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Cost and Managment Accounting

SEMESTER - IV

BUSINESS ADMINISTRATION

BLOCK - 1

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SEMESTER 4
BACHELOR IN BUSINESS ADMINISTRATION
COST AND MANAGMENT ACCOUNTING
BLOCK 1

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COURSE INTRODUCTION

This course is about “Cost and Management Accounting”. Cost accounting is used to calculate the per unit cost of product, so if the management or the organisation does not know the per unit product price, they will not able to set the selling price of a product and determine the profit per unit which they can earn.Managers use cost accounting to support decision-making to cut a company’s costs and improve profitability and as a student of mangement each and every student should have a fair idea on important concepts like financial accounting, management accounting, material cost control and labour cost, overheads and job and contract costing,batch costing etc which dependent on cost accounting. cost accounting establishes budget and actual cost of operations, processes, departments or product and the analysis of variances, profitability or social use of funds. This course will help the management students to apply the theoritical concepts in the different organisation, firm and factories. So, this course is important to the management student.This course consist of 14 units and this 14 units are devided into two blocks i.e. block 1 and block 2. Each block comprises of 7 units.

BLOCK 1: INTRODUCTION

This is the first block of the course “Cost and Management Accounting”. This block consists of seven units.

The first unit explains about the meaning and objectives of cost accounting. It also give a detail note of the concept of financial and management accounting.

The second unit is about classification of Cost and its techniques.

The third unit describes about materials cost control, its meaning and functions. Here, the fixation of stock level, ABC Analysis, Inventory System and method of pricing of materials issues are discussed.

The fourth unit explains about labour cost control. The meaning and types of labour cost are discussed. The concept of Idle time, Abnormal Idle time and methods of remuneration are also discussed.

The fifith unit explains about Overheads, its meaning and importance and classification and procedures are also discussed.

The sixth unit is about absorption of overheads and methods of absorption of overhead.

The seventh unit describes about job costing and contract costing.

While going through this block, you will get some boxes marked with “ACTIVITY” which will help you in making your learning more active and efficient. And, at the end of each section, you will get “CHECK YOUR PROGRESS” questions. These have been designed to self-check your progress of study. It will be better if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with “ANSWERS TO CHECK YOUR PROGRESS” given at the end of each unit.

UNIT 1: COST ACCOUNTING

UNIT STRUCTURE

1.1 Learning objectives

1.2 Introduction

1.3 Meaning of Cost Accounting

1.4 Objectives of Cost Accounting

1.5 Cost accounting, financial accounting and management accounting

- 1.5.1 Difference between cost accounting and financial accounting
- 1.5.2 Meaning of management accounting
- 1.5.3 Difference between Cost accounting and management accounting

1.6 Advantages of Cost Accounting

1.7 Limitations of Cost Accounting

1.8 Let Us Sum Up

1.9 Further Reading

1.10 Answers to Check Your Progress

1.11 Model Questions

1.1 LEARNING OBJECTIVES

After going through this unit, you will be able to

- explain the meaning & objectives of Cost Accounting
- explain the difference between Cost Accounting and Financial Accounting
- describe the meaning of Management Accounting
- outline differences between Cost Accounting and Management Accounting
- discuss the advantages and limitations of Cost Accounting

1.2 INTRODUCTION

In this unit we are going to discuss the meaning and objectives of cost accounting and its various advantages and disadvantages. Cost accounting means keeping account of the costs of items in production. After that you will get a fair idea on the meaning of management accounting.

The difference between cost accounting, financial accounting and management accounting will also be discussed.

1.3 MEANING OF COST ACCOUNTING

Cost Accounting is one of the important disciplines of accountancy to give proper information required to the management for effectively discharging its functions such as planning, organizing, controlling, directing, co-coordinating and decision making. In this regard, Financial accounting is concerned with record keeping directed towards the preparation of Profit and Loss Account and Balance Sheet. It provides information about the enterprise in a general way. Accordingly Financial Accounts are prepared as per the requirement of the Companies Act and Income Tax Act. The main purpose of financial accounting is to ascertain profit or loss of a concern as a whole for a particular period. Thus, financial accounting does not serve as the needs of management for effective control, determination of prices, making effective plan for future operations and formulating various policy decision.

To overcome the limitations of the financial accounting, the cost accounting is a recent development born in response to the needs of management for detailed information about cost of a product or a unit of services. Every business firm is expected to make profit in the long run and keep costs within control. Recently the Companies Act has made obligatory the keeping of cost records in some manufacturing companies. In essence, therefore Cost Accounting is now widely used by large manufacturing and non-manufacturing operations.

1.4 OBJECTIVES OF COST ACCOUNTING

The following are the important objectives of Cost Accounting :

1) Ascertainment of cost.
2) Determination of selling price.
3) Cost control and cost reduction.
4) Ascertainment of profit of each activity.
5) Assisting Management in decision making.
6) Formulating business policy.
7) Matching costs with revenue.

1.5 COST ACCOUNTING, FINANCIAL ACCOUNTING AND MANAGEMENT ACCOUNTING

In this section we will discuss about the difference between cost accounting, financial accounting, and management accounting.

1.5.1 Difference between Cost accounting and Financial Accounting

The following are the differences between Financial Accounting and Cost Accounting:

Point of difference	Financial Accounting	Cost Accounting
Purpose	It is prepared for providing information about the final results of the business activities as a whole for a particular period to its proprietors, outsiders etc.	The main purpose of Cost Accounting is to provide information to the management for the proper planning, control and decision making.
Need	Financial Accounts are maintained as per the requirements of Companies Act and Income Tax Act.	Cost accounts are maintained to meet the requirement of the management



Cost accounting:

It is the process of recording, classifying, analysing and allocating costs associated with a process and developing courses of action to control the costs.



Financial accounting:

It is the process of recording, summarising and reporting the myriad of transactions resulting from business operations over a period of time.

Recording	Transactions are classified, recorded and analysed subjectively.	In cost accounting, transactions are classified recorded and analysed objectively according to the purpose for which costs are incurred.
Analysis of	Financial accounting reveals the profit of a business as a whole.	Cost Accounting shows the profit made on each product, job or process
Accounting Period	Financial accounts are prepared for a definite period.	Cost reports are prepared frequently and submitted to the management may be daily, weekly etc.
Stock	In financial accounts, stocks are valued at cost price or market price which ever is less.	Cost accounting stocks are valued at cost.
Dealings	Financial accounts deal with actual facts and figures.	Cost account lays emphasis on both actual facts and estimates or predetermined cost.
Relative Efficiency	Financial accounts do not reveal the relative efficiency of each department or section.	Cost account provides information on the relative efficiencies of various plant and machinery

1.5.2 Meaning of Management Accounting

Management Accounting: Management Accounting helps the management in effectively performing its functions of planning, organizing, controlling, coordinating and decision making.

The Institute of Cost and Management Accountants, London, has defined Management Accounting as "the application of professional knowledge and skill in the preparation of accounting information in such a way as to assist management in the formation of policies, and in the planning and control of the operations of the undertaking."

1.5.3 Difference between Cost Accounting and Management Accounting

Cost Accounting Vs Management Accounting

The following are the main distinctions between Cost Accounting and Management Accounting :

1) Cost Accounting deals with cost ascertainment, cost allocation, cost apportionment and cost control. Management Accounting provides all accounting in formations to the management for discharge of its functions effectively.
2) Management Accounting has a wider scope as compared to cost accounting. Therefore management accounting uses more advanced techniques of Management reporting.
3) Management accounting deals with both Cost Accounting and Financial Accounting. But cost accounting deals with cost data.
4) Standard Costing, Budgetary Control, Break-Even Analysis, Inventory Control etc. are the basic tools and techniques used in Cost Accounting. But in Management Accounting, fund flow analysis, cash flow analysis, ratio analysis etc. are the important tools used for analysis and interpretation of financial statement.

1.6 ADVANTAGES OF COST ACCOUNTING

Cost Accounting helps the management to ascertain the true cost of every operation, through setting objectives and standard of operation, comparison of actual performance with standard to reveal the discrepancies or variances. If the variances are adverse, the management takes up corrective measure to eliminate variations. The following are the advantages of cost accounting to the management, to the employees, to the creditors, to the government and to the public.

Advantages to the management

1) Facilitates planning.
2) Helps in formulating policies.
3) Useful in setting up objectives and standards of performance.
4) Facilitates cost comparison.
5) Leads to effective cost control.
6) Determines the selling price.
7) Ascertains profit of each activity.
8) Assists the Management in decision making.
9) Facilitates cost reduction.
10) Measures performance.

Advantages to the Employees

1) Ensures fair incentive wage schemes.
2) Facilitates job security, recognition and promotion.
3) Useful in measuring operating efficiency of the employees.

Advantages to the Creditors

1) Measures the financial strength and creditworthiness of the business.
2) Attract investors for extending their credit facilities.
3) Creates trustworthiness among the creditors, debenture holders, banks etc.

Advantage to the Government

1) It helps to formulate business policies and national plans for industrial development.
2) It facilitates assessment of taxation, and establishment of indexes.
3) It assists in effective utilization of resources, i.e. materials, labour and machines etc.
4) It assists the government for cost reduction, price fixation, export and import and granting subsidy etc.

Advantage to the public

1) It helps in elimination of wastages and inefficiencies.
2) It facilitates the consumers to pay fair price for products.
3) It leads to progress of national economic growth.
4) Creates employment opportunities.
5) Increases the living standards of the people.

1.7 LIMITATIONS OF COST ACCOUNTING

The following are some of the limitations of cost accounting :

1) There is lack of uniformity in regard to its procedure and practices.
2) Cost are classified and interpreted in such different manners that though given the same title, they are computed on a different basis.
3) Lack of consistency becomes more acute when projections are made beyond the recorded cost data.
4) Inherent limitations of cost accounting objections raised by different sections of business societies against the introduction of cost accounting.
5) Cost accounting is unnecessary for recently established industries. And also modern methods of costing systems are not suitable for all types of industries.
6) Cost accounting system involves considerable amount of expenditure at the installation stage. Thus costing system is not economical for a small concern.

7) Cost accounting involves accounting procedures and record-keeping. These are far more detailed and difficult than those required in financial accounting.



CHECK YOUR PROGRESS:

Q1: Fill in the blanks :

a) Cost accounting is used by large ..... and ..... operations

b) Cost accounting deals with ..... , ... and .....

c) Cost accounting stocks are valued at .....

d) Financial accounts are prepared for a ..... period

e) Cost accounting shows the profit made on each ....., ... and process.

Q2: State two objectives of cost accounting.

.....

.....



1.8 LET US SUM UP

- Cost Accounting is one of the important disciplines of accountancy to give proper information required to the management for effectively discharging its functions such as planning, organizing, controlling, directing, co-coordinating and decision making

- The following are the important objectives of Cost Accounting :

  1) Ascertainment of cost.
  2) Determination of selling price.
  3) Cost control and cost reduction.
  4) Ascertainment of profit of each activity.
  5) Assisting Management in decision making.
  6) Formulating business policy.

7) Matching costs with revenue

- Management Accounting helps the management in effectively performing its functions of planning, organizing, controlling, and coordinating and decision making.
- We have also discussed the difference between cost accounting and management accounting and financial accounting.
- At the end we discussed the advantages and disadvantages of cost accounting.



1.9 FURTHER READING

1. Jain P K & Khan MY(2017); *Management Accounting*,7edition Mcgraw Higher Ed, India
2. Narang K.L. & Jain S.P.(2015), *Cost Accounting*, Kalyani Publications
3. Narang K.L. & Jain S.P(2015), *Cost And Management Accounting,*
4. Lal J & Srivastava S (2013), *Cost & Management Accounting*; Mcgraw Higher Ed
5. Banerjee(2013);*Cost Accounting: Theory and Practice*; PHI Learning Pvt Ltd; New Delhi



1.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1. a. manufacturing, non-manufacturing

b. cost ascertainment, cost allocation and cost control

c. Cost

d. definite

e. product, job and process

Ans to Q2. i) Ascertainment of cost.

ii) Determination of selling price.



1.11 MODEL QUESTIONS

Q1. What do you understand by Cost Accounting?

Q2. What are the important objectives of Cost Accounting?

Q3. What are the differences between financial account and cost accounting?

Q4. Distinguish between cost accounting and management accounting.

Q5. Cost Accounting has become an essential tool of management. Give your comments on this statement.

Q6. Indicate the various advantages and limitations of Cost Accounting.

*** ***** ***

UNIT 2: CLASSIFICATION OF COST

UNIT STRUCTURE

2.1 Learning objectives

2.2 Introduction

2.3 Cost concept

2.4 Techniques of costing

2.5 Classification of Cost

2.6 Let Us Sum Up

2.7 Further Reading

2.8 Answers to Check Your Progress

2.9 Model Questions

2.1 LEARNING OBJECTIVES

After going through this unit, you will be able to

- describe the cost concepts
- explain the techniques of costing
- discuss the Classification of Cost

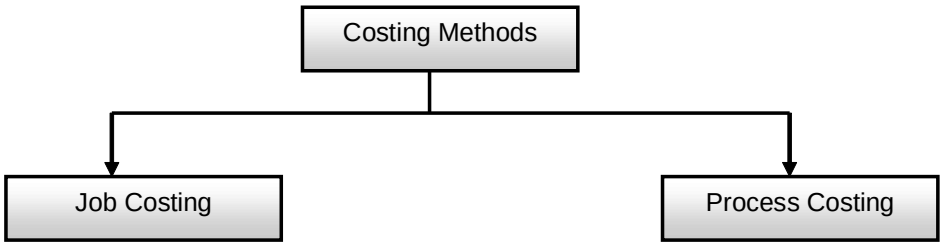
2.2 INTRODUCTION

In the earlier unit, we come to know about the concept of cost accounting and its different objectives. Now in this unit we are going to discuss the classification of cost and the various techniques of costing. You will find this unit interesting, as it discuss about the costing methods like job and process costing and the five different techniques of costing.

2.3 COST CONCEPT

The term ‘methods’ and ‘systems’ are used synonymously to indicate an integrated set of procedures based on a complex concept of ideas, principles and concepts. The term method of costing refers to cost ascertainment. Different methods of costing for different industries depend upon the production activities and the nature of business. For

these, costing methods can be grouped into two broad categories : (1) Job costing and (2) Process costing.





Complied :
Act in accordance with someone's rules, commands or wishes.
Overheads :
The expense of maintaining property

1. **Job Costing:** Job costing is also termed as specific Order Costing (or) Terminal Costing. In job costing, costs are collected and accumulated according to jobs, contracts, products or work orders. Each job is treated as a separate entity for the purpose of costing. The material and labour costs are ***complied*** through the respective abstracts and ***overheads*** are charged on predetermined basis to arrive at the total cost. Job costing is used in printing, furniture making, ship building etc.

   Job costing is further classified into (a) Contract costing (b) Cost plus contract and (c) Batch costing.

   a) **Contract Costing :** This method of costing is applicable where the job work is big like contract work of building. Under this method, costs are collected according to each contract work. Contract costing is also termed as Terminal costing. The principles of job costing are applied in contract costing.

   b) **Cost plus Contract :** These contracts provide for the payment by the contracted of the actual cost of manufacture plus a stipulated profit. The profit to be added to the cost. It may be a fixed amount or it may be a stipulated percentage of cost. These contracts are generally entered into when at the time of undertaking a work, it is not possible to estimate its cost with reasonable accuracy due to unstable condition of material, labour etc. When the work is spread over a long period of time, the prices of materials, rates of labour etc. are liable to fluctuate.

c) Batch Costing : In Batch Costing, a lot of similar units which comprise the batch may be used as a cost unit for ascertainment of cost. Separate Cost Sheet is maintained for each batch by assigning a batch number. Cost per unit of product is determined by dividing the total cost of a batch by the number of units of the batch. Batch Costing is used in drug industries, ready-made garments industries, electronic components manufacturing T V Sets, etc.

2. Process Costing: This costing method refers to continuous operation or continuous process costing. Process costing method is applicable where goods or services pass through different processes to be converted into finished goods. Process costing is used in Cement industries, Sugar industries, Textiles, Chemical industries etc.

The following are the important variants of process costing system.

a) Operation Costing : It is concerned with the determination of the cost of each operation rather than process. It offers scope for computation of unit operation cost at the end of each operation by dividing the total operation cost by total output of units.

b) Operating Costing : Operating costing is also termed as service costing. Operating costing is similar to process costing and is used in service industries. This method of costing is suitable for concerns rendering services. For example, Hospitals, Transport, Canteen, Hotels etc.

c) Output Costing : Output costing is also called Unit Costing (or) Single Costing. This method of costing is applicable where a concern undertakes mass and continuous production of single unit or two or three types of similar products or different grades of the same products. Under this method, cost per unit is measured by dividing the total cost by number of units produced. Output Costing is used in industries like Cement, Cigarettes, Pencils, Quarries etc.

d) Multiple Costing : This method of costing means combination of two or more methods of costing like operation costing and output costing. Under this method, the cost of different sections of production are combined after finding out the cost of each and every part manufactured. This method of costing is suitable for the industries manufacturing motor cars, engines, aircraft, tractors, etc.

2.4 TECHNIQUES OF COSTING

Costing is the technique and process useful to allocation of expenditure, cost ascertainment and cost control. In order to fulfill the needs of the management, it supplies necessary information to the management. The following are the various techniques of costing:

a. Uniform Costing
b. Marginal Costing
c. Standard Costing
d. Historical Costing
e. Absorption Costing

a) Uniform Costing: Uniform Costing is not a distinct method of costing. In fact when several undertakings start using the same costing principles and or practices, they are said to be following uniform costing. The basic idea behind uniform costing is that the different firms in an industry should adopt a common method of costing and apply uniformly the same principles and techniques for better cost comparison and common good.

b) Marginal Costing: The C.I.M.A. London defines marginal costing as "a technique of costing which aims at ascertaining marginal costs, determining the effects of changes in costs, volume, price etc. on the Company's profitability, stability etc. and furnishing the relevant data to the management for enabling it to take various management decisions by ***segregating*** total costs into variable and fixed costs."



Segregating :
Separate or isolate one thing from another.

c) Standard costing: Standard Costing is a technique of cost accounting which compares the standard cost of each product or service with actual cost to determine the efficiency of the operation, so that any remedial action may be taken immediately.

d) Historical Costing: Historical costing is the ascertainment and recording of actual costs when or after, they have been incurred and is one of the first stages in the growth of the Cost Accountant's work. Actual costs refer to material cost, labour cost and overhead cost.

e) Absorption Costing: Absorption Costing is also termed as Full Costing (or) Orthodox Costing. It is the technique that takes into account charging of all costs both variable and fixed costs to operation processed or products or services.



CHECK YOUR PROGRESS

Q1: Fill in the blanks :

a) Costing methods can be grouped into two .. broad categories: (1) ……..... (2) ……

b) Job costing is also termed as specific Order Costing (or) ……

c) Process Costing method refers to ……

d) Multiple Costing method of costing means combination of …… methods of costing

Q2: What are the various techniques of costing?

a. ……

b. ……

c. ……

d. ……

e. ……

2.5 CLASSIFICATION OF COST

Classification is the process of grouping costs according to their common characteristics or features. There are various methods of classifying costs on the basis of requirements.

The following are the important bases on which costs are classified :

a) On the basis of Nature (or) Elements.

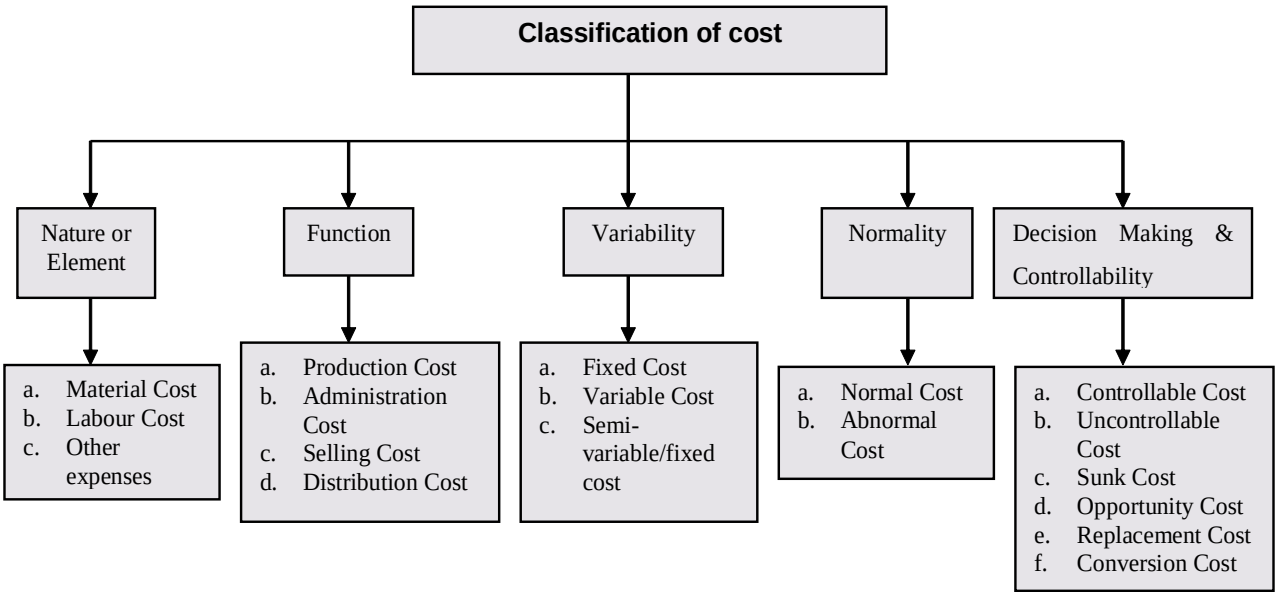
b) On the basis of Function

c) On the basis of Variability.

d) On the basis of Normality.

e) On the basis of Controllability and Decision Making.

The following chart can explain further the classifications cost:



1) On the basis of Nature or Elements: One of the important classification cost is on the basis of nature or elements. Based on elements, it is classified into Material Cost, Labour Cost and Other Expenses. They can be further subdivided into Direct and Indirect Material Cost, Direct and Indirect Labour Cost and Direct and Indirect Other Expenses.

2) **On the basis of Function:** The classification of costs on the basis of the various functions of a concern is known as function-wise classification. Here, there are four important functional divisions in the business organization. viz. (a) Production Cost (b) Administration Cost (c) Selling Cost and (d) Distribution Cost.

3) **On the basis of Variability :** On the basis of variability with the volume of production cost is classified into Fixed Cost, Variable Cost and Semi Variable Cost. Fixed Costs are those costs which remain constant with the volume of production. Rent and rates of office and factory building are some example of fixed cost.

Variable costs are those costs incurred directly with the volume of output. For example, cost of materials and wages to workers are the expenses chargeable with direct proportion to the volume of production.

Semi-Variable Costs are those costs incurred partly fixed and partly variable, with the volume of production. Accordingly, it has both fixed and variable features. For example, depreciations and maintenance cost of plant and machinery.

4) **On the basis of Normality:** Costs are classified into normal costs and abnormal costs on the basis of normality features. Normal costs are those incurred normally within the target output or fixed plan.

5) **On the basis of Controllability and Decision Making:** Based on the managerial decision making and controllability the classifications are as follows: (a) Controllable Cost, (b) Uncontrollable Cost, (c) Sunk Cost, (d) Opportunity Cost, (e) Replacement Cost, (f) Conversion Cost.

a) ***Controllable Costs :*** Controllable Costs are the costs which can be influenced by the action of a specified number of an undertaking. Controllable Costs incurred in a particular responsibility centre which is influenced by the action of the executive heading. For example, direct materials and indirect materials.

b) ***Uncontrollable Costs:*** Uncontrollable Costs are those costs which cannot be influenced by the action of a specified number of an undertaking. In fact, no cost is controllable; it is only in relation to a particular individual that may specify a particular cost to either controllable or non-controllable. For example, rent and rates.

c) ***Sunk cost :*** These are historical costs which were incurred in the past and are not relevant to the particular decision making problem being considered. While considering the replacement of a plant, the depreciated book-value of the old asset is irrelevant as the amount is a sunk cost which is to be written-off at the time of replacement. Unlike incremental or decremental costs, sunk costs are not affected by increase or decrease of volume. Examples of sunk cost include dedicated fixed assets, development cost already incurred.

d) ***Opportunity Cost:*** Opportunity cost means the cost of forgoing or giving up an opportunity. It is the notional value of going without the next best use of time, effort and money. These indicate the income or potential benefits sacrificed because a certain course of action has been taken. An example of opportunity costs is the market value forgone or sacrificed when an old machine is being used.

e) ***Replacement Cost:*** Such expenses may be incurred due to factors like change in method of production, an addition or alteration in the factory building, change in flow of production etc. All such expenses are treated as production overheads; when amount of such expenses is large, it may be spread over a period of time.

f) ***Conversion Cost:*** Conversion costs are those costs which are incurred while converting materials into semi-finished or finished goods. It is the aggregate of direct wages, direct expenses and overhead costs of converting raw materials into finished products.



CHECK YOUR PROGRESS

Q3: What are the important bases on which costs are classified ?

a) .....

b) .....

c) .....

d) .....

e) .....

Q4: What are the important bases on which managerial decision making and controllability is classified?

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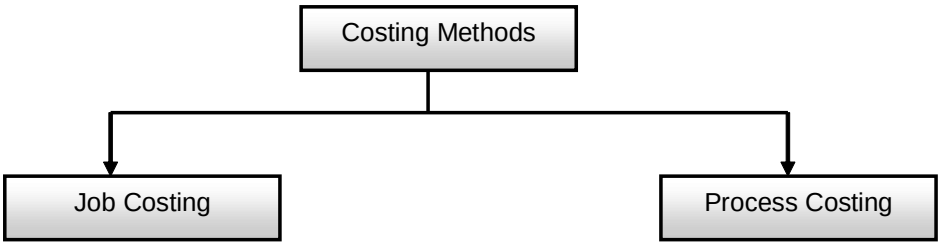
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2.6 LET US SUM UP

In this unit we discussed the following concepts:

- Costing methods can be grouped into two broad categories: (1) Job costing and (2) Process costing.



- In job costing, costs are collected and accumulated according to jobs, contracts, products or work orders.
- Job costing is further classified into (a) Contract costing (b) Cost plus contract and (c) Batch costing.
- Process costing method is applicable where goods or services pass through different processes to be converted into finished goods.

- The following are the important variants of process costing system.
  a) Operation Costing
  b) Operating Costing
  c) Output Costing
  d) Multiple Costing
- Costing is the technique and process useful to allocation of expenditure, cost ascertainment and cost control
- The following are the various techniques of costing:
  a. Uniform Costing
  b. Marginal Costing
  c. Standard Costing
  d. Historical Costing
  e. Absorption Costing
- The following are the important bases on which costs are classified :
  a) On the basis of Nature (or) Elements.
  b) On the basis of Function
  c) On the basis of Variability
  d) On the basis of Normality
  e) On the basis of Controllability and Decision Making.



2.7 FURTHER READING

1. Jain P K & Khan MY(2017); *Management Accounting*,7edition Mcgraw Higher Ed, India
2. Narang K.L. & Jain S.P.(2015), *Cost Accounting*, Kalyani Publications
3. Narang K.L. & Jain S.P(2015), *Cost And Management Accounting,*
4. Lal J & Srivastava S (2013), *Cost & Management Accounting*; Mcgraw Higher Ed
5. Banerjee(2013);*Cost Accounting: Theory and Practice*; PHI Learning Pvt Ltd; New Delhi



2.8 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: a. (1) Job costing and (2) Process costing.

b. Terminal Costing

c. continuous process costing.

d. two or more

Ans to Q2: The following are the various techniques of costing:

a. Uniform Costing

b. Marginal Costing

c. Standard Costing

d. Historical Costing

e. Absorption Costing

Ans to Q3: The following are the important bases on which costs are classified :

a) On the basis of Nature (or) Elements.

b) On the basis of Function

c) On the basis of Variability.

d) On the basis of Normality.

e) On the basis of Controllability and Decision Making.

Ans to Q4: Based on the managerial decision making and controllability the classifications are as follows: (a) Controllable Cost, (b) Uncontrollable Cost, (c) Sunk Cost, (d) Opportunity Cost, (e) Replacement Cost, (f) Conversion Cost.



2.9 MODEL QUESTIONS

Q1. What are the important methods of Costing? Describe each of them briefly.

Q2. What are the important techniques of costing?

Q3. What method of costing would you recommend for the following industries? Give reason.

a) Ship Building
b) Ready-made Garment
c) Sugar Industries
d) Hospitals
e) Cigarettes
f) Motor Cars manufacture.

Q4. Describe the different classification of cost in detail.

Q5. What are the important basic requisites for classification of cost? Explain them briefly.

Q6. Write short notes on:

a) Uniform Costing.
b) Historical Costing
c) Marginal Costing.
d) Standard Costing
e) Sunk Costing

Q7. What are the differences between controllable costs and uncontrollable costs?

*** ***** ***

UNIT 3: MATERIALS COST CONTROL

UNIT STRUCTURE

3.1 Learning Objectives

3.2 Introduction

3.3 Meaning of Materials

3.4 Material Costing

3.5 Functions of Materials Control

- 3.5.1 Objectives of Stores Control
- 3.5.2 Essential of Material Control
- 3.5.3 Advantages of Materials Control

3.6 Fixation of Stock Level

3.7 The ABC Analysis

3.8 Inventory System

3.9 Method of Pricing of Materials Issues

3.10 Let Us Sum Up

3.11 Further Reading

3.12 Answers to Check Your Progress

3.13 Model Questions

3.1 LEARNING OBJECTIVES

After going through this unit, you will be able to

- explain the meaning of materials
- discuss the importance and need for Material Control
- describe the functions of material Costing
- explain the method of Pricing of Materials Issues
- outline the ABC Analysis, Inventory System and Fixation of Stock Level

3.2 INTRODUCTION

In this unit we are going to discuss on material cost control. Materials cost is one of the important elements of cost of product or unit. It constitutes a substantial proportion of the total cost of production. For material cost control purpose, it is very essential to know the important aspects of material, material control and material purchase control.

While going through this unit we will come to know about Material Costing, Functions of material Costing, objectives of stores control, essential of Material Control and advantages of Materials Control.

At the end of this unit you will get a fair idea on the concept of Method of Pricing of Materials Issues, the ABC Analysis, Inventory System, and Fixation of Stock Level.

3.3 MEANING OF MATERIALS

Materials: The term 'materials' refers to all commodities or components which are consumed in the process of manufacturing. The materials may be classified into Direct Materials and Indirect Materials.

a. **Direct Materials:** Direct Materials form part of the finished products. They can be easily identified with a particular cost unit. For example, cotton used in textile mills, timber used in furniture industries.

b. **Indirect Materials:** Indirect Materials are indirectly used for conversion from raw materials into finished products. They cannot be easily identified with a particular cost unit. For example, spare parts, tools, nails, lubrications etc.

Materials are further classified on the basis of the nature which has to be used such as:

a) Raw Materials, e.g., rubber, timber, steel etc.

b) Components, e.g. instruments

c) Consumable stores, e.g., cotton waste, brushes

d) Maintenance materials e.g. spare parts

e) Tools, e.g., jigs and fixtures.

3.4 MATERIALS CONTROL

Materials control may be defined as the systematic control over the procurement, storage and usage of materials so as to maintain an even flow of materials and at the same time avoiding excessive investment in inventories.

From the above definition we can derive the following important aspects:

1) To ensure the smooth flow of production without interruptions.

2) Prevention of excessive investments in materials stock.

3.5 FUNCTIONS OF MATERIALS CONTROL

The following are the important functions involved in materials control in order to achieve the objectives of the stores department:

1. Purchasing of Materials
2. Receiving of Materials
3. Inspection of Materials
4. Storage of Materials
5. Issue of Materials
6. Maintenance of Stores Records
7. Stock Audit.

3.5.1 Objectives of Stores Control

The following are the objectives of stores control:

1. To receive materials and store them properly.
2. To ensure proper production and preservation of materials
3. To make sure proper classification and condification of materials.
4. To provide proper information to the management about stock of materials.
5. To ensure good housekeeping and effective material handlings.

6. To assist in verification and provision of supporting information for effective purchase action.
7. To minimize obsolescence of materials adopted through effective control measures.
8. To ensure the optimum investment in materials to avoid overstocking or under stocking of materials.
9. To maintain proper records about materials, receipts, issues and balance.
10. To issue materials as per specifications.
11. To make sure of the availability of all types of materials.
12. To ensure proper utilization of floor space.

3.5.2 Essential of Material Control

Effective materials control is required for the following essential to be considered:

1. Systematic planning for requirement of materials.
2. Essentials for co-ordination and co-operation among different departments.
3. Fixing of stock level is essential for avoiding overstocking.
4. Floor space is required for smooth handling of materials.
5. Proper filing system should be adopted.
6. Proper condification and classification of materials as per specifications.
7. Perpetual inventory system should be adopted for verification of materials in stock.
8. Proper planned storage control and issue.
9. Systematic procedure should be adopted for materials, receipts and issues.
10. Qualified personnel required to manage the materials functions effectively.
11. Appropriate system of internal auditing should be adopted.

3.5.3 Advantages of Materials Control

The following are the advantages of materials control:

1. It ensures continuous flow of production.
2. There is maximum utilization of stores resources.
3. It facilitates economy of buying.
4. It ensures optimum investments in inventories.
5. There is possibility of reduction of loss of theft, leakage, obsolescence etc.
6. It minimizes cost of materials during purchase, storage and issue of materials.
7. It facilitates effective information system to management.



CHECK YOUR PROGRESS

Q1: What do you mean by material and what are the two types of materials?

.....

.....

.....

.....

Q2: What are the different functions of materials control?

.....

.....

.....

.....

3.6 FIXATION OF STOCK LEVEL

Material control involves physical control of materials, preservation of stores, minimization of obsolescence and damages through timely disposal and efficient handling. Effective stock control system should ensure the minimization of inventory carrying cost and materials holding cost. Level of stock is the important aspect of inventory control. Stock level may be overstocking or under stocking. Overstocking requires large

capital with high cost of holding. In the case of under stocking, production and overall performance of the concern as a whole will be affected. Thus, fixation of stock level is essential to maintain sufficient stock for the smooth flow of production and sales. The following are the important techniques usually adopted in different industries.

a. Maximum stock Level
b. Minimum Stock Level
c. Danger Level
d. Re-Order Level
e. Economic Ordering Quantity (EOQ)
f. Average of Stock Level

a) Maximum Stock Level: The maximum stock level indicates the maximum quantity of an item should not be allowed to increase. The maximum quantity of an item can be held in stock at any time. The following factors can be considered while fixing the maximum stock levels:

1) Availability of capital.
2) Availability of floor space.
3) Cost of storage.
4) Possibility of fluctuation of prices in raw materials.
5) Cost of insurance.
6) Economic order of quantity.
7) Average rate of consumption.
8) Re-order level and lead time.
9) Seasonal nature of supply.
10) Risk of obsolescence, depletion, evaporation etc.

The maximum stock level can be calculated by the following formula.

Maximum stock Level = Re-order Level + Re-Ordering Quantity — (Minimum Consumption x Minimum Re-Ordering Period)

b) Minimum Stock Level: Minimum stock level indicates the minimum quantity of material to be maintained in stock. Accordingly, the

minimum quantity of an item should not be allowed to fall. The minimum stock is also known as Safety Stock or Buffer Stock.

The following formula is adopted for calculation of minimum stock level:

Minimum Stock Level = Re-order Level — (Normal Consumption x Normal Re-order Period)

c) **Danger Level:** It is the stock level below the minimum Level. This level indicates the danger point to affect the normal production. When materials reach danger level, necessary steps should be taken to restock the materials. If there is any emergency, special arrangements should be made for fresh issue. Generally this level is fixed above the minimum level but below the re-ording level.

The formula for determination of danger level is:

Danger level = Average Rate of consumption x Emergency supply Time

d) **Re-order level:** Re-order level is also termed as Ordering Level. It indicates when to order, i.e., orders for its fresh supplies. This is the stock level between maximum and the minimum stock levels. The re-order stock level is fixed on the basis of economic order quantity, lead time and average rate of consumption.

Calculation of re-order level is adopted by the following formula:

Re-order level = Minimum Stock Level + (Average Rate of Consumption x Average Re-order period)

(or)

Re-Order level = Maximum Consumption x Maximum Re-ording Period

e) **Economic Order Quantity (EOQ):** Economic Order Quantity is one of the important techniques used to determine the optimum quantity or number of orders to be placed from the supplies. The main objectives of economic order quantity is to minimize the cost of ordering, cost of carrying materials and total cost of production. Ordering costs include cost of stationery, salaries of those engaged

in receiving and inspecting, general office and administrative expenses of purchase departments. Carrying costs are incurred on stationery, salaries, rent, materials handling cost, interest on capital, insurance cost, risk of obsolescence, deterioration and wastage of materials and evaporation. Economic Order Quantity can be calculated by the following formula :

$$\textbf{E O Q} = \sqrt{\frac{2AB}{CS}}$$

Where :

E O Q = Economic Ordering Quantity

A = Annual Consumption

B = Buying Cost per Order

C = Cost Per Unit

S = Storage and carrying Cost per Annum

f) Average Stock level: Average stock level is determined on the basis of minimum stock level and re-orders quantity.

This can be calculated with the help of the following formula:

Average Stock Level = Minimum Stock Level + ½ of Re-order Quantity

(or)

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



EXERCISE : 1

From the following particulars calculate the:

a) Maximum Stock Level.

b) Minimum Stock Level.

c) Re-ordering Level.

d) Average Stock Level.

1) Normal consumption = 600 units per week.

2) Maximum consumption = 840 units per week.

3) Minimum consumption = 480 unit per week.

4) Re-order quantity = 7200 units.

5) Re-order period = 10 to 15 weeks.

6) Normal reorder period = 12 weeks.

Solution :

Given,

Maximum Consumption = 840 units

Maximum Record Period = 15 weeks

∴ Re-order level = Maximum Consumption x Maximum Re-order Period

= 840 x 15

= 12600 units

Now,

Maximum stock level

= Record level + Re-order quantity – (Minimum Consumption x Minimum Re-order Period)

= 12600 + 7200 – (480 x 10)

= 19800 – 4800 = 15000 units

Again,

Minimum stock level

= Re-order level – (Normal Consumption x Normal Re-order Period)

= 12600 – (600 x 12)

= 12600 – 7200

= 5400 units

And,

Average stock level

$$= \frac{\text{Minimum stock level} + \text{Maximum stock level}}{2}$$

$$= \frac{5400 + 15000}{2} = \frac{20400}{2} = 10200 \text{ units}$$

3.7 THE ABC ANALYSIS

A B C Analysis is one of the important techniques which is based on grading the items according to the importance of materials. This method is popularly known as Always Better Control. This is also termed as Proportional Value Analysis. In inventory control, this technique helps to analyze the distribution of any characteristic by money value of importance in order to determine its importance. Accordingly, materials are grouped into three categories on the basis of the money value of importance of materials.

1) High Value Materials - A
2) Medium Value Materials - B
3) Low Value Materials - C

The items, which are of high value and less than 10 per cent of the total consumption or inventory can be called as 'A' grouped materials. It is required to exercise selective control and focus more attention because of high value items. Similarly, 70 per cent of materials in total consumption or inventory which lies 10 per cent of the inventory value can be grouped under 'C' categories. The materials which have moderate value that lies between the high value materials and low value materials are grouped under 'B' category. The following table shows more explanation about A B C Analysis.

Category	Percentage of total Inventory	Percentage of total Inventory Cost
A	Less than 10	70 to 80
B	10 to 20	15 to 25
C	70 - 80	Less than 10

Advantage of ABC Analysis

1) Exercise selective control is possible.
2) Focus high attention on high value items is possible.
3) It helps to reduce the clerical efforts and costs.

4) It facilitates better planning and improved inventory turnover.

5) It facilitates goods storekeeping and effective materials handling.



CHECK YOUR PROGRESS

Q4: Match the following:

1)	High Value Materials	C
2)	Medium Value Materials	A
3)	Low Value Materials	B

Q5: Fill in the blanks:

a. Minimum stock level indicates the ……..…. of material to be maintained in stock.

b. Danger Level is the stock level below the …….. Level.

c. Re-order level is also termed as. ……

d. EOQ Stands for ……

3.8 INVENTORY SYSTEM

The chief aims of inventory Control is as follows:

1) To maintain a balanced inventory

2) To ensure the smooth flow of production.

3) To keep the investment in inventory as low as possible.

Accordingly stock verification is an important aspect to ensure and maintain a balanced inventory. The following are the two systems of stock verification adopted in different industries:

1) Periodic Inventory System.

2) Perpetual Inventory System.

3) Continuous Stock verification.

1) Periodic Inventory System: Under this system, quantity and value of materials are checked and verified at the end of the accounting period after having a physical verification of the units in hand.

2) Perpetual Inventory System: The Perpetual Inventory System is also known as Automatic Inventory System. This is one of the



Obviate :
Prevent from happening
Pilferage :
The act of stealing small amount.

important methods adopted for verification of inventories to know the physical balance. According to ICMA London defines Perpetual Inventory System as a method of recording stores balances after every receipt and issue to facilitate regular checking and to ***obviate*** closing down for stock taking.

Advantages of Perpetual Inventory System:

1) It facilitates rigid control over stock of materials.
2) It gives upto date details about materials in stock.
3) Not necessary to stop production for stock taking.
4) It assists to minimize ***pilferage*** and fraudulent practices.
5) It enables to reconcile the stock records and document for accuracy.
6) It helps to take the important decision for corrective actions.

Perpetual Inventory Records: Perpetual Inventory represents a system of records maintained by the organization. The records are of two types, viz :

a) Bin cards
b) Stores Ledger

A constant comparison of the quantity balances of these two set of record is made and the balances are reconciled.

a) Bin card : Bin Card is only quantitative record of stores receipt, issue and balance and is kept by the Storekeeper for each item of stores.

b) Stores Ledger : Stores ledger is both quantitative and monetary value record of stores receipt, issue and balance and is prepared by the Cost Accounting Department.

Bin Card Vs Stores ledger

The Difference between Bin Card and the Stores Ledger can be summarized as follows:

Bin Card	Stores ledger
1. Bin Cards are Maintained at the Stores	1. Stores Ledger is maintained in the Accounts Department.
2. It is posted by Issue Clerk.	2. It is posted by Ledger Clerk.
3. Bin Cards meant for recording record of quantity Only	3. It is as record of quantity and Value
4. Transactions posted individually	4. Transactions can be posted periodically
5. Posting can be made at the time of issue	5. In stores ledger posting can be made after issue.

3) Continuous Stock Verification: Since Verification of physical inventory is an essential feature of a sound system of material control, a system of continuous stock taking is introduced. Continuous stock taking ensures that the balance of all items of stocks is checked at least three to four times in a year by physical verification. It avoids long and costly procedure of closing down the stores for stock taking on periodical basis. Stock discrepancies are detected on timely basis and preventive measures can be taken. The correctness of the physical stocks as reflected in the books is ensured and thus the monthly accounts represent a true and fair view of the business. Continuous Stock Verification not only serves as an essential tool of material control but also will help in proper presentation of accounting information to the management.

3.9 METHOD OF PRICING OF MATERIALS ISSUES

In the relation to the estimation of the cost of the product for pricing decisions, a material issue assures a key role. Material price usually refers to the price quoted and accepted in the purchase orders. Materials are issued from the stores to work orders based on the material requisition. But stock of materials consists of different consignment received at different dates and prices. There are different methods used

for pricing the materials issues may be summarized in the following categories:

(A) Actual Price Method (or) Cost Price Method
   1) First In First out (FIFO)
   2) Last In First Out (LIFO)
   3) Specific Price Method.
   4) Base Stock Method.
   5) Highest In First Out (HIFO)

(B) Average Cost Method
   1) Simple Average Method.
   2) Weighted Average Method.
   3) Periodic Simple Average Method.
   4) Periodic Weighted Average Method.

C) Standard Price Method.

D) Inflated Price Method.

E) Market Price Method (or) Replacement Price Method.

A. Actual Price Method

In this method, the materials issued are priced at their actual cost and this involves identification of each lot purchased. This method is suitable only in the case of materials purchased for a specific job. There are several methods frequently used under actual cost price method which will be discussed in details.

1) First In first Out (FIFO) : First In first Out (FIFO) is also known as FIFO. Under this method, the pricing of issue is based on an assumption made that the oldest stock is issued first. Therefore at the time of issue, the rate pertaining to that will be applied untill the whole lots is exhausted.

Advantages:

1) It is simple and easy to adaptability.
2) It is beneficial when the prices are falling.
3) As it is issued at actual price, it reflects on profit in the pricing.
4) This method is very useful for slow moving materials.

Disadvantages:

1) Calculation becomes complicated due to fluctuation of material prices.
2) More chances of clerical errors due to complicated calculations.
3) Under fluctuating prices, one requisition involves more than one price.
4) In time of raising price this method tends to show the production at low cost since the cost of replacing the material will be higher.



EXERCISE : 2

From the following particulars, prepare the Stores Ledger Account showing how the value of the issues would recorded under FIFO methods

01.12.2003	Opening Stock 1,000 Units at Rs. 26 each
05.12.2003	Purchased 500 Units at Rs. 24.50 each
07.12.2003	Issued 750 Units
10.12.2003	Purchased 1,500 Units at Rs. 24 each
12.12.2003	Issued 1,100 Units
15.12.2003	Purchased 1000 Units at Rs. 25 each
17.12.2003	Issued 500 Units
18.12.2003	Issued 300 Units
25.12.2003	Purchased 1,500 Units at Rs. 26 each
29.12.2003	Issued 1, 500 Units

Solution : 2

a. Stores Ledger Account (FIFO)

	Receipts			Issues			Balance		
Date	*Qty.*	*Rate Rs.*	*Amt. Rs.*	*Qty.*	*Rate Rs.*	*Amt. Rs.*	*Qty.*	*Rate Rs.*	*Amt. Rs.*
01.12.2003	-	-	-	-		-	1,000	26	26,000
05.12.2003	500	24.50	12,250				1,000	26	26,000
							500	24.50	12,250

07.12.2003				750	26	19,500	250	26	6,50
							500	24.50	12,25
10.12.2003	1,500	24	36,000				250	26	6,500
							500	24.50	12,250
							1,500	24	36,000
12.12.2003				250	26	6,500			
				500	24.50	12,250			
				350	24	8,400	1,150	24	27,600
15.12.2003	1,000	25	25,000				1,150	24	27,6000
							1,000	25	25,000
17.12.2003				500	24	12,000	650	24	15,600
							1,000	25	25,000
18.12.2003				300	24	7,200	350	24	8,400
							1,000	25	25,000
25,12,2003	1,500	26	39,000				350	24	8,400
							1,000	25	25,000
							1,500	26	39,000
29,12.2003				350	24	8,400			
				1,000	25	25,000			
				150	26	3,900	1,350	26	35,100

Closing value of stock = 1350 x 26 = 35100

2. **Last In First Out (LIFO):** This method is just opposite to First In First Out method. The basic assumption here is that the most recent receipts are issued first. The price of the materials to be issued would be the cost price of the last lots of materials purchased.

Advantages

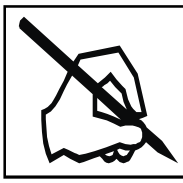
1) It is beneficial when the period of raising prices.

2) Under this method, latest prices are issued thereby leading to lower reported profits hence savings in taxes.

3) When there are wide fluctuations in price levels this methods tends to minimize unrealized gains or losses in inventory.

Disadvantages

1) This method involves more clerical work which leads to complicated calculations.
2) Under this method more than one price is to be adopted for the same issue lot of material.
3) Due to wide fluctuation of prices, comparison of cost of similar jobs is very difficult.



EXERCISE : 3

By solving the Exercese 2, under LIFO method.

Solution : 3

Store ledger Account (LIFO)

Receipts				Issues			Balance		
Date	*Qty.*	*Rate Rs.*	*Amt. Rs.*	*Qty.*	*Rate Rs.*	*Amt. Rs.*	*Qty.*	*Rate Rs.*	*Amt. Rs.*
01.12.2002	-	-	-	-	-	-	1,000	26	26,000
05.12.2002	500	24.50	12,250				1,000	26	26,000
							500	24.50	12,250
07.12.2002				500	24.50	12,250			
				250	26	6,500	750	26	19,500
10.12.2002	1,500	24	36,000				750	26	19,500
							1,500	24	36,000
12.12.2002				1100	24	26,400	750	26	19,500
							400	24	9,600
15.12.2002	1,000	25	25000				750	26	19,500
							400	24	9,600
							1,000	25	25,000

17.12.2002				500	25	12,500	750	26	19,500
							400	24	9,600
							500	25	25,000
18.12.2002				300	25	7,500	750	26	19,500
							400	24	9,600
							200	25	5,000
25.12.2002	1,500	26	39,000				750	26	19,500
							400	24	9,600
							200	25	5,000
							1,500	26	39,000
29,12.2002				1500	26	39,000	750	26	19,500
							400	24	9,600
							200	25	5,000

Closing value of stock = 750 x 26 + 400 x 24 + 200 x 25 = 34100

3. **Specific Price Method :** Specific Price method is one of the methods of actual price method. In this method adopted where the materials are purchased for particular job or operation and the issue is charged with the actual cost price. This method is suitable only in the case of special purpose materials are purchased for a particular job. This method has been widely used in job order industries which carry out individual jobs or contract against specific orders.

4. **Base Stock Method:** Under this method pricing is determined on the basis of assumption made here is that a certain minimum quantity of materials maintained in stock. This minimum quantity is known as Base Stock or Safety Stock. This quantity cannot be used unless an emergency arises. The minimum stock is in the nature of fixed assets because it is created out of the first lot of the material purchased. Therefore it always valued at the actual cost price of the first lot and is carried forward as fixed assets. This method is usually applied with FIFO or LIFO.

B. Average Cost Method:

In this method, the issues to the production department are split into equal batches from each shipment at stock. It is a realistic method reflecting the price levels and stabilizing the cost price. The following various methods of averaging issue prices may be used :

1) Simple Average Method
2) Weighted Average Method
3) Periodic Simple Average Method.
4) Periodic Weighted Average Method

1) Simple Average Method: Under this method, price of issue materials is determined by dividing the total of the prices of the materials in stock, i.e., adding of different prices by the number of different prices. Then, this average price is applied to the issues to production. This method is simple and easy to operate. The value of closing stock becomes unrealistic. The following formula is applied for calculation of material issue price under simple average method:

$$\text{Issue Price} = \frac{\text{Total of Unit Prices of Materials in Stock}}{\text{Number of Prices}}$$

2) Weighted Average Method: Under this method the price of materials issue is determined by dividing the total cost of materials in stock by the total quantity of material in stock. Here weighted average rate is calculated based on both quantity and price of the materials in stock. As more issues are made, a new average rate is computed and this average rate is applied to the subsequent issues. The materials issue price is calculated by the formula given below :

$$\text{Weighted Average Price} = \frac{\text{Value of Materials in Stock}}{\text{Quantity in Stock}}$$

3) **Standard Price Method:** Under this method, standard price of material issues are calculated on the basis of detailed analysis of market prices and trends. The standard price also referred to as predetermined price is fixed for a definite period of six months or more. Accordingly the material issue is done on the basis of standard price irrespective of actual rate. The difference between actual price and standard price is treated as material variance. At the end of the period, new standard price is fixed for a further period.

4) **Market Price Method:** This method is also known as Replacement Rate Method. Under this method issue materials that are valued at the market rate prevailing at the time of issue. It therefore follows that when price increases the stock on hand is continuously under estimated because receipts are cost at actual and issued at higher rates.



3.10 LET US SUM UP

In this unit we discussed on the following:

- The term 'materials' refers to all commodities or components which are consumed in the process of manufacture. The materials may be classified into Direct Materials and Indirect Materials.
- Materials control may be defined as the systematic control over the procurement, storage and usage of materials so as to maintain an even flow of materials and at the same time avoiding excessive investment in inventories
- The following are the important functions involved in materials control in order to achieve the objectives of the stores department:
  1. Purchasing of Materials
  2. Receiving of Materials
  3. Inspection of Materials
  4. Storage of Materials

5. Issue of Materials
6. Maintenance of Stores Records
7. Stock Audit.

- We discussed the Objectives of Stores Control, Essential of Material Control, Advantages of Materials Control
- The following are the important techniques usually adopted in different industries.
  a. Maximum stock Level
  b. Minimum Stock Level
  c. Danger Level
  d. Re-Order Level
  e. Economic Ordering Quantity (EOQ)
  f. Average of Stock Level
- A B C Analysis is one of the important techniques which is based on grading the items according to the importance of materials. This method is popularly known as Always Better Control
- The chief aims of inventory Control is as follows:
  1) To maintain a balanced inventory
  2) To ensure the smooth flow of production.
  3) To keep the investment in inventory as low as possible
- Bin Card is only quantitative record of stores receipt, issue and balance and is kept by the Storekeeper for each item of stores.
- Stores ledger is both quantitative and monetary value record of stores receipt, issue and balance and is prepared by the Cost Accounting Department.
- There are different methods used for pricing the materials issues may be summarized in the following categories:
  a. Actual Price Method (or) Cost Price Method
  b. Average Cost Method
  c. Standard Price Method.
  d. Inflated Price Method.
  e. Market Price Method (or) Replacement Price Method.



3.11 FURTHER READING

1. Jain P K & Khan MY(2017); *Management Accounting*,7edition Mcgraw Higher Ed, India
2. Narang K.L. & Jain S.P.(2015), *Cost Accounting*, Kalyani Publications
3. Narang K.L. & Jain S.P(2015), *Cost And Management Accounting,*
4. Lal J & Srivastava S (2013), *Cost & Management Accounting*; Mcgraw Higher Ed
5. Banerjee(2013);*Cost Accounting: Theory and Practice*; PHI Learning Pvt Ltd; New Delhi



3.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: The term 'materials' refers to all commodities or components which are consumed in the process of manufacture. The materials may be classified into Direct Materials and Indirect Materials.

Ans to Q2: The following are the important functions involved in materials control :

1. Purchasing of Materials
2. Receiving of Materials
3. Inspection of Materials
4. Storage of Materials
5. Issue of Materials
6. Maintenance of Stores Records
7. Stock Audit.

Ans to Q3:

1) High Value Materials ⟶ A
2) Medium Value Materials ⟶ B
3) Low Value Materials ⟶ C

Ans to Q4: a. Minimum Quantity b. Minimum

c. Ordering Level d. Economic Order Quantity



3.13 MODEL QUESTIONS

Q1. What do you understand by the concept material?

Q2. Define Material Control

Q3. What are the important functions of Materials Control?

Q4. Explain the objectives of Material Control

Q5. Explain briefly the essentials of Material Control?

Q6. What are the advantages of Material Control?

Q7. Explain the purpose of storekeeping

Q8. What do understand by Maximum Stock, Minimum Stock and Re-order Level ?

Q9. What is Economic Order Quantity ? Explain its significance.

Q10. Explain the concept of A B C Analysis.

Q11. What is perpetual Inventory System ? Explain its advantages.What do you undferstand by Bin Card and Stores Ledger ?

Q12. From the following particulars calculate :

a) Re-order Level b) Minimum Level

c) Maximum level d) Average Level

Normal usage 100 units per day

Maximum usage 130 units per day

Minimum usage 60 units per day

Economic order Quantity 5000 units

Re-order Period 25 to 30 days.

[Ans : (a) Re-order Level = 3900 units. b) Minimum Level = 150 units

c) Maximum Level = 7400 units d) Average level = 4275 units]

Q13. Calculate E O Q from the following :

Annual Consumption = 600 units

Ordering Cost Rs. 12 per order.

Carrying Cost 20% Price per unit Rs. 20

[Ans : E O Q = 60 units].

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UNIT 4: LABOUR COST CONTROL

UNIT STRUCTURE

4.1 Learning Objectives

4.2 Introduction

4.3 Meaning of Labour Cost

4.4 Types of Labour Cost

4.5 Control of Labour Cost

4.5.1 Techniques of Labour Cost Control

4.6 Idle Time

4.7 Abnormal Idle Time

4.8 Accounting Treatment of normal idle time and abnormal idle time

4.9 Method of Remuneration

4.10 Let Us Sum Up

4.11 Further Reading

4.12 Answers to Check Your Progress

4.13 Model Questions.

4.1 LEARNING OBJECTIVES

After going through this unit, you will be able to

- explain the meaning of labour cost
- outline the types of labour cost
- explain the techniques of labour cost control
- describe the concept of idle time and the accounting treatment for normal idle time and abnormal idle time.
- discuss the methods of remuneration

4.2 INTRODUCTION

In the earlier unit we discussed on materials cost control, now in this unit we have will be discussing on the concept of labour cost control. We know that in any organization, labour plays an important role

and without whom the production of an industry may be hampered. So we are going to discuss the concept on labour cost and its various types. We will also get an idea on the techniques used for labour cost control.

At the end of the unit you will come to know the concept of idle time and the accounting treatment for normal idle time and abnormal idle time and the various methods of remuneration.

4.3 MEANING OF LABOUR COST

Labour cost is the second important element of cost of production. Wages, salaries and other forms of remunerations represent a major portion of the total cost of a product or services. The growth and profitability of the concern depends upon proper utilization of human resources or labour forces which in turn needs proper accounting and control of cost. Thus, control of labour cost is very significant issue from the view point of management.

4.4 TYPES OF LABOUR COST

The labour Cost can be classified into two types:

1) Direct Labour Cost.
2) Indirect Labour Cost.

1) Direct Labour Cost: Any labour cost that is specially incurred for or can be readily charged to or identified with a specific job, contract, work order or any other unit of cost is termed as direct labour cost. Wages for supervision, wages for foremen, and wages for labours who are actually engaged in operation or process are the examples of direct labour cost.

2) Indirect labour Cost: Indirect labour is for work in general. The importance of the distinction lies in the fact that whereas direct labour can be identified with and charged to the job, indirect labour cannot be so charged and has, therefore to be treated as part of the factory overheads to be included in the cost of production. For example, salaries and wages of supervisors, storekeepers and maintenance labour etc.

4.5 CONTROL OF LABOUR COST

Control of labour cost has a significant influence on the growth, profitability and cost of production. Labour cost may become unduly high due to inefficiency of labour, ineffective supervision, idle time, unusual overtime work etc. The primary objectives of the management therefore are to efficiently utilize the labour as economically as possible.

4.5.1 Techniques of Labour Cost Control

In order to achieve the effective utilization of manpower resources, the management has to apply proper system of labour cost control. The labour cost control may be determined on the basis of establishment of standard of efficiency and comparison of actuals with standards. The management applies various techniques for the effective control of labour costs as under :

1) Scientific method of production planning.
2) Use of labour budgets.
3) Establishment of labour standards.
4) Proper system of labour performance report.
5) Effective system of job evaluation and job analysis.
6) Devise a proper system of control over ideal time and unusual overtime work.
7) Establish a fair and equitable remuneration system.
8) Effective cost accounting system.

4.6 IDLE TIME

Idle Time is that time during which the workers spend their time without giving any production or benefit to the employer and concern. The idle time may arise due to non-availability of raw materials, shortage of power, machine breakdown etc.

Type of idle Time: It refers that any loss of time is inherent in every situation which cannot be avoided. Any cost associated with the normal idle time is mostly fixed in nature. The normal idle time arises due to the following reasons:

1) Time taken for personal affairs.
2) Time taken for lunch and tea break.
3) Time taken for obtaining work.
4) Time taken for changing from one job to another.
5) Waiting time for getting instructions, tools and or raw materials, spare parts etc.
6) Time taken by the workers to walk between factory gate and place of work.



CHECK YOUR PROGRESS

Q1: The labour Cost can be classified into two types:

a. .....

b. .....

Q2: State True or False

a. Wages for supervision, wages for foremen, and wages for labours are the examples of direct labour cost. (True/False)
b. The idle time may arise due to availability of raw materials. (True/False)
c. The labour cost control may be determined on the basis of establishment of standard of efficiency and comparison of actual with standards. (True/False)

4.7 ABNORMAL IDLE TIME

Abnormal idle time refers to any loss of time which may occur due to some abnormal reasons. Abnormal idle time can be prevented through effective planning and control. The abnormal idle time may arise due to the following avoidable reasons:

1) Faulty planning.
2) Lack of co-operation and co-ordination.
3) Power failure.
4) Time lost due to delayed instructions.
5) Time lost due to inefficiency of workers.

6) Time lost due to non-availability of raw materials, spare parts, tools etc.
7) Time lost due to strikes, lock outs and lay-off.

4.8 ACCOUNTING TREATMENT OF NORMAL IDLE TIME AND ABNORMAL IDEAL TIME

Normal Idle Time: Normal idle time wages is treated as a part of cost of production. Thus, in case of direct workers an allowance for normal idle time is built into labour cost rates. In the case of indirect workers, normal idle time wage is spread over all the products or jobs through the process of absorption of factory overheads.

Abnormal Idle Time: Abnormal idle time cost is not included as a part of production cost and is shown as a separate item in the Costing Profit and Loss Account. So that normal cost is not distributed.

Over Time: The term “Over time” refers to when a worker works beyond the normal working hours or scheduled time is known as ‘overtime.’ According to factories Act, the wage rate of overtime work to be paid at double the normal rate of wages. The extra amount of remuneration is paid to the worker in addition to normal rate of wages is said to be overtime premium.

Effect of over Time Payment on Productivity: The following are the effects of over time payment on productivity:

1) Overtime premium is an extra payment over normal wages and hence will increase the production cost.
2) The efficiency of workers during overtime work may fall and hence output may be reduced.
3) To earn more, workers may not concentrate on work during normal hours and thus the output during normal hours may fall.
4) Reduced output and increased premium will increase the cost of production.

Accounting Treatment of Overtime Wages

The following are the ways of charging of overtime premium:

1) If overtime is resorted at the desire of the customer then overtime premium is charged to concerned job directly.
2) If overtime is required to cope with general production schedule or for meeting urgent orders, the overtime premium should be treated as overhead cost of particular department or cost centre which works overtime.
3) If overtime is worked on account of abnormal conditions such as flood, earthquake etc. that should be charged to costing profit and loss account.

Control of Overtime: Control of overtime is essential to minimize the cost of production and increase the overall performance of the efficiency. Effective control of overtime can be possible through the following ways:

1) Effective sound planning of production
2) Adequate supervision.
3) Ensuring availability of raw materials, spare parts
4) Encouraging productivity
5) Reducing labour turnover
6) Ensuring effective system of repairs and maintenance, material handling and smooth flow of production
7) Fair and equitable remuneration to efficient and inefficient workers.



CHECK YOUR PROGRESS

Q3: State True or False

a. Abnormal idle time refers that any loss of time which may occur due to some abnormal reasons. (True/False)
b. Normal idle time wages is not treated as a part of cost of production. (True/False)
c. Abnormal idle time cost is treated as a part of production cost (True/False)
d. The term “Over time” refers to when a worker works beyond the normal working hours. (True/False)
e. Control of overtime is essential to maximise the cost of production. (True/False)

4.9 METHODS OF REMUNERATION

There are two basic methods of wage payment: (1) Time Wages System and (2) Piece Wage System. Under time wage system, wages are paid on the basis of time spent on the job irrespective of the amount of work done. This is known as **Time Rate or Day Wage** System. The unit of time may be a day, a week, a fortnight or a month. Under piece wage system, remuneration is based on the amount of work done or output of a worker. This is known as **"Piece Rate System"** or **"Payment by Result."** Thus, a workman is paid in direct proportion to his output. A variety of bonus and premium plans have been designed to overcome the drawbacks of two basic methods of wage payments. A system of incentive plans also takes into consideration the primary principles of these two basic plans known as Incentive or Bonus or Premium Plan.

The following are the important methods of remuneration which may be grouped into:

1) Time Rate Systems
2) Piece Rate Systems
3) Bonus System (or) Incentives Schemes
4) Indirect Monetary Incentives.

These may be further classified as under:

1) Time Rate System:
   a) At Ordinary Levels
   b) At High Wage Levels
   c) Guaranteed Time Rates.

2) Piece Rate System:
   a) Straight Piece Rate
   b) Piece Rates with Guaranted Time Rate
   c) Differential Piece Rates :
      i) Taylor's Differential Piece Rate System
      ii) Merrick Differential Piece Rate System
      iii) Gantt Task and Bonus Plan.

3) Bonus System or Incentive Schemes :

a) Halsey Premium Plan
b) Halsey-Weir Premium Plan
c) Rowan Plan
d) Barth Variable Sharing Plan
e) Emerson Efficiency Plan
f) Bedaux Point Premium System
g) Accelerating Premium Plan
h) Group or Collective Bonus Plans.

4) Indirect Monetary Incentives

a) Profit- Sharing
b) Co-partnership

5) Non-Monetary Incentives:

1) TIME RATE SYSTEM:

a) Time Rate at Ordinary Levels : This is also termed as "Day Wage System" or "Flat Rate System". Under this system, wages are paid to the workers on the basis of time spent on the job irrespective of the quantity of work produced by the workers. Payment can be made at a rate per day or a week, a fortnight or a month. The formula for calculation of payment of time rate of ordinary levels is as follows :

Remuneration or Earnings = Hours Worked × Rate Per Hour

Time wage system is suitable under the following conditions :

1) Where the units of output are difficult to measure, e.g. watchman.
2) Where the quality of work is more important e.g., artistic furniture, fine jewellery, carving etc.
3) Where machinery and materials used are very sophisticated and expensive.
4) Where supervision is effective and close supervision is possible.
5) Where the workers are new and learning the job.
6) Where the work is of a highly varied nature and standard of performance cannot be established.

Advantage

1) It is simple and easy to calculate.

2) Earning of workers are regular and fixed.
3) Time rate system is accepted by trade unions.
4) Quality of the work is not affected.
5) This method also avoids inefficient handling of materials and tools.

Disadvantages

1) No distinction between efficient and inefficient worker is made and hence they get the same remuneration.
2) Cost of supervision are high due to strict supervision used for high productivity of labour.
3) Labour cost is difficult to control as more payment may be made for the lesser amount of work.
4) No incentive is given to efficient workers. It will depress the efficient workers.
5) There are no specific standards for evaluating the merit of different employees for promotions.

b) Time Rate at High Levels: Under this system, efficient workers are paid higher wages in order to increase production. The main object of this method is to remove the drawbacks of time rate at ordinary levels. This system is simple and easily understandable. When higher rate of wages are paid, it not only reduces labour turnover but also increases production and efficiency.

c) Guaranteed Time Rates: Under this method, the wage rate is calculated by considering to changes in cost of living index. Accordingly, the wage rate is varied for each worker according to the change in cost of living index. This system is suitable during the period of raising prices.

2) PIECE RATE SYSTEM:

This is also known as “Piece Wage System” or “Payment By Result.” Under this system, wages of a worker are calculated on the basis of amount of work done or output of a worker. Accordingly, a worker is paid in direct proportion to his output.

Advantages:

1) It facilitates direct relation between efforts and reward.
2) This system encourages the efficient workers to increase production.
3) Under this system efficient workers are recognized and rewarded.
4) It helps to reduce the cost of supervision and idle time.
5) Tenders or quotations can be prepared confidently and accurately.

Disadvantage:

1) Where a concern is producing large quantities, it is difficult to fix a piece rate.
2) In order to maximize their earnings, workers working with high speed may affect their health.
3) The quality of output cannot be maintained.
4) This system is not encouraging to the inefficient workers.
5) Temporary delays or difficulties may affect the earnings of the workers.

Piece Rate System is suitable where

1) Quality and workmanship are not important.
2) Work can be measured accurately.
3) Quantity of output directly depends upon the efforts of the worker.
4) Production of standardized goods in a factory.
5) Job is of a repetitive nature.

There are three important methods of paying labour remuneration falling under this type : a) Straight Piece Rate (b) Piece Rates with Guaranteed Time Rates and (c) Differential Piece Rates.

a) **Straight Piece rate:** Under this system workers are paid according to the number of units produced at a given rate per unit. Thus, total earnings of each worker are calculated on the basis of his output irrespective of the time taken by him. The following formula is used for measuring piece work earning:

Straight Piece Work Earnings = Units Produced × Rate Per Hour

b) **Piece Rate with Guaranteed Time Rates:** Under this method, the worker earning from piece work less than the guaranteed

minimum wage, will get the fixed amount of guaranteed time rate. A guaranteed rate would be paid per hour rate or day rate or week rate.

c) Differential Piece Rates: This system is designed to provide for variation of piece rates at different levels of output. Accordingly increase in wages is proportionate to increase in output. Under this system efficient workers get ample reward and at the same time inefficient workers are motivated to earn more. The following are the important types of differential piece rates :

i) Taylor's Differential Piece Rates System.

ii) Merrick's Differential Piece Rates System.

iii) Gant Task Bonus Plan.

a) Taylor's Differential Piece Rates system

F.W. Taylor, who is the father of scientific management introduced this plan. Under this system, two piece rates are applicable on the basis of standard of performance established. Accordingly one is high rate and the other one is lower rate. Thus high piece rate is applicable for standard and above the standard performance. Lower piece rate for those workers with below the standard performance.



EXERCISE : 1

Calculate the earnings of workers A and B under Straight Piece rate system and Taylor's Differential piece Rate system from the following Particulars :

Standard time allowed 50 units per hour.

Normal time rate per hour Rs. 100

Differentials to be applied.

80% of piece rate at or above standard.

120% of piece rate at or above standard.

In a day of 8 hours A produced 300 units and B produced 450 units.

Solution 1:

Calculation of Piece Rates :

Standard production per hour = 50 units.

Standard production for 8 hours = 50 × 8 = 400 units.

Rate per hour = Rs. 100.

$$\text{Piece rate per unit} = \frac{100}{50} = \text{Rs. 2 per unit}$$

Straight Piece Rate System

Earnings of worker A and B

A for 300 units @ Rs. 2 = 300 × 2 = Rs. 600

B for 450 units @ Rs. 2 = 450 × 2 = Rs. 900

Differential Piece Rate System

Low Piece Rate at 80% differential $\frac{2\times80}{100}$ = Rs. 1.60

High Piece Rate at 80% differential $\frac{2\times120}{100}$ = Rs. 2.40

Standard production in 8 hours = 8 × 50 units per hour

= 400 units

∴ Earnings of worker A and B

A produced 300 units (above standard) = 300 × 1.60

Therefore low Piece rate of Rs. 1.60 applicable = Rs. 480

B produced 450 units (above standard) = 450 × 2.40

Therefore high Piece rate of Rs. 2.40 applicable = Rs. 1080

b) Merrick Differential Piece Rate System:

This is also termed as Multiple Piece Rate system. This plan is designed to overcome the drawback of Taylor's Differential Piece Rate System. Under this method, three piece rates are applied with different levels of performance. Accordingly

Performance	Differential Piece Rate
1) Less than 83%	Normal Piece Rate (or) Basic Piece Rate
2) From 83% to 100%	110% of Normal Piece Rate
3) More than 100%	120% of Normal Piece Rate

c) Gantt's task Bonus Plan: This system is designed by Henry L. Gantt. Under this system standard time for every task is fixed through time and motion study. The main feature of this system is a good combination of time rate, differential piece rate and bonus. In this system day wages are guaranteed to all workers. Wages under this system are calculated as follows:

Performance		Earnings
1) Output Below Standard	-	Time Rate (Guaranteed)
2) Output at Standard	-	Wages of Time Rate plus Bonus of 20% of the Time Rate
3) Output at Above Standard	-	High Piece Rate on worker's output

3. BONUS OR INCENTIVES SCHEMES:

Incentive Scheme of wage payment is also known as Premium Bonus Plans. Introduced in order to increase production ensuring proper industrial climate. Wage incentive plans may be of two types : (1) Individual Incentive Plans and (2) Group Incentive Plans.

A. Individual Incentive Plans: Under individual incentive plans, remuneration can be measured on the performance of the individual worker. In the case of the group incentive scheme earnings can be measured on the basis of the productivity of the group of workers or entire work force of the organization. Various types of incentive schemes are combinations of time and piece rate systems. The following are the important individual incentive plans discussed below :

1) Halsey Premium Plan: This Plan was developed by F.A. Halsey. This system also termed as Split Bonus Plan or Fifty-Fifty Plan. Under this plan, Standard time is fixed for each job or operation on the basis of past performance. If a worker completes his job within or more than the standard time then the worker is paid a guaranteed time wage. If a worker completes his job within or less than the standard time, then he gets a bonus of 50% of the time saved plus normal earnings. Under this method, the total earnings is calculated as follows:

Total Earning = Guaranted Time Wages + Bonus of 50% of Time saved

(or)

Total Earning = T × R + 50% (S - T) x R

Where T - Time Taken; R - Hourly Rate; S - Standard Time

or

Total Earnings = Time taken × hourly rate + $\frac{50}{100}$ (Time Saved × Hourly Rate)



EXERCISE : 2

Calculate the total earnings of the worker under Halsey Premium Plans:

Standard Time	12 hours
Hourly Rate	Rs. 3
Time Taken	8 hours

Solution 2:

Earnings under Halsey Premium Plan:

Standard Time = 12 hours

Time Taken = 8 hours

Time Saved = Standard Time - Time Taken

= 12 - 8 = 4 hours

Rate per hour = Rs. 3

Total Earnings = T × R + 50% (S - T) x R

$$= 8 \times 3 + \frac{50}{100} (4 \times 3)$$

= 24 + 6 = Rs. 30

Total Earnings = Rs. 30

Merits:

1) It is simple to understand.
2) Total earnings of each worker can be easy to calculate.
3) Both employer and employee get equal benefit of time saved.

4) This system not only benefits efficient worker but also provides average worker to get guaranteed minimum wages.

5) This system is based on time saved and it can reduce the labour cost.

Demerits:

1) Lack of co-operation among the employees.

2) Under this system establishment of standard is very difficult.

3) Earning are reduced at high level of efficiency.

2) The Halsey -Weir Scheme: Under this system the worker gets the bonus of 30% of the time saved instead of 50% of time saved under Halsey Plan. Except for this, Halsey Plan and Halsey-Weir Systems are similar in all other respects.

3) Rowan Plan: This plan was introduced by James Rowan of England. It was similar to the Halsey Plan in many respects except that it differs in calculation of bonus. Under this system, bonus is determined as the proportion of the time taken which the time saved bears to the standard time allowed. Under this system the following formula is applied to calculation of bonus:

$$\text{Bonus} = \frac{\text{Time Saved}}{\text{Standard Time}} \times \text{Time Wages}$$

$$\text{Total Earnings} = \text{Time taken} \times \text{Hourly Rate} + \frac{\text{Time Saved}}{\text{Standard Time}} \times T \times R$$

Time Saved = Standard Time - Time Taken

Time Wages = Time Taken × Hourly Rate



EXERCISE : 3

From the following information, calculate total earnings of a worker under Rowan System:

Standard Time = 10 hours

Time Taken = 8 hours

Rate per hour = Rs. 3

Solution 3:

Calculation of total earnings under Rowan Plan:

Standard Time = 10 hours

Time Taken = 8 hours

Time Saved = Standard Time - Time Taken

= 10 - 8 = 2 hours

Rate per hour = Rs. 3 Per hour

$$\text{Total Earnings} = T \times R + = \frac{\text{Time Saved}}{\text{Standard Time}} \times T \times R$$

$$= 8 \times 3 + \frac{2}{10} (8 \times 3)$$

$$= 24 + 4.8 = \text{Rs. } 28.8$$

4) Emerson's Efficiency Sharing Plan: Under this plan, earning of a worker is by combining guaranteed day wages with a differential piece rate. Accordingly the level of efficiency is determined on the basis of establishment of standard task for a unit of time. If the level of worker's efficiency reaches 67% the bonus is paid to him at a normal rate. The rate of bonus increases in a given rate as the output increases from 67% to 100% efficiency. Above 100% efficiency, the bonus increases to 20% of the wage earned plus additional bonus of 1% is added for each increase of 1% in efficiency.



EXERCISE : 4

From the following particulars calculate total earnings of a worker under Emerson's Efficiency Sharing Plan:

Standard output per day of 8 hours is 16 units

Actual output of a worker for 8 hours is 20 units

Rate per hour is Rs. 2.50

Solution 4:

Calculation of earnings under Emerson's Sharing Plan :

$$\text{Level of performance} = \frac{\text{Actual Output}}{\text{Standard Output}} \times 100$$

$$= \frac{20 \text{ units}}{16 \text{ units}} \times 100 = 125\%$$

Bonus Payable

At 100% efficiency = 20% of time wages

Further increase of 1% in the bonus is given for every 1% increase in the efficiency.

For next 25% efficiency @ 1% for each 1% increase in efficiency = 25% of Time Wages

Total Bonus payable = 45% of Time wages.

Earning

Time Wages for 8 hours @ Rs. 2.50 per hour = Rs. 20.

Add : 45% bonus of time wages $= \frac{45}{100} \times 20 = \text{Rs. } 9$

Total Earning = Rs. 20 + Rs. 9 = Rs. 29

5) Barth Variable Sharing Plan: This scheme is introduced to attract newly recruited and skilled employees who are motivated to learn work. It provides sufficient incentives to inefficient workers who are motivated to increase productivity. Earning under this method is calculated by applying the following formula:

Earnings = Rate per hour × $\sqrt{\text{Standard time} \times \text{time taken}}$



EXERCISE : 5

From the following particulars calculate earnings of a worker under Brath Variable sharing plan :

Standard Time = 12 hours

Time Taken = 8 hours

Rate per hour = Rs. 5

Solution 5:

Calculation of earnings under Barth Variable sharing plan :

Earnings = Rate per hour × $\sqrt{\text{Standard time} \times \text{time taken}}$

= 5 × $\sqrt{12 \times 8}$

= Rs. 48. 98

6) Accelerating Premium Bonus Plan : Under this plan, bonus is determined on the basis of time saved unlike a fixed percentage under Halsey Plan and as decreasing percentage under Rowan Plan. The bonus is paid to workers at an increased rate. This provides increasing incentives to efficient workers.

B. Group or Collective Bonus Plan: The incentive schemes explained so far are applicable to individual performance depending directly on production. However it is not the individual workers who produce the goods or services (operation) alone but group of several other workers are required to jointly perform a single operation. It is, therefore, essential that a group incentive scheme should be introduced. Bonus is calculated for a group incentive scheme. The bonus is calculated for a group of workers and the total amount is distributed among the group of workers on any one of the following basis :

a) Equally by all the workers of the group.

b) Pro rate on the time rate basis.

c) Pre determined percentage basis.

d) Specified proportion basis.

The following are the important types of group incentive bonus plans:

1) Budgeted Expenses bonus plan

2) Priest Man bonus Plan

3) Towne's Gain-sharing Plan

4) Scanlon Plan

1) Budgeted Expenses Bonus Plan: Under this method, bonus is determined on the basis of savings in actual expenditure compared with total budgeted expenditure.

2) **Priest man Bonus Plan:** Under this plan standard performance is fixed by the management and committee of works. The group of workers get bonus when actual performance exceeds the standard performance irrespective of individual's efficiency or inefficiency.

3) **Towne's Gain-sharing Plan:** Under this plan, bonus is calculated on the basis of savings in labour cost. The group of workers get bonus when actual costs is less than the standard costs, one - half of the savings is distributed among workers including foremen in proportion with the wages earned.

4) **Scanlon Plan:** Scanlon Plan is designed with the chief aim of reducing the cost of operations in order to increase the production efficiency. This plan is generally applicable in industries where the operation cost is high. Under this scheme, bonus is determined on the basis of standard costs or wastages and percentage of the reduction in operation cost.

4. INDIRECT MONETARY INCENTIVE:

Indirect schemes are regarded beneficial to both employers and workers. In this regard, under indirect monetary incentives by giving them a share of profit and introducing co-partnership scheme or as they have become partners in the business in order to make a very profitable enterprise.

Profit Sharing: Profit Sharing and bonus is also known as Profit sharing Bonus. Under this scheme, there is an agreement between the employer and employee by which employee receives a share, fixed in advance of the profits. Accordingly profit sharing bonus refers to the distribution of profit on the basis of a certain percentage of one's monthly earnings. The amount to be distributed depends on the profits earned by an enterprise. The proportion of the profits to be distributed among the employees is determined in advance.

Co-partnership: This system provides not only a worker to become partner in the business but also to share in the profit of the concern. There are different degrees of partnership and share of responsibilities allowed to the workers to take part in its control.

5. NON-MONETARY INCENTIVE SCHEMES:

Under this system, employees are provided better facilities, instead of additional monetary payments. Some of the examples of non-monetary incentives are free education for children rent free accommodation, medical facilities canteen facilities, welfare facilities, and entertainment facilities etc.



4.10 LET US SUM UP

In this unit, we discussed on the following aspects :

- Control of labour cost is very significant issue from the viewpoint of management.
- The labour Cost can be classified into two types:
  1) Direct Labour Cost.
  2) Indirect Labour Cost.
- The management applies various techniques for the effective control of labour costs as under :
  1) Scientific method of production planning.
  2) Use of labour budgets.
  3) Establishment of labour standards.
  4) Proper system of labour performance report.
  5) Effective system of job evaluation and job analysis.
  6) Devise a proper system of control over ideal time and unusual overtime work.
  7) Establish a fair and equitable remuneration system.
  8) Effective cost accounting system.
- Idle Time is that time during which the workers spend their time without giving any production or benefit to the employer and concern.
- Abnormal idle time refers that any loss of time which may occur due to some abnormal reasons
- Normal idle time wages is treated as a part of cost of production.

- Abnormal idle time cost is not included as a part of production cost and is shown as a separate item in the Costing Profit and Loss Account.
- The term “Over time” refers to when a worker works beyond the normal working hours or scheduled time is known as ‘overtime.’
- The following are the important methods of remuneration which may be grouped into:
  1) Time Rate Systems
  2) Piece Rate Systems
  3) Bonus System (or) Incentives Schemes
  4) Indirect Monetary Incentives.



4.11 FURTHER READING

1. Jain P K & Khan MY(2017); *Management Accounting*,7edition Mcgraw Higher Ed, India
2. Narang K.L. & Jain S.P.(2015), *Cost Accounting*, Kalyani Publications
3. Narang K.L. & Jain S.P(2015), *Cost And Management Accounting,*
4. Lal J & Srivastava S (2013), *Cost & Management Accounting*; Mcgraw Higher Ed
5. Banerjee(2013);*Cost Accounting: Theory and Practice*; PHI Learning Pvt Ltd; New Delhi



4.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: a. Direct Labour Cost.
b. Indirect Labour Cost.

Ans to Q2: a. True b. False c. True

Ans to Q3: a. True b. False c. False d. True
e. False



4.13 MODEL QUESTIONS

Q1. What are the important objectives of ideal wage system?

Q2. What are the different methods of wage payment?

Q3. Critically examine the advantages and disadvantages of time wage system.

Q4. What are the differences between time rate system and piece rate system?

Q5. What do you understand by piece rate system? Discuss the merit and demerits of piece rate system.

Q6. What do you understand by Taylor's Differential Piece Rate system? Explain its significance.

Q7. Write short notes on :

a) Halsey Plan b) Rowan Plan,

c) Emerson's Efficiency Plan d) Halsey-Wair Plan

e) Gantt Task Bonus Plan f) Barth's System.

Q8. What do you mean by collective bonus plan? Explain the type of group incentive plans.

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UNIT 5: OVERHEADS

UNIT STRUCTURE

5.1 Learning objectives

5.2 Introduction

5.3 Meaning and definition of Overhead Cost

5.4 Importance of Overhead Cost

5.5 Classification of Overheads

5.6 Procedure or Steps in Overhead

5.7 Let Us Sum Up

5.8 Further Reading

5.9 Answers to Check Your Progress

5.10 Model Questions

5.1 LEARNING OBJECTIVES

After going through this unit, you will be able to

- discuss the meaning and definition of overhead costs
- describe the importance of overhead costs
- explain the classification of overheads
- outline the Procedure or steps in overhead

5.2 INTRODUCTION

Overhead refers to all non labour expenses required to operate a business. In this unit you will get a fair idea on the concepts of overheads, its meaning and definition. Again, we will discuss the importance of overhead costs.

The classification of overheads are discussed and at the end of the unit you will come to know about the procedure or steps in overhead.

5.3 MEANING AND DEFINITION OF OVER HEAD COST

Aggregate of all expenses relating to indirect material cost, indirect labour cost and indirect expenses is known as Overhead. Accordingly,

all expenses other than direct material cost, direct wages and direct expenses are referred to as overhead.

According to Wheldon, Overhead may be defined as “the cost of indirect material, indirect labour and such other expenses including services as cannot conveniently be charged to a specific unit.”

Blocker and Weltmer define overhead as follows:

“Overhead cost is operating cost of a business enterprise which cannot be traced directly to a particular unit of output. Further such costs are invisible or unaccountable.”

5.4 IMPORTANCE OF OVERHEAD COST

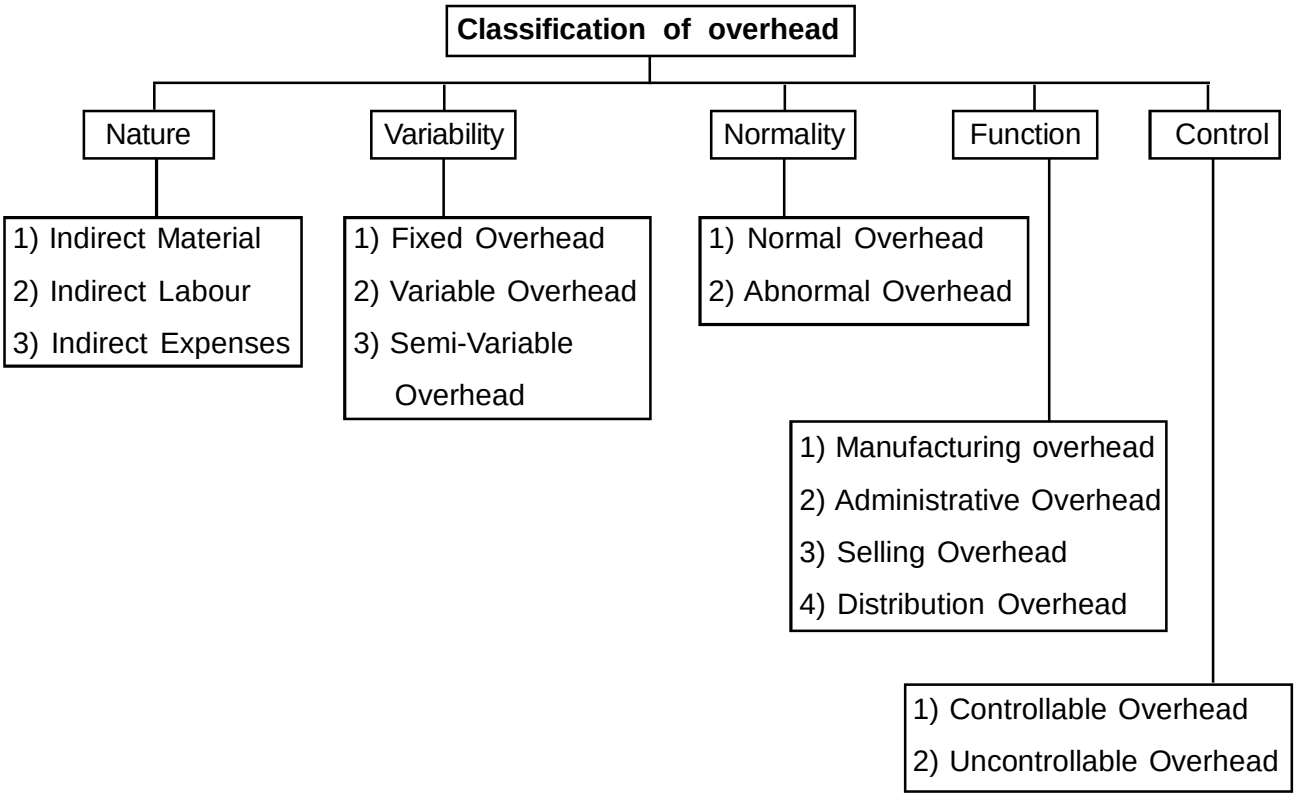
Now a days business is a dynamic organism. Advancement of technological development and innovation, economic situations and social considerations are the important factors for modernization of industries for mass production to meet its more demand. The overhead charges are heavily increased and they represent major portion of total cost. Therefore, it assumes greater importance for cost control and cost reduction.

5.5 CLASSIFICATION OF OVERHEADS

Classification of overheads is the process of grouping of costs based on the features and objectives of the business organization. The following are the important methods on which the overheads are classified:

a) On the basis of Nature.
b) On the basis of Function.
c) On the basis of Variability.
d) On the basis of Normality.
e) On the basis of Control.

The following chart can explain the further classification of overhead:





CHECK YOUR PROGRESS:

Q1: What do you mean by Overhead Cost?

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Q2: Write down the different important methods on which the overheads are classified?

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Let us discuss it in detail.

1. <u>On the Basis of Nature :</u>

One of the important classifications is on the basis of nature or elements.

Based on nature the aggregate of all indirect material cost, indirect labour cost and indirect other expenses are known as overheads. Accordingly, overheads are grouped into (a) Indirect material Cost (b) Indirect Labour Cost and (c) Indirect Expenses.

a) **Indirect material Cost:** Indirect materials do not form part of the finished products. Indirect materials are indirectly or generally used for production which cannot be identified directly. For example, oil, lubricants, cotton waste, tools for repairs and maintenance etc. are indirect materials.

b) **Indirect Labour Cost:** Indirect labour is for work in general. The importance of the distribution lies in the fact that whereas direct labour can be identified with and charged to the job, indirect labour cannot be so charged and has, therefore, to be treated as part of the factory overheads to be included in the cost of production. Examples are salaries and wages of supervisors, storekeepers, maintenance labour etc.

c) **Indirect Expenses:** Any expenses that are not specifically incurred for or can be readily charged to or identified with a specific job. These are the expenses incurred in general for more than one cost centre. Examples of indirect expenses are rent, insurance, lighting, telephone, stationery expenses etc.

2) On the Basis of Function :

The classification overheads on the basis of the various function of the business concern are known as function wise overheads. Here, there are four important functional overheads such as:

a) Production Overhead b) Administration Overhead
c) Selling Overhead d) Distribution Overhead

a) **Production Overhead:** Production overhead is also termed as manufacturing overhead or works overhead or factory overhead. It is the aggregate of all indirect expenses which are incurred for work in operation or factory. These costs are normally incurred during the period when the production process is carried on. For example, factory rent, factory light, power, factory employees' salary, oil, lubrication of plant & machinery, etc.

b) **Administrative Overhead:** Administrative expenses are incurred in general for management to discharge its functions of planning organizing, controlling, co-ordination and directing. These expenses are not specifically incurred and cannot be identified with the specific job. It is also termed as office cost. For example, office rent, rates, printing, stationery, postage, telegram, legal expenses etc. are the office and administrative costs.

c) **Selling overheads:** Selling expenses are overheads which are incurred for promoting sales, securing orders, creating demand and retaining customers. For example, salesmen's salaries, advertisement, rent and rates of show room, samples, commission etc.

d) **Distribution Overhead:** Distribution overhead are incurred for distribution of products or output from producers to the ultimate consumers. For example, warehouse staff salaries, expenses of delivery van, storage expenses, packing etc.

3) <u>On the Basis of Variability :</u>

One of the important classifications is on the basis of variability. According to this, the expenses can be grouped into (a) Fixed Overhead (b) Variable Overhead and (c) Semi-Variable Overhead.

a) **Fixed Overhead:** Fixed cost or overhead incurred remain constant due to change in the volume output or change in the volume of sales. For example, rent and rates of buildings, depreciation of plant, salaries of supervisors etc.

b) **Variable Overhead:** Variable overhead may be defined as "they tend to increase or decrease in total amount with changes in the volume of output or volume of sales." Accordingly the change is in direct proportion to output. Indirect materials, indirect labour, repair and maintenance, power, fuel, lubricants etc. are examples of variable overhead costs.

c) **Semi-variable Overheads:** Semi-variable overheads are incurred with a change in the volume of output or turnover. They neither remain fixed nor do they tend to vary directly with the output.

These costs remain fixed upto a certain volume of output but they will vary at other part of activity. Semi-variable overheads are mixed cost, i.e. partly fixed and partly variable. For example, power, repairs and maintenance, depreciation of plant and machinery telephone etc.

4) <u>On the Basis of Normality :</u>

Overheads are classified into normal overheads and abnormal overheads on the basis of normality features. According to this normal overheads are incurred in achieving the target output or fixed plan. On the other hand, abnormal overhead costs are not expected to be incurred at a given level of output in the conditions in which the level of output is normally produced. For example, abnormal idle time, abnormal wastage etc. Such expenses are transferred to Profit and Loss Account.

5) <u>On the basis of Control:</u>

It is one of important classifications of overhead on the basis of control. Based on control it is grouped into controllable overhead and uncontrollable overhead. Controllable overhead which can be controlled by the action of a specified number of undertaking. For example, idle time, wastage etc. can be controlled. Uncontrollable overheads cannot be controlled by the action of the executive heading the responsibility centre. For example, rent and rates of building cannot be controlled.



CHECK YOUR PROGRESS:

Q3: State True or False

a. Indirect materials form part of the finished products. (True/False)

b. Examples of indirect expenses are rent and insurance. (True/False)

c. Production overhead is also termed as manufacturing overhead. (True/False)

d. Selling expenses are overheads which are incurred for promoting sales, securing orders. (True/False)

e. Controllable overheads cannot be controlled by the action of a specified number of undertaking. (True/False)

5.6 PROCEDURE OR STEPS IN OVERHEAD

Overhead are incurred for work in general. Overhead is added to the prime cost in order to measure the total cost of production or cost of goods sold. For allocation and apportionment of overhead in the cost of production or cost of goods sold the following procedures are involved.

1) Classification of Overhead
2) Collection of Overhead
3) Overhead Analysis :
   a) Distribution of overhead to production and service departments, i.e. Allocation and apportionment of overhead to cost centre.
   b) Re-distribution of overhead from service department to production department i.e., Allocation and Apportionment of Service centres to production centres or departments.
4) Absorption of overhead by cost units, i.e. computation of overhead absorption rates.

We will discuss the above procedures in detail. They are as follows:-

1) CLASSIFICATION OVERHEADS

We have already discussed the classification of overhead in the previous Sec 5.5

2) COLLECTION OF OVERHEAD :

The production overheads or factory overheads are collected and identified under separate overhead code numbers or standing order numbers. These overheads are collected from different sources and documents. The following are the important sources and documents :

Overhead Expenses		***Sources and Documents Used***
1) Indirect Materials	-	Materials Requisition
2) Power and light	-	Meter Reading
3) Indirect wages	-	Time cards, Pay Rolls, Wage Analysis
4) Salaries	-	Salaries Sheet
5) Depreciation	-	Plant Register, Machinery Register

6) Rates	-	Lease
7) Rates	-	Local Government Assessment
8) Office Stationery	-	Supplier's Invoices
9) Postage	-	Postage Book

3) OVERHEAD ANALYSIS :

(a) Allocation and Apportionment of Overhead to Cost Centre

The first step of overhead analysis is distribution of overhead to production department and service department. Before analysing overhead, we should know the concept of Allocation, Absorption and Apportionment.

i) Allocation : Cost allocation refers to the allotment of whole item of cost to cost centers. The technique of charging the entire overhead expenses to a cost centre is known as cost allocation.

ii) Absorption : Cost absorption refers to the process of absorbing all overhead costs allocated to apportioned over particular cost centre or production department by the unit produced.

iii) Apportionments : Apportionment is the process of distribution factory overheads to cost centers or cost units on an equitable basis. The term apportionment refers to the allotment of expenses which cannot be identified wholly with a particular department. Such expenses require division and apportionment over two or more cost centers in proportion to estimated benefits received.

Allocation Vs Apportionment

1) Allocation deals with whole amount of factory overheads while apportionment deals with proportion of item of cost or proportion to cost centers.
2) The item of factory overhead directly allocated and identified with specific cost centers. Whereas apportionment requires suitable and equitable basis. For example, factory rent may be allocated to the factory and has to be apportioned among the producing and service departments on an equitable basis.

Basic of Apportionment

Overhead apportionment depends upon matching with principles. Accordingly, the basis for apportionment should be related to the basis on which the expenditure is incurred. The following are the usual basis adopted for apportionment of overhead :

Basis of Apportionment

Overhead Cost	***Basic of Distribution***
1) Lighting floor space or meter reading	- No. of light points,
2) Rent, Rates and taxes	- Floor Area
3) Insurance of building Depreciation of building,	- Area of floor
4) Depreciation of plant and Machinery and Equipments	- Book value
5) E S I, Canteen, Safety compensation supervision welfare, fringe benefits	- No. of employees
6) Delivery Van, Internal Transport	- Weight, volume ton
7) Audit fees	- Sales or Total Cost
8) Storekeeper's expenses	- Weight, value of materials or Number of requisitions
9) Power	- H.P. Hours or K.W. Hours



EXERCISE : 1

A factory has three production departments and two service department. The following figures have been extracted from the financial books:

	Rs.
Supervision	6,000
Repairs of plants and Machinery	3,000
Rent	8,000
Light	2,000
Power	3,000
Employer's contribution to ESI	600
Canteen Expenses	1,000

The following further details have been extracted from the books of the respective departments:

	Production Department			**Service Department**	
Particulars	**A**	**B**	**C**	**D**	**E**
1. Direct Wages (Rs.)	4,000	3,000	2,000	2,000	1,000
2. Area of Square feet	20,000	10,000	5000	5000	1000
3. No. of Employees	50	40	20	20	10
Value of Machinery	10,000	5,000	3,000	3,000	1,000
Light Points	80	60	30	30	20
H.P. of Machines	200	100	50	50	20

Prepare a statement showing primary distribution of overheads to the production and service departments of the factory on a suitable basis.

Soluton : 1

Primary overhead Distribution Summary

Particulars	*Basis of Apportionment*	*Total Rs.*	*Production Department*			*Service Dept.*	
			Department			*Department*	
			A	*B*	*C*	*D*	*E*
1. Supervision	No. of Employees 5 : 4 : 2 : 2 : 1	6,000	2,142	1,715	857	857	429
2. Repairs of plant and Mechinery	Value Machinery 10 : 5 : 3 : 3 : 1	3,000	1,364	681	409	409	137
3. Rent	Area of square feet 20 : 10 : 5 : 5 : 1	8,000	3,902	1,951	976	976	195
Light	Light points 8 : 6 : 3 : 3 : 2	2,000	727	545	273	273	182
Power	H.P. of Machines 20 : 10 : 5 : 5 : 2	3,000	1,429	714	357	357	143
Employer's contribution to ESI	Direct Wages 4 : 3 : 2 : 2 : 1	600	200	150	100	100	50
Canteen Expenses	No. of Employees 5 : 4 : 2 : 2 : 1	1,000	357	286	143	143	71
	Total	23,600	10,121	6,042	3,115	3,115	1,207

b) Re-apportionment (Re-distribution) : Re-distribution of overhead from various service departments to production departments is known as Re-apportionment or Secondary distribution. Accordingly, allocation and apportionment of overheads from service departments or centers to production centers or departments. The following are the important bases adopted for apportionment of Secondary distribution :

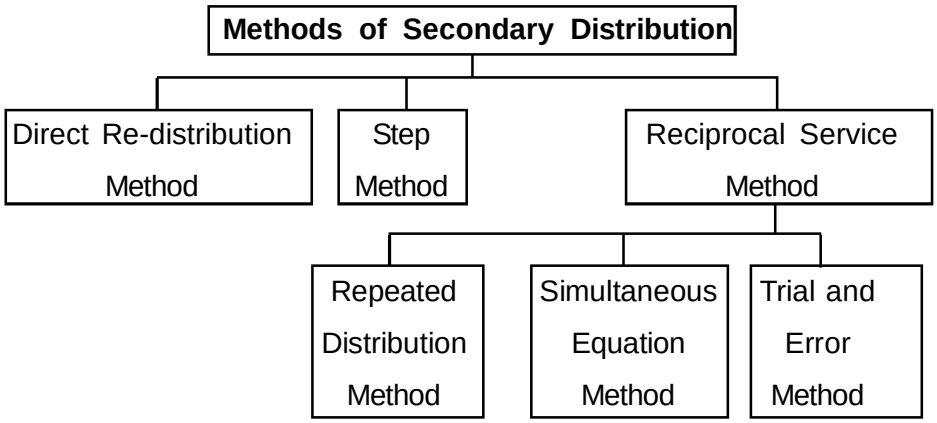
Service Department	***Basis of Apportionment***
1) Purchase Department	Number of Purchase Orders or Number of Purchase Requision or Value of Materials
2) Maintenance and Repairs Department	Hours worked
3) Stores Department	No. of Requisition or Value of Materials
4) Personnel Department (Canteen, Welfare, Medical, Employer's liability)	No. of Employees or Direct Wages
5) Time Keeping Department	No. of Employee or Labour Hours or Direct Wages
6) Pay roll Department	No. of Employees or Direct Wages
7) Accounts Department	No. of Employees
8) Tool Room	Direct Labour Hours or Machine Hours or Direct Wages
9) Transport Department	Car Hours, Truck Hours, Tonnage handled
10) Power House	K.W. Hours
11) Fire Insurance	Stock Value

Methods of Re-apportionment or Re-distribution

The following are the important methods of re-distribution of service department overheads to production department :

1) Direct Re-distribution Method
2) Step Distribution Method
3) Reciprocal Service Method - this method further grouped into:
   a) Repeated Distribution Method
   b) Simultaneous Equiation Method
   c) Trial and Error Method

The following chart explains more about the method of re-apportionment of service department cost :



1) Direct Re-distribution Method : Under this method the cost of service department is directed to re-distribution to the production departments without considering the services rendered by one service department to another service department.

EXERCISE : 2

Ramesh Ltd. has three production department A, B and C and six service departments. The following figures are extracted from the records of the company:

Production Department	
A	Rs. 16,000
B	Rs. 10,000
C	Rs. 12,000
	Rs. 38,000
Service Departments	
Stores	Rs. 2,000
Timekeeping	Rs. 3,000
Maintenance	Rs. 1,000
Power	Rs. 2,000
Welfare	Rs. 1,000
Supervision	Rs. 2,000
	Rs. 11,000

Total Overhead Expenses Rs. 49,000.

The other information available in respect of the production departments:

Particulars	Production Departments		
	A	B	C
No. of Employees	40	30	20
No. of Stores Requisition	30	20	10
Horse Power of Machines	500	500	600
Machine Hours	2500	1500	1000

You are required to apportion the costs of various service departments to production departments.

Soluton : 2

Primary overhead Distribution Summery

Expenses	Basis	Total Rs.	Production Departments		
			A Rs.	B Rs.	C Rs.
As per primary Department summary Service Department :	------	38,000	16,000	10,000	12,000
Stores	No. of Stores Requisitioned 30 : 20 : 10	2,000	1,000	667	333
Timekeeping	No. of Employees 40 : 30 : 20	3,000	1,333	1,000	667
Maintenance	Machine hours 25 : 15 : 10	1,000	500	300	200
Power	Horse Power 5 : 5 : 6	2,000	625	625	750

Expenses	Basis	Total Rs.	Production Departments		
			A Rs.	B Rs.	C Rs.
Welfare	No. of Employees 40 : 30 : 20	1,000	445	333	222
Supervision	No. of Employees 40 : 30 : 20	2,000	889	667	444
Total		49,000	20,792	13,592	14,616

B. Step Method : Under this method, the cost of most serviceable department is first distributed to production departments and other service departments. Thereafter, the next service department is distributed and later the last service departments untill the cost of all the service departments are redistributed to the production department.



EXERCISE : 3

A manufacturing company has two production departments A and B and three Service Departments - Timekeeping, Stores and Maintenance. The departmental summary showed the following expenses for Dec. 2009.

Production Departments:	Rs.
A	32,000
B	10,000
Service Department :	
Timekeeping	8,000
Stores	10,000
Maintenance	6,000
Total Overhead Expenses	66,000

The following information about departments is available and is used as a basis for distribution :

Particular	Production Service		Departments		
	A	B	Timekeeping	Stores	Maintenance
No. of Employees	20	15	10	8	5
No. of Stores Requisitions	12	10	-------	------	3
Machine Hours	1200	800	-------	-------	-------

You are required to apportion these costs to production departments :

Solution : 3

Departments	Primary Distribution Rs.				
Timekeeping	8000	(-) 8,000			
Stores	10,000	3,334	(-) 13,334		
Maintenance	6,000	2,500	1,600	(-) 10,100	
A	32,000	1,333	6,400	6,060	45,793
B	10,000	833	5,334	4,040	20,207
Total	66,000				66,000

Basis of Apportionment :

Timekeeping : 20 : 15 : 8 : 5 (No. of Employees)

Store : 12 : 10 : 3 (No. of Stores Requisition)

Maintenance : 12 : 8 (Machine Hours)

3) Reciprocal Service Method : This method recognizes the fact that if a service department receives services from other department, the services should be charged in the receiving department. Thus, the cost of inter departmental services is taken into account on reciprocal basis. The following are the three important methods available for dealing with reciprocal distribution :

a) Simultaneous Equation Method.

b) Repeated Distribution Method.

c) Trial and Error Method.

a) Simultaneous Equation Method : Under this method, the true cost of total overhead of each service department is ascertained with the help of Simultaneous or Algebraic Equation. The obtained result re-apportioned to production department on the basis of given percentage.

b) Repeated Distribution Method : Under this method, the total overhead costs of the service departments are distributed to service and production departments, according to given percentage of the service departments are exhausted in turn repeatedly until the figures become too small to matter.

c) Trial and Error Method : In this method, the cost of a service centre is apportioned to another service centre. Then, the cost of another service centre along with the apportioned cost from the first centre is again apportioned back to the first service centre. This process is repeated till the amount to be apportioned becomes zero or negligible.

EXERCISE : 4



The following particulars related to a manufacturing company has three production departments : P, Q; and R and two service departments X and Y :

Production Departments :

P Rs. 2,000

Q` Rs. 1,500

R Rs. 1,000

Service Departments :

S Rs. 500

T Rs. 400

The Service department expenses are charged on a percentage basis as follows :

	Production department			Service Department	
Service Depts :	P	Q	R	S	T
S	20%	30%	40%	---	10%
T	30%	30%	20%	20%	----

Prepare a statement showing the distribution of the two service departments expenses to three production departments under (1) Simultaneous Equation Method and (2) Repeated Distribution method.

Solution : 4

1) Simultaneous Equation Method :

Let X be the total expenses of Departments S

Let Y be the total expenses of Department T

X = 500 + 0.20 Y ——————————— (1)

Y = 400 + 0.10 X ——————————— (2)

Putting the value of Equation (2) in Equation (1), we get

X = 500 + 0.20 (400 + 0.10X)

X = 500 + 80 + 0.02 X

X - 0.02 x = 580

(or) 0.98 x = 580

X = 592

Again, putting the value of X in Equation (2), we get

Y = 400 + 0.10 (592)

= 400 + 59

Y = 459

∴ Total expenses of Service Department S = Rs. 592

and Total expenses of Service Department T = Rs. 459

Departmental Overhead Distribution Summary

Particulars	Production department			Service Departments	
	P	Q	R	S	T
	Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*
Overhead as per Summary	2,000	1,500	1,000	500	400
Distribution of expenses of Department S in 2:3:4:1	118	178	237	(-)592	59
Distribution of expenses of Department S in 3:3:2:2	138	137	92	92	(-)459
Total	2,256	1,815	1,329	-----	------

2) Repeated Distribution Method

Particulars	Production department			Service Departments	
	P	Q	R	S	T
	Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*
Total Department Overhead as per Primary Distribution	2,000	1,500	1,000	500	400
Service Department S in 2:3:4:1	100	150	200	(-) 500	50
Service Department T in 3:3:2:2	135	135	90	90	(-) 450
Service Department S in 2:3:4:1	18	27	36	(-) 90	9
Service Department T in 3:3:2:2	4	4	1	---	(-) 9
Total	2,257	1,816	1,327	---	---



5.7 LET US SUM UP

In this unit, we discussed on the following aspects :

- Overhead cost is operating cost of a business enterprise which cannot be traced directly to a particular unit of output.
- We discussed importance of overhead cost
- The following are the important methods on which the overheads are classified:
  - a) On the basis of Nature.
  - b) On the basis of Function
  - c) On the basis of variability
  - d) On the basis of Normality
  - e) On the basis of Control

- For allocation and apportionment of overhead in the cost of production or cost of goods sold the following procedures are involved.
  1) Classification of Overhead
  2) Collection of Overhead
  3) Overhead Analysis



5.8 FURTHER READING

1. Jain P K & Khan MY(2017); *Management Accounting*,7edition Mcgraw Higher Ed, India
2. Narang K.L. & Jain S.P.(2015), *Cost Accounting*, Kalyani Publications
3. Narang K.L. & Jain S.P(2015), *Cost And Management Accounting,*
4. Lal J & Srivastava S (2013), *Cost & Management Accounting*; Mcgraw Higher Ed
5. Banerjee(2013);*Cost Accounting: Theory and Practice*; PHI Learning Pvt Ltd; New Delhi



5.9 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: Overhead cost is operating cost of a business enterprise which cannot be traced directly to a particular unit of output

Ans to Q2: The following are the important methods on which the overheads are classified:

a) On the basis of Nature.
b) On the basis of Function
c) On the basis of variability
d) On the basis of Normality
e) On the basis of Control

Ans Q3: a. False b. True c. True d. True e. False



5.10 MODEL QUESTIONS

Q1. What do you understand by overhead charges ?

Q2. "Overheads may be classified according to their nature and a number of other charactertics". Discuss this statement while classifying cost.

Q3. What is meant by allocation and apportionment? Distinguish between allocation and apportionment of overhead.

Q4. What basis you would adopt for apportionment of the following items of overhead expenses to different departments ?

(a) Power and light (b) depreciation on building

(c) Rent and Rates (d) Postage

(e) Indirect Wages.

Q5. Explain the different methods of re-apportionment of overheads.

*** ***** ***

UNIT 6: ABSORPTION OF OVERHEAD

UNIT STRUCTURE

6.1 Learning objectives

6.2 Introduction

6.3 Meaning of Overhead Absorption

6.4 Overhead Rates

6.5 Methods of Absorption Overhead

6.6 Under absorption and over absorption of Overheads

6.6.1 Causes of under and over absorption of Overhead

6.6.2 Methods of Treatment for Overhead Adjustment

6.7 Administration, Selling and Distribution Overheads

6.8 Let Us Sum Up

6.9 Further Reading

6.10 Answers to Check Your Progress

6.11 Model Questions

6.1 LEARNING OBJECTIVES

After going through this unit, you will be able to

- describe the meaning of overhead absorption
- discuss the overhead rates
- outline the methods of absorption overhead

6.2 INTRODUCTION

In the earlier unit we discussed about the overhead, now in this unit you will get a fair idea on the concept of absorption of overhead. Here we are going to discuss the meaning of overhead absorption. The overhead rates will also be discussed.

And at the end of the unit the different methods of absorption overhead will be discussed.

6.3 MEANING OF OVERHEAD ABSORPTION

Absorption of overhead is also termed as levy, recovery, or application of overhead. Cost absorption refers to the process of

absorbing all overhead costs allocated to apportioned over particular cost centre or production department by the unit produced. Accordingly, the distribution of the overhead cost to the cost centers or cost units is known as Overhead Absorption.

6.4 OVERHEAD RATE

The apportionment of overhead expenses is done by adopting suitable basis such as output, materials, prime cost, labour hours, machine hours etc. In order to determine the absorption of overhead in costs of jobs, products or process, a rate is calculated and it is called as “Overhead Absorption Rate” or “Overhead Rate.” The overhead rate can be calculated as below :

$$\text{Overhead Rate} = \frac{\text{Overhead Expenses}}{\text{Total Quantity or Value}}$$

Different overhead rates are applied based on the features and objectives of the business organization. The following are the important overhead absorption rates generally employed :

1) Actual Overhead Rate
2) Predetermined Overhead Rate
3) Blanket Overhead Rate
4) Multiple overhead Rate
5) Normal Overhead Rate
6) Supplementary Overhead Rate

Each of the above overhead absorption rates has been explained in the following pages :

1) Actual Overhead Rate : Actual overhead rate as otherwise called the historical rate. This rate is calculated by dividing the actual overhead absorbed by the actual quantity or value of the base selected for a particular period. Assuming that overhead rate is calculated on monthly basis, the following formula is expressed as:

$$\text{Actual Overhead Rate} = \frac{\text{Actual Overhead during the month}}{\text{Actual Quantity or value of the base for the month}} \times 100$$

2) Predetermined Overhead Rate : Predetermined overhead rate is determined in advance of actual production and the rate is computed by dividing the budget overhead for the accounting period by the budgeted base for the period. The formula is :

$$\text{Pre-determined Overhead Rate} = \frac{\text{Budgeted Overheads for the Period}}{\text{Budgeted base for the Period}} \times 100$$

3) Blanket Overhead Rate: Blanket overhead rate is also termed as Single Overhead Rate. A single overhead rate when computed for the entire factory is known as Blanket Rate. It is calculated as:

$$\text{Blanket Rate} = \frac{\text{Overhead of Entire Factory}}{\text{Total Quantum of the Base Selected}}$$

Single rate may be applied suitably in small concerns and only where a single product is manufactured.

4) Multiple Overhead Rate : Multiple overhead rates involves computation of separate rates for each production department, service department, cost centre, each product or line and for each production factor. The following formula is used for calculating multiple overhead rate :

$$\text{Multiple Overhead Rate} = \frac{\text{Overhead Cost Allocated and Apportioned to Each Cost Centre}}{\text{Corresponding Base}}$$

5) Normal Overhead Rate : Normal Overhead Rate is a predetermined rate calculated with reference to normal capacity. It is calculated as :

$$\text{Normal Overhead Rate} = \frac{\text{Normal Overhead}}{\text{Base at Normal Capacity}}$$

6) Supplementary Overhead Rates : These rates used to carryout adjustment between overhead absorbed and overhead incurred. These are used in addition to some other rates and is calculated as under :

$$\text{Supplementary Overhead Rates} = \frac{\text{Actual Overhead Incurred - Absorbed Overhead}}{\text{Base Unit or Hours}}$$



CHECK YOUR PROGRESS

Q1: Fill in the blanks:

a. Absorption of overhead is also termed as levy, recovery, or …… of overhead

b. Actual overhead rate as otherwise called the …….. rate

c. Predetermined overhead rate is determined in advance of …… production

d. Blanket overhead rate is also termed as …….. Rate.

e. …… is a predetermined rate calculated with reference to normal capacity

Q2: What are the important overhead absorption rates generally employed?

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.....

6.5 METHODS OF ABSORPTION OVERHEAD

There are number of methods applicable for computing overhead absorption rate. The following are the various methods of absorbing "Manufacturing Overhead" depending upon the suitable basis selected for the purpose:

1) Direct Material Cost Method
2) Direct Labour Cost Method
3) Direct Labour Hours Method
4) Prime Cost Method
5) Unit of Output Method
6) Machine Hour Rate Method

1) DIRECT MATERIAL COST METHOD :

Under this method, the rate of absorption is calculated on the basis of direct material cost method. The rate of manufacturing overhead absorption is determined by dividing the manufacturing overhead by the direct material cost. The result obtained the rate of absorption is expressed as percentage. Thus, the overhead rate is calculated by the following formula :

$$\text{Direct Material Percentage Rate} = \frac{\text{Factory Overheads}}{\text{Direct Material Cost}} \times 100$$



EXERCISE : 1

Manufacturing overhead budget for 2003 = Rs.20,000

Cost of direct materials = Rs.80,000

Calculation :

$$\text{Direct Material Percentage Rate} = \frac{20,000}{80,000} \times 100$$

$$= 25\%$$

2) DIRECT LABOUR COST METHOD:

Direct Labour Cost Method is also termed as Direct Wages Method. Under this method direct wage rate can be determined by dividing the estimated factory overhead cost apportioned by the predetermined direct wages, and the result obtained is expressed as a percentage. The following formula for calculating the percentage rate is :

$$\text{Percentage of Direct Labour Rate} = \frac{\text{Factory Overhead}}{\text{Direct Wages}} \times 100$$



EXERCISE : 2

Direct Wages paid in factory during the year 2003, = Rs. 10,000

Factory overhead during that the period was = Rs. 4,000

$$\text{Direct Labour Percentage Rate} = \frac{4,000}{10,000} \times 100 = 40\%$$

3) DIRECT LABOUR HOURS METHOD:

Under this method the rate is determined by dividing the production of Factory overheads by direct labour hours of each department. This method is designed to overcome the objections of direct labour cost method. This method is most suitable in such industries where the production is carried out manually or by skilled labours. Thus, the direct labour hour rate will be calculated by applying the following formula :

$$\text{Direct Labour Hour Rate} = \frac{\text{Factory Overhead}}{\text{Direct Labour Hour}}$$

4) PRIME COST METHOD :

Under this method, both direct material cost and direct labour cost are taken into account for determination of recovery rate. The actual or predetermined rate of factory absorption is computed by dividing actual or budgeted overhead expenses by the aggregate of direct material or direct labour cost of the department. The following formula is used for calculation of overhead recovery rate :

$$\text{Overhead Recovery Rate} = \frac{\text{Factory Overhead}}{\text{Prime Cost}} \times 100$$



EXERCISE : 1

You are required to find out (I) Direct Material Cost Rate (2) Direct Labour Cost Rate (3) Direct Labour Hours and (4) Prime Cost rate from the following particulars :

Total Overhead for the period	Rs. 25,000
Total direct labour cost (Direct wages)	Rs. 8,000
Total materials used or Direct material cost	Rs. 10,000
Total direct labour hours	Rs. 2,000

Solution : 3

1) Direct Material Cost Rate $= \frac{\text{Factory Overhead}}{\text{Direct Material Cost}} \times 100$

$$= \frac{25000}{10000} \times 100 = 250\%$$

2) Direct Labour Cost Rate $= \frac{\text{Factory Overhead}}{\text{Direct Wages}} \times 100$

$$= \frac{25000}{8000} \times 100 = 312.5\%$$

3) Direct Labour Hours Rate $= \frac{\text{Factory Overhead}}{\text{Direct Labour Hours}} \times 100$

$$= \frac{25000}{2000} \times 100 = 1250\%$$

4) Prime Cost Rate $= \frac{\text{Factory Overhead}}{\text{Prime Cost}} \times 100$

$$= \frac{25000}{10000 + 8000} \times 100$$

$$= \frac{25000}{18000} \times 100 = 138.88\%$$

5. UNIT OF OUTPUT METHOD:

This method is also termed as Production Unit Method of Cost Unit Rate method. Under this method absorption rate is determined on the basis of number of units produced is known as Cost Unit Rate. The

recovery rate is calculated by dividing the actual or budgeted factory overheads by the number of cost units produced. The formula is :

$$\text{Cost Unit Rate} = \frac{\text{Factory Overhead}}{\text{No. of Units Produced}}$$

This method is most suitable in such industries where the production of same grade is carried out.



Expended:
Spent

6) MACHINE HOUR RATE:

Machine hour rate means the cost of expenses incurred in running a machine for one hour. It is one of the scientific methods of absorbing factory expenses where the process of manufacturing are carried out by machines. Under this method, overhead costs are allocated on the basis of the number of hours a machine or machines are used for a particular job. According to the Institute of Cost and Management Accountants, England a machine hour rate is "an actual or Predetermined rate of cost apportionment or overhead absorption, which is calculated by dividing the cost to be apportioned or absorbed by the number of machine hours expended or to expended."

The machine hour rate is determined by dividing the amount of overhead cost to be apportioned or absorbed by the number of machine hours. Machine hour rate can be calculated as below :

$$\text{Machine Hour Rate} = \frac{\text{Factory Overhead}}{\text{Machine Hours}}$$

Calculation of Machine Hour Rate : The following steps are required for computing the machine hour rate :

1) Identify the overhead expenses relating to a specific machine or group of machine in order to require for computing machine hour rate.
2) Each machine or group of machine treated as a cost centre.
3) Manufacturing overhead or machine expenses are grouped into two types :

a) Fixed or Standing Charges

b) Variable Machine Expenses.

a) Fixed or Standing Charges : Fixed or Standing Charges which remain constant irrespective of the use of machine. For example, rent, insurance charges, rates, supervision etc.

b) Variable Machine Expenses : These expenses are variable with use of the machine. For example, power, depreciation repairs etc.

4) An hourly rate of fixed or standing charges will be calculated by totalling of fixed charges and dividing by the number of normal hours worked by machine.

5) Normal working hours are calculated by adding the cost relating to non-productive time i.e. normal ideal time for maintenance and setting up etc.

6) Separate hourly rate for each machine expenses will be calculated.

7) The total of the standing charges rate and machine expenses rates per hour will give the machine hour rate.

Basis for apportionment of Machine Expenses

The following bases of apportionment of different expenses are required to be considered for the calculation of machine hour rate :

Expenses	*Basis*
Fixed or Standing Expenses :	
1) Rent and Rates	*Floor area occupied by each machine.*
2) Heating and Lighting	*No. of points used or Floor area or heating any machine*
3) Supervision	*Time spent on each machine*
4) Lubricating Oil and Consumable Stores	*Machine hours, Past experience or Capital value.*
5) Insurance	
Machine Expenses :	
1. Depreciation	*Value of Machine*
2. Power	*Horse power of each machine*
3. Repairs	*Cost of repairs spread over its working life.*

Advantages

1) It helps to measure the relative efficiency of different machines.
2) It facilitates comparison of cost of operating different machines.
3) It helps to ascertain idle time of machines relating to non-productive time.
4) It is the most desirable scientific method, where the time factor is taken into account.

Disadvantages

1) It involves more clerical labour in determining the number of machine hours worked.
2) It does not consider where the expenses not proportional to the working hours of machines.
3) It is very difficult to measure the machine hours where the works are completed without operating any machinery.

EXERCISE : 4



Calculate machine hour rate of Machine X

	Rs.	
Consumable stores	600	
Repairs	800	
Heat and light	360	
Rent	1,200	
Insurance of building	4,800	
Insurance of machines	800	
Depreciation of machines	700	
Room services	60	
General charges	90	
Normal working hours	10,000	hours
Area of sq. feet.	100	
Book value of machines	12,000	

Solution : 4

Computation of Machine Hour Rate for Machine X

Particulars	*Total per hour* Rs.	*Rate per hour* Rs.
Standing Charges :		
Consumable stores	600	
Heat and light (360 × 100/600)	60	
Rent (1200 × 100/ 600)	200	
Insurance of building (4800 × 100/600)	800	
Insurance of Machine (800 ×12000 / 32000)	300	
Room Service (60 ×100 / 600)	10	
General charge (90 × 100 / 600)	15	
Total Standing charges	1, 985	
Standing charges per hour $\frac{1,985}{10,000}$ =		0.199
Machine Expenses :		
Repairs (800 / 10,000)		0.080
Depreciation of machines (135.48 / 10,000)		0.014
Machine Hour Rate		0.293

Working Notes

1) Heat and light, rent, insurance of building, room service and general charges have been distributed on the basis of floor area.

2) Depreciation of machine has been calculated on the basis of book value of machines and working hours, i.e. 10,000 × 12000 (or) 120 : 500 = 6 : 25.

   700 × 6/ 31 = Rs. 135.48.

3) Insurance of machine has been apportioned on the basis of book value of machines.



CHECK YOUR PROGRESS

Q3: Fill in the blanks

a. Under Direct Material Cost Method, the rate of absorption is calculated on the basis of …… cost method.

b. Direct Labour Cost Method is also termed as …….. Method.

c. Direct Labour Hours Method is designed to overcome the objections of …….. cost method

d. Under Prime Cost Method, both …….. cost and ……..cost are taken into account

e. Unit of Output Method is also termed as …… of Cost Unit Rate method

f. Machine hour rate means the cost of expenses incurred in running a machine for ……hour.

6.6 UNDER ABSORPTION AND OVER ABSORPTION OF OVERHEADS

Absorption of overhead may be based either on the actual rate or predetermined rate. If the actual rates are used, the costs having been actually incurred and overhead absorbed are equal. But in the case of predetermined rates, the costs have been determined in advance of incurrence of the overhead expenditure. This may lead to difference of overhead incurred and overhead absorbed. Such a difference of Overhead is said to be under absorption of overhead or over absorption of overhead.

According, the term over absorption means that the amount of overhead absorption is more than the actual is said to be over absorption of overhead.

The term under absorption of overhead means that the amount of overhead absorption is less than the actual overhead incurred is said to be under absorption of overhead.

6.6.1 Cause of Under and Overhead Absorption of Overhead

The following are some of the reasons for over and under absorption of overheads:

1) Actual overhead cost incurred may be more or less than the budgeted overhead.
2) Actual machine hours, labour hour and output may be lower or higher than the budgeted or predetermined base.
3) Seasonal fluctuations.
4) Wrong computation of overhead absorption rate, output and machine hours.
5) Under or Over utilization of production capacity.

6.6.2 Methods of Treatment for Overhead Adjustment

The following three important methods may be adopted for overhead adjustment and disposal of over or under absorption of overheads :

1) Carrying Over of Overheads
2) Application or use of supplementary rates
3) Write off to Costing Profit and Loss Account.

1) Carrying Over of Overheads : Under this method, the amount of over or under absorption is carry forward to the next year. This method may be adopted in situation where the normal business cycle extends for more than one year.

2) Application of Supplementary Rate : Under this method, the supplementary rate is adopted when the amount of under or over absorbed overheads is quite large. Supplementary rate is calculated by dividing the amount of under or over absorbed overheads by the actual base.

$$\text{Supplementary Rate} = \frac{\text{Amount of Under or Over Absorbed Overheads}}{\text{Actual Base}}$$

The supplementary rate may be used as positive supplementary rate or negative supplementary rate. In the case of positive supplementary rate it is intended to add under absorbed overhead to cost of production. A negative rate, however, adjusted the cost by deducting the amount of over absorbed overhead.

3) **Write off to Costing Profit and Loss Account:** Under this method, if the amount of under or over absorbed overhead is small it may be written off to Costing Profit and Loss Account. If due to some abnormal factors, the amount of under or over absorbed is large it should be transferred to profit and Loss Account.

6.7 ADMINISTRATION, SELLING AND DISTRIBUTION OVERHEADS

Administration Overhead: Administrative overhead are incurred in general for management to discharge its functions of planning, Organizing, controlling, co-ordination and directing. These expenses are not specifically incurred. Thus, the overheads are collected under a standing order number, allocated and apportioned to various cost centers and units.

The administrative overhead is absorbed under any one of the following methods :

1) Transferring to Profit and Loss account
2) Apportioning to Works Overheads
3) Apportioning to selling Overheads.

Selling and Distribution Overhead: Selling and distribution expenses are incurred for promoting sales, securing order, creating demand and distribution of products or output from producers to the ultimate consumers. The incidence of selling and distribution overheads depends on external factors such as distance of market, nature of competition etc. which are beyond the control of management. They are dependent upon customer's behaviour, liking etc. These expenses are the nature



Amenable :
Open to being acted upon in a certain way.

of policy costs and hence not amenable to control. The overhead rate of selling and distribution overheads can be determined by any one of the following basis:

a) A rate per article or unit of production

b) A percentage on the selling price of each article or production unit.

c) A percentage on the factory cost.



CHECK YOUR PROGRESS

Q4: What do you mean by under absorption and over absorption of overheads?

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Q5. What do you mean by selling and distribution overhead and administration overhead?

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6.8 LET US SUM UP

In this unit, we discussed on the following:

- The distribution of the overhead cost to the cost centers or cost units is known as Overhead Absorption.
- In order to determine the absorption of overhead in costs of jobs, products or process, a rate is calculated and it is called as "Overhead Absorption Rate" or "Overhead Rate."
- The following are the important overhead absorption rates generally employed :

  1) Actual Overhead Rate

2) Predetermined Overhead Rate
3) Blanket Overhead Rate
4) Multiple overhead Rate
5) Normal Overhead Rate
6) Supplementary Overhead Rate

- The following are the various methods of absorbing "Manufacturing Overhead" depending upon the suitable basis selected for the purpose:
  1) Direct Material Cost Method
  2) Direct Labour Cost Method
  3) Direct Labour Hours Method
  4) Prime Cost Method
  5) Unit of Output Method
  6) Machine Hour Rate Method
- Over absorption means that the amount of overhead absorption is more than the actual is said to be over absorption of overhead.
- Under absorption of overhead means that the amount of overhead absorption is less than the actual overhead incurred is said to be under absorption of overhead.
- Administrative overhead are incurred in general for management to discharge its functions of planning, organizing, controlling, co-ordination and directing.
- Selling and distribution expenses are incurred for promoting sales, securing order, creating demand and distribution of products or output from producers to the ultimate consumers.



6.9 FURTHER READINGS

1. Management Accounting: Khan & Jain
2. Cost Accounting : Hongren
3. Cost & Management Accounting: Jain & Narang
4. Cost Accounting: B. Banerjee

6.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: a. application b. historical c. Normal Overhead Rate d. Single Overhead e. actual production

Ans to Q2: The important overhead absorption rates generally employed are as follows :

1) Actual Overhead Rate
2) Predetermined Overhead Rate
3) Blanket Overhead Rate
4) Multiple overhead Rate
5) Normal Overhead Rate
6) Supplementary Overhead Rate

Ans to Q3: a. direct material cost

b. Direct Wages

c. direct labour cost

d. material cost and direct labour

e. Production Unit Method

f. one

Ans to Q4: Over absorption means that the amount of overhead absorption is more than the actual is said to be over absorption of overhead.

Under absorption of overhead means that the amount of overhead absorption is less than the actual overhead incurred is said to be under absorption of overhead.

Ans to Q5: Selling and distribution expenses are incurred for promoting sales, securing order, creating demand and distribution of products or output from producers to the ultimate consumers. **Administrative overhead** are incurred in general for management to discharge its functions of planning, organizing, controlling, co-ordination and directing.



6.11 MODEL QUESTIONS

Q1. Explain absorption of overhead.

Q2. What do you understand by overhead rates.

Q3. Briefly explain the different kinds of overhead absorption rates.

Q4. What do you understand by machine hour rate? How it is computed?

Q5. What do you mean by absorption and over absorption of overhead? Brief explain the methods of treatment of under or over absorption of overheads.

Q6. Compute Machine hour rate from the following data :

Cost of machine Rs. 1,10,000

Installation charges Rs. 10,000

Estimated scrap value (after 15 years) Rs. 5,000

Rent and rates for the shop Rs. 200 P.M.

General lighting for the shop Rs. 300 P.M.

Insurance premium for the machine Rs. 960 P.a.

Repairs and maintenance Rs. 1000 P.a.

Power consumption 10 units per hour

Rate of power per 100 units Rs. 20

Estimated working hours per annum 2200 which include setting up time of 200 hours.

Shop supervisor's salary per month Rs. 600

The machine occupies d of the total area of the shop. The shop supervisor is expected to devote 1/5the

of his time for supervising the machine.

[**Ans :** Machine hour rate : Rs 7.95]

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UNIT 7: JOB AND CONTRACT COSTING

UNIT STRUCTURE

7.1 Learning objectives

7.2 Introduction

7.3 Meaning and Definition of Job Costing

- 7.3.1 Features of Job Order Costing
- 7.3.2 Objectives of Job Order Costing
- 7.3.3 Advantages and Disadvantages of Job Costing
- 7.3.4 Pre-requisites for Job Costing
- 7.3.5 Job Costing procedure

7.4 Concept of Contract Costing

- 7.4.1 Features of Contract Costing
- 7.4.2 Recording Cost on Contract or Costing procedure
- 7.4.3 Treatment of Profit or loss on Contracts a/c

7.5 Let Us Sum Up

7.6 Further Reading

7.7 Answers to Check Your Progress

7.8 Model Questions.

7.1 LEARNING OBJECTIVES

After going through this unit, you will be able to

- discuss the meaning and definition of Job Costing
- describe Batch costing and contract costing
- explain the Elements of contract cost

7.2 INTRODUCTION

In this unit, we are going to discuss job costing and contract costing. In job costing costs are collected and accumulated according to jobs, contracts, products or work orders. Methods of Costing are broadly classified

into (1) Specific Order Costing and (2) Operating Costing. The term Specific Order Costing refers to the basic costing method which is applicable where the work consists of separate contracts, jobs or batches. The specific order costing is further classified into Job Costing, Batch Costing and Contract Costing. Again, Contract Costing is a special type of Job Costing where the unit of cost is a single contract.

This unit will enlighten you with more details on these aspects.

7.3 MEANING AND DEFINITION OF JOB COSTING

Job Costing is that form of specific order costing which applies to industries which manufacture products or render services against specific orders such as civil contracts, construction works, automobile repair shop, printing press, machine tool manufacturing. Ship building and furniture making etc.

DEFINITION OF JOB COSTING : The term Job Costing may be defined as "in Job Costing, costs are collected and accumulated according to jobs, contracts, products or work orders. Each job is treated as a separate entity for the purpose of costing. The material and labour costs are complied through the respective abstracts and overheads are charged on predetermined basis to arrive at the total cost."

7.3.1 Features of Job order Costing

Some of the important features of this method of costing are given below:

1. Works or production is undertaken against the order of customers.
2. Production is not continuous process because each job is accepted by work order basis and not for stock or future sales.
3. Each job is treated as a separate entity for the purpose of costing.
4. There is no uniformity in the flow of production because of different production process.

5. Costs are collected and accumulated after the completion of each job or products in order to find out profit or loss on each job.
6. The jobs differ from each other requiring separate work in progress maintained for each job.

7.3.2 Objectives of Job Order Costing

The following are the important objectives of Job Costing:

1) Job Costing provides accurate Cost information for each job or product.
2) It enables management to reduce the cost by making comparison of each element of actual costs with estimated ones.
3) It helps the management to measure the operational efficiency and inefficiency for each job or works to take effective decision making.
4) This method enables the management to provide proper valuation of work in progress.

7.3.3 Advantages and disadvantages of Job Costing

The following are the various advantages of job order costing:

1) It helps the management in identifying profitable and unprofitable jobs.
2) It provides the required information for the preparation of estimates while submitting quotations for similar jobs.
3) It facilitates effective cost control by evaluating operational efficiency of each job or work.
4) It helps management to fix the selling price of each order or each job.
5) Spoilage and defective works can be easily identified with each job or person.
6) It facilitates the application of cost-plus formula of pricing for large contracts.

7) It facilitates the introduction of budgetary control of overheads, since the overheads are charged on predetermined basis to arrive at the total costs.

Disadvantages of job costing

There are some disadvantages of job costing cited below:

1) This method is relatively more labour intensive. Thus, it is an expensive method.
2) With the increase in clerical work, there are chances for committing more errors and mistakes.
3) Job Costing is essentially historical costing. It does not provide for the control of cost unless it is combined with estimated or standard costing system.
4) It is difficult to make cost comparison among different jobs because each job has its own features.

7.3.4 Pre-requisites for Job Costing

In order to ensure the successful application of the Job Costing method, it is essential to consider the following pre-requisites:

1) A sound production planning and controlling system.
2) An appropriate time booking and time keeping system to avoid idle time.
3) Maintenance of necessary records with regard to job tickets, work order, operation tickets, bills of materials and tools requirements etc.
4) Appropriate methods of overhead apportionment and absorption rate.
5) Effective designing and scheduling of production.

7.3.5 Job Costing Procedure

The procedure of Job costing that may be adopted for costing purposes is briefly given below:

1) Customer's Enquiry: Production or job order is executed on the basis of enquiries received from the customers. The routine enquiries may be related to expected estimated costs

to be incurred, quality to be maintained and duration for production planning etc.

2) **Quotation for the Job:** As per the customer's enquiry and specifications of work or job, a responsible person is preparing the estimates or quotation and price is fixed for a specific job. And the same is conveyed to the customer appropriately.
3) **Customer's Order:** If the quotation is satisfactory to the customer, he may place an order.
4) **Production Order:** As soon as an order is received, the Production Planning and Controlling Department will make out a production order. It is in the form of instructions issued to the foremen to execute the order and to control its physical progress. It contains all the information regarding the production. Accordingly the production control department assigns a production order number for each order or job.
5) **Cost Accumulation:** The Cost Accountant is responsible for preparing a Job Cost Card on the basis of production order. It is also termed as "Job Cost Sheet," For each job the costs are collected and recorded under separate production order number. The sources of collection of costs are:
    a) Direct material can be identified or obtained either from Bill of Materials or Requisition Slips or Invoices in the case of direct purchases.
    b) Wages paid to direct labour is associated with a job and can be identified or recorded with the help of Time Sheet, Job Cards and Wage Analysis Sheet.
    c) Direct expenses are identified on the basis of direct expenses vouchers.
    d) Overheads are apportioned on some predetermined basis. It can be accumulated with the use of standing order numbers or cost account numbers.

6) **Completion of Jobs:** After the completion of a job, the final report is sent to the costing department with regard to charging of material, labour, and overheads which are to be recorded on the job cost sheet. The actual cost recorded under each element of cost is ascertained to find out the total cost. Any deviations from the estimated costs are also noted to take the corrective actions.

7) **Profit or Loss on job:** It is determined by comparing the actual cost with the price obtained.



EXERCISE : 1

From the following details, you are required to calculate the cost of Job No. 215 and find out the price to give a profit of 25% on total cost

Materials Cost at Rs. 2000

Dept.	Wages
A	- 30 hours @ Rs. 3 Per hour
B	- 20 hours @ Rs. 2 Per hour
C	- 10 hours @ Rs. 5 Per hour

Overhead expenses for three departments were estimated as follows:

Variable Overheads

Dept A - Rs. 1,000 for 1,000 labour hours
B - Rs. 6,000 for 3,000 labour hours
C - Rs. 2,000 for 400 labour hours

Fixed Overheads

Estimated at Rs. 10000 for 5000 normal working hours.

Solution : 1

Job Cost Sheet (Job. No. 215)

	Amounts Rs.	*Amounts Rs.*
Direct materials		*2000*
Wages		
Dept. A = 30 hrs x Rs. 3	90	
B = 20 hrs × Rs. 2	40	
C = 10 hrs × Rs. 5	50	180
Variable Overheads		
Dept. A = 30 x Rs. 1,000 / 1,000 hrs	30	
Dept. B = 20 x Rs. 6,000 / 3,000 hrs	40	
Dept. C = 10 x Rs. 2,000 / 400 hrs	50	120
Fixed Overheads		
60 hrs x Rs. 10,000 / 5,000 hrs		120
Total Cost		**2420**

Profit 25% on total cost $\frac{25}{100} \times 2{,}420 = 605$

Selling Price = (605+2420)= Rs. 3,025



CHECK YOUR PROGRESS

Q1. Mention any two advantages and disadvantages of job costing.

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Q2. Write two objectives of job costing.

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7.4 CONCEPT OF CONTRACT COSTING

Contract Costing is a special type of job costing where the unit of cost is a single contract. Contract itself is a cost centre and is executed under the customer's specifications. Contract Costing is defined by the ICMA Terminology as "that form of specific order costing which supplies where work is undertaken to customer's special requirements and each order is of long duration. The work is usually of constructional nature."

Contract Costing is also termed as "Terminal Costing". The principles of job costing are applicable to contract costing and are used by such concerns of builders, public works contractors, constructional and mechanical engineering firms and ship builders etc. undertake work on a contract basis.

7.4.1 Features of Contract Costing

The following are the special features of Contract Costing:

1) The cost unit is a specific contract.
2) Each contract takes a long time to complete.
3) The work being of a constructional nature, the same is executed at customer's site, as per his specifications.

4) Bulk of the materials are purchased and delivered direct to the contract site or obtained from the central stores through the requisition slips.
5) Generally specific portions of the contract are given to sub-contractors.
6) Most of costs which are normally treated as indirect can be identified specifically with a particular contract and are charged to it as direct costs.
7) Overheads constitute only a very small proportion of the cost of the contract. However, indirect costs consist mainly of administrative cost of the central office.
8) Scale of operations and cost control become difficult due to theft of materials, labour time utilization, pilferages etc.
9) The pay roll is prepared either at the site or at a central administrative office.

7.4.2 Recording Cost on Contract or Costing Procedure

In contract costing, costs are allocated, collected and accumulated according to the contract works. Each contract is treated as a separate entity in which each contract account may be maintained separately or in general ledge itself for the purpose of costing and cost control. The following are the costing procedures for different costs relating to the important expenses:

A) Materials:

(i) Contract Account is debited with the following transactions relating to materials:

1) Bulk of materials is purchased for a specific contract from suppliers.
2) Materials obtained from contractor's central stores through the requisition slips.
3) Materials transferred from one contract to another contract.
4) Value of materials remaining unutilized on site during the accounting year.



Extraneous:
Not essential

(ii) Contract Account is credited with the following transactions relating to materials:

1) Materials returned under Materials Return Note.
2) Sale of materials at site on account of some extraneous reasons.
3) Materials transferred to other contracts.
4) Materials stolen or destroyed by fire.
5) On completion, if a part of materials received from the stores are returned.

(iii) Any profit or loss on materials account is transferred to the Profit and Loss account:

1) Sale price is different from the cost price.
2) Resulting from the sale of materials at site.
3) Resulting from the materials stolen or destroyed by fire.

B) Labour: In the case of contract costing, all labour engaged at site and the salaries and wages paid to the labour and workers are treated as direct labour cost and debited to Contract Account.

C) Direct Expenses: Most of the expenses like electricity, insurance, telephone, postage, sub-Contracts, Architect's fees etc. can also be treated as direct cost, is debited to Contract Account.

D) Overhead Cost: In the case of contract costing, overheads incurred only an insignificant part of the total cost of contract account. The nature office and administrative expenses of a particular contract may be apportioned on suitable basis.

E) Plant and Machinery: For the use of plant and machinery in a particular contract , the treatment of plant costs in any of the two ways :

a) Where a plant has been specially purchased for a particular contract and will be exhausted at site, the Contract Account should be debited with the cost of

the plant. On the completion of the contact the residual or written down value as shown by the Plant Ledger will be credited to the Contract Account.

b) When the plant and machinery are required to the contract site only for a shorter period, the contract account should be debited with the notional amount of depreciation based on some estimates to be charged to the Contract Account.



Notional:
Imaginary

F) Sub- Contracts: Sub-Contracts refer to some portions of the specified work connected with the main contract, to be done by the sub-contractor. For example, the work of painting, special flooring, steel work etc. may be given to the sub-contractors. Usually, sub-contract has been undertaken on cost-plus basis and the cost of such sub-contract should be treated as a direct charge and is debited to Contract Account.

G) Work Certified: In the case of the small contracts which are completed within the shorter period, the contractor pays the contract price on the completion of the contract. In the case of contracts of long duration, the contract agreement provides interim payment to the contractor. It is done on the basis of Certificates issued by the contractee's Surveyor, Architect or Engineer. At the same time Contractee usually does not pay to the full value of the work certified. A portion of amount say 20% or 30% thereof shall be retained by the Contractee. The money so retained is called as "Retention Money." This retention money is intented to ensure that the contractor to complete the work as scheduled and according to specifications. Money retained could also be used for imposing penalties for faulty or delayed work. This amount will be settled on the completion of the contract.

H) Work Uncertified : If the progress of a work is unsatisfactory or the work has not reached the stipulated stage, though certain work is completed, such work does not qualify for a

certificate by the Contractee's Architect or Surveyor and such work is termed as "Work Uncertified." It is valued at cost and credited to contract Account and debited to Work in Progress Account.

i) **Work in Progress :** Work in progress includes the amount of work certified and the amount of work uncertified. The work in progress account will appear on the asset side of the balance sheet. The amount of cash received from the contractee and reserved for contingencies will be deducted out of this amount.

7.4.3 Treatment of Profits or Loss on Contracts A/c.

The accounting treatment of profits or loss of contracts in the following stages:

a) Profit or Loss on incomplete contracts

b) Profits or Loss on completed contracts

A) Profit or Loss on Incomplete Contracts

To determine the profits to be taken to Profit and Loss Account, in the case of incomplete contracts, the following situations may arise:

i) **Completion of Contract is Less than 25% :** In this case, no profit should be taken to profit and Loss Account.

ii) **Completion of Contract is upto 25% or more but Less than 50% :** In this case, one-third of the notional profit, reduced in the ratio of cash received to work certified, should be transferred to profit and Loss Account. It can be expressed as :

$$\frac{1}{3} \times \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

iii) **Completion of Contract is upto 50% or more than but less than 90%:** In this case, two-third of the notional profit, reduced in the ratio of cash received to work certified, should

be transferred to Profit and Coss Account. It can be expressed as :

$$\frac{2}{3} \times \text{National Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

iii) Completion of Contract is upto 90% or more than 90% i.e., it is nearing completion: In this case, the profit to be taken to Profit and Loss Account is determined by determining the estimated profit and using any one of the following formula:

a) $$\text{Estimated Profit} = \frac{\text{Work Certified}}{\text{Contract Price}}$$

b) $$\text{Estimated Profit} = \frac{\text{Work Certified}}{\text{Contract Price}} \times \frac{\text{Cash Received}}{\text{Work certified}}$$

(or)

$$\therefore \text{Estimated Profit} = \frac{\text{Cash Received}}{\text{Contract Price}}$$

c) $$\text{Estimated Profit} = \frac{\text{Cost of Work to Date}}{\text{Estimated Total Cost}}$$

d) $$\text{Estimated Profit} = \frac{\text{Cost of Work to date}}{\text{Estimated Total Cost}} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

e) $$\text{Normal Profit} = \frac{\text{Work Certified}}{\text{Contract Price}}$$

Escalation Clause: This clause is often provided in contracts as safeguard against any likely changes in price or utilization of material and labour. Such a clause in a contract would provide that in the event of a specified contingency happening, the contract price would be suitably enhanced by an agreed formula

or factor. This clause is particularly necessary where the prices of a certain raw material are likely to rise, where labour rates are anticipated to increase, or where the quantity of material and labour hours cannot be assessed properly or estimated unless the job has progressed sufficiently.

Cost-Plus Contract: These contracts provide for the payment by the contractee of the actual cost of manufacturing plus a stipulated profit. The profit to be added to the cost may be fixed amount or it may be a stipulated percentage of cost. These contracts are generally entered into when at the time of undertaking of a work, it is not possible to estimate it's cost with reasonable accuracy due to unstable condition of material, labour etc. or when the work is spread over a long period of time and prices of materials, rates of labour etc. are liable to fluctuate.

(B) Profits or Loss on Completed Contracts

When a contract is completed, the overall profit or loss on the contract is transferred to the Profit and Loss Account.



EXERCISE : 2

The following are the expenses on a contract which commences on 1st Jan. 2009

Materials purchased	1,00,000
Materials on hand	5,000
Direct wages	1,50,000
Plant issued	50,000
Direct expenses	80,000

The contract price was Rs. 15,00,000 and the same was duly received when the contract was completed in August 2009. Charge indirect expenses at 15% on wages, provide Rs. 10,000 for depreciation on plant and prepare the contract account and the contractee's account.

Solution : 2

Contract Account

Particulars	Amount Rs.	Particulars	Amount Rs.
To Materials Purchased	1,00,000	By Materials on hand	5000
To Direct Wages	1,50,000	By Plant on hand	
To Direct Expenses	80,000	(Rs. 50,000 — 10,000)	40,000
To Indirect Expenses		By Contractors A/c	
(15% on Wages)	22,500	(Contract Price)	15,00,000
To depreciation on Plant	10,000		
To Profit & Loss A./c	11,82,500		
	15,45,000		15,45,000

Contractee's Account

Particulars	Amount Rs.	Particulars	Amount Rs.
To Contract A/c	15,00,000	By Bank	15,00,000
	15,00,000		15,00,000



CHECK YOUR PROGRESS

Q2. Write true or false for the following statements:

(i) Contract costing is also termed as balance ..... costing. (True/False)

(ii) Escalation clause is provided as safeguard against any changes in price of labour. (True/False)

(iii) When a contract is started, the overall profit or loss on the contract is transferred to Profit and Loss account. (True/False)



7.5 LET US SUM UP

In this unit we have discussed job costing, its advantages and disadvantages. We have also discussed contract costing, its special

features and how to record cost on contract costing procedure. There is a detailed discussion on definition, features and job order costing besides its advantages and disadvantages. Similarly, an attempt was made to familiarize you to contract costing with details about its meaning and special features. A few illustrations have been added in order to have greater clarity to these concepts.



7.6 FURTHER READING

1. Management Accounting: Khan & Jain
2. Cost Accounting : Hongren
3. Cost & Management Accounting: Jain & Narang
4. Cost Accounting: B. Banerjee



7.7 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1: Advantages:

1) It helps the management in identifying profitable and unprofitable jobs.
2) It provides the required information for the preparation of estimates while submitting quotations for similar jobs.

Disadvantages:

1) This method is relatively more labour intensive. Thus, it is an expensive method.
2) With the increase in clerical work, there are chances for committing more errors and mistakes.

Ans to Q2: Objectives:

1) Job Costing provides accurate Cost information for each job or product.
2) It enables management to reduce the cost by making comparison of each element of actual costs with estimated ones.

Ans to Q3: (i) False, (ii) True, (iii) True



7.8 MODEL QUESTIONS

Q1. What do you understand by Contract Costing?

Q2. Explain the essential features of Contract Costing?

Q3. Explain the important costing procedure of Contract Costing?

Q4. Write short notes on:

a) Sub-Contracts

b) Work Certified

c) Cost-plus contract

d) Escalation clause

e) Work Uncertified

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REFERENCES (FOR ALL UNITS)

1. Banerjee(2013);*Cost Accounting: Theory and Practice*; PHI Learning Pvt Ltd; New Delhi
2. Lal J & Srivastava S (2013), *Cost & Management Accounting*; Mcgraw Higher Ed
3. Jain P K & Khan MY(2017); *Management Accounting*,7edition Mcgraw Higher Ed, India
4. Narang K.L. & Jain S.P.(2015), *Cost Accounting*, Kalyani Publications
5. Narang K.L. & Jain S.P(2015), *Cost And Management Accounting,*