as well as service departments. This process is in the form of **Primary apportionment or distribution of overheads**. The selection of the base on which overheads are or should be apportioned depends on the following principles:

- (a) **Service or use basis:** If the benefit obtained by various departments from the overheads can be measured, overheads can be apportioned on that basis.
- (b) **Survey basis:** If amount of services rendered can't be measured, survey basis may be applied. For example, if it can be noted that a supervisor is giving 60% of his services to department 'A' and 40 % to department 'B', his wages can be apportioned on that basis.
- (c) **Ability to pay basis:** In this case, the apportionment may depend upon the factors like total sales/profitability. It may not be fair in some cases as most efficient departments may have to bear higher amounts of overheads, though actual overheads of that department may be lower than those of the other departments.

The usual bases which can be selected for Primary Apportionment may be as below:

Item of expenditure	Base
(1) Canteen expenses/Staff Supervision	Number of workers.
(2) Rent/Taxes	Area
(3) Power	HP/KWh
(4) General Lighting	Number of light points/area
(5) Depreciation	Value of assets
(6) Supervision	Number of Employees/wages paid
(7) Telephone expenses	Number of telephone calls made
(8) Fire Insurance.	Value of stocks held/value of Assets.

Illustration :

The Omega Co. has having four departments. A, B, and C are production departments and D is a servicing department. The actual costs for a period are as follows :

	Rs.
Rent	2,000
Repairs	1,200
Depreciation	900
Light	200
Supervision	3,000
Insurance	1,000
Employees Insurance (Employer's liability)	300
Power	1,800

The following data are also available in respect of departments.

	Dept. A	Dept. B	Dept. C	Dept. D
Area sq. ft.	150	110	90	50
Number of workers	24	16	12	8
Total wages (Rs.)	8,000	6,000	4,000	2,000
Value of plant (Rs.)	24,000	18,000	12,000	6,000
Value of stock (Rs.)	15,000	9,000	6,000	-

Apportion the cost to the various departments on the most equitable method.

Solution :

Apportionment of Overheads

Particulars	Base	Total Rs.	Dept. A Rs.	Dept. B Rs.	Dept. C Rs.	Dept. D Rs.
Rent	Area sq. ft.	2,000	750	550	450	250
Repairs	Total wages	1,200	480	360	240	120
Depreciation	Value of Plant	900	360	270	180	90
Light	Area – sq. ft.	200	75	55	45	25
Supervision	No. of workers	3,000	1,200	800	600	400
Insurance	Value of stock	1,000	500	300	200	-
Employees' Insurance (Employer's Liabilities)	No. of workers	300	120	80	60	40
Power	Value of Plant	1,800	720	540	360	180
		10,400	4,205	2,955	2,135	1,105

Notes :

It is assumed that the insurance is payable only on stock. Had it been assumed that it is payable on stock as well as plant, the base would have been the combined value of stock and plant.

For the apportionment of power cost, Kwh/HP rating would have been an ideal base. As relevant data is not available, it is apportioned on the basis of value of plant.

Repairs are apportioned on the basis of total wages assuming that repair charges consist of mainly the labour charges.

(3) Secondary Apportionment :

With the process of primary apportionment or distribution, the loading of overheads for all the departments i.e. production as well as service departments can be obtained. The next step is to transfer the overheads of non-production departments to the production departments, as the various cost centers move through the production departments only. This is in the form of '**Secondary apportionment or distribution of overheads**'.

The usual bases which can be selected for the secondary apportionment may be as below:

- (1) Maintenance Dept. - Number of hours worked.
- (2) Stores Dept. - Number of requisitions.
- (3) Purchase Dept. - Number of Purchase orders
- (4) Building Service Dept. - Area
- (5) Welfare/ Canteen and other facilities - Number of employees.
- (6) Personnel or Time keeping Dept. - Number of employees.
- (7) Internal Transport - Weight/value of goods moved.

While apportioning the overheads of non-production departments to production departments, the problem will be there if non-production departments are rendering the services inter-se.

There can be two ways to handle the situation like this :

- (A) Ignore the services given by one service department to another. The defects involved with this method are very obvious.

 **Activity B :**

Explain in your own words the concept of primary and secondary apportionment of overheads. Name an organization, which in your opinion is successful in classifying and apportioning the overheads.

Illustration :

The following figures are extracted from the accounts of M/s. Vasant Works for the month of July 1983.

	Production Depts.		Service Depts.		
	P1	P2	S1	S2	S3
Indirect Material	280	140	170	350	160
Indirect Wages	324	312	296	190	218
Power and Light	Rs. 3,000				
Supervision Charges	Rs. 2,200				
Rent and Taxes	Rs. 500				
Insurance on assets	Rs. 60				

Depreciation at the rate of 12% p.a. on capital value of assets has to be considered. From the above information and the following departmental data, prepare overhead recovery rates for the production departments P1 and P2 on the basis of direct labour hours. The expenses of service departments should be apportioned straight to the production depts. with the information that S1 is tool room, S2 is maintenance department and S3 is stores department.

Departmental Data :	P1	P2	S1	S2	S3
Area (sq. ft.)	400	200	100	200	100
Capital Value of Assets (Ps.)	8000	4000	7000	5000	6000
Kilowatt Hours	4000	3000	1000	1000	1000
Number of employees	150	100	75	100	125
Direct Labour Hours	5000	5000			
Number of requisitions	1000	300			

Solution :

Statement showing apportionment of overheads

Items	Base	P1 Rs.	P2 Rs.	S1 Rs.	S2 Rs.	S3 Rs.
Indirect Material	Allocation	280	140	170	350	160
Indirect wages	Allocation	324	312	296	190	218
Power & Light	Kilowatt Hrs	1200	900	300	300	300
Supervision	No. of employees	600	400	300	400	500
Rent & Taxes	Area	200	100	50	100	50
Insurance on Assets	Value of assets	16	8	14	10	12
Depreciation	Value of assets	80	40	70	50	60
		2700	1900	1200	1400	1300
Dept. S1	Labour Hours	600	600	(-)1200		
Dept. S2	Labour Hours	700	700		(-)1400	
Dept. S3	No. of requisitions	1000	300			(-)1300
		5,000	3,500			

(B) If it is decided to consider the services rendered by one service department to another, the first problem will be to decide the percentage in which services are given by the service departments inter-se. After such percentage is decided, the secondary apportionment can be made by either of the following methods.

- (i) **Simultaneous Equation Method:** Under this method the amount of overheads of each production department can be obtained by solving simultaneous equations.

- (ii) **Repeated Distribution Method:** Under this method service dept. overheads are distributed to other departments, production as well as service, on agreed percentage and this process is repeated till the figures of service departments are exhausted or are too small to consider further apportionment.

Illustration :

A company has 3 production depts. and 2 service depts. and for a period departmental distribution summary has the following totals.

Production Depts.	A ..Rs. 800	B Rs. 700	C. Rs. 500
Service Depts.	1Rs. 234	2.. Rs. 300	

The expenses of service depts. are charged out on a percentage basis as :

	A	B	C	1	2
Service Dept. 1	20%	40%	30%	-	10%
Service Dept. 2	40%	20%	20%	20%	

You are required to show the apportionment of overheads.

Solution :

- (a) Simultaneous Equation Method:

$$\text{Let } x = \text{ total overheads of Dept. 1}$$

$$y = \text{ total overheads of Dept. 2}$$

$$\therefore x = 234 + 2/10 y$$

$$\text{and } y = 300 + 1/10 x$$

$$\therefore 10x = 2340 + 2y \quad \dots(1)$$

$$\text{and } 10y = 3000 + x \quad \dots(2)$$

Rearranging equation 1 and multiplying equation 1 by 5

$$-10y = 11700 - 50x$$

$$10y = 3000 + x$$

$$\text{Adding 0} = 14700 - 49x$$

$$\therefore 49x = 14700$$

$$x = \frac{14700}{49}$$

$$\therefore X = 300 \quad \dots(3)$$

$$\text{However, } Y = 300 + 1/10 X$$

$$Y = 300 + 1/10 X \times 300$$

$$Y = 330 \quad \dots(4)$$

Total overheads can be apportioned on the basis of agreed percentages to production departments as below.

	Total Rs.	Dept. A Rs.	Dept. B Rs.	Dept. C Rs.
As per Primary appointment	2,000	800	700	500
Dept. 1 (90% of Rs. 300)	270	60	120	90
Dept. 2 (80% of Rs. 330)	264	132	66	66
	2534	992	886	656

(b) Repeated Distribution Method :

	Dept. A Rs.	Dept. B Rs.	Dept. C Rs.	Dept. 1 Rs.	Dept. 2 Rs.
As per Primary appointment	800	700	500	234	300
Dept. 1	47	94	70	(-) 234	23
Dept. 2	129	65	64	65	(-) 323
Dept. 1	13	26	20	(-) 65	6
Dept. 2	3	1	2	-	(-) 6
	992	886	656	-	-

(3) Absorption :

The process of secondary apportionment of overheads, ensures the loading of overheads to the production departments. Now the next stage is that each job or product should get the loading of the overheads while it is moving through the production department and this process is in the form of Absorption or Recovery of overheads. There can be a number of methods for absorbing the overheads but the ultimate selection of method has to be made after considering various factors like type of industry, nature of products, manufacturing process, requirements and policy of management, cost of operating the system etc.

The various methods which can be considered for deciding the rates of overhead absorption are as below :

(1) Direct Materials Cost Percentage Rate:

This is calculated as :

$$\frac{\text{Amount of overheads to be absorbed}}{\text{Direct Materials cost}} \times 100$$

For example, If production overheads to be absorbed are Rs. 25,000/- and Direct materials cost is Rs. 50,000, the absorption rate will be :

$$\frac{25,000}{50,000} \times 100 \text{ i.e. } 50\%$$

Now if the direct materials cost of a job is Rs. 500, it will be getting the loading of overheads to the extent of 50% of direct materials cost, i.e. Rs. 250. This method is useful if materials cost forms a major part of production cost and is normally used if materials costs are stable and equipments used remain unchanged.

This method leads to unsatisfactory results due to following reasons.

- (i) There can be some situations where material prices vary without any change in the amount of overheads, in which case, this method may show wrong results.
- (ii) If this method is used, a job using expensive material may get high loading of overheads as compared to a job using cheap material, which may not be fair.

(2) Direct Wages Percentage Rate:

This is calculated as:

$$\frac{\text{Amount of overheads to be absorbed}}{\text{Direct wages cost}} \times 100$$

For example, if the production overheads to be absorbed are Rs. 10,000 and direct wages cost is Rs. 40,000, the absorption rate will be :

$$\frac{10,000}{40,000} \times 100 \text{ i.e. } 25\%$$

Now if the direct wages cost of a job is Rs. 400, it will be getting the loading of overheads to the extent of 25% of direct wages cost, i.e. Rs. 100. This method is useful if labour cost forms a major part of production cost and also if the work performed by all the workers is uniform, ratio of skilled and unskilled workers is constant and labour rates do not fluctuate widely.

The problem with this method is that there is very little relationship between direct wages and overhead expenses. It may give wrong results if the workers vary in ability.

(3) Prime Cost Percentage Rate:

This is calculated as:

$$\frac{\text{Amount of overheads to be absorbed}}{\text{Prime Cost}} \times 100$$

For example, if the production overheads to be absorbed are Rs. 16,000 and prime cost is Rs. 80,000, the absorption rate will be:

$$\frac{16,000}{80,000} \times 100 \text{ i.e. } 20\%$$

Now if the prime cost of a job is Rs. 250, it will be getting the loading of overheads to the extent of 20% of prime cost, i.e. Rs. 50.

This method is useful in this sense that it considers both the materials cost as well as labour cost.

(4) Labour Hour Rate:

This is calculated as:

$$\frac{\text{Amount of overheads to be absorbed}}{\text{Labour hours required for production.}}$$

For example, if production overheads to be absorbed are Rs. 50,000 and labour hours worked are 100,000, the absorption rate will be :

$$\frac{\text{Rs. } 50,000}{100,000} \text{ i.e. Re. } 0.50 \text{ per labour hour.}$$

Now, if a job requires 20 labour hours to complete it, the loading of overheads to the same will be Re. 0.50 per labour hour i.e. Rs. 10/-.

This method is useful if labour is the most important element of cost.

However, additional records are required to be kept for time booking per job. Further, if machinery forms a dominant portion in production cost, this method may lead to wrong results.

(5) Machine Hour Rate:

This is calculated as:

$$\frac{\text{Amount of overheads to be absorbed}}{\text{Number of Machine Hours}}$$

For example, if production overheads to be absorbed are Rs. 20,000 and machine hours worked as 5000, the absorption rate will be

$$\frac{\text{Rs. } 20,000}{5,000} \quad \text{i. e. Rs. 4 per machine hour.}$$

Now if a job requires 25 machine hours to complete, the loading of overheads to the same will be Rs. 4 per machine hour, i.e. Rs. 100.

If the machine use accounts for a large element of cost in the overall production cost, then this method can be used conveniently. This rate can be considered to be useful and ideal especially in the days of high mechanisation and automation.

While computing the machine hour rate, it is necessary to consider the various overheads required to be incurred for running a machine or group of machines treating the same as distinct cost centers.

Activity C :

In your opinion why is absorption necessary? Discuss any two methods of absorption in overheads.

Illustration :

Following information relates to activities of a production department of a factory for a certain period.

Direct Materials used	Rs. 4,000
Direct wages	Rs. 6,000
Direct Labour hours worked	
(Including 20,000 hrs. of Machine operations)	24,000
Overheads chargeable to the dept.	Rs. 5,000

For order No. 156 carried out in dept. relevant figures were.

Direct Materials used	Rs. 200
Direct wages	Rs. 165
Direct labour hours	
(Including 800 machine hours)	820

Calculate the overheads chargeable to Order No. 156 by 5 cost rates.

Solution :

Calculation of overhead absorption rate

(a) Direct Material Cost percentage:

$$\frac{\text{Amount of overheads}}{\text{Direct Material Cost}} \times 100 \\ = \frac{\text{Rs. } 5,000}{\text{Rs. } 4,000} \times 100 = 125\%$$

(b) Direct Labour Cost percentage:

$$\frac{\text{Amount of overheads}}{\text{Direct Labour Cost}} \times 100 \\ = \frac{\text{Rs. } 5,000}{\text{Rs. } 6,000} \times 100 = 83 \frac{1}{3}\%$$

(c) Prime Cost percentage :

$$\frac{\text{Amount of overheads}}{\text{Prime Cost}} \times 100$$

$$= \frac{\text{Rs. } 5,000}{\text{Rs. } 10,000} \times 100 = 50\%$$

(d) Labour Hour Rate :

$$\frac{\text{Amount of overheads}}{\text{Direct Labour Hours}}$$

$$= \frac{\text{Rs. } 5,000}{24,000} = \text{Re. } 0.2083 / \text{Labour Hour.}$$

(e) Machine Hour Rate

$$\frac{\text{Amount of overheads}}{\text{Machine Hours}}$$

$$= \frac{\text{Rs. } 5,000}{20,000} = \text{Rs. } 0.25 / \text{Machine Hour.}$$

The overheads chargeable to Order No. 156 and the total cost of the same can be calculated as below:

	Material Rs.	Labour Rs.	Overheads Rs.	Total Rs.
(a) Direct Material Cost percentage	200.00	165.00	250.00 *	615.00
(b) Direct Labour Cost percentage	200.00	165.00	137.50	502.50
(c) Prime Cost percentage	200.00	165.00	182.50	547.50
(d) Labour Hour Rate	200.00	165.00	170.83	535.83
(e) Machine Hour Rate	200.00	165.00	200.00	565.00

$$* 200 \times 125\% = 250$$

Illustration :

Compute the machine hour rate from the following data.

Cost of the machine	Rs. 1,00,000
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Installation charges	Rs. 10,000
----------------------	------------

Estimated scrap value after the expiry of life (15 years)	Rs. 5,000
Rent and Rates for the shop per month	Rs. 200
General lighting for the shop per month	Rs. 300
Insurance charges for the machine per annum	Rs. 960
Repairs and Maintenance expenses per month	Rs. 1,000
Power consumption 10 Units per hour.	
Estimated working hours per annum 2,200 (This includes setting up time of 200 hours)	
Rate of power per 100 Units	Rs. 20
Shop supervisor's salary per month	Rs. 600

The machine occupies 1/4 of the total area of the shop. The supervisor is expected to devote 1/5 of the total time for the supervision of the machine.

Calculation of Machine Hour Rate :

(a) Standing Charges	Rs.
Depreciation	7,000.00
Rent and Rates	600.00
General lighting	900.00
Insurance Charges	960.00
Repairs and Maintenance	12,000.00
Shop Supervisor's salary	1,440.00
Annual standing charges	<u>22,900.00</u>
Annual Machine Hours (Excluding setting up time)	2000
Hourly standing charges	Rs. 11.45

(b) Running charges :

Power Expenses	
Rate of power 20 paise per unit.	
Power consumption - 10 units per hour.	
Hourly power expenses	Rs. 2.00

(c) Machine Hour Rate i.e. a + b

Rs. 13.45

Working Notes :

- (1) It is assumed that during the setting up time, the machine will not be used for the intended purpose and hence the said time is ignored for the calculation of machine hour rate.
- (2) It is assumed that the depreciation is charged on straight-line basis.

Hence, it is calculated as :

$$\text{Estimated overhead absorption rate} = \frac{\text{Cost of Machine + Installation charges} - \text{Estimated scrap value}}{\text{Estimated life of machine}}$$

$$= \frac{\text{Rs. } 100,000 + \text{Rs. } 10,000 - \text{Rs. } 5000}{15 \text{ years}} = \text{Rs. } 7,000 \text{ p.a.}$$

- (3) It is assumed that the Repairs and Maintenance expenses are incurred only for the machine.

8.4 ACTUAL V/S PREDETERMINED OVERHEAD ABSORPTION RATES

The overhead absorption rates can be considered on actual basis or predetermined basis. For computing the absorption rates on actual basis, the actual data for the previous period is considered, i.e. actual overheads, actual direct materials/wages cost, actual prime cost, actual labour hours worked, actual machine hours worked etc. However, the actual overhead absorption rates have certain limitations.

- (1) The actual details are available only after the end of actual accounting period and required details may not be available either for proper control of overheads or for price fixation.
- (2) If the production is of seasonal nature, overhead absorption rates will not be constant month wise and comparison of production costs month wise will be difficult.

As such, it is customary to consider predetermined overheads absorption rates instead of actual overhead absorption rates. By predetermined rates it is meant that instead of considering actual data in respect of Direct Materials/Wages/Prime Cost or Labour/Machine Hours, estimations are made in respect of the same and predetermined overhead absorption rate is applied whenever computations are to be made in respect of product cost of a job.

8.5 UNDER AND OVER ABSORPTION OF OVERHEADS

If the organization follows the policy of considering predetermined overhead absorption rates, it may face the problem of under or over absorption of overheads if the actual overheads to be absorbed or the bases for the absorption, i.e. Materials/ Wages/ Prime cost or Labour/Machine Hours etc. vary from the assumption. For example, a Company considers the overhead absorption rate as a direct materials cost percentage rate. It is decided that the predetermined overhead absorption rate should be considered for the forthcoming year 1989. As such, the predetermined overhead rate was estimated on the basis of following details.

$$\text{i.e. } \frac{\text{Estimated amount of overheads}}{\text{Estimated Direct Materials cost}} \times 100$$

$$\text{i.e. } \frac{\text{Rs. } 10,000}{\text{Rs. } 50,000} \times 100 \text{ i.e. } 20\%$$

Now, on this basis all the jobs moving through that department during 1989 will be getting the loading of overheads @ 20% of Direct Materials Costs.

After the year 1989 ended, the actual details are computed and it is found out that whereas Direct Materials cost was as estimated, i.e. Rs. 50,000, the actual amount of overheads was reduced to Rs. 9,000. As such, the rate at which the overheads should have been absorbed, should have been

$$\frac{\text{Rs. } 9,000}{\text{Rs. } 50,000} \times 100, \text{ i.e. } 18\% \text{ and not } 20\% \text{ as originally considered}$$

Such situation gives rise to the under absorption or over absorption of overheads.

The situation of under absorption arises if the overheads absorbed are less than the actual overheads. The situation of over absorption arises if the overheads absorbed are more than the actual overheads.

E.g. Period	Overheads Absorbed Rs.	Actual Overheads Rs.	Remarks
I	7,500	9,000	Underabsorption
II	10,000	8,000	Overabsorption.

Causes :

Under - absorption of overheads may take place due to the reasons like :

- Actual overheads being more than the estimated overheads or
- Actual output or hours worked being less than those as estimated.

Over - absorption of overheads may take place due to the reasons like :

- Actual overheads being less than the estimated overheads OR
- Actual output or hours worked being more than those as estimated.

8.6 TREATMENT OF UNDER OR OVER ABSORBED OVERHEADS

The overheads which are under or over absorbed may be treated in either of the following ways:

- (1) **Use of supplementary rate:** If the amount of under or over absorbed overheads is considerably significant, the cost of the cost centers may be adjusted by means of the use of supplementary overhead absorption rate. This method of treating the over or under absorption of overheads is most important where the cost is considered as a base for quoting selling prices, for example, cost plus contracts.

For example, the predetermined overhead absorption rate, for the forthcoming period of months, was decided as below.

$$\frac{\text{Amount of overheads}}{\text{Total labour Hours}} = \frac{\text{Rs. } 50,000}{25,000} = \text{Rs. } 2/\text{Labour Hour.}$$

A mid term review of 6 monthly operations revealed that whereas the total labour hours during the period were 12,500, the amount of overheads incurred was Rs. 30,000. The overheads actually absorbed will be 12,500 hours x Rs. 2 i.e. Rs. 25,000. Considering the same trend of amount of overheads, the total annual overheads are likely to be Rs. 60,000, out of which Rs. 25,000 are already absorbed. As such, for the remaining 6 months, the overhead absorption rate may be calculated as :

$$\frac{\text{Revised amount of overheads}}{\text{Number of Labour Hours}}$$

$$\begin{aligned}
 &= \frac{\text{Rs. } 60,000 - \text{Rs. } 25,000}{12,500} \\
 &= \frac{\text{Rs. } 35,000}{12,500} = \text{Rs. } 2.80 / \text{Labour Hour.}
 \end{aligned}$$

- (2) **Carrying over to the remaining period:** In case of the seasonal types of organization, the overheads under or over absorbed during a certain period may be carried over to the remaining part of the accounting period with the hope that they may be compensated during the remaining period of time.
- (3) **Writing off to Costing Profit and Loss Account :** In case of the under or over absorption of the overheads arising out of the abnormal circumstances, they are written off to Costing Profit and Loss Account.

Activity D :

Do you think that under and over absorption of overheads affects the overhead costing? How? Mention any two distinguishing points in this regard.

Illustration :

The budgeted working conditions of a cost centre are as follows:

Normal working per week	-	42 hours
No. of machines	-	14
Normal weekly loss of hours on maintenance etc.	-	5 hours per machine
No. of weeks worked per year	-	48
Estimated annual overheads	-	Rs. 1,24,320
Estimated direct wage rate	-	Rs. 4 per hour.

Actual result in respect of a 4 week period are :

Wages incurred	-	Rs. 9,000
Overheads incurred	-	Rs. 10,200
Machine hours produced	-	2,000

You are required to calculate:

- (a) The overhead rate per machine hour
- (b) The amount of under or overabsorption of wages and overheads.

Solution :

- (a) Normal working hours per year
 - (For all 14 machines)
 - 42 weekly hours per machine
 - x 14 machines x 48 weeks
 - = 28,224 machine hours.
- (b) Hours lost on maintenance
 - 5 hours per week x 14 machines
 - x 48 weeks = 3,360 machine hours.
- (c) Effective machine hours i.e., a - b
 - 24,864 machine hours.
- (d) Estimated annual overheads
 - Rs. 1,24,320
- (e) Machine hour rate i.e., d / c
 - Rs. 5
- (f) Overheads absorbed
 - 2000 machine hours x Rs. 5
 - = Rs. 10,000
- (g) Overheads actually incurred
 - Rs. 10,200
- (h) Overheads underabsorbed
 - i.e., g - f
 - Rs. 200

WAGES

- (a) Labour hours for 4 weeks
 - 42 hours x 4 week = 168 hours
- (b) For 14 machines
 - 168 hours x 14 machines
 - = 2,352 hours
- (c) Estimated direct wage rate
 - Rs. 4 per hour
- (d) Estimated direct wages for 4 weeks i.e., b x c
 - Rs. 9,408
- (e) Wages actually incurred
 - Rs. 9,000
- (f) Wages over absorbed
 - i.e., d-e
 - Rs. 408

8.7 CONTROL OVER OVERHEADS

As the basic intention of cost accounting is to exercise the control over the costs and as the overheads is a part of the cost, cost accounting procedures attempt to control the overheads also. For this purpose, the following propositions should be remembered:

- (1) The success of procedures to control the overheads largely depends upon the correct classification of the overheads. This classification can be done from the various angles.
 - (a) **Function wise:** This takes the form of classification in the form of factory overheads, administration overheads and selling and distribution overheads.
 - (b) **Variability wise:** This takes the form of classification in the form of fixed overheads, variable overheads and semi-fixed or semi – variable overheads.
 - (c) **Normality wise:** This takes the form of classification in the form of normal overheads and abnormal overheads.

Fixed overheads normally arise as a result of policy and are largely uncontrollable at the lower level of management. They can be controlled at the top level of management. However, the variable overheads can be controlled at the lower or middle level of management as well.

Most of the administration overheads are fixed in nature and can be controlled mainly at top management level. However, the factory overheads can be controlled at lower or middle management level also.

- (2) After the correct classification of overheads, use may be made of the following two techniques with the intention to exercise proper control over overheads.
 - (a) Budgetary control
 - (b) Standard costing

Both these techniques are discussed in detail in the following chapters.

However, both these techniques necessarily involve the following stages in the process of implementation.

- (i) **Planning:** This lays down the course of action to be taken in future.

In case of budgetary control, it is in the form of the budgets and in case of standard costing, it is in the form of the standard cost.

- (ii) **Implementation of plan :** This indicates actual steps to execute the plan. For this, downward communication may be necessary from top management level to lower management level.
 - (iii) **Measuring actual performance, comparison with plans and computing variances :** Measurement of actual performance may be in terms of actual costs or actual output. Actual costs and actual output is compared with the planned performance and variations, if any are calculated.
 - (iv) **Analysis of variances and decision making :** Variations between the actual performance and the planned performance is required to be analyzed as to the causes and proper corrective actions are required to be taken to remove unfavorable variations or maintain favorable variations.
- (3) Classification of overheads as fixed and variable, facilitates the preparation of flexible budgets which provides proper base for comparison in the form of budgeted overheads for any level of activity actually attained. Flexible budgets may be treated as an improved method to control the overheads.

Activity D :

“The success of procedures to control the overheads largely depends upon the correct classification of these overheads.” Comment.

8.8 SUMMARY

The sum total of indirect costs is termed as overheads. The classification of overheads is based element-wise, function-wise, variability-wise, controllability-wise, normality-wise, etc. The basic aim of costing is to find out the cost of each cost center. To charge the indirect costs i.e. overheads to the individual cost centers the procedure followed is through the apportionment as identifying the common costs with the individual departments is the first stage, called as primary apportionment of cost. Next is to transfer the overheads of non-production departments to production departments, as the various cost centers move through the production departments only. This is in the form of ‘Secondary apportionment or distribution of overheads’. Now the next stage is that each job or product should get

the loading of the overheads while it is moving through the production department and this process is in the form of Absorption or Recovery of overheads.

The various methods, which can be considered, for deciding the rates of overhead absorption are Direct Materials Cost Percentage Rate, Direct Wages Percentage Rate, Prime Cost Percentage Rate, Labour Hour Rate, Machine Hour Rate. The overhead absorption rates can be considered on an actual or predetermined basis. For computing the absorption rates on actual basis, the actual data for the previous period is considered, i.e. actual overheads, actual direct materials/wages cost, actual prime cost, actual Labour hours worked, actual machine hours worked. If the organization follows the policy of considering predetermined overhead absorption rates, it may face the problem of under or over absorption of overheads if the actual overheads to be absorbed or the bases for the absorption, i.e. materials/ wages/ prime cost or labour/machine hours etc. vary from the assumption.

The overheads, which are under or over absorbed, may be treated in either in the use of supplement rate, Carrying over the overheads to remaining period, Writing off the overheads to Profit and Loss Account. The basic intention of cost accounting is to exercise the control over the costs and as the overheads is a part of cost, cost accounting procedures attempt to control the overheads also. The success of procedures to control the overheads largely depends upon the correct classification of the overheads. This classification can be done from the various angles, like function-wise, variability wise, Normality wise. After the correct classification of overheads, use may be made of following two techniques with the intention to exercise proper control over overheads (a) Budgetary control (b) Standard costing.

8.9 KEY WORDS

Element-wise classification of Overheads: Overheads may be classified as per the elements of cost. i.e., Indirect Material Cost, Indirect Labour Cost and Indirect Expenses

Function-wise classification of Overheads: Overheads are classified according to the functions they perform. For example, factory overheads (also termed as Production or Works or Manufacturing Overheads), Administration Overheads, Selling and Distribution Overheads.

Fixed Overheads: These overheads indicate the costs which remain unaffected by variations in volume of output. Per unit cost of overheads may reduce as the volume of output increases but the total overheads remain constant.

Primary apportionment or distribution of Overheads: As it is not possible in all the cases to allocate the overheads, i.e. in case of common expenses for the entire factory. Hence, they can be apportioned among the various departments on some suitable basis, i.e. to all production as well as service departments. Such apportionment is termed as primary apportionment.

Secondary apportionment or distribution of overheads: This is the process of transferring the overheads of service departments to production departments. As a result of secondary apportionment of overheads, overheads of the organization as a whole get identified only with production departments.

Semi-variable Overheads: These overheads indicate those, which are neither fixed nor variable in nature. These may remain fixed at certain levels of activity while may vary proportionately at other levels of activity.

Variable Overheads: These overheads indicate the costs, which vary directly in proportion to volume of output. Per unit cost of overheads remains the same but total overheads may increase or decrease as per volume of output.

8.10 ILLUSTRATIVE PROBLEMS

- (1) Meera Industries Limited is a single product organization having a manufacturing capacity of 6,000 units per week of 48 hours. The output data vis-a-vis different elements of cost for three consecutive weeks are given below :

Units Produced	Direct Material Rs.	Direct Labour Rs.	Total factory overheads (Variable and Fixed) Rs.
2,400	4,800	6,000	37,200
2,800	5,600	7,000	38,400
3,600	7,200	9,000	40,800

As a cost Accountant, you are asked by the company to work out the selling price assuming level of 4,000 units per week and a profit of 20% on selling price.

Solution :

It can be observed that an increase in production by 400 units increases the total factory overheads by Rs. 1,200 indicating that per unit variable overheads are Rs. 3. Hence, at the activity level of 2,400 units, the total variable overheads are Rs. 7,200 i.e. 2400 units x Rs.3 per unit, out of total overheads of Rs. 37,200. Hence, the balance amount represents fixed overheads. It should be noted that the direct material cost and direct labour cost represents the variable cost of production. At 2,400 units, per unit cost is as below :

Direct material - Rs. 4800 / 2400 units = Rs. 2 / per unit.

Direct Labour - Rs. 6000 / 2400 units = Rs. 2.5 per unit

The cost sheet for the production of 4000 units can be worked out as below :

Cost Sheet - 4000 units

	Per Unit	Total
	Rs.	Rs.
Direct Material Cost	2.00	8,000
Direct Labour Cost	2.50	10,000
Variable Overheads	3.00	12,000
Fixed Overheads	7.50	30,000
Total Cost	15.00	60,000
Add : Profit i.e. 20% of selling price of Or 25% of total cost	3.75	15,000
Sales	18.75	75,000

9.1 INTRODUCTION

In the conventional system of cost ascertainment, the direct cost may be identified with the individual cost centre. However, the indirect costs i.e. the overheads are identified with the individual cost centre on the most equitable basis. This results into some problems in the process of managerial decision-making.

- a) The above process does not take into consideration the behaviour of cost. All the costs in the practical circumstances do not behave in the same manner. Some of the costs tend to remain constant despite the changes in the level of activity or volume of operations. These types of costs are comparatively irrelevant in the managerial decision-making.
- b) The above process results into the under absorption or over absorption of overheads.

The said limitations have given rise to a managerial decision making technique that basically tries to classify the costs based upon the behaviour of cost. The technique is referred to as Marginal Costing. The basic proposition made by this technique is that the costs should be classified on the basis of behaviour of the costs. From this angle, the costs can be viewed as fixed costs and variable costs.

9.2 CLASSIFICATION OF COST

Fixed Cost is the cost that tends to remain constant irrespective of the level of activity or volume of operations. Fixed Cost tends to vary with time rather than with the level of activity. The basic characteristic feature of the fixed cost is that this cost in terms of amount may remain constant at all the levels of activities, however, the per unit fixed cost goes on decreasing with the increasing level of activity and vice-a-versa.

Variable Cost is the cost that varies in direct proportion with the level of activity or volume of operations. Basic characteristic feature of variable cost is that variable cost in terms of amount may increase or decrease with the changing level of activity or volume of operations. However, per unit variable cost remains constant.

In practical circumstances, some costs may not be entirely fixed or entirely variable. They are technically in the form of semi-fixed costs or semi-variable costs. For the purpose of marginal costing, the semi-fixed costs or semi-variable costs are required to be classified in the individual components of fixed cost and variable cost. For segregating the semi-fixed or semi-variable cost into the individual components of fixed cost and variable cost, various techniques or methods may be available viz.

- Comparison by period or level of activity
- Range or High and Low method
- Analytical method
- Scatter graph method
- Least Square method

Based upon the above discussions, let us make some calculations for a manufacturing organization manufacturing and selling a single product, operating at various levels of activities.

Level of Activity – Units	1000	1500	2000
Per Unit Selling Price – Rs.	100	100	100
Total Sales – Rs.	1,00,000	1,50,000	2,00,000
Variable Cost – Rs.	60,000	90,000	1,20,000
Fixed Cost – Rs.	30,000	30,000	30,000
Total Cost – Rs.	90,000	1,20,000	1,50,000
Per Unit Variable Cost – Rs.	60	60	60
Per Unit Fixed Cost – Rs.	30	20	15
Per Unit Total Cost – Rs.	90	80	75

It can be observed from the above calculations that if the fixed cost is included in the calculation of total cost, per unit total cost becomes non-comparable with the changes in the level of activity in one cost-period to another cost-period. To avoid this non-comparability, it is necessary to eliminate the fixed costs while determining the total cost.

As such, the technique of Marginal Costing proposes that fixed cost tends to remain stagnant at least over a shorter period of time and hence should be ignored in the entire decision making process. As such, marginal costing considers only the variable cost as the relevant cost in the decision making process.

 **Activity A:**

Briefly explain the fixed and variable costs of a manufacturing process of a concern and list any two techniques to segregate these costs.

9.3 THE CONCEPT OF MARGINAL COSTING

Marginal Cost is defined as the amount at any given volume of output by which the aggregate costs are changed if the volume of output is increased or decreased by one unit. The aggregate cost consists of both, fixed cost and variable cost. In the short run, fixed costs remain constant irrespective of changes in the volume, aggregate costs may increase or decrease with the changes in volume, specifically due to variable cost. As such, in simple words, marginal cost indicates the Per Unit Variable Cost.

Marginal Costing is defined as the ascertainment, by differentiating between fixed and variable costs, of the marginal costs and of the effect on profit of changes in volume and type of output.

Basic assumptions made by Marginal Costing

The entire technique of Marginal Costing is based upon the following assumptions.

- a) Variable Cost varies in direct proportion with the level of activity. However, per unit variable cost remains constant at all the levels of activities.
- b) Per unit selling price remains constant at all the levels of activities.
- c) Whatever is produced by the organization is sold off. In other words, there are no variations due to the stock.

Features of Marginal Costing

1. The product costs are classified as fixed costs and variable costs. Semi-variable costs are also classified in their individual components of fixed cost and variable cost.

2. Only variable costs are considered while computing the product costs. The closing stock of finished goods and semi-finished goods is valued after considering variable costs only.
3. Fixed costs are written off during the period of incurrence and hence do not find a place in the product cost determination or the inventory valuation.
4. Prices of the products are based on variable costs only.
5. Profitability of the products or departments is decided in terms of marginal contribution.

Marginal Costing and Cost-Volume-Profit Relationship

The definition of the term “Marginal Costing” requires the computation of :

- a) Marginal Cost
 - b) Cost-Volume Profit Relationship
- a) Determination of Marginal Cost**

As stated earlier, the marginal cost is the additional cost for manufacturing one additional unit, which is nothing else but the variable cost per unit. Thus the marginal cost or variable cost includes the direct cost plus the variable overheads. Fixed overheads get clubbed with the fixed cost.

b) Cost Volume-Profit Relationship

The intention of every business activity is to earn the profit and to maximize profit. Determination of the profits depends upon the interplay between the following factors and there exists a close relationship among these factors :

- (1) Selling price per unit and total sales amount.
- (2) Total cost which in its turn may be in the form of variable cost or fixed cost.
- (3) Volume of sales

Cost-Volume-Profit Analysis aims at studying the relationships existing among these factors and its impact on the amount of profits.

The relationships existing among these factors may be basically presented in two forms.

- (a) In statement or report form
- (b) In graphical form, the graphs or charts taking the form of break even chart, contribution break even chart or profit chart.

 **Activity B :**

Discuss any four assumptions and features of marginal costing. Name an organization where you have found the application of this concept.

9.4 FORMS OF OPERATING STATEMENT

Under the marginal costing technique, the operating statement takes the form as specified below.

(a) In case of a single product company

	Rs.
Sales	X
Less : Marginal cost	
Direct Material Cost	X
Direct Labour Cost	X
Direct Expenses	X
Variable Overheads	X
	X
Contribution	X
Less : Fixed costs	X
Profit	X

(b) In case of a multi - product company

	Product A Rs.	Product B Rs.	Product C Rs.	Total Rs.
Sales	X	X	X	X
Less : Marginal cost				
Direct Material cost	X	X	X	X
Direct Labour cost	X	X	X	X
Direct Expenses	X	X	X	X
Variable Overheads	X	X	X	X
Contribution	<hr/> X	<hr/> X	<hr/> X	<hr/> X
Less : Fixed costs				X
Profit				X

9.5 BASIC CONCEPTS OF MARGINAL COSTING**(1) Basic equation of Marginal Costing:**

The basic intention of the business is to earn the profit which is the excess of sales over the total costs.

$$\therefore \text{Profit} = \text{Sales} - \text{Total Cost}$$

However, total cost can be either fixed cost or variable cost. As such the basic equation takes the following forms.

$$\therefore \text{Profit} = \text{Sales} - (\text{Variable Cost} + \text{Fixed Cost})$$

$$\therefore \text{Profit} = \text{Sales} - \text{Variable cost} - \text{Fixed cost}$$

$$\therefore \text{Profit} + \text{Fixed cost} = \text{Sales} - \text{Variable cost}.$$

This is the basic equation of marginal costing.

Both the expressions of Sales - Variable Cost and

Profit + Fixed cost are technically termed as contribution.

$$\therefore \text{Sales} - \text{Variable Cost} = \text{Contribution} = \text{Fixed Cost} + \text{Profit}$$

$$\therefore \text{Contribution} - \text{Fixed cost} = \text{Profit}$$

(2) Contribution :

As discussed earlier, the term contribution can be expressed in two ways basically:

- (a) Sales - Variable Cost
- (b) Fixed cost + Profit

As in the short period, fixed costs are ineffective due to their stagnant nature, variable cost becomes the most important cost in deciding the profitability. As such, the situation which generates higher contribution is treated as profitable situation.

Further, the term contribution plays an important role in a situation where there are more than one product and the profits on individual products cannot be ascertained due to the problems of apportionment of fixed costs to different products. This is due to the fact that the fixed costs are ignored by marginal costing.

(3) Profit Volume (P/V) Ratio:

This ratio indicates the contribution earned with respect to one rupee of sales. As such, it is expressed as

$$\frac{\text{Contribution}}{\text{Sales}} \times 100$$

As in the short run, fixed cost remains the same, if there is any change in profits, that is only due to change in contribution. Hence P/V ratio may also be expressed as :

$$\frac{\text{Change in Profits}}{\text{Change in Sales}} \times 100$$

E.g. Sales price is Rs. 10 per unit, variable cost is Rs.6 per unit, and fixed costs are Rs.300, we observe that for 100 and 150 units, P/V Ratio works out as:

	<u>100 Units</u>	<u>150 Units</u>
	Rs.	Rs.
Sales	1,000	1,500
Variable cost	600	900
Contribution	400	600
Fixed cost	300	300
Profit	<u>100</u>	<u>300</u>

Hence, P/V Ratio is

	100 Units	150 Units
$\frac{\text{Contribution}}{\text{Sales}} \times 100$	$\frac{400}{1,000} \times 100$ = 40%	$\frac{600}{1,500} \times 100$ = 40%

$$\frac{\text{Increase in Profits}}{\text{Increase in Sales}} \times 100 = \frac{300 - 100}{1500 - 1000} \times 100 = \frac{200}{500} \times 100 = 40\%$$

The fundamental property of P/V Ratio is that it remains constant at all the levels of activities, provided per unit sales price and variable cost remains constant. It should be noted that P/V Ratio remains unaffected by any variation in fixed costs though overall profits may change due to this variation.

A high P/V Ratio indicates that a slight increase in sales without corresponding increase in fixed costs will result in higher profits and vice-versa. This is a pointer to increased sales promotion efforts to increase sales volume.

A low P/V Ratio indicates low profitability so that efforts can be made to increase the profits by increasing selling price or by reducing variable cost. Overall profitability may also be increased by concentrating more on products having high P/V Ratio.

Note: The basic expression of P/V Ratio i.e. Contribution/Sales may lead to other useful conclusion as -

$$(a) \text{ Sales} \times \text{P/V Ratio} = \text{Contribution}$$

$$(b) \frac{\text{Contribution}}{\text{P/V Ratio}} = \text{Sales}$$

(4) Break Even Point (BEP):

This is a situation of no profit no loss. It means that at this stage, contribution is just enough to cover the fixed costs i.e. Contribution = Fixed Cost. It also means that contribution generated by all sales beyond Break Even Point will directly result into profits. As such, it will be intention of every business to reach the Break Even Point, as early as possible.

The Break Even Point may be expressed in two ways.

(a) In terms of quantity – $\frac{\text{Fixed Costs}}{\text{Contribution per unit}}$

(b) In term of amount – $\frac{\text{Fixed Costs}}{\text{P/V Ratio}}$

(5) Margin of Safety :

These are the sales beyond Break Even Point. A business will like to have a high margin of safety because this is the amount of sales which generates profits. As such, the soundness of the business is indicated by the margin of safety. A high margin of safety indicates that the Break Even Point is much below the actual sales and even if there is reduction in sales, business will be still in profits. A low margin of safety accompanied by high fixed cost and high P/V Ratio indicates that efforts are required to be made for reducing the fixed cost or increasing sales volume. A low margin of safety accompanied by a law P/V Ratio indicates that efforts are required to be made for reducing the variable cost or increasing the selling price.

Margin of safety may be expressed as below:

$$\text{Margin of Safety} = \text{Sales} - \text{Break Even Sales}$$

$$= \text{Sales} - \frac{\text{Fixed cost}}{\text{P/V Ratio}}$$

$$\text{Margin of Safety} = \frac{\text{Sales} \times \text{P/V Ratio} - \text{Fixed Cost}}{\text{P/V Ratio}}$$

$$= \frac{\text{Contribution} - \text{Fixed Cost}}{\text{P/V Ratio}}$$

$$= \frac{\text{Profit}}{\text{P/V Ratio}}$$

Margin of safety may be expressed as a ratio or as a percentage. e.g. If actual sales are Rs.1,00,000 and Break Even Sales are Rs.60,000, Margin of Safety will be

$$\frac{\text{Sales} - \text{Break Even Sales}}{\text{Sales}} \times 100$$

$$\text{i.e. } \frac{1,00,000 - 60,000}{1,00,000} \times 100 = \frac{40,000}{1,00,000} \times 100 \\ = 40\% \text{ of Sales}$$

 **Activity C :**

Briefly explain the three basic concepts of marginal costing and compare these relative concepts with each other.

Illustrations :

(1) Following details are available:

	Sales Rs.	Total Cost Rs.
Period I	39,000	34,800
Period II	43,000	37,600

Calculate variable cost, fixed cost and contribution for each period.

Solution :

As Sales - Total Cost = Profit, we know as below :

	Sales Rs.	Total Cost Rs.	Profit Rs.
Period I	39,000	34,800	4,200
Period II	43,000	37,600	5,400

As P/V Ratio = $\frac{\text{Increase in Profits}}{\text{Increase in Sales}} \times 100$

Solution:

Sales are Rs. 50,00,000 and Margin of safety is 40% of sales, hence margin of safety is Rs. 20,00,000. As Break Even Sales = Sales – Margin of Safety.

$$\text{BEP} = \text{Rs. } 50,00,000 - \text{Rs. } 20,00,000 = \text{Rs. } 30,00,000$$

We know that,

$$\text{Margin of Safety} = \frac{\text{Profit}}{\text{P/V Ratio}}$$

$$\text{Margin of Safety} \times \text{P/V Ratio} = \text{Profit}$$

As Margin of Safety is Rs. 20,00,000 and P/V Ratio is 50%,

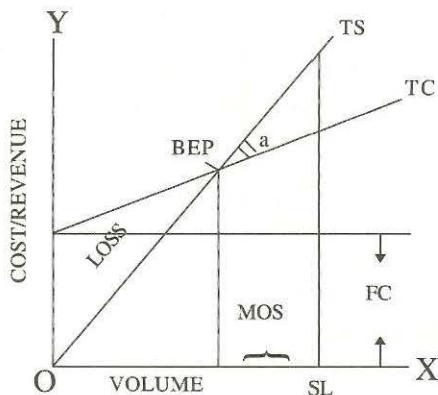
$$\text{Profit} = 20,00,000 \times 50\% = 10,00,000$$

9.6 GRAPHICAL PRESENTATION OF COST-VOLUME-PROFIT RELATIONSHIPS

As discussed earlier, the Cost-Volume-Profit relationships may be expressed in the form of visual aids like graphs and charts. There may be various ways in which these charts and graphs can be prepared depending upon the purpose for which they are prepared. We will discuss three of these ways.

(1) Simple Break Even Chart

It can be prepared as below.



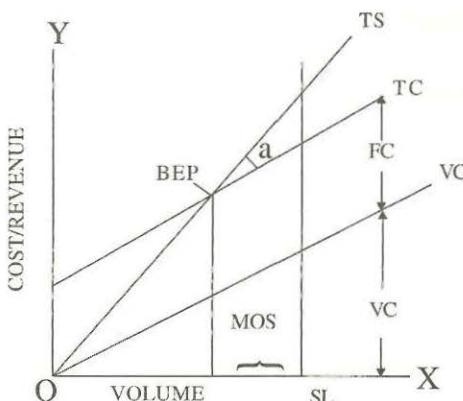
TS	=	Total Sales Line
TC	=	Total Cost Line
BEP	=	Break Even Point
SL	=	Selected Level of Activity
FS	=	Fixed Cost
MOS	=	Margin of Safety
Angle a	=	Angle of Incidence

Note : It will be observed from the above chart, that the angle formed by total sales line and total cost line is termed as Angle of Incidence. As the difference between total sales and total cost is in the form of profits, higher the angle of incidence better will be the situation.

The limitation of Simple Break Even Chart is that contribution cannot be shown separately. As such, the following type of Break Even Chart may be prepared i.e. Contribution Break Even Chart.

(2) Contribution Break Even Chart :

This is a chart where the contribution is shown more clearly and specifically than in a simple break even chart. It can be prepared as below.

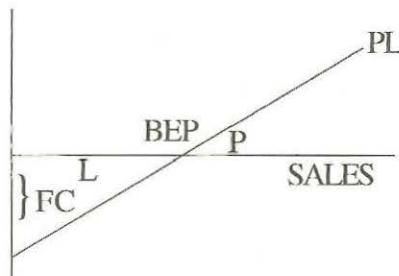


TSL	=	Total Sales Line
TCL	=	Total Cost Line
BEP	=	Break Even Point

SL	=	Selected Level of Activity
TS-VC	=	Contribution
TC-VC	=	Fixed Cost
VC	=	Variable Cost
MOS	=	Margin Of Safety
Angle a	=	Angle of Incidence.

(3) Profit Graph:

In case of this type of break even chart, horizontal axis represents sales volume and vertical axis represents profit or loss. The diagonal line represents contribution. The point where the contribution line cuts horizontal axis indicates sales at the Break Even Point indicating that at this point, there is no profit or no loss.



PL	=	Profit Line	FC	=	Fixed Cost
P	=	Profit Area	L	=	Loss Area
BEP	=	Break Even Point			

Activity D :

Mention any two points, in regard to graphical representation, which can help in representing the concept of marginal costing.

9.7 PRACTICAL APPLICATIONS OF MARGINAL COSTING

The technique of marginal costing can be profitably employed in the following situations.

(1) Evaluation of Performance :

The performance of various segments of a business, say a department or a product or a branch and so on, can be evaluated with the help of marginal costing and the evaluation of the performance will be based upon the contribution generating capacity of these segments. If the fixed costs are apportioned over these segments on any basis whatsoever, it will be ignored while evaluating the performance.

Illustration :

Following details are available in respect of three products.

	Products		
	A Rs.	B Rs.	C Rs.
Sales	1,00,000	1,50,000	2,50,000
Total Cost			
Variable Cost	90,000	1,00,000	1,50,000
Fixed cost (Apportioned on the basis of sales)	20,000	30,000	50,000
Total Cost	1,10,000	1,30,000	2,00,000
∴ Profit (Loss)	(10,000)	20,000	50,000

As product A is incurring the losses, it is decided to close down its production. Advise the management.

Solution :

It will not be advisable to close down the production of product A, because it is generating the positive contribution

(i.e. Rs. 1,00,000 - Rs. 90,000 = Rs. 10,000)

Closing down of product A will mean loss of contribution generated by it, fixed cost still remaining the same. Assuming that the production of product A is closed down, what will be the effect on profitability? Let us verify by applying marginal costing principles.

	Product B Rs.	Product C Rs.	Total Rs.
Sales	1,50,000	2,50,000	4,00,000
Variable Cost	1,00,000	1,50,000	2,50,000
∴ Contribution	50,000	1,00,000	1,50,000
Fixed costs			1,00,000
∴ Profits			50,000

It means that existing total profits of Rs. 60,000 [50,000 + 20,000 - 10,000] will reduce to Rs. 50,000 which will affect profitability adversely.

(2) Profit Planning :

Marginal costing, through the calculations of P/V Ratio, enables the management to plan the activities in such a way that the profits can be maximised or to maintain a specific level of profits. As such, this technique helps the planning of profits.

Illustration :

- (1) M/s. C and P Ltd. Produces and sells industrial containers and packing cases. Due to competition, the company proposes to reduce the selling price. If the present level of profit is to be maintained, indicate the number of units to be sold if the proposed reduction in price is (a) 10% and (b) 15%. The following information is available:

	Rs.	Rs.
(1) Present Sales (30,000 Units)		6,00,000
(2) Variable Cost (30,000 Units)	3,60,000	
(3) Fixed Cost	1,40,000	
		5,00,000
(4) Net Profit		1,00,000

$$\text{P/V Ratio} = \frac{\text{Contribution per unit}}{\text{Selling Price per unit}} \times 100$$

$$\frac{20.25}{101.25} \times 100 = 20\%$$

(3) Fixation of Selling Price :

The technique of marginal costing may be applied in the area of price fixation in such a way that prices fixed should cover at least the variable cost. As in the short run, the fixed cost is a stagnant cost, it can be ignored, though it can not be ignored in the long run because of the simple fact, that it is a cost. In the short run, the prices fixed above the variable cost may generate some positive contribution which may help in the recovery of fixed cost. However, if the fixed cost is ignored in the long run, it may put the business into serious troubles as the business will never be able to earn the profits.

In this connection, following propositions should be kept in mind.

- (a) In some exceptional circumstances viz. during the phase of depression, serious competition in the market, to introduce the new product in the market by keeping the price as low as possible in the initial stages, to dispose off the product which may deteriorate in quality etc., it may be necessary to fix the selling price even below the variable cost, however it is a deliberate decision taken by the management.
- (b) The above principle is equally applicable while fixing the export price as well. The export price over and above the variable cost will result into increased amounts of profits if the fixed costs can be taken care of by the inland sales and if the home market is not likely to get affected by the export price fixed. However, if certain specific costs, either fixed or variable, are required to be incurred specifically for the execution of the export order, they will have to be recovered while fixing the export price as if it is a part of the variable cost.

Illustration :

- (1) The operating statement of a company is as follows:

	Rs.
Sales (80,000 Units @ Rs. 15)	12,00,000
Costs – Variable	
Materials	2,40,000
Labour	3,20,000
Overheads	<u>1,60,000</u>
	7,20,000
Fixed	<u>3,20,000</u>
Total Costs	10,40,000
Profit (Sales - Total Cost)	1,60,000

The plant capacity is 1,00,000 units. A customer from U.S.A. is desirous of buying 20,000 units at a net price of Rs. 10 each unit. Advise the company whether or not offer should be accepted? Will your advice be different if the customer is a local one?

Solution :

At present, variable cost per unit is Rs. 9 i.e.

$$\frac{\text{Rs. } 7,20,000}{80,000 \text{ units}}$$

So long as the export price is more than Rs. 9, it is going to generate additional contribution which is going to increase the profits, as the fixed costs are already covered by the local sales. As the export price offered is Rs. 10 i.e., Re. 1 more than the variable cost per unit, the company should accept the offer. The advice will be the same even if the customer is a local one, provided the price discrimination, i.e. Rs. 15 per unit for 80,000 units and Rs. 10/- per unit for 20,000 units is not going to adversely affect the current market for 80,000 units at the current price of Rs. 15. If the company accepts the export offer of Rs. 10 per unit, the revised profitability structure will be as below:

	Rs.
Sales :	80,000 units @ Rs. 15
	20,000 units @ Rs. 10
	14,00,000
Costs :	Variable
1,00,000 units @ Rs. 9	9,00,000
Fixed	3,20,000
Total costs	12,20,000
Profit (Sales - Total Cost)	1,80,000

The revised amount of profit will be more by Rs. 20,000 as compared to the existing amount of profits. Hence, the export order should be accepted by the company.

(4) Make or buy decision :

If the management is facing problem to decide whether a component or a product should be manufactured in house which can be purchased from an outside source as well, the technique of marginal costing may render useful assistance. For example, the following cost data is made available in respect of two components A and B.

	Component A Rs. per unit	Component B Rs. per unit
If manufactured		
Variable Cost	30	30
Fixed Cost	25	20
Total Cost	55	50
If purchased, buying price	40	25

If the above data is viewed from total cost point of view, without considering the classification of cost like fixed or variable, it may be concluded that the purchase proposition may be profitable for both the components A and B. However, the conclusion may be misleading as the total cost in case of component A, if purchased, is not going to be only Rs. 40 per unit, but it is going to be Rs. 65 (i.e. Rs. 40 purchase price per unit plus Rs. 25 fixed cost per unit) which being more than present total cost, manufacturing proposition will be beneficial. On the other hand, in case of component B, total cost, if purchased, is going to be Rs. 45/- per unit (i.e. Rs. 25 purchase price per unit plus Rs. 20 fixed cost per unit) which being less than present total cost, buying proposition will be beneficial.

The above conclusions may be simplified in the following way:

If Purchases Price < Variable Cost, go in for purchase proposition.

If Purchase Price > Variable Cost, go in for manufacturing proposition.

Before taking any make or buy decision only on the basis of marginal cost analysis, following points should also be taken into consideration.

- (1) If the buying proposition is beneficial in case of a component or product, the final decision to buy may depend on other factors also viz. whether the supplier is reliable one, whether the supplier can assure required quality, whether the supplier can assure uninterrupted supply etc.
- (2) If it is decided to buy a component or a product which was being manufactured till now, the manufacturing capacity released should be profitably used for some other purposes. If it is decided to manufacture a component which was being purchased till now, there may be two possibilities. One, production capacity used for same component or product may be diverted to manufacture another component or product. In this case, the loss of contribution of that another component or product should be considered as a part of cost. Second, if additional production facilities are required to be acquired for the manufacturing proposition, the additional fixed costs attached with the manufacturing proposition should be considered.

(5) Optimizing product mix :

Product mix refers to the proportion in which various products of a company can be sold. If a concern is dealing in a number of products, a problem which usually arises is to decide a mix or proportion in which the sales of the various products should be made so that the profits can be maximized. Such a problem can be solved by studying the contributions generated by the various products individually and by selecting that mix which generates the maximum total contribution.

Illustration :

Following information has been made available from the cost records of Universal Automobiles Ltd. manufacturing spare parts

Direct Materials Cost per unit

X	Rs. 8
Y	Rs. 6

Direct wages

X 24 hours @ 25 paise per hour.

Y 16 hours @ 25 paise per hour.

Variable overheads - 150% of wages

Fixed overheads - 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

State which of the alternatives you would recommend to management.

Solution :

Productwise Profitability Structure

	Product X Rs.	Product Y Rs.
(1) Selling Price per unit	25	20
(2) Variable cost per unit		
Direct Material	8	6
Direct Wages	6	4
Variable Overheads	9	6
Total Variable cost per unit	23	16
(3) Contribution per unit	2	4

Evaluation of various alternative sales mixes as per Total Contribution

Alternative	Product X	Product Y	Total
	Rs.	Rs.	Rs.
a.	$250 \times 2 = 500$	$250 \times 4 = 1,000$	1,500
b.	—	$400 \times 4 = 1,600$	1,600
c.	$400 \times 2 = 800$	$100 \times 4 = 400$	1,200
d.	$150 \times 2 = 300$	$350 \times 4 = 1,400$	1,700

Fixed overheads are going to be the same in all these alternatives. As such, the alternative which generates maximum contribution is the maximum profitable one. As alternative d i.e. 150 units of X and 350 units of Y generates maximum of contribution, it will be recommended to the management.

(6) Cost control :

Marginal costing is necessarily a technique of cost classification and cost presentation. The segregation of total costs as fixed costs and variable costs itself facilitates the cost control. Variable costs are the controllable costs at the lower level of management whereas fixed costs can be controlled only on the top level of management and that too, to a limited extent only. Classification of costs as fixed costs and variable costs enables the management to concentrate on the controllable costs. At the same time, the fixed costs are not completely ignored. The only thing is that they are collected and reported separately as an amount deducted from total contribution. As such, the fixed costs can also be controlled as they can be programmed and estimated in advance.

(7) Flexible Budget Preparation :

Marginal costing technique and more particularly the classification of costs as fixed and variable, facilitates the preparation of flexible budgets which is discussed in details in the chapter 'Budgetary Control'.

Activity E :

Identify an organization which you feel would benefit from the application of marginal costing in the practical application of decision-making process of business. Give two reasons with an explanation.

9.8 THE PROBLEM OF THE KEY FACTOR

Under the marginal costing technique, profitability is measured in terms of the contribution. The products generating maximum contribution or having maximum P/V Ratio are treated as the maximum profitable products. As the intention of every business is to maximize the profits, the company will concentrate maximum on the products having highest P/V Ratio and will thus maximize the profits. However, in practice, there may be some factors which may come into play which may restrict the company's intention or capability to maximize the profits. For example, in case of the products having highest P/V Ratio, market may be limited, or in case of a maximum profitable product, raw material may not be available. These factors are in the form of 'Key Factor' or 'Limiting Factor' or 'Scarce Factor'. A key factor is defined as the factor which, at a particular point of time or over a period, will limit the volume of output. The key factor may be in various forms viz. sales/market, material, labour, machine availability and so on. In order to evaluate the profitability of a product under key factor situations, the contribution per unit of key factor is the basic criteria. A product generating maximum contribution per unit of key factor is the maximum profitable product.

Illustration :

From the following details, which product would be recommended if time is the key factor?

	Product A	Product B
Direct Material Cost per unit	Rs. 24	Rs. 14
Direct Labour @ Rs. 2 per hour	Rs. 20	Rs. 30
Variable Overheads (% of labour cost)	200%	300%
Selling Price per unit	Rs. 150	Rs. 200

Solution :

	Product A	Product B
(1) Selling Price Unit Rs.	150	200
(2) Variable Cost per unit Rs.		
Direct Material Cost	24	14
Direct Labour Cost	20	30
Variable Overheads	40	90
Total Variable Cost per unit	<u>84</u>	<u>134</u>
(3) Contribution per unit Rs. (3 = 1-2)	66	66
(4) Number of labour hours	10	15
(5) Contribution per labour hour Rs. (5 = 3-4)	6.6	4.4

As labour hours are the key factor and contribution per labour hour is more in case of product A, it will be recommended for production.

9.9 MULTIPLICITY OF THE KEY FACTOR

In practice, more than one key factor may come into play and any decision regarding product mix ascertainment or profitability ascertainment will have to be decided on the basis of consideration of multiplicity of key factors. The situation of multiplicity of key factors is a more complex situation, the solutions to which may be found in the more advanced techniques like linear programming.

Illustration :

Following data is available to decide the product mix.

	A	B	C
Raw material per unit	10 kgs	6 kgs	15 kgs.
Labour Hours required (Rate Rs. 1 per hour)	15	25	20
Selling price per unit Rs.	125	100	200
Maximum production			
Possible Units	6,000	4,000	3,000

1,00,000 kgs of raw material is available at Rs. 10 per kg. Maximum production hours are 1,84,000 with a facility for a further 15,000 hours on overtime basis at twice the normal wage rate.

Solution :

	Product A	Product B	Product C
(1) Selling Price per units Rs.	125	100	200
(2) Variable cost per unit			
Material Cost (10 per kg)	100	60	150
Labour Cost (1 per hour)	15	25	20
Total Variable Cost per unit	115	85	170
(3) Contribution per unit Rs. (3 = 1-2)	10	15	30
(4) Contribution per Kg of Raw material - Rs.	1.00	2.50	2.00
(5) Contribution per labour hrs Rs.	0.66	0.60	1.50

Considering the contribution per kg of raw material as well as per labour hour, the rankings among the various products will be as below.

I - Product C

II - Product B

III - Product A

Hence, the available raw material and labour hours will be used for the manufacture of Product C and Product B respectively.

Product	Units	Raw Material Kgs.	Labour Hours No.
C	3,000	45,000	60,000
B	4,000	24,000	1,00,000
		69,000	1,60,000

Hence, the balance of raw material and labour hours available for manufacturing of Product A will be as below.

Raw Material - Kgs. - 31,000 kgs. (i.e. 1,00,000 kgs - 69,000 kgs)

Labour Hours - 24,000 (i.e. 1,84,000 - 1,60,000)

Plus 15,000 extra hours by paying double the normal wage rate.

If extra labour hours are used for the manufacture of product A by paying double the normal wage rate, the cost structure of product A will be as below:

(1) Selling Price per unit	Rs.	125
(2) Variable cost per unit		
Material Cost	Rs.	100
Labour Cost	Rs.	30
Total Variable Cost	Rs.	130
(3) Contribution per unit	(-) Rs.	5
		(3 = 1-2)

As there cannot be the positive contribution generated, it will not be advisable to use the labour hours which require the payment of wages at double the normal wage rate. As such, product A will be manufactured by utilising the labour hours which require the payment of wages at the normal wage rate only i.e. 24,000 hours with the help of which 1,600 units of A (24,000 Hours/ 15 Hours per unit) can be manufactured. As such, the final product mix will be as below.

Product A	1,600 Units
Product B	4,000 Units
Product C	3,000 Units

Note : One alternate solution is possible to solve the problem of key factors. If the labour hours which require the payment of wages at double the normal wage rate can be utilised for the manufacture of Product C, its cost structure will be as below.

(1) Selling Price per Unit	Rs.	200
(2) Variable cost per unit		
Material	Rs.	150
Labour	Rs.	40
	Rs.	190
(3) Contribution per unit	Rs.	10

As such, apparently it may be possible to utilise the labour hours carrying double the normal wage rate for manufacturing product C and utilise the released labour hours carrying the normal wage rate for manufacturing Product A (i.e. 15,000 hours) In this case, the final product mix will be as below.

Product A	—	2,600 Units
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Product B	-	4,000 Units
Product C	-	3,000 Units

The calculation of total contribution generated under both those alternatives is as below.

Alternative I (without overtime)

Product	No. of Units	Contribution Per Unit Rs.	Total Contribution Rs.
A	1,600	10	16,000
B	4,000	15	60,000
C	3,000	30	90,000
			1,66,000

Alternative II (on overtime basis)

Product	No. of Units	Contribution Per Unit Rs.	Total Contribution Rs.
A	2,600	10	26,000
B	4,000	15	60,000
C	2,250	30	67,500
C	750	10	7,500
			1,61,000

As in the second alternative, the total contribution generated is less than the one generated in the first alternative, the second alternative can not be accepted. As such, it will be advisable for the company not to utilise the labour hours requiring the payment of wages at double the normal wage rate.

9.10 LIMITATIONS OF MARGINAL COSTING

- (1) The classification of total cost as variable cost and fixed cost is difficult. No cost can be completely variable or completely fixed. In some cases, the cost which is considered to be variable, may not be variable in practical terms for example, direct labour cost. Under normal situations this cost is treated as variable cost. However, in India, considering the tremendous legal backing the workers are having, the direct labour cost may not be variable in nature. As such, it may be necessary to consider the direct labour cost as a part of fixed cost.

- (2) Under the marginal costing, the fixed costs are eliminated for the valuation of inventory of finished goods and semi-finished goods, inspite of the fact that they might have been actually incurred. As such, it is not correct to eliminate the fixed costs. Further, such an elimination affects the profitability adversely.
- (3) In the age of increased automation and technological development, the component of fixed costs in the overall cost structure may be sizeable. Any technique like marginal costing which ignores the fixed costs altogether, may not be proper under these circumstances as a major portion of cost is not taken care of.
- (4) Marginal costing technique does not provide any standard for the evaluation of performance. In that sense, the techniques of budgetary control and standard costing may be considered to be better techniques from cost control point of view.
- (5) Fixation of selling price on marginal cost basis may be useful for short term only. Here also, an undue importance given to only variable cost may result into taking on heavy business with low margin which in turn may increase the fixed costs. As such, over the long run, the prices should be decided on total cost basis only. Fixation of selling price on the marginal cost basis in the long run may be dangerous. Moreover, consideration of fixed costs may be necessary in price fixation under certain circumstances like cost plus contracts unless a very high percentage over the marginal cost is considered to take care of both fixed costs as well as profit margin.
- (6) Marginal costing does not take into consideration the fixed overheads, as such the problem of under or over absorption of fixed overheads can be avoided. But the problem of under or over absorption of variable overheads cannot be avoided.
- (7) Marginal costing can be used for assessment of profitability only in the short run. However, in the long run, one has to consider the fixed costs also in order to assess the profitability. Moreover, interpretation of the term 'short run' is a subjective concept. For how long the decision can be taken on the basis of marginal costing principles cannot be decided in the objective manner.

9.11 SUMMARY

Marginal costing basically tries to classify the cost on the basis of behavior of cost. From this angle, the costs can be viewed as fixed costs and variable costs. Fixed Cost is the cost that tends to remain constant irrespective of the level of activity or volume of operations. Fixed Cost tends to vary with time rather than with level of activity. Basic characteristic feature of fixed cost is that this cost in terms of amount may remain constant at all the levels

of activities, however per unit fixed cost goes on decreasing with the increasing level of activity and vice-a-versa.

Variable Cost is the cost that varies in direct proportion with the level of activity or volume of operations. Basic characteristic feature of variable cost is that variable cost in terms of amount may increase or decrease with the changing level of activity or volume of operations. However, per unit variable cost remains constant. In practical circumstances, some costs may not be entirely fixed or entirely variable. They are technically in the form of semi-fixed costs or semi-variable costs. For the purpose of marginal costing, the semi-fixed costs or semi-variable costs are required to be classified in the individual components of fixed cost and variable cost. For segregating the semi-fixed or semi-variable cost into the individual components of fixed cost and variable cost, various techniques or methods may be available viz. Comparison by period or level of activity, Range or High and Low method, Analytical method, Scatter graph method, Lease Square method.

Marginal Costing is defined as the ascertainment, by differentiating between fixed and variable costs, of the marginal costs and of the effect on profit of changes in volume and type of output. The entire technique of Marginal Costing is based upon the certain assumptions. The definition of the term "Marginal Costing" requires the computation of Marginal Cost, and Cost-Volume Profit Relationship. There are certain basic concepts in marginal costing, which help us to understand the various calculations, like contribution, cost-volume profit ratio, break-even analysis, margin of safety, etc. The practical application of marginal costing can be profitably employed in evaluating the performance, profit planning, fixation of selling price, make or buy decision, optimising product mix, cost control, flexible budget preparation, etc.,

9.12 KEY WORDS

Break Even Point (BEP) : This is a situation of no profit no loss. It means that at this stage, contribution is just enough to cover the fixed costs i.e. Contribution = Fixed Cost. It also means that contribution generated by all sales beyond Break Even Point will directly result into profits. As such, it will be intention of every business to reach the Break Even Point, as early as possible.

The Break Even Point may be expressed in two ways.

$$(a) \text{ In terms of quantity} - \frac{\text{Fixed Costs}}{\text{Contribution per unit}}$$

$$(b) \text{ In term of amount} - \frac{\text{Fixed Costs}}{\text{P/V Ratio}}$$

Contribution : Sales - Variable Cost, or Fixed cost + Profit.

Fixed Cost : Is the cost that tends to remain constant irrespective of the level of activity or volume of operations. Fixed Cost tends to vary with time rather than with level of activity. Basic characteristic feature of fixed cost is that this cost in terms of amount may remain constant at all the levels of activities.

Marginal Cost : Is defined as the amount at any given volume of output by which the aggregate costs are changed if the volume of output is increased or decreased by one unit.

Margin of Safety : These are the sales beyond Break-Even Point.

Margin of safety may be expressed as below:

$$\begin{aligned}\text{Margin of Safety} &= \text{Sales} - \text{Break Even Sales} \\ &= \text{Sales} - \frac{\text{Fixed cost}}{\text{P/V Ratio}}\end{aligned}$$

$$\begin{aligned}\text{Margin of Safety} &= \text{Sales} \times \text{P/V Ratio} - \frac{\text{Fixed Cost}}{\text{P/V Ratio}} \\ &= \text{Contribution} - \frac{\text{Fixed Cost}}{\text{P/V Ratio}} \\ &= \frac{\text{Profit}}{\text{P/V Ratio}}\end{aligned}$$

Profit Volume (P/V) Ratio : This ratio indicates the contribution earned with respect to one rupee of sales. As such, it is expressed as

$$\frac{\text{Contribution}}{\text{Sales}} \times 100$$

As in the short run, fixed cost remains the same, if there is any change in profits, that is only due to change in contribution. Hence P/V ratio may also be expressed as :

$$\frac{\text{Change in Profits}}{\text{Change in Sales}} \times 100$$

Variable Cost : Is the cost that varies in direct proportion with the level of activity or volume of operations. Basic characteristic feature of variable cost is that variable cost in terms of amount may increase or decrease with the changing level of activity or volume of operations.

9.13 ILLUSTRATIVE PROBLEMS

- (1) Profit and sales for the year 1984 are as follows. Profit Rs. 18,000, Sales Rs. 2,40,000.

In 1985, the sales increased by Rs. 40,000 and the profit naturally increased by Rs. 8,000.

You are required to calculate.

- (1) P/V Ratio
- (2) Sales required to achieve a profit of Rs. 1,00,000.
- (3) Sales at Break even Point.

Solution:

We know that

$$\text{P/V Ratio} = \frac{\text{Increase in Profits}}{\text{Increase in Sales}} \times 100$$

$$\text{P/V Ratio} = \frac{8,000}{40,000} \times 100 = 20\% \quad \dots(a)$$

We also know that Sales \times P/V Ratio = Contribution

and Contribution - Profit = Fixed Cost.

Applying this to the information available for the year 1984

$2,40,000 \times 20\% = \text{Rs. } 48,000$ is the contribution and

$48,000 - 18,000 = \text{Rs. } 30,000$ is the fixed cost

If the company wants to achieve the profit of Rs. 1,00,000 the total contribution which will have to be generated will be Expected Profit + Fixed cost

i.e. Rs. 1,00,000 + Rs. 30,000

i.e. Rs. 1,30,000

$$\text{We know that Sales} = \frac{\text{Contribution}}{\text{P/V Ratio}}$$

As such sales required to achieve a profit of Rs. 1,00,000 will be

$$\begin{aligned} & \frac{\text{Expected Profit} + \text{Fixed Cost}}{\text{P/V Ratio}} \\ &= \frac{1,00,000 + 30,000}{20\%} \\ &= \frac{1,30,000}{20\%} = \text{Rs. } 6,50,000 \quad \dots(\text{b}) \end{aligned}$$

We know that

$$\text{Break Even Point} = \frac{\text{Fixed Cost}}{\text{P/V Ratio}}$$

$$\begin{aligned} \therefore \text{Sales at Break Even Point} &= \frac{30,000}{20\%} \\ &= \text{Rs. } 1,50,000 \quad \dots(\text{c}) \end{aligned}$$

(2) The Directors of Sports Material Manufacturing Co. gives the following information.

Sales - (1,00,000 Units) - Rs. 1,00,000

Variable Costs - Rs. 40,000

Fixed Costs - Rs. 50,000

(a) Find out P/V Ratio, Break Even Point and Margin of Safety.

- (b) Evaluate the effects on P/V Ratio, Break Even Point and Margin of safety of the following -
- 20% increase in physical sales volume.
 - 10% increase in fixed costs.
 - 5% decrease in variable costs.
 - 10% increase in selling price.

Solution :

(A) Present profitability structure is as below.

Sales - 1,00,000 Units

	Per Unit (Rs.)	Total (Rs.)
Sales	1.00	1,00,000
Variable Costs	0.40	40,000
Contribution	0.60	60,000
Fixed Costs		50,000
Profit		10,000

(1) P/V Ratio

$$\frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{60,000}{1,00,000} \times 100 = 60\%$$

(2) Break Even Point

$$\frac{\text{Fixed Cost}}{\text{P/V Ratio}} = \frac{50,000}{60\%} = \text{Rs. } 83,333$$

(3) Margin of Safety

$$\frac{\text{Profit}}{\text{P/V Ratio}} = \frac{10,000}{60\%} = \text{Rs. } 16,667$$

10.1 INTRODUCTION

Budget and Budgetary control

The term ‘Budget’ is defined as a financial and/or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective.

The analysis of this definition reveals the following characteristics of the budget.

- (1) It may be prepared in terms of quantity or money or both.
- (2) It is prepared for a fixed or set period of time.
- (3) It is prepared before the defined period of time commences.
- (4) It spells out the objects to be attained and the policies to be pursued to achieve that objective.

The term ‘Budgetary Control’ is defined as the establishment of budgets, relating 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 the basis for its revision.

The analysis of this definition reveals the following facts about budgetary control.

- (1) It deals with the establishment of the budgets.
- (2) It deals with the comparison of budgeted results with the actual results.
- (3) It deals with computation of the variations and the actions to be taken for maintaining the favourable variations, removing the adverse variation or revising the Budgets themselves.

Activity A:

Assume that you are a finance manager in an organization, prepare an imaginative customary budget and mention any two points distinguishing the concept of budgetary control.

10.2 ADVANTAGES OF BUDGETARY CONTROL

- (1) It is a powerful tool available to the management for the purpose of cost control and the maximization of profits through the same. It enables the management to utilize the available resources in the most profitable manner.
- (2) A budget sets the plan of action. Plans in respect of various functional areas of operations are expressed in the form of the budgets. As such, the Budgetary Control system acts as a means of declaration of the policies of the management.
- (3) It acts as a means of communication. The plans and objects laid down by top level management are communicated to the middle level and lower level management by way of the budgets. As such, each and every person working in the organisation is aware of his duties and responsibilities in relation to those of the others. This maximizes the utilization of resources.
- (4) It acts as a means of improving the co-ordination. The budgets prepared in the various functional areas of operations are prepared in such a way that the efforts are coordinated in the direction of achievement of common and defined objective. It develops the team spirit and help of various people can be sought to solve the common problem.
- (5) The comparison between the budgeted results and the actual results may reveal the areas where there are adverse variations, which may be identified as weak areas or delicate areas. As such, efforts can be made to remove these adverse variations, keeping aside the areas where there are no variations. This enables the concentration of efforts of the management on a smaller portion of activities which facilitates ‘Management by exception.’
- (6) Budgetary control system enables the delegation of authority and makes possible the principles of Responsibility Accounting.
- (7) It is a powerful tool available to the management for Performance Appraisal. The executives responsible for those functions where there is favourable variation may be rewarded, whereas the executives responsible for those functions where there is adverse variation may be punished. In this sense, the budgetary control system provides a basis for the establishment of the incentive systems.

 **Activity B:**

Assuming that you are a finance manager, list four advantages of the budgetary control system which you think would help make a positive change.

10.3 PRE-REQUISITES FOR THE IMPLEMENTATION OF BUDGETARY CONTROL

If the organization decides to install the Budgetary Control system as a cost control technique, it will have to comply with the following preliminaries.

(1) Deciding the Budget Centre:

A budget centre is that section of the organization with respect to which the budgets will be prepared. A budget centre may be in the form of a product or a department or a branch of the company and so on. A budget centre should be clearly defined and established, as the budgets will be prepared with respect to each and every budget centre.

(2) Deciding the Budget Period:

A Budget Period is that period of time for which the budget will be prepared and operated. The selection of the Budget Period should be made very carefully-too long a budget period makes the correct estimation more difficult while too short a budget period may prove to be more costly. The selection of Budget Period may depend upon the nature of operations and the purpose of preparing the budgets. As such, in case of industries like the ones engaged in generation and distribution of electricity, transport operations etc. where capital expenditure is too high, budgets may be prepared even for a period of 5 to 10 years, while in case of industries like the ones engaged in manufacturing of motor vehicles or radios etc., where the customer demand may change more frequently, the budget period may be shorter. Similarly, a sales budget may be prepared for a period of 5 years, whereas the short term cash budget may be prepared on weekly or even daily basis.

(3) Establishment of Accounting Records:

There should be an efficient and proper system of accounting so that the information and data as required for the efficient implementation of the Budgetary Control system will be available in time.

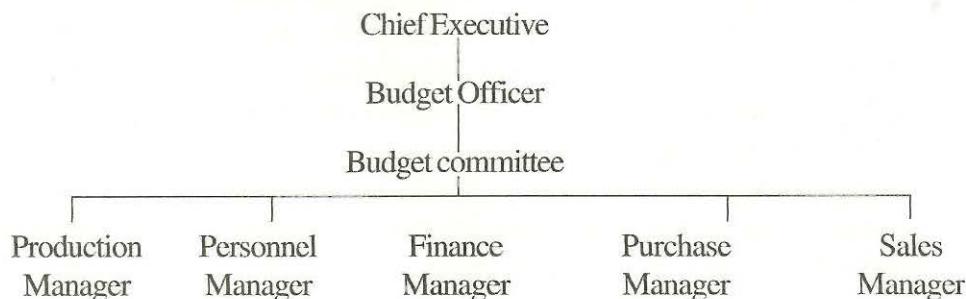
(4) Organization for Budgetary Control:

A properly prepared organization chart may make the duties and responsibilities of each level of executive very clear to himself. The budgetary control organization will be headed by a senior executive in the form of budget controller or budget officer. In small or medium sized organizations, he himself will be involved in all types of works involved with the budgetary control system.

However, in case of large organizations, he may have a budget committee under him which may consist of Chief Executive, budget officer himself and heads of main departments. The role of budget committee may be only advisory and its decision may become binding only if accepted by the Chief Executive. The functions performed by the budget committee can be broadly stated as below.

- (a) To receive and scrutinise the functional budgets.
- (b) To revise the functional budgets, if necessary.
- (c) To approve the revised budgets.
- (d) To receive the budget reports and comparative statements.
- (e) To locate the responsibilities and recommend the corrective and remedial action.

The usual and normal organization for the budgetary control may be expressed by way of the following organization chart.



(5) Preparation of a Budget Manual:

A budget manual is a document setting out the responsibilities of the persons engaged in and the forms and procedures required for the budgetary control. A budget manual enables the standardization of the methods and procedures in relation to the budgetary control. It should be well written, indexed and divided into the sections. It may be in bound book form or loose leaf form. A budget manual may contain the following particulars.

- (a) Introduction of principles and objectives of budgetary control and the definitions and brief explanations.
- (b) Duties and responsibilities of the various executives and the organization chart.
- (c) Functions and duties of budget officer and budget committee.
- (d) Scope of the budget and areas to be covered, whether budget will be a fixed budget or flexible budget.
- (e) Accounts codes, budget center codes and other codes operated.
- (f) The forms of reports and statements to be used.
- (g) The last date for submission of budgets.
- (h) Budget diagrams.

(6) Determination of Budget Key Factor:

A budget key factor is that the impact of which should be assessed first before other functional budgets are prepared to ensure that other functional budgets are capable of fulfillment. The key factor may take various forms like sales, raw material, labour, production capacity, availability of funds and Government restrictions. Once the key factor is established, the budget with respect to that function will be prepared first and the other budgets will be prepared to conform to that. For example, if sales are the key factor, the sales manager will prepare and submit sales forecast first. The production manager will then decide whether it is possible to produce the quantity to meet sales demand. In case of the situations where there are more than one key factor, the importance of the key factors themselves will be assessed first. The problem of multiplicity of key factors may be solved with the help of techniques like linear programming, operations research etc.

10.4 TYPES OF BUDGETS

There can be basically four areas in which management can function and the types of budgets can be studied with respect to these functional areas of management viz. Sales/Marketing, production, personnel and finance.

(A) Sales/Marketing

The budgets in this area may be of following types:

(I) Sales Budget

It is a forecast of total sales expressed in terms of quantity and or money. It is inevitably the interplay between two factors i.e. sales quantity and selling price. Sales quantity may be forecasted after taking into consideration various factors.

- (1) **Analysis of Past Trend:** Analysis of the past trend over the last 5-10 years may reveal the long term trends, seasonal trends and the cyclical trends. With the help of this trend analysis, the future trend can be established. For this purpose, reference can be made to the reports published by trade organizations and Government publications.
- (2) **Reports by Salesmen:** Being in the actual field, probably the sales staff may be best able to estimate the quantity which can be sold in the market. Before using this estimate as an official sales forecast, necessary adjustments may be made for error of judgment or to avoid the possibility of overestimation on the part of the salesmen.
- (3) **Market Research and Market Survey:** This is a very specialized technique available to assess which of the company's products can be sold, in which market, in what quantity and at what selling price. Such an analysis will facilitate the preparation of sales forecast area wise, product wise, salesmen wise and channel of distribution wise.
- (4) **General Economic Conditions:** General trade and business conditions affect the sales forecast of the company. They may be in the form of competition from other companies, supply condition for material and labour, trade conditions of the customers of the company and so on.

Selling price at which products of the company can be sold may depend upon various factors viz.

- (1) Cost price of the product
- (2) Selling price charged by the competitors.
- (3) Expected amount of profits.
- (4) Advertisement and other sales promotion efforts carried out by the company.

If the company envisages selling higher quantity than the past sales or the existing production capacity, and if some capital investment proposal is involved to increase the production, then the feasibility of the proposal and the availability of funds may also be required to be considered. If the sales forecast is less than the past sales but the top management insists upon a certain amount of additional profits, then the possibility of increasing the selling price or selling efforts and reduction in the cost price may be required to be considered.

(II) Selling and Distribution Cost Budget:

It shows the selling and distribution cost for selling the quantities considered in sales budget. The sales manager, the distribution manager, the advertising manager and the finance manager will be the persons involved in the preparation of this budget. This budget may be prepared on the principles of flexible budgeting (as discussed later in this unit) for each head of selling and distribution costs, on the basis of volume of sales to be achieved.

(III) Advertising Cost Budget:

This cost is closely associated with sales. The intention of incurring this cost is to increase the sales. However, the result of incurring this cost i.e. increased sales may not be immediate and even if there is increase in sales, it is difficult to measure the portion of increased sales which is due to advertising cost. As such, normally, advertising cost budget is established in the form of a fixed amount for a specific period.

The various ways in which the amount of budgeted advertising cost can be decided are as below:

- (1) Percentage of Sales or Profits:** Here the advertising cost may be decided as a fixed percentage of sales or profits. However, the past data may not be suitable in view of recent business situations.

- (2) **Funds Available:** Here the advertising cost depends upon the capability of the company to spend on advertising. This may be a hypothetical method and may not necessarily consider the relationship between advertising cost and benefits there from.
- (3) **Competitor's Policy:** Here the advertising cost may depend upon the amount which the competitors are spending on advertising. This method may pose some difficulty as the amount spent by competitors may not be known and it may be wrong to assume that the company may be able to derive the same benefits from advertising as the competitors derive.

(B) Production:

The budgets in this area may be of the following types:

(I) Production Budget:

It is a forecast of production for the budget period. It may be prepared from two angles.

- (i) Production Budget in terms of Quantity.
- (ii) Production Budget in terms of money i.e. the production Cost Budget further classified under each element of cost such as Direct Material Cost, Direct Labour Cost and Overheads Cost.

The material cost can be estimated by preparing the materials budget which indicates the estimated quantities as well as costs of various materials required for carrying out production as per production budget.

The labour cost can be estimated by preparing the Direct Labour Cost budget which indicates the direct labour requirements required to produce the quantity as specified in the production budget. For the purpose of this budget, labour requirement in terms of number of workers of different grades will be decided first. Afterwards, the rates of pay and allowances will be considered to decide the labour cost. The production overheads can be estimated by preparing production overhead budget which indicates all items of production overheads classified as fixed, variable and semi-variable. The process of allocation and apportionment can be followed to decide the loading of overheads to each budget centre. Following factors will have to be considered before preparing the production budget in terms of quantity'.

- (1) **Coordination with Sales Forecast:** Before the quantity to be produced is decided, it will be necessary to confirm whether it is possible to sell the quantity which is produced during the budget period. If it is not possible to sell whatever can be produced, in spite of all the sales promotion efforts, then the production budget should be adjusted to conform to the sales forecast. If the expected sales exceed existing production capacity, possibility of overtime working or extra shift working should be considered.
- (2) **Production Capacity:** Production Budget estimates the quantity to be produced. If it is not possible to produce the quantity with the existing capacity available, it will be necessary to increase the capacity by incurring additional capital expenditure.
- (3) **Consideration of Stocks:** Whatever is to be sold need not be produced necessarily. The quantity to be produced, after giving due consideration to the sales forecast, may depend upon the opening and closing stock of finished goods. The quantity to be produced during the budget period may be decided as:

Estimated Closing stock of finished goods

Add: Quantity to be sold,

Less: Opening Stock of Finished Goods.

- (4) **Management Policy:** Sometimes, the policy decisions taken by the management are required to be considered before setting the production budget. For example, it will have to be considered whether certain components are decided to be produced instead of purchasing or vice versa.

(II) Purchases Budget:

It is a forecast of quantity and value of materials, direct or indirect, required to be purchased during the budget period. It is needless to state that the purchases budget is closely connected to the production budget. Following factors are required to be considered before setting the purchases budget,

- (1) Orders already placed for the purchases of materials.
- (2) Material already purchased but reserved for some specific purposes.
- (3) Opening and closing stocks.
- (4) Storing facilities and economic order quantity.
- (5) Availability of funds.

- (6) Prices of the materials.

(C) Personnel:

In this functional area, the budget to be prepared takes the form of a personnel budget, which indicates the requirement of personnel or labour force, either direct or indirect, to conform to the sales forecast and the production budget. The labour requirement may be decided in terms of number and grade of workers, number of labour hours, rupee value etc. Consideration is also required to be made of the overtime working or shift working. This budget may also indicate the training plans for new workers.

(D) Finance:

The most important budget which is prepared under this functional area is the cash budget. It is an estimate of the expected cash receipts and cash payments during the budget period. Thus by preparing the cash budget, it is possible to predict whether at any point of time, there is likely to be excess or shortage of cash. If the shortage of cash is estimated, it may be required to arrange the cash from some other source. If the excess of cash is estimated, it may be possible to explore the investment opportunities. Before preparing the cash budget, the following principles should be kept in mind.

- (i) The period for which cash budget is prepared should be selected very carefully. There is no fixed rule as to the period to be covered by the cash budget. It may vary from company to company depending upon the individual requirements. As a general rule, the period covered by the cash budget should neither be too long or too short. If it is too long, it is possible that the estimate will not be accurate. If it is too short, the factors which are beyond the control of management will not be given due consideration.
- (ii) The items which should appear in the cash budget, should be carefully decided. Naturally, all those items which do not involve cash flow will not be considered while preparing the cash budget. For example, as the cost of depreciation does not involve any cash outflow, it does not affect the cash budget, though the amount of depreciation affects the determination of tax liability which involves cash outflow.

A cash budget may be prepared in any of the following three methods:

- (1) **Receipts and Payments Method:** This method is useful for short term estimations. It lists the various estimated sources of cash receipts on one hand and the various estimated applications of cash on the other.

While preparing the cash budget by this method, the various items appearing on the same may be classified under the following two categories:

- (i) **Operating Cash Flows:** These are the items of cash flow which arise as a result of regular operations of the business.
- (ii) **Non operating Cash Flows:** These are the items of cash flow which arise as the result of other operations of the business.

The standard items which may appear on the cash budget prepared by this method may be stated as below:

<u>Cash Inflow</u>	<u>Cash Outflow</u>
Operating:	Operating:
Cash sales	Payment to creditors
Collection from debtors	Cash Purchases of raw materials
Interest/Dividend received	Wages/Salaries
	Various kinds of overheads.
	(To the extent they are actually paid)
Non-operating	Non-operating
Issue of shares/debentures	Redemption of shares/debentures.
Receipt of loans/borrowings	Loan Installments
Sales of Fixed Assets	Purchases of Fixed Assets
Sales of Investments	Interest
	Taxes
	Dividends.

Thus, finally cash budget appears in the form of opening cash balance, to which various estimated cash receipts are added, the estimated cash payments being deducted from this sum to arrive at the closing cash balance.

- (2) **Balance Sheet Method:** This method is useful for long term estimates. According to this method, the budgeted Balance Sheet is prepared for the following budget period, after considering the various terms viz. Capital, Long Term Liabilities, Current liabilities, Fixed Assets, Current Assets, but except cash. After both the sides of Balance Sheet are balanced, the balancing figure indicates the estimated cash balance in hand at the end of that period. This method does not consider the expenses and assumes the regular pattern of inflow and outflow of cash. Further, it indicates the cash requirement only at the

end of budget period, any excess or shortage of cash during the budget period are not considered.

- (3) **Adjusted Profits/Losses Method:** This method also is useful for long term estimates. According to this method, the cash budget is prepared in the following way to show the estimated cash balance at the end of the budget period.

Opening cash balance.

Add: Profit before depreciation, provisions and other non-cash expenses.

Add: Decrease in Current Assets or Increase in Current Liabilities.

Add: Capital Receipts.

Add: Receipt of loans/borrowings

Less: Capital Expenditure

Less: Repayment of loan installments

Less: Payment of dividends/taxes

Less: Increase in Current Assets or Decrease in Current Liabilities

In other words, cash budget prepared as per this method is in the form of cash flow statement.

(E) Miscellaneous Budgets:

In addition to the various budgets as described above, which can be prepared in prime functional areas of marketing, production, personnel and finance, some other types of budgets may also be prepared.

(I) Overheads Cost Budget:

It indicates the various types of overheads to be incurred during the budget period. For the correct establishment of overheads cost budget, it will be necessary to classify the various overheads. In order to exercise proper control on the overheads, it will be necessary to analyse the overheads as fixed, variable and semi-variable. The semi-variable overheads are further required to be split into fixed and variable elements.

(II) Capital Expenditure Budget:

It is the plan of proposed investment in the fixed assets. It is closely related to the sales budget, production budget and cash budget. As such, capital expenditure budget should be properly coordinated with other functional budgets.

The capital expenditure may be required to be incurred for the replacement purposes or expansion purposes. The requirements of capital expenditure may be basically received from the various functional executives viz. production manager, sales manager, finance manager and so on. If the investment in fixed assets is considered to be economically and financially feasible, then the arrangement is required to be made for the acquisition of the same. If the cash budget reveals the excess funds available, it may not be necessary to arrange the funds for acquiring the fixed assets from outside source. However, if no excess cash balance is available, then it may be necessary to borrow the funds from some outside source.

(F) Master Budget:

After all the functional budgets are prepared individually and are properly coordinated with each other, the master budget can be prepared by incorporating all the functional budgets. The ultimate incorporation of all the functional budgets takes the form of budgeted Profit and Loss Account and the Budgeted Balance Sheet.

It may involve the presentation of current year's budgeted figures as well as those of the previous year showing clearly why there is a change.

Fixed and Flexible Budget:

Any budget in any functional area of operation can be established as a fixed budget or a flexible budget. A fixed budget is established for a specific level of activity and is not adjusted to the actual level of activity attained at the time of comparison between the budgeted and actual results. Naturally, fixed budget is established only for a short period of time where the budgeted level of activity is expected to be attained to the maximum possible extent. Fixed budgets are more suitable for fixed expenses i.e. the expenses which have no relation with the level of activity. The fixed budgets do not indicate that they cannot be changed at all. A fixed budget can be revised if the actual level of activity is likely to differ widely from the budgeted level of activity. Fixed budget cannot be used as an effective tool of cost control while computing the variations between the budgeted result and the actual result, the variance cannot be explained properly and it is not possible to say whether the variance is due to the changes in the level of activity or due to the efficiency or inefficiency of the executive responsible for the execution of the budget. A flexible budget is designed to change with the fluctuations in the level of activity and provides a basis for comparison for any level of activity actually attained. A flexible budget is more elastic, and practical. It can be properly used as an effective tool for the evaluation of performance and cost control. It explains the variations between the budgeted results and actual results stating the variations which are due to changes in the level of activity (which

is beyond the control of operating executive) and which are due to the operational efficiency or inefficiency (for which the operating executive is responsible.)

For the purpose of establishment of the flexible budgets, it is necessary to classify the costs as fixed costs, variable costs and semi-variable costs. The fixed costs remain the same at all the levels of activity whereas the variable costs change directly in proportion to the level of activity. So far as the semi-variable costs are concerned, each item of cost is examined and classified into its fixed and variable elements and a trend is established regarding the nature and behavior of each item of cost.

Activity C:

Prepare a list of three types of budgets, which an organization might be interested in from a budgetary control's point of view.

10.5 SUMMARY

'Budget' is defined as a financial and/or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective. 'Budgetary Control' is defined as the establishment of budgets, relating 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 the basis for its revision. This unit discusses the prerequisites of implementing the budgetary control which involves various steps like, deciding the budget centre, budget period, establishing of accounting records, and organisation for budgetary control, preparation of budget manual and determination of budget key factor. There are different types of budgets with respect of functional areas of management. They are sales budget, purchases budget, production budget, finance budget, personnel budget, and cash budget. We come across fixed and flexible budget that is; a fixed budget is established for a specific level of activity and is not adjusted to the actual level of activity attained at the time of comparison between the budgeted and actual results. Naturally, fixed budget is established only for a short period of time where the budgeted level of activity is expected to be attained to the maximum possible extent. Fixed budgets are more suitable for fixed expenses i.e. the expenses which have no relation with the level of activity.

A flexible budget is designed to change with the fluctuations in the level of activity and provides a basis for comparison for any level of activity actually attained. A flexible budget is more elastic, and practical. It can be properly used as an effective tool for the evaluation of performance and cost control. It explains the variations between the budgeted results and actual results, stating the variations which are due to changes in the level of activity (which is beyond the control of operating executive) and which are due to the operational efficiency or inefficiency (for which the operating executive is responsible.)

10.6 KEY WORDS

Budget: Is defined as a financial and/or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective.

Budgetary Control: Is defined as the establishment of budgets, relating 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 the basis for its revision.

Budget Centre: Is that section of the organization with respect to which the budgets will be prepared. A budget centre may be in the form of a product or a department or a branch of the company and so on.

Budget Period: Is that period of time for which the budget will be prepared and operated.

Budget Manual: Is a document setting out the responsibility of the persons engaged in and the forms and procedures required for the budgetary control. A budget manual enables the standardization of the methods and procedures in relation to the budgetary control.

Capital Expenditure Budget: It is the plan of proposed investment in the fixed assets. It is closely related to the sales budget, production budget and cash budget. As such, capital expenditure budget should be properly coordinated with other functional budgets.

Finance Budget: The most important budget which is prepared under this functional area is the cash budget. It is an estimate of the expected cash receipts and cash payments during the budget period.

Fixed Budget: A fixed budget is established for a specific level of activity and is not adjusted to the actual level of activity attained at the time of comparison between the budgeted and actual results. Naturally, fixed budget is established only for a short period

of time where the budgeted level of activity is expected to be attained to the maximum possible extent. Fixed budgets are more suitable for fixed expenses i.e. the expenses which have no relation with the level of activity.

Flexible Budget: It can be properly used as an effective tool for evaluation of performance and cost control. It explains the variations between the budgeted results and actual results stating the variations which are due to changes in the level of activity.

Master Budget: After all the functional budgets are prepared individually and are properly coordinated with each other, the master budget can be prepared by incorporating all the functional budgets. The ultimate incorporation of all the functional budgets takes the form of budgeted Profit and Loss Account and the Budgeted Balance Sheet. It involves the presentation of current year's budgeted figures as well as those of the previous year showing clearly why there is a change.

Overheads Cost Budget: It indicates the various types of overheads to be incurred during the budget period. For the correct establishment of overheads cost budget, it will be necessary to classify the various overheads.

Production Budget: It is a forecast of production for the budget period. It may be prepared from two angles.

- (i) Production Budget in terms of Quantity.
- (ii) Production Budget in terms of money i.e. the production Cost Budget further classified under each element of cost such as Direct Material Cost, Direct Labour Cost and Overheads Cost.

Purchases Budget: It is a forecast of quantity and value of materials, direct or indirect, required to be purchased during the budget period. It is needless to state that the purchases budget is closely connected to the production budget.

Personnel Budget: Indicates the requirement of personnel or labour force, either direct or indirect, to conform to the sales forecast and the production budget. The labour requirement may be decided in terms of number and grade of workers, number of labour hours, rupee value etc. Consideration is also required to be made of the overtime working or shift working. This budget may also indicate the training plans for new workers.

Sales Budget: It is a forecast of total sales expressed in terms of quantity and or money. It is inevitably the interplay between two factors i.e. sales quantity and selling price.

11.1 INTRODUCTION

The determination of the actual cost on the basis of the various costing records maintained is no doubt important, but such actual cost (or historical cost) involves some limitations as to its utility.

- (1) The actual cost information is available only after the completion of the job, process or service and hence is of no practical utility from control point of view, as no basis is provided with which the actual costs can be compared.
- (2) There are various kinds of managerial decisions where cost is an inevitable basis as in price fixation or submission of quotations. However, if the details of actual costs are available too late, such cost details are of no practical utility for the purpose of price fixation or submission of quotation.
- (3) The actual costs may be affected due to inefficient functioning. The actual costs may be excessive due to abnormal expenses, avoidable wastes, inefficient use of labour and excessive use of materials. As such, actual costs are not useful for providing a yardstick for measuring efficiency of performance.
- (4) Actual costing is comparatively expensive as it involves the maintenance of various records and documents. The above stated limitations involved with the determination of actual costs have given rise to the technique of standard costing.

11.2 CONCEPT OF STANDARD COST AND STANDARD COSTING

The term ‘standard cost’ has been defined as a pre-determined cost which is calculated from the management’s standards of efficient operation and the relevant necessary expenditure.

The term ‘standard costing’ has been defined as ‘the preparation and use of standard costs, their comparison with actual costs and the measurement and analysis of variances to their causes and points of incidence.’

Thus, standard cost is the normal cost under the ideal circumstances. It may be used as a base for the purpose of price fixation and submission of quotations. Moreover, the standards when compared with the actual cost may also be used as tools for cost control and as a yardstick for measuring efficiency of performance, which is possible with standard costing system. As such, the process of standard costing involves the following stages.

- (1) Pre-determination of technical data related to production i.e. details of materials and labour operations required for each product, the quantum of inevitable losses, level of activity etc.
- (2) Pre-determination of standard costs in full details under each element of cost i.e. Labour, Material and Overhead.
- (3) Comparison of actual performance and costs with standards and working out the variances i.e. the difference between the actual and the standards.
- (4) Analysis of variances in order to determine the reasons for deviations of actuals from the standards.
- (5) Presentation of information to the appropriate level of management to enable suitable action being taken, or revision of standards.

It should be noted in this connection that standard costing is not a separate system of accounting but only a technique used with the intention of controlling the costs. Though it can be used in case of all methods of costing like job costing, process costing etc.; it can be more effective in case industries producing the standard products on continuous basis.

Activity A:

Define standard cost and mention two points differentiating it from standard costing.

11.3 ADVANTAGES OF STANDARD COSTING

- (1) Standard costing provides a yardstick with reference to which the efficiency/inefficiency in performance may be established. This facilitates the basic management function of cost control.
- (2) Standard costing provides the incentive and motivation to work with greater effort for achieving the standard.

- (3) Standard costs may be used as the basis for the process of price fixation, filing the tenders and offering the quotations. If the prices are to be quoted on cost plus basis, actual costs may not be available in which case standard costs can be the base for fixation of selling prices.
- (4) Standard costing system facilitates delegation of authority and fixation of responsibility for each individual or department. This also tones up the general organization of the concern.
- (5) Variance analysis and reporting is based on the principle of management by exception. The top management may not be interested in details of actual performances but only in the variations from the standard, so that corrective measures may be taken in time.
- (6) When constantly reviewed, the standards provide means for and encourage action for cost reduction. Focus on out of control situations, leads to cost reduction through the improved methods, improved quality of products, better material and workers, effective selection and use of capital resource etc.
- (7) A properly laid down system of standard costing may facilitate the correct implementation of the technique of budgetary control which also is a good system of cost control.

11.4 LIMITATIONS OF STANDARD COSTING

- (1) Establishment of standard costs is difficult in practice. Even though, standards are fixed after defining them properly, there is no guarantee that the standards established will have the same tightness or looseness as envisaged.
- (2) In the course of time, even in a short period, the standards become rigid. It may not be possible to maintain the standards to keep pace with the changes in manufacturing conditions. Revision of standards is costly.
- (3) Sometimes, standards set create adverse effects. If standards are set tightly and there is non-achievement of the same, it creates frustration.
- (4) The standard costing may not be suitable in all types of organizations, for example,
 - (i) In case of small concerns, where the production cannot be properly scheduled. In small concerns, personal contacts may be more effective than the standard costing.

- (ii) In case of industries having non-standardized products.
 - (iii) In case of industries having repair jobs which keep changing as per customer requirements.
 - (iv) In case of industries where products take more than one accounting period to complete for example, contract jobs.
- (5) Due to the play of random factors, it may be difficult to properly examine the variance and distinguish between controllable and uncontrollable variances. For example, adverse labour time variance may be due to poor grade of labour, poor quality of material, defective plant and machinery and lack of trained workers.
- (6) Lack of interest in standard costing on the part of the management makes the system ineffective and can't be used as a proper means of cost control.

 **Activity B:**

Briefly write about any two merits and demerits of standard costing.

11.5 COMPARISON OF STANDARD COSTING AND BUDGETARY CONTROL

Both standard costing and budgetary control are the best possible tools available to the management for the purpose of controlling the costs. Both the techniques involve the process of setting the targets or standards, measurement of actual performance, comparison of actual performance with targets or standard set, computation and analysis of variations and the attempts to maintain favourable variations and remove unfavourable variations. The technique of budgetary control can be used effectively if the system of standard costing is prevailing. Thus, both the techniques complement each other but are not necessarily dependent upon each other. On the other hand, in spite of the various similarities, both the techniques differ from each other in certain respects.

- (1) System of budgetary control may be operated even if no standard costing system is in use in the concern.

- (2) Budgets are the ceilings or limits on expenses above which actual expenditure should not normally exceed and if it does, the planned profits will be reduced. Standard costs are minimum targets to be attained by the actual performance.
- (3) Budgets may be prepared in the various areas of activities like sales, production, purchases, capital investment etc., whereas standard costing specifically relates to the function of production and manufacturing costs.
- (4) A more searching analysis is required to be made in case of standard costing variances than in case of budgetary control variances. Variances in case of budgets may point out efficiency or inefficiency. But variances in case of standard costing provide material for further probe and investigation.
- (5) The scope of standard costing is much wider than that of budgetary control. Adherence to budgeted performance may indicate that the business is out of difficulties. A genuine attempt to attain the standards always provides the scope for improved performance.
- (6) Budgets are based upon the future or estimated costs which may be used for forecasting the requirements of various factors of production like material, labour, finance etc. Standard costs are planned or ideal costs under the ideal situations as to operating efficiency, capacity level attainment and so on. Standard costs may not be necessarily useful for forecasting purposes.

Activity C:

Mention any two distinguishing characteristic features of standard costing and budgetary control.

11.6 PRELIMINARIES FOR ESTABLISHING STANDARD COSTING SYSTEM

Before the standard costing system is established in an organization, the following preliminaries will have to be complied with.

(1) Establishment of cost centres:

As explained before, a cost center is any unit with respect to which the costs will be ascertained. If the standard costing system is to be implemented, the cost centres should be defined very clearly so that the responsibility can be fixed in case of non standard performance.

(2) Design of accounts:

As the standard costing essentially involves the process of comparing the actual performance to standard performance and computation of variances there from, the accounts should be designed in such a way that the information about the actual performance is available as correctly as possible and as speedily as possible. For this purpose, the codification of accounts may be considered.

(3) Establishment of standards:

This is probably the most critical part of the implementation of standard costing i.e. to establish the standards with respect to the individual elements of cost i.e. Direct Material Cost, Direct Labour Cost and Overheads. It is necessary to exercise maximum care while establishing the standards as wrongly established standards may defeat the purpose of standard costing.

Following steps are involved in the process of establishing the standards:

- (a) Study of technical and operational details of the organization like the manufacturing process, levels of managements and their responsibilities, units and nature of inputs and outputs, details regarding wastes and losses, expected efficiency and capacity utilization etc.
- (b) Study of existing cost accounting systems and formats in use.
- (c) Decision about the types of standards to be used. It may be noted that there may be various types of standards.

 **Activity D:**

List down the three steps involved in the establishing of the standard costing system.

11.7 BASIC STANDARDS AND CURRENT STANDARDS

Basic Standards:

These are established for an unaltered use over a longer period of time and they don't reflect the current conditions. These types of standards are not useful from the cost control point of view and can be used in case of industries where technical processes are fully established or in the case of those types of costs which are fixed in nature viz. rent, remuneration to managerial personnel etc.

Current Standards:

These are established for a shorter period of time and are adaptable to change in current conditions. As current conditions are likely to change, the current standards are also subject to revision as per the changes in current conditions.

Current standards may be of three types.

Ideal Standards:

These are the standards which are set which are attainable under the most favourable conditions possible and assumes the maximum utilization of various factors of production (like men, material and machines) which is not practicable and attainable. Thus, the ideal standards are generally theoretical in nature and the variances always show an unfavorable trend. The basic limitation of these types of standards is that the constant non achievement of these standards causes frustration among the staff and the constant reporting of unfavorable variances is presumed which results into lost impact of system itself.

Expected Standards:

These are the standards which are anticipated to be attained during the budget period. These are based upon the expected performance based upon the conditions which are likely to prevail during the budget period. Allowances are provided for the unavoidable deviations from the ideal performance like labour time wastage, excess material use, break down of machinery etc. Thus, these standards are more realistic in nature and are more useful from cost control point of view.

Normal Standards:

These are the standards which may be anticipated to be achieved in future, over a longer period of time, considering the past performance. As such, the inefficiencies of the past

performance, if any, get reflected in these types of standards. Further, the problems faced in estimating the future over a longer period of time also restrict the use of these standards for cost control purposes.

After the consideration of various types of standards which may be used, the process of establishment of standards with respect to various elements of costs comes into operation. As discussed above, the standards may be set for the various elements of costs i.e. Direct Material Cost, Direct Labour Cost and Overheads.

(a) Direct Material Cost:

Setting the standard cost for Direct Material, involves two stages i.e. to decide the Price Standard and to decide the Use Standard.

Price Standard:

It may involve the consideration of following factors:

- (i) Current market conditions and likely changes.
- (ii) Prices of current supply orders.
- (iii) Prices of long term supply contracts.

Along with the basic prices, it may involve the consideration of the factors like discount, packing charges, insurance, sales tax, octroi etc. It may be the primary responsibility of the Purchase Department to supply the details required for this purpose.

Use Standard:

It may be the primary responsibility of Engineering or Design Department to supply the details required for this purpose, on the basis of standard bill of material. This may involve the process of product study. Sufficient provisions should be made for unavoidable scrap or wastages.

(b) Direct Labour Cost:

Setting the standard cost for Direct Labour involves two stages i.e. To decide the wage rate standard and to decide Labour Efficiency standard.

Wage Rate Standards:

It may involve the consideration of following factors:

- (i) The system of wages payments prevailing i.e. Piece Rate Wages or Time Rate Wages.
- (ii) Systems prevailing for bonus payments.
- (iii) The provisions of agreements with workers covering a future period of time.
- (iv) Provisions of various laws and guidelines governing the fixation of wage rates.
- (v) Grades of workers required and likely trends of market conditions in respect of availability thereof.

Labour Efficiency Standards:

It may be decided on the basis of the consideration of following factors:

- (i) Records of past performance.
- (ii) Time and motion study considering the details in respect of an average worker as the base.
- (iii) Trial Runs, specifically in respect of a new product. Sufficient provision should be made in respect of the unavoidable idle time.

(c) Overheads Cost:

Setting the standard cost of overheads involves the following stages:

- (i) Estimation of standard overheads cost.
- (ii) Estimation of standard level of activity (in terms of labour hours, machine hours or units of production).
- (iii) Estimation of standard overhead absorption rate which may be decided as below.

Standard Overhead Cost

Standard Level of Activity

Thus, the standard absorption rate may be per unit of production, per labour hour or per machine hour.

For better control purposes, the standards for overhead cost may be decided separately for fixed overheads and variable overheads, as fixed overheads are normally uncontrollable at the lower level of management.

(d) Reporting of Variances:

The basic intention of implementation of standard costing system as a cost control device is not complete till the variances computed in respect of each element of cost are properly reported to the relevant level of management for the decision making purposes. For this purpose, the following propositions should be considered.

- (a) For effective cost control, the organizational structure should be clearly defined and responsibility of each individual should be clearly defined.
- (b) The reports reporting the variances should be simple, clear and quick.
- (c) The computation and analysis of variances in respect of each element of cost should be accurate. A wrong analysis of variances may result into misleading conclusions.
- (d) For more effectiveness, the variances should be segregated as controllable variances and non-controllable variances. However, the analysis of uncontrollable variances should be made with the same care as in case of controllable variances.
- (e) The reporting of variances should contain a comparison with the planned results.
- (f) The format and the contents of reports reporting the variances may depend upon the level of management to whom reports are being made. The reports to top management would be obviously formal containing only the broad details and final results. The reports to lower level of management may contain the full analysis of each variance showing the causes therefor and locating the responsibilities therefor.

11.8 ANALYSIS OF VARIANCES

As stated earlier, the process of standard costing involves the establishment of standard costs and the computation of actual costs under each element of cost and the comparison between standard costs and actual costs. The difference between standard cost and actual cost is termed as 'Variance'. If the actual cost is less than the standard cost, the variance is a favourable variance. If the actual cost is more than the standard cost, the variance is an unfavorable or adverse variance. The utility of standard costing as a technique of cost control is not complete only by the computation of variances unless these variances are further analysed as to the causes responsible for these variances. The basic objective of variance analysis is to classify the variances as controllable and uncontrollable ones. For

example, if material actually used is in excess of standard quantity or if time actually taken by the workers is more than standard time, the variance will be an unfavourable one for which the responsibility can be assigned on the executives concerned. However if the variances occur due to general strike, general increase in wage rates, devaluation of currency, change in customers' demands etc., the variances will be uncontrollable ones for which no responsibility can be assigned to any executive. By concentrating most on controllable and adverse variances, it is possible for the management to exercise control through exception which is the basic objective of standard costing. Thus, the stress can be laid on variances only and no further action will be necessary in cases where standard costs are matching with the actual costs, provided that the conditions underlying the fixation of standards remain unchanged.

The variances arising in one period may be compared with variances in the previous period for a better control.

Thus a detailed analysis of variances, specifically the controllable ones, as to the causes leading to these variances, and the corrective actions required to be taken to reduce these variances enables the management to exercise proper cost control. However, it does not mean that the favourable variances need no investigation. A constant occurrence of favourable variance may indicate incorrect fixation of standards that need to be revised. A constant favourable variance may be due to a genuine improvement in performance or due to the manufacture of sub-standard products.

Activity E:

Define concept variance. What could be the reasons behind such occurrences of variances in the elements of cost? Write any two reasons.

We will discuss the variance under each element of cost.

(A) Material Cost Variance:

It is the difference between standard material cost and actual material cost. It may be further analysed as:

- (i) Material Price Variance

(ii) Material Usage Variance

(i) **Material Price Variance:**

It is that portion which is due to difference between standard price specified and actual price paid. It is calculated as -

Actual Quantity (Actual Price - Standard Price)

The causes for this may be traced as

- (1) Change in price of material.
- (2) Change in quantity of purchase or uneconomical size of purchase order.
- (3) Rush order to meet shortage of supply or purchase in less favourable market.
- (4) Failure to take advantage of off season prices.
- (5) Failure to get cash/trade discounts.
- (6) Weak purchase organization.
- (7) Payment of excess/less freight.
- (8) Transit losses/discrepancies if prices include them.
- (9) Change in quality or specification of material purchased.
- (10) Use of substitute materials at different prices.
- (11) Change in pattern or amount of taxes or duties.

From the above, it can be seen that the responsibility for this type of variance may be normally placed on purchase department. However, there may be some situations where the responsibility for this type of variance can not be placed on purchase department. For example, when the purchases are made in uneconomic quantities due to the lack of working capital.

(ii) **Material Usage Variance:**

It is that portion which is due to the difference between standard quantity specified and actual quantity used. It's calculated as -

Standard Price (Actual Quantity - Standard Quantity)

The causes to this may be traced as:

- (1) Inefficient or careless use of materials.
- (2) Change in specification/design of the product.
- (3) Inefficient/inadequate inspection of materials.
- (4) Change in quality of material or purchases of inferior material.
- (5) Production inefficiency resulting in wastages.
- (6) Use of substitute materials.
- (7) Theft/pilferage of materials.
- (8) Inefficient labour not able to handle material properly.
- (9) Defective machines and not proper maintenance of the same.
- (10) Change in the composition of material mix. If more than one material is mixed to get the final product, any change in the standard mix may result into material usage variance. It may arise in case of textile, chemical, rubber industries etc.
- (11) Change in the yield. If a certain amount of standard output is expected from some inputs, any variance in actual output may result in material usage variance. It may arise in case of processing industries.

The material usage variances may further be analysed in the following ways:

(a) Materials Mix Variance:

As stated above, it is that part of usage variance which may arise due to change in the standard composition of material mix where more than one materials are required to be mixed together to get the final product. This may be a peculiar feature of the industries like textile, chemical, rubber etc. The actual mix of materials may be different than the standard mix due to non-availability of specified material. Increased proportion of costly material in the mix results into adverse materials mix variance and vice-versa.

This variance is calculated as:

Standard price (Actual mix - Standard mix)

(b) Materials Yield Variance:

As stated above, it is that part of usage variance which may arise due to difference between standard yield expected and the actual yield obtained, where a certain specified yield is expected from a given input of materials. This may be a peculiar feature of the processing industries. A low actual yield indicates consumption of materials in excess of standards set resulting into an adverse variance and vice versa.

This variance is calculated as:

Standard Yield Price (Actual Loss - Standard Loss)

Where standard yield price is calculated as:

Total Standard Cost

Total Standard Output

Activity F:

Material being the element of cost, analyse the three material cost variances.

Illustration 1:

Material	Standard			Actual		
	Qty. Kgs.	Price Rs.	Total Rs.	Qty. Kgs.	Price Rs.	Total Rs.
A	500	6.00	3,000	400	6.00	2,400
B	400	3.75	1,500	500	3.60	1,800
C	300	3.00	900	400	2.80	1,120
	1200			1300		
Less: 10% Normal Loss	120			Actual Loss	220	
	1,080		5,400		1080	5,320

Calculate material cost variances.

Solution:**(A) Material Cost Variance**

Standard Material Cost - Actual Material Cost.

$$\therefore 5,400 - 5,320$$

$$= 80 \text{ (Favourable)}$$

(B) Material Price Variance

AQ (AP - SP) Where	AQ = Actual Quantity
AP = Actual Price	SP = Standard Price
Material A = 400 (6.00 - 6.00)	= Nil
Material B = 500 (3.60 - 3.75)	= 75 (Favourable)
Material C = 400 (2.80 - 3.00)	= <u>80 (Favourable)</u>
	<u>155 (Favourable)</u>

(C) Material Usage Variance

SP (AQ - SQ) Where	SP = Standard Price
AQ = Actual Quantity	SQ = Standard Quantity
Material A = 6.00 (400 - 500)	= 600 (Favourable)
Material B = 3.75 (500 - 400)	= 375 (Adverse)
Material C = 3.00 (400 - 300)	= <u>300 (Adverse)</u>
	<u>75 (Adverse)</u>

(D) Materials Mix Variance

Standard Price (Actual Mix - Standard Mix)

Material A = 6.00 (400 - 541.67)	= 850 (Favourable)
Material B = 3.75 (500 - 433.33)	= 250 (Adverse)
Material C = 3.00 (400 - 325)	= 225 (Adverse)
	<u>375 (Favourable)</u>

Note: The standard mix is calculated as below.

When total input is 1,200 Kgs, the Materials A,B, and C are mixed in the proportion of 500 Kgs., 400 Kgs and 300 Kgs. respectively. When total input is 1,300 Kgs. the materials should have been mixed in the following proportion.

$$\text{Material A} = \frac{500}{1200} \times 1300 = 541.67 \text{ Kgs.}$$

$$\text{Material B} = \frac{400}{1200} \times 1300 = 433.33 \text{ Kgs.}$$

$$\text{Material C} = \frac{300}{1200} \times 1300 = 325.00 \text{ Kgs.}$$

(E) Materials Yield Variance

Standard Yield Price (Actual Loss - Standard Loss)

$$5 (220 - 130)$$

$$= 450 \text{ (adverse)}$$

Note: Standard Yield Price is calculated as below

$$\frac{\text{Total standard cost}}{\text{Total standard output}} = \frac{\text{Rs. } 5400}{1080 \text{ Kgs.}} = \text{Rs. } 5/\text{Per Kg.}$$

Check:

Material Cost Variance = Materials Price Variance + Material Usage Variance

Materials Usage Variance = Materials Mix Variance + Materials Yield Variance

$$80 (\text{F}) = 155 (\text{F}) + 375 (\text{F}) + 450 (\text{A}) \quad [\text{F=Favourable}] \\ [\text{A=Adverse}]$$

Where, F indicates favourable and A indicates adverse variance.

(B) Labour Cost Variances

It is the difference between standard direct wages specified and actual wages paid. It is further analysed as:

- (i) **Wage/Labour Rate Variance:** It is that portion which is due to difference between standard pay of wages specified and actual rate paid. It is calculated as

Actual Hours (Standard Rate - Actual Rate)

The causes of this may be traced as

- (1) Change in wage structure or piece-work rate.
- (2) Variation due to different grades of workers and their wages differing from those specified.
- (3) Use of different methods of payment, for example, Actual payment on the time basis whereas standards are set on the piece rate basis.
- (4) Employment of casual/temporary workers to meet seasonal demands.
- (5) New workers not being allowed full normal wages.
- (6) Overtime or night shift allowance more or less than standard.
- (7) Composition of gang as regards the skill and rates of wages different than specified standards.

Though the responsibility of wages/labour rate variances can be placed on Personnel Department, in practice, this type of variance is usually an uncontrollable one.

- (ii) **Labour Efficiency Time Variance:** It is that portion which is due to difference between standard labour hours specified and the actual labour hours expended.

It is calculated as:

Standard Rate (Standard Hours - Actual Hours)

The causes of this may be traced as:

- (1) Lack of proper supervision.
- (2) Poor working conditions.
- (3) Delays due to waiting for materials, tools, instructions etc, if not treated as idle time.

- (4) Defective tools, equipments etc.
- (5) Machine break down if not treated as idle time.
- (6) Work on new machines requiring less time.
- (7) Basic inefficiency of workers due to lack of morale, insufficient training, faulty instructions etc.
- (8) Use of non-standard material requiring higher lime for processing.
- (9) Operations not provided for and booking them under direct wages.
- (10) Wrong selection of workers.
- (11) Increase in labour turnover.
- (12) Incorrect recording of performance i.e. time or output.

The labour efficiency variance may be further analysed in the following manner.

(a) Idle Time Variance: It is the standard cost of actual hours recorded as idle time due to abnormal circumstances like strike, lock out, power failure, machinery breakdown etc. It is calculated as -

Standard Rate x Idle Hours

This type of variance is normally calculated separately and not kept only as a part of efficiency variance, as the employees should not be blamed for inefficiency when the idle time arises due to circumstances beyond their control, say power failure. It is needless to state that this variance is always unfavorable and needs further investigation as to the causes for abnormal idle time.

(b) Labour Mix Variance (Gang Composition Variance)

It indicates that part at efficiency variance which arises due to change in Actual Gang of labour from that of Standard Gang of labour if various grades of labour are included in a gang and if certain grades of labour are not available. It is calculated as:

Standard Rate (Revised Standard Hours- Actual Hours)

Where the revised standard hours indicate the actual labour hours divided in the ratio of standard hours. It should be noted that if the idle time variance is calculated separately, the idle time hours should be excluded from actual total hours in standard ratio.

(c) Labour Yield Variance:

In many cases, this variance is calculated separately which indicates the effect on labour cost of actual yield or output being different from standard yield or output.

In numerical terms, it is equal to revised efficiency variance i.e. after separating Mix Variance and Idle Time Variance from Efficiency Variance, which is calculated as

Standard Rate (Standard Hours - Revised Standard Hours)

 **Activity G:**

Without manpower, no production process is possible. What do you know about labour variances?

Illustration 2:

Following details are available from the records of a ltd. company for a month regarding the standard labour hours and rates of an hour for a product.

	Hours	Rate per hour Rs.	Total Rs.
Skilled	10	3.00	30.00
Semi-skilled	8	1.50	12.00
Unskilled	16	1.00	16.00
			<u>58.00</u>

The actual production for the product was 1,500 units for which the actual hours worked and rates were as below.

	Hours	Rate per hour Rs.	Total Rs.
Skilled	13,500	3.50	47,250
Semi-skilled	12,600	1.80	22,680
Unskilled	30,000	1.20	36,000
Compute:			

- (a) Labour Cost Variance
- (b) Labour Rate Variance
- (c) Labour Efficiency Variance
- (d) Labour Mix Variance

(a) Labour Cost Variance:

Solution:

	Standard			Actual		
	Hours	Rate per Hr.	Total	Hours	Rate per Hr.	Total Rs.
Skilled	15,000	3.00	45,000	13,500	3.50	47,250
Semi-Skilled	12,000	1.50	18,000	12,600	1.80	22,680
Unskilled	24,000	1.00	24,000	30,000	1.20	36,000
	51,000		87,000	56,100		1,05,930

Standard Cost - Actual Cost

$$\therefore 1,05,930 - 87,000 = 18,930 \text{ (A)}$$

(b) Labour Rate Variance:

Actual Hours (Standard Rate - Actual Rate)

$$\begin{aligned}
 13,500 (3.50 - 3.00) &= 6,750 \text{ (A)} \\
 12,600 (1.80 - 1.50) &= 3,780 \text{ (A)} \\
 30,000 (1.20 - 1.00) &= \underline{6,000} \text{ (A)} \\
 &\quad \underline{\underline{16,530}} \text{ (A)}
 \end{aligned}$$

(c) Labour Efficiency Variance:

Standard Rate (Standard Hours - Actual Hours)

$$\begin{aligned}
 3.00 (13,500 - 15,000) &= 4,500 \text{ (F)} \\
 1.50 (12,600 - 12,000) &= 900 \text{ (A)} \\
 1.00 (30,000 - 24,000) &= \underline{6,000} \text{ (A)} \\
 &\quad \underline{\underline{2,400}} \text{ (A)}
 \end{aligned}$$

(d) Labour Mix Variance:

Standard Rate (Standard Hours - Revised Actual Hours)

3.00 (13,500 - 16,500)	=	9,000	(F)
1.50 (12,600 - 13,200)	=	900	(F)
1.00 (30,000 - 26,400)	=	3,600	(A)
		6,300	(F)

(C) Overhead Cost Variances

The analysis of overheads variances is different and the most complex task than the calculation of material and labour variances. It is so due to the fact that establishment of a standard overhead absorption rate is difficult as a part of total overheads is fixed, which affects the overhead absorption rate with the change in volume.

It should be noted in this connection that the overhead absorption rate can be computed in the following way.

- (a) If the overhead rate is expressed in terms of labour hours.

$$\text{Hourly Rate} = \frac{\text{Budgeted Overhead Cost}}{\text{Budgeted Labour Hours}}$$

- (b) If the overhead rate is expressed in terms of units produced

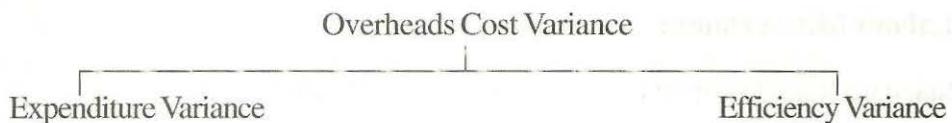
$$\text{Unit Rate} = \frac{\text{Budgeted Overhead cost}}{\text{Budgeted output in units}}$$

As the overheads can be either the variable overheads or fixed overheads, the overhead cost variances may be separately calculated for variable overheads and fixed overheads.

Variable Overheads Variance

It is that amount of overheads which change directly with the level of activity and per unit variable overheads remain constant. As such, the variable overheads are not affected with the change in volume of operations.

The common method of analyzing the variable overheads variances is shown in the chart below.



(a) Overheads Cost Variance:

It is the difference between standard overheads cost absorbed and actual overheads cost incurred. It is calculated as -

$$\left[\frac{\text{Standard Hours for}}{\text{Actual production}} \times \frac{\text{Standard Hourly Rate}}{\text{Rate}} \right] - \text{Actual Overhead}$$

(b) Overheads Expenditure Variance:

It is the difference between the standard allowance for the output achieved and actual overheads cost incurred.

It is calculated as -

$$\text{Revised Budgeted Overheads for Actual Hours} - \text{Actual Overheads}$$

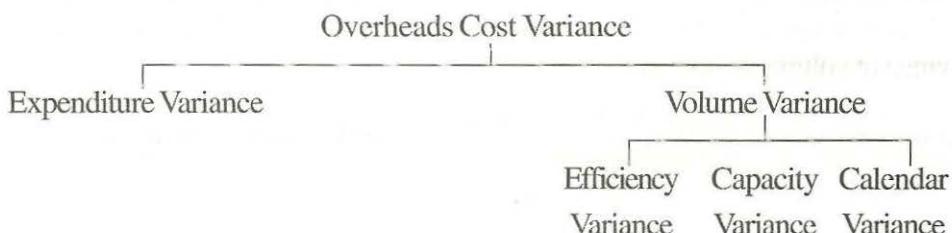
(c) Overheads Efficiency Variance:

It is due to the difference between budgeted efficiency of production and actual efficiency attained. It is calculated as -

$$\frac{\text{Standard Hourly Rate}}{\text{Rate}} \times \left[\frac{\text{Standard Hours for}}{\text{Actual production}} - \text{Actual Overheads} \right]$$

Fixed Overheads Variances:

In modern times, especially in the days of rapid mechanization of production processes, the fixed overheads form a major portion of the production cost. As such, it is necessary that the management is properly informed about the standard fixed overheads or any deviations therefrom. The common method of analyzing the fixed overheads variances is shown in the chart below.



As each of the above variances can be computed either on the basis of units of production or on the basis of hours. We will first study the nature of the above variances and then the methods of computation.

(a) Overheads Cost Variance:

It is the difference between the total standard overheads cost absorbed in the output achieved and the total actual overheads cost. Thus, it can be seen that the overheads cost variance is simply the under or over absorption of overheads.

(b) Expenditure Variance:

It is the difference between the standard allowance for the output achieved and the actual overheads cost incurred.

The causes of this variance may be

- (1) Change in the quality/price of indirect material.
- (2) Change in the labour rates for indirect workers or change in the grade of indirect workers.
- (3) Change in the rate of power, insurance and other overheads.

(c) Volume Variance:

It is that portion of the overhead variance which is due to the difference between the budgeted level of output and the actual level of output.

The causes of this variance may be as below.

- (1) Labour problems like strikes, lockouts etc.
- (2) Material shortage
- (3) Machinery Breakdown
- (4) Waiting for tools/instructions/material
- (5) Power failure.
- (6) Change in the demand for product

It will not be out of place to mention here that in case of the variable overheads, per unit or per hour overheads remain constant and are not affected by the change in the level of output. As such, volume variance does not arise in case of variable overheads.

(d) Efficiency Variance:

It is that portion of the overhead variances, as a part of volume variance, which is due to the difference between budgeted efficiency of production and the actual efficiency attained. The causes of this variance may be as below.

- (1) Poor working conditions.
- (2) Change in the labour performance
- (3) Defective and faulty tools.
- (4) Incorrect Machine operations.
- (5) Defective or inferior material.

(e) Capacity Variance:

It is that portion of the overhead variances, as a part volume variance, which is due to the working at higher or lower capacity than standard.

The causes of this variance may be as below.

- (1) Seasonal variations.
- (2) Shortage of labour force.
- (3) Abnormal idle time due to the reasons like power failures, strikes, lock outs etc.
- (4) Change in the customer demand.

(f) Calendar Variance:

It is that portion of overhead variances, as a part of volume variance, which is due to the difference between the number of working days in the budget period and the actual number of working days in the period in which the budget is applied.

Calendar Variance arises only if there is abnormal increase or decrease in the number of working days, as the normal holidays are already considered while setting the standard. Thus, the declaration of an unexpected day as holiday may result into calendar variance.

Computation of Fixed Overheads Variances:

As discussed earlier, the fixed overheads variances may be computed on the basis of units of production or on the basis of hours.

(A) On the basis of units of production:

(1) Overheads Cost Variance:

Standard Overhead Cost - Actual Overhead Cost

(2) Expenditure Variance:

Budgeted Overhead Cost - Actual Overhead Cost

(3) Volume Variance:

Standard Rate per unit X [Actual Production - Budgeted Production]

(4) Efficiency Variance:

Standard Rate per unit X [Actual Production - Standard Production in Actual Hours]

(5) Capacity Variance:

Standard Rate X $\left[\begin{array}{l} \text{Standard Production} - \text{Revised Budgeted} \\ \text{in Actual Hours} \quad \quad \quad \text{Production} \end{array} \right]$

(6) Calendar Variance:

Standard Rate per unit X [Revised Budgeted Production - Budgeted Production]

Activity H:

State the concept of overhead variance, relating it to fixed and variable overheads.

Illustration 3:

An Engineering Company has furnished you the following data

	Budget	Actual
	July 1986	
No of working days	25	27
Production in Units	20,000	22,000
Fixed overheads in Rs.	30,000	34,000

Budgeted fixed overhead rate is Rs. 1 per hour. In July 1986, the actual hours worked were 31,500.

Calculate the following variances.

- (a) Total overheads Variance
- (b) Expenditure Variance
- (c) Volume Variance
- (d) Efficiency Variance
- (e) Capacity Variance
- (f) Calendar variance

Solution:

[F = Favourable, A = Adverse]

(1) Total Overheads Variance:

Standard Overheads Cost - Actual Overheads Cost

$$\therefore 33,000 - 34,000$$

$$= 1,000 \text{ (A)}$$

(2) Expenditure Variance:

Budgeted Overheads Cost - Actual Overheads Cost

$$\therefore 30,000 - 34,000$$

$$= 4,000 \text{ (A)}$$

(3) Volume Variance:

Standard Rate per unit x [Actual Production - Budgeted Production]

$$\therefore 1.5 \times (22,000 - 20,000)$$

$$= 3,000 \text{ (F)}$$

(4) Efficiency Variance:

$$\begin{aligned} \text{Standard Rate per unit} &\times [\text{Actual Production} - \text{Standard Production in Actual Hours}] \\ \therefore 1.5 &\times (22,000 - 21,000) \\ &= 1,500 (\text{F}) \end{aligned}$$

(5) Capacity Variance:

$$\begin{aligned} \text{Standard Rate per unit} &\times [\text{Standard Production in Actual Hours} - \text{Revised Budgeted Production}] \\ \therefore 1.5 &\times (21,000 - 21,600) \\ &= 900 (\text{A}) \end{aligned}$$

(6) Calendar Variance:

$$\begin{aligned} \text{Standard Rate per Unit} &\times [\text{Revised Budgeted Production} - \text{Budgeted Production}] \\ \therefore 1.5 &\times (21,600 - 20,000) \\ &= 2,400 (\text{F}) \end{aligned}$$

Check:

$$\text{Volume variance} = \text{Efficiency Variance} + \text{Capacity Variance} + \text{Calendar Variance}$$

$$3000 (\text{F}) = 1500 (\text{F}) + 900 (\text{A}) + 2400 (\text{F})$$

$$\text{Total Variance} = \text{Expenditure Variance} + \text{Volume Variance}$$

$$1000 (\text{A}) = 4000 (\text{A}) + 3000 (\text{F})$$

Working Notes:

(A)

- (1) Standard Rate per unit is calculated as below

Budgeted Overhead Cost

Budgeted Production

$$\therefore \frac{30,000}{20,000} = \text{Rs. 1.5 Per Unit}$$

- (2) Standard Production in actual hours is calculated as below:

Budgeted overheads are Rs.30,000, while budgeted fixed overhead rate is Rs. 1 per hour. Therefore, budgeted hours are 30,000, while budgeted production is 20,000

units. It means that one unit requires 1.5 hours.(standard) As actual hours worked are 31,500, the standard production in those many hours will be -

$$\frac{31,500}{1.5} = 21,000 \text{ Units}$$

- (3) Revised Budgeted Production is calculated as below.

Budgeted Number of working days are 25 while budgeted production is 20,000 units. It means that standard production in one day is -

$$\frac{20,000 \text{ Units}}{25 \text{ days}} = 800 \text{ Units}$$

As actual number of working days is 27, the standard production in those many days will be -

$$800 \text{ units} \times 27 \text{ days} = 21,600 \text{ units}$$

(B) On the basis of hours:

(1) Overheads Cost Variance:

$$\text{Standard Overheads Cost} - \text{Actual Overheads Cost}$$

(2) Expenditure Variance:

$$\text{Budgeted Overheads Cost} - \text{Actual Overheads Cost}$$

(3) Volume Variance:

$$\text{Standard Hourly Rate} \times [\text{Standard Hours for Actual Production} - \text{Budgeted Hours}]$$

(4) Efficiency Variance:

$$\text{Standard Hourly Rate} \times [\text{Standard Hours for Actual Production} - \text{Actual Hours}]$$

(5) Capacity Variance:

$$\text{Standard Hourly Rate} \times [\text{Actual Hours} - \text{Revised Budgeted Hours}]$$

(6) Calendar Variance:

$$\text{Standard Hourly Rate} \times [\text{Revised Budgeted Hours} - \text{Budgeted Hours}]$$

Illustration 4:

An engineering company has furnished you with the following data.

	Budget	Actual (July 1986)
No. of working days	25	27
Production in Units	20,000	22,000
Fixed Overheads (in Rs.)	30,000	34,000

Budgeted fixed overhead rate is Rs. 1 per hour. In July 1986, the actual hours worked were 31,500.

Calculate the following variances

- (a) Total Overheads Variance
- (b) Expenditure Variance
- (c) Volume Variance
- (d) Efficiency Variance
- (e) Capacity Variance
- (f) Calendar Variance

Solution:

Calculation of overhead variances will be as below.

(1) Total Overheads Variance:

$$\text{Standard Overheads} - \text{Actual Overheads} \\ \therefore 33,000 - 34,000 = 1,000 \text{ (A)}$$

(2) Expenditure Variance:

$$\text{Budgeted Overheads} - \text{Actual Overheads} \\ \therefore 30,000 - 34,000 = 4,000 \text{ (A)}$$

(3) Volume Variance:

$$\text{Standard Hourly Rate} \times [\text{Standard Hours for Actual Production} - \text{Budgeted Hours}] \\ = 1 (33,000 - 30,000) = 3,000 \text{ (F)}$$

(4) Efficiency Variance:

Standard Hourly Rate (Standard hours - Actual hours)

$$\therefore 1 (33,000 - 31,500) \\ = 1,500 (\text{F})$$

(5) Capacity Variance:

Standard Hourly Rate (Actual hours - Revised Budgeted Hours)

$$\therefore 1 (31,500 - 32,400) \\ = 900 (\text{A})$$

(6) Calendar Variance:

Standard Hourly Rate (Revised Budgeted Hours - Budgeted Hours)

$$\therefore 1 (32,400 - 30,000) \\ = 2,400 (\text{F})$$

Check:

Volume Variance = Efficiency Variance + Capacity Variance + Calendar Variance

$$3000 (\text{F}) = 1500 (\text{F}) + 900 (\text{A}) + 2400 (\text{F})$$

Total Overhead Cost Variance = Expenditure Variance + Volume Variance

$$1000 (\text{A}) = 4000 (\text{A}) + 3000 (\text{F})$$

Working Notes:

- (1) Standard rate per hour is known to be Rs. 1.

As Budgeted overheads are Rs.30,000, Budgeted Hours will be 30,000

- (2) Budgeted Hours are known to be 30,000 for the Budgeted production of 20,000 units, indicating that standard time required for one unit is 1 1/2 hours.

If the actual production is 22,000 units, the standard time required for actual production will be 33,000 hours.

- (3) The budgeted number of working days are 25 and budgeted hours are 30,000, indicating that the standard hours available in one day are 1,200.

If the company has actually worked for 27 days, the revised budgeted hours will be 32,400 i.e. 1,200 hours per day x 27 days.

Sales Variances:

While standard costing principles are mainly applied in the area of costs i.e. Material cost, Labour cost and overheads cost, some companies calculate the sales variances also which is the difference between budgeted sales and actual sales and its impact on profits.

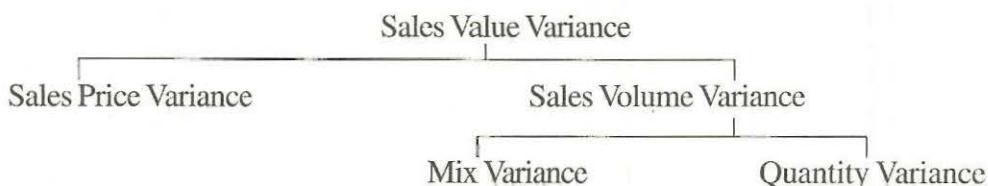
There may be two ways to calculate sales variances.

(A) The turnover/value method.

(B) The margin/profit method.

(A) The Turnover/Value Method:

The common method of analysing sales variances under this method is shown in the chart below.



(1) Sales Value Variance:

It is the difference between the budgeted sales and the actual sales.

It is calculated as -

$$\text{Actual Sales} - \text{Budgeted Sales}$$

(2) Sales Price Variance:

It is that portion of sales variance which is due to the difference between standard price specified and the actual price charged.

It is calculated as -

$$\text{Actual Sales Volume} \times [\text{Actual Price} - \text{Standard Price}]$$

(3) Sales Volume Variance:

It is that portion of sales variance which is due to the difference between the standard quantity specified and the actual quantity sold.

It is calculated as -

$$\text{Standard Price} \times [\text{Actual sales volume} - \text{Standard sales volume}]$$

(4) Sales Mix Variance:

It is that portion of sales volume variance which may arise due to change in actual composition of sales mix from the standard composition of sales mix, where more than one product is dealt with.

It is calculated as -

$$\text{Standard Sales} - \text{Revised Standard Sales}$$

Where -

Standard Sales are actual quantity sold at budgeted price. Revised Budgeted sales are standard sales rearranged in the budgeted ratio.

Note: It should be noted that the sales mix variance, under turnover method will always be zero. This is so because though the sales mix is varied, the actual sales at budgeted price are rearranged in the budgeted ratio.

(5) Sales Quantity Variance:

It is that portion of sales volume variance, which may arise due to the difference between standard value of actual sales at standard mix and budgeted sales. It is calculated as -

$$\text{Revised Standard Sales} - \text{Budgeted Sales}$$

Activity I:

Sales is a source of revenue to an organization. Can you explain the sales variance analysis with the help of any two of its methods?

Illustration 5:

Product	Standard			Actual		
	Qty.	Sale Price Rs.	Total Rs.	Qty.	Sale Price Rs.	Total Rs.
A.	500	5	2,500	500	5.40	2,700
B.	400	6	2,400	600	5.50	3,300
C.	300	7	2,100	400	7.50	3,000
	<u>1200</u>		<u>7,000</u>	<u>1500</u>		<u>9,000</u>

Calculate the Sales Variances.

Solution:

(A)

(1) Sales Value Variance:

Actual Sales - Budgeted Sales

$$\therefore 9,000 - 7,000 = 2,000 \quad (\text{F})$$

(2) Sales Price Variance:

Actual Sales Volume (Actual Price - Standard Price)

$$\text{A} - 500 (5.40 - 5.00) = 200 \quad (\text{F})$$

$$\text{B} - 600 (5.50 - 6.00) = 300 \quad (\text{A})$$

$$\text{C} - 400 (7.50 - 7.00) = \underline{200} \quad (\text{F})$$

$$\underline{\quad 100 \quad} \quad (\text{F})$$

(3) Sales Volume Variance:

Standard Price (Actual Sales Volume - Standard Sales Volume)

$$\text{A} - 5 (500 - 500) = \text{Nil}$$

$$\text{B} - 6 (600 - 400) = 1200 \quad (\text{F})$$

$$\text{C} - 7 (400 - 300) = \underline{700} \quad (\text{F})$$

$$\underline{\quad 1900 \quad} \quad (\text{F})$$

(4) Sales Mix Variance:

Standard Sales - Revised Standard Sales

Where standard sales are actual quantity at standard price and Revised standard sales are standard sales rearranged in budgeted ratio.

	Qty.	Standard Sales		Revised Standard Sale	
		Price Rs.	Total Rs.	Ratio	Total
A	500	5	2500	35.71%	3178
B	600	6	3600	34.29%	3052
C	400	7	2800	30.00%	2670
			8900		8900

Ratio is calculated as below

$$A - \frac{2500}{7000} \times 100 = 35.71\%$$

$$B - \frac{2400}{7000} \times 100 = 34.29\%$$

$$C - \frac{2100}{7000} \times 100 = 30\%$$

∴ Sales Mix Variance -

$$A \quad 2500 - 3178 = 678 \text{ (A)}$$

$$B \quad 3600 - 3052 = 548 \text{ (F)}$$

$$C \quad 2800 - 2670 = \underline{\underline{130}} \text{ (F)}$$

Nil

(5) Sales Quantity Variance

Revised Standard Sales - Budgeted Sales:

$$A \quad 3178 - 2500 = 678 \text{ (F)}$$

$$B \quad 3052 - 2400 = 652 \text{ (F)}$$

$$C \quad 2670 - 2100 = 570 \text{ (F)}$$

$$= \underline{\underline{1900}} \text{ (F)}$$

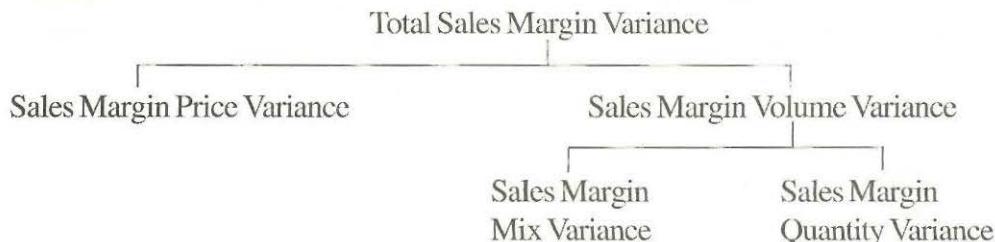
Check:

Sales Value Variance = Sales Price Variance + Sales Mix Variance + Sales Quantity Variance

$$= 2000 \text{ (F)} = 100\text{(F)} + \text{Nil} + 1900 \text{ (F)}$$

(B) The Margin/Profit Method:

This method of sales variances measures the effect of actual sales and budgeted sales on profit. As this method does not consider the cost variances, all costs are assumed to be standard costs. The common method of analysing sales variances under this method is shown in the chart below.



(1) Total Sales Margin Variance:

It is the difference between actual margin (by considering standard costs) and budgeted margin.

It is calculated as -

$$\text{Actual Profit} - \text{Budgeted Profit}$$

(2) Sales Margin Price Variance:

It is that portion of total sales margin variance which is due to the difference between standard price of actual sales made and actual price.

It is calculated as

$$\text{Actual Profit} - \text{Standard Profit}$$

(3) Sales Margin Volume Variance:

It is that portion of total sales-margin variance which is due to the difference between standard profit and budgeted profit.

It is calculated as -

Standard Profit - Budgeted Profit.

(4) Sales Margin Mix Variance:

It is that portion of sales margin volume variance which is due to the difference between standard profit and revised standard profits.

It is calculated as -

Standard Profit - Revised Standard Profit.

(5) Sales Margin Quantity Variance:

It is that portion of sales margin volume variance which is due to the difference between budgeted profit and revised standard profits.

It is calculated as-

Revised Standard Profits - Budgeted Profit.

Illustration 6:

A Ltd. company has budgeted the following sales for the month

A - 900 units at Rs. 50 per unit.

B - 650 units at Rs. 100 per unit.

C - 1200 units at Rs. 75 per unit.

Actual sales were -

A - 950 units at Rs. 58 per unit.

B - 700 units at Rs. 90 per unit.

C - 1200 units at Rs. 80 per unit.

Costs per unit of A, B and C were Rs. 40, Rs. 88 and Rs. 60 respectively.

Compute the Sales Margin variances.

Solution:

Product	Qty	SALES		COST OF SALES		PROFIT	
		Price Rs.	Total Rs.	Per unit Rs.	Total Rs.	Per unit Rs.	Total Rs.
BUDGET							
A	900	50	45,000	40	36,000	10	9,000
B	650	100	65,000	88	57,200	12	7,800
C	1200	75	90,000	60	72,000	15	18,000
			<u>2,00,000</u>		<u>1,65,200</u>		<u>34,800</u>
ACTUAL							
A	950	58	55,100	40	38,000	18	17,100
B	700	90	63,000	88	61,600	2	1,400
C	1200	80	96,000	60	72,000	20	24,000
			<u>2,14,100</u>		<u>1,71,600</u>		<u>42,500</u>

Standard sales and revised standard sales are calculated as below:

STANDARD SALES:

Product	Qty	SALES		COST OF SALES		PROFIT	
		Price Rs.	Total Rs.	Per unit Rs.	Total Rs.	Per unit Rs.	Total Rs.
A	950	50	47,500	40	38,000	10	9,500
B	700	100	70,000	88	61,600	12	8,400
C	1200	75	90,000	60	72,000	15	18,000
			<u>2,07,500</u>		<u>1,71,600</u>		<u>35,900</u>

REVISED STANDARD SALES:

Product	Revised Standard sales Rs.	Revised Standard profit Rs.
A	46,688	9,338
B	67,437	8,092
C	93,375	18,675
	<u>2,07,500</u>	<u>36,105</u>

Calculation of Variances

(1) Total Sales Margin Variance:

Actual Profit - Budgeted Profit
 $\therefore 42,500 - 34,800 = 7,700 \text{ (F)}$

(2) Sales Margin Price Variance

Actual Profit - Standard Profit
 $\therefore 42,500 - 35,900 = 6,600 \text{ (F)}$

(3) Sales Margin Volume Variance

Standard Profit - Budgeted Profit.
 $\therefore 35,900 - 34,800 = 1,100 \text{ (F)}$

(4) Sales Margin Mix Variance:

Standard Profit - Revised Standard Profit.
 $\therefore 35,900 - 36,105 = 205 \text{ (A)}$

(5) Sales Margin Quantity Variance:

Revised Standard Profit - Budgeted Profit
 $\therefore 36,105 - 34,800 = 1,305 \text{ (F)}$

11.9 SUMMARY

The term ‘standard cost’ has been defined as a pre-determined cost which is calculated from the management’s standards of efficient operation and the relevant necessary expenditure.

The term ‘standard costing’ has been defined as ‘the preparation and use of standard costs, their comparison with actual costs and the measurement and analysis of variances to their causes and points of incidence. Standard cost is the normal cost under the ideal circumstances. It may be used as a base for the purpose of price fixation and submission of quotations. Moreover, the standards when compared with the actual cost may also be used as tools for cost control and as a yardstick for measuring efficiency of performance. Standard costing is not a separate system of accounting but only a technique used with the intention of controlling the costs. Though it can be used in case of all methods of costing like job costing, process costing etc.; it can be more effective in case on industries producing the standard products on continuous basis.

Standard costing and budgetary control are the best possible tools available to the management for the purpose of controlling the costs. Both the techniques involve the process of setting the targets or standards, measurement of actual performance, comparison of actual performance with targets or standard set, computation and analysis of variations and the attempts to maintain favorable variations and remove unfavorable variations. The technique of budgetary control can be used effectively if the system of standard costing is prevailing. Thus, both the techniques complement each other but are not necessarily dependent upon each other.

The standard costing system is established in an organization, which includes steps like, the establishment of cost centers, design of accounts, establishment of standards etc. Basic standards are established for an unaltered use over a longer period of time and they don't reflect the current conditions. These types of standards are not useful from the cost control point of view and can be used in case of industries where technical processes are fully established or in case of those types of costs which are fixed in nature viz. rent, remuneration to managerial personnel etc. Current standards are established for a shorter period of time and are adaptable to change in current conditions. These are of three types, Ideal, expected and Normal standards.

The process of standard costing involves the establishment of standard costs and the computation of actual costs under each element of cost and the comparison between standard costs and actual costs. The difference between standard cost and actual cost is termed as 'Variance'. If the actual cost is less than the standard cost, the variance is a favourable variance. If the actual cost is more than the standard cost, the variance is an unfavorable or adverse variance. The basic objective of variance analysis is to classify the variances as controllable and uncontrollable ones. Variance analysis includes material cost variance, labour cost variance and overhead cost variance.

11.10 KEY WORDS

Labour Cost Variance: It is the difference between standard direct wages specified and actual wages paid.

Material Cost Variance: It is the difference between standard material cost and actual material cost. Further, it includes material price and usage variance.

Overhead Cost Variance: This can be explained with the help of variable and fixed cost variances.

Sales Variances: Is the difference between budgeted sales and actual sales. This can be calculated through the turn over value method and margin profit method.

Standard Cost: Is a pre-determined cost, which is calculated from the management's standards of efficient operation and the relevant necessary expenditure.

Standard Costing defined as 'the preparation and use of standard costs, their comparison with actual costs and the measurement and analysis of variances to their causes and points of incidence.'

Basic Standards are established for an unaltered use over a longer period of time and they don't reflect the current conditions. These types of standards are not useful from the cost control point of view and can be used in case of industries where technical processes are fully established.

Current Standards are established for a shorter period of time and are adaptable to change in current conditions. As current conditions are likely to change, the current standards are also subject to revision as per the changes in current conditions, they are established for a shorter period of time and are adaptable to change in current conditions. These may be of three types. They are ideal, expected and normal standard.

Variance, the process of standard costing, involves the establishment of standard costs and the computation of actual costs under each element of cost and the comparison between standard costs and actual costs. The difference between standard cost and actual cost is termed as 'Variance'.