Semester -V

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17PAU503A	**SEC 3 - APPLIED COST ACCOUNTING**	**5**	**1**	**-**	**4**

SCOPE

Applied Cost Accounting represents the concepts on Costing, Material Control, Overhead Costing, Job Costing and Contract Costing. This paper gives the basic aspects of tools and techniques of Inventory Control, Batch Costing, Process Costing and Job Costing.

OBJECTIVES

- To familiarize students with the various concepts in Costing.
- To make the students to understand the elements of Cost.
- To enhance the students knowledge on Overhead Costing.

UNIT I

Introduction - Meaning - Objectives and Advantages of Cost Accounting - Difference between Cost Accounting and Financial Accounting - Cost Concepts and Classifications - Elements of Cost - Installation of a Costing System - Role of a Cost Accountant in an Organisation - Preparation of Cost Sheet in Lien with Cost Accounting Standards.

UNIT II

Elements of Cost: Material and Labour - Materials - Material/Inventory Control Techniques - Accounting and Control of Purchases - Storage and Issue of Materials - Methods of Pricing of Materials Issues - FIFO – LIFO - Simple Average - Weighted Average - Replacement - Standard Cost - Treatment of Material Losses - Labour - Accounting and Control of Labour Cost - Time Keeping and Time Booking - Concept and Treatment of Idle Time - Over Time - Labour Turnover and Fringe Benefits - Methods of Wage Payment and the Incentive Scheme - Halsey, Rowan, Taylor's Differential Piece Wage.

UNIT III

Elements of Cost - Overheads - Classification - Allocation - Apportionment and Absorption of Overheads - Under and Over absorption - Capacity Levels and Costs - Treatments of Certain Items in Costing like Interest on Capital - Packing expenses - Bad debts - Research and Development Expenses - Activity Based Cost Allocation.

UNIT IV

Methods of Costing - Unit costing - Job costing - Contract costing - Process costing (process losses, valuation of work in progress - Joint and by-products) - Service costing (only transport).

UNIT V

Book Keeping in Cost Accounting - Integral and Non-Integral Systems - Reconciliation of Cost and Financial Accounts

Note: - Distribution of Marks: Theory- 20% and Problems -80% respectively.

SUGGESTED READINGS:

TEXT BOOKS

1. Jain, S.P., & Narang, K.L. (2014). *Cost Accounting: Principles and Methods* (12th ed.). Ludhiana: Kalyani Publishers.

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1. Charles T. Horngren, Srikant M. Datar, & Madhav V. Rajan. (2010). *Cost Accounting, A Managerial Emphasis* (13th ed.). New Delhi: Pearson Education.
2. Drury, & Colin. (2012). *Management and Cost Accounting* (8th R.ed.). New Delhi: Cengage Learning.
3. Jawahar Lal. (2013). *Cost Accounting* (5th ed.). New Delhi: McGraw Hill Education.
4. Nigam, B.M. Lall., & Jain, I.C. (2009). *Cost Accounting Principles and Practice* (1st ed.). New Delhi: PHI Learning.
5. Rajiv Goel. (2013). *Cost Accounting* (1st ed.). Mumbai: International Book House.
6. Singh, & Surender. (2014). *Cost Accounting* New Delhi: Scholar Tech Press.
7. Arora, M.N. (2013). *Cost Accounting – Principles and Practice* (12th ed.)., New Delhi: Vikas Publishing House.
8. Maheshwari, S.N., & Mittal, S.N. (2012). *Cost Accounting: Theory and Problems*. New Delhi: Shri Mahavir Book Depot.
9. Iyengar, S.P, (2005). *Cost Accounting* (10th ed.). New Delhi: Sultan Chand and Sons.
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UNIT I

SYLLABUS

Introduction: Meaning- Objectives and Advantages of Cost Accounting- Difference Between Cost Accounting and - Cost Concepts and Classifications- Elements of Cost- Installation of a Costing System - Role of a Cost Accountant in an Organization- Preparation of Cost Sheet

INTRODUCTION TO COST ACCOUNTING

Cost:

The word cost is used very often in our day –to –day affairs. The committee on terminology, American institute of certified public accountants defined as:

"Cost is the amount, measured in money, of cash expended or other property transferred, capital stock issued, services performed, or liability incurred, in consideration of goods or services received or to be received".

Costing:

It is referred to as classifying, recording and appropriate allocation of expenditure for the determination of the costs of products or services".

Cost Accounting:

The institute of cost and works accountants, India defines" cost accounting is the technique and process of ascertainment of costs. Cost accounting is the process of accounting for costs, which begins with recording of expenses or the bases on which they are calculated and ends with preparation of statistical data".

Uses of Cost, financial and management accounting:

Cost Accounting is a branch of accounting, which has been developed because of the limitations of Financial Accounting from the point of view of management control and internal reporting.

Financial accounting performs admirably, the function of portraying a true and fair overall picture of the results or activities carried on by an enterprise during a period and its financial position at the end of the year.

Also, on the basis of financial accounting, effective control can be exercised on the property and assets of the enterprise to ensure that they are not misused or misappropriated.

To that extent financial accounting helps to assess the overall progress of a concern, its strength and weaknesses by providing the figures relating to several previous years.

Data provided by Cost and Financial Accounting is further used for the management of all processes associated with the efficient acquisition and deployment of short, medium and long term financial resources.

Such a process of management is known as Financial Management. The objective of Financial Management is to maximize the wealth of shareholders by taking effective Investment, Financing and Dividend decisions. Investment decisions relate to the effective deployment of scarce resources in terms of funds while the Financing decisions are concerned with acquiring optimum finance for attaining financial objectives.

The last and very important 'Dividend decision' relates to the determination of the amount and frequency of cash which can be paid out of profits to shareholders.

On the other hand, Management Accounting refers to managerial processes and technologies that are focused on adding value to organizations by attaining the effective use of resources, in dynamic and competitive contexts.

Hence, Management Accounting is a distinctive form of resource management which facilitates management's 'decision making' by producing information for managers within an organization.

SCOPE OF COST ACCOUNTING

The terms 'costing' and 'cost accounting' are many times used interchangeably. However, the scope of cost accounting is broader than that of costing. Following functional activities are included in the scope of cost accounting:

1. **Cost book-keeping*:*** It involves maintaining complete record of all costs incurred from their incurrence to their charge to departments, products and services. Such recording is preferably done on the basis of double entry system.
2. **Cost system*:*** Systems and procedures are devised for proper accounting for costs.
3. **Cost ascertainment*:*** Ascertaining cost of products, processes, jobs, services, etc., is the important function of cost accounting. Cost ascertainment becomes the basis of managerial decision making such as pricing, planning and control.
4. **Cost Analysis*:*** It involves the process of finding out the causal factors of actual costs varying from the budgeted costs and fixation of responsibility for cost increases.
5. **Cost comparisons***:* Cost accounting also includes comparisons between cost from alternative courses of action such as use of technology for production, cost of making different products and activities, and cost of same product/ service over a period of time.
6. **Cost Control*:*** Cost accounting is the utilization of cost information for exercising control. It involves a detailed examination of each cost in the light of benefit derived from the incurrence of the cost. Thus, we can state that

cost is analyzed to know whether the current level of costs is satisfactory in the light of standards set in advance.

7. **Cost Reports*:*** Presentation of cost is the ultimate function of cost accounting. These reports are primarily for use by the management at different levels. Cost Reports form the basis for planning and control, performance appraisal and managerial decision making.

OBJECTIVES OF COST ACCOUNTING

There is a relationship among information needs of management, cost accounting objectives, and techniques and tools used for analysis in cost accounting. Cost accounting has the following main objectives to serve:

1. Determining selling price

The objective of determining the cost of products is of main importance in cost accounting. The total product cost and cost per unit of product are important in deciding selling price of product. Cost accounting provides information regarding the cost to make and sell product or services. Other factors such as the quality of product, the condition of the market, the area of distribution, the quantity which can be supplied etc., are also to be given consideration by the management before deciding the selling price, but the cost of product plays a major role.

2. Controlling cost

Cost accounting helps in attaining aim of controlling cost by using various techniques such as Budgetary Control, Standard costing, and inventory control. Each item of cost [viz. material, labour, and expense] is budgeted at the beginning of the period and actual expenses incurred are compared with the budget. This increases the efficiency of the enterprise.

3. Providing information for decision-making

Cost accounting helps the management in providing information for managerial decisions for formulating operative policies. These policies relate to the following matters:

(i) Determination of cost-volume-profit relationship.

(ii) Make or buy a component

(iii) Shut down or continue operation at a loss

(iv) Continuing with the existing machinery or replacing them by improved and economical machines.

4. Ascertaining costing profit

Cost accounting helps in ascertaining the costing profit or loss of any activity on an objective basis by matching cost with the revenue of the activity.

5. Facilitating preparation of financial and other statements

Cost accounting helps to produce statements at short intervals as the management may require. The financial statements are prepared generally once a year or half year to meet the needs of the management. In order to operate the business at high efficiency, it is essential for management to have a review of production, sales and operating results. Cost accounting provides daily, weekly or monthly statements of units produced, accumulated cost with analysis. Cost accounting system provides immediate information regarding stock of raw material, semi-finished and finished goods. This helps in preparation of financial statements.

Some other Objectives of Cost accounting are as follows:

- To ascertain the cost per unit of the different products manufactured by the business concern.
- To provide a correct analysis of cost both by process or operations and by different elements of cost.

- To disclose sources of wastage whether of material, time or expense or in the use of machinery equipment & tools.
- To provide requisite data & serve as a guide to price fixing of products manufactured or services rendered.
- To ascertain the profitability for advising the management.
- To exercise effective control of stock, raw materials, working progress & finished products.
- To reveal the sources of economy.
- To help in supervising.
- To organize the internal systems, Cost reduction programs.
- To provide specialized services of cost audit.
- To find out costing Profit or Loss.

Advantages of cost accounting:

1. To the management
   - i) Action against unprofitable activities
   - ii) Facilitates decision making
   - iii) Assistant in fixing prices
   - iv) Facilitates cost control
   - v) Establishes standard cost
   - vi) Improves efficiency
   - vii) Inventory control
   - viii) Prevents fraud
   - ix) Tool of management control
   - X) Measuring rods
   - xi) Future prospects
   - xii) Budgeting
2. To the employees

i) Sound wage policy

ii) Higher bonus plan

iii) Distinction between efficient and inefficient workers

iv) Security of job

3. To the creditors
4. To the government
5. To the public

Limitations of cost accounting:

- It lacks a uniform procedure.
- Many formalities are to be observed.
- Handling future situations has not been much.
- It is very expensive.
- It is failure in many cases.

Merits of Cost Accounting

1. Helpful in Planning and Decision Making:

- Cost information brings to light the profitable activities of the organisation.
- It provided the sound and rational basis for planning, the changes in products, plants, processes and techniques of production.
- The information provided by cost accounting is also useful in evaluating the various alternatives involved in a situation before taking any final decision.

2. Inventory Control:

- As an efficient stores accounting system is essential to an adequate system of cost accounts, in effective check is provided on all materials and stores.

3. Ascertainment of Costs:

- Cost accounting is very helpful in calculating the cost of an article being produced by the enterprise.
- It helps in fixing the selling price of the product.

4. Standard Costs:

- It helps the production manger not only to find what various jobs and processes have cost but also what they should have cost.
- The pre-planned standard costs are used for comparison of the cost of the products.

5. Assistance in Manufacturing:

- Cost accounting pinpoints lapses in purchases of raw materials and other articles, their utilization.
- It indicates where wastages are occurring long before the production is finished. It helps to take immediate steps to avoid such losses and wastes.

6. Promotion of Sales:

- Cost accounting is also very helpful in the promotion of sales by adopting an appropriate price policy.
- The technique of break even analysis serves as constant remembers to increase the sales to the break even point.
- It also seeks to control the selling and distribution coasts.

7. Evaluation of Profitability:

- It helps in elimination unprofitable activities and operations.

8. Profit can be maximized:

- Cost accounting helps the management in maximizing profits by eliminating all wastes and uneconomical processes. This cost accounts help in increasing points and minimizing loses.

Relationship of cost and financial accounting

S. No.	Basis	Financial accounting	Cost accounting
1	Distinction period/amount	Transaction is recorded for a definite period.	Transaction is identified with cost units.
2	Purpose	Prepared to show the final results during a particular period to owners, outsiders etc.	It aims to guide the management for proper planning, control and decision making.
3	Analysis of expenditure	It analyses the expenditure under different types of expenses, e.g. wages, salaries, depreciation etc.	It analyses the expenditure under different types of performance as distinct from types of expenses e.g. direct labor, indirect labor, direct materials, etc.
4	Material control	It does not tell us the inefficiencies of material handling, as the figures are available in aggregate.	It provides the system of good inventory control through a prescribed procedure for purchases, storage, issue etc.
5	Nature	It is positive science	It is positive as well as normative science
6	Wastages	There are no such categories	Wastages, shortages, losses etc are categorized into normal and

			abnormal and aim to eliminate losses.
7	Dealings	It deals with actual facts and figures	It deals partly with actual facts and figures and partly with estimates.
8	Transactions	It deals with external transactions	It deals with internal transactions
9	Classifications	It makes no distinction between controllable and uncontrollable or fixed and variable costs.	It makes clear distinction between controllable and uncontrollable or fixed and variable costs.
10	Legal requirements	They are kept as required by companied act, income tax act.	These accounts are kept generally to meet the requirement of the management. Now it, is obligatory to keep such records.

The difference between management and cost accounting are as follows:

S.No.	Cost Accounting	Management Accounting
1	The main objective of cost accounting is to assist the management in cost control and decision-making.	The primary objective of management accounting is to provide necessary information to the management in the process of its planning, controlling, and performance evaluation, and

		decision-making.
2	Cost accounting system uses quantitative cost data that can be measured in monitory terms.	Management accounting uses both quantitative and qualitative data. It also uses those data that cannot be measured in terms of money.
3	Determination of cost and cost control are the primary roles of cost accounting.	Efficient and effective performance of a concern is the primary role of management accounting.
4	Success of cost accounting does not depend upon management accounting system.	Success of management accounting depends on sound financial accounting system and cost accounting systems of a concern.
5	Cost-related data as obtained from financial accounting is the base of cost accounting.	Management accounting is based on the data as received from financial accounting and cost accounting.
6	Provides future cost-related decisions based on the	Provides historical and predictive information for future

	historical cost information.	decision-making.
7	Cost accounting reports are useful to the management as well as the shareholders and creditors of a concern.	Management accounting prepares reports exclusively meant for the management.
8	Only cost accounting principles are used in it.	Principals of cost accounting and financial accounting are used in management accounting.
9	Statutory audit of cost accounting reports are necessary in some cases, especially big business houses.	No statutory requirement of audit for reports.
10	Cost accounting is restricted to cost-related data.	Management accounting uses financial accounting data as well as cost accounting data.

TECHNICAL METHODS OF COSTING

1. **Historical Costing:**
    - The ascertainment of costs after they have been incurred Historical costs are, therefore, 'postmortem' costs as under this method all the expenses incurred on the production are first incurred and them the costs are ascertained.

2. **Standard Costing:**
   - The preparation and use of standard costs, their comparison with actual costs and the analysis of variance to their causes and points of incidence'.
   - Here the standards are first set and then they are compared with actual performances. The difference between the standard and the actual is known as the variance. The variances are analyzed to find out their causes and also the points or locations at which they occur.
3. **Marginal Costing:**
   - The ascertainment of marginal costs and of the effects on profit of changes in volumes or type of output by differentiating between fixed costs and variable costs'.
   - The fixed costs are those which do not change but remain the same, with the increase or decrease in the quantum of production. The variables costs are those which do change proportionately with the change in quantum of production.
   - The marginal costing takes into account only the variable costs to find out 'marginal costs'. The difference between Sales and Marginal costs is known as 'Contribution' and contribution is an aggregate of fixed costs and Profit/Loss. So the fixed costs are deducted from the contribution to find out the profits.
   - Marginal costing is a technique to ascertain the effect on profits. Marginal costing is a technique to ascertain the effect on profit by the change in the volume of output or by the change in the type of output.

4. **Direct Costing:**

The practice of charging all direct cost to operations, process or products, leaving all the indirect costs to be written off against profits in the period in which they arise

5. **Absorption Costing**

The practice of charging all costs, both variables and fixed, to operations, processes or products.

This is the traditional technique as opposed to Marginal or Direct costing techniques. Here both the fixed and variables cost are charged in the same manner.

METHODS OF COSTING

1. **Job Costing**

It is defined by ICMA, London as that form of specific order costing, which applies where work is undertaken to customer's special requirements.

2. **Contract Costing**

It is applied where the job is big and of no longer duration. For each individual contract, separate accounts have to be kept.

3. **Batch Costing**

A batch may represent a number of small orders in batches through the factory. ICMA defines as "that form of specific order costing, which applies where similar articles are manufactured in batches either for sale or for use within the undertaking.

4. **Multiple costing**

It means a combination of two or more of the above methods. The system of costing is adopted in manufacturing concerns where a variety of parts are produced separately and later assembled into a final product.

5. Process Costing

It applies to industries where production is carried on through different stages before becoming a finished product.

6. Single output or Unit Costing

Under this method production is continuous and units are identical. Producing a single article or a few articles, choosing the cost unit depends upon the nature of the product.

7. Operation Costing

This method is used where there is a mass production and processes are repetitive in nature, and there is a detailed application of processes costing.

8. **Operating Costing**

It is suitable to those industries which render services instead of producing goods e.g. transport companies, electricity companies, railways, hospitals etc.

9. Departmental Costing

It is a method of cost finding adopted to ascertain the cost of operating a department or a cost centre separately.

CLASSIFICATIONS OF COSTS

Costs are classified into following categories:

1. Classification according to nature or element

The Term is defined as "the primary classification of costs according to the factors upon which expenditure is incurred i.e. material cost, labor cost and expenses".

2. Classification according to function of companies

Under this method costs are classified as production cost, administrative cost, selling cost and distribution cost.

3. Classification according to variability

(a) Fixed Cost

It means the cost tends to unaffected with the volume of output.

(b) Variable cost

It means the cost tends to vary directly with the volume of output.

(c) Semi-variable cost

Semi variable costs are those which are partly fixed and partly variable.

4. Classification according to controllability

a) controllable or

b) uncontrollable costs

- Controllable costs

A cost which can be influenced by the action of a specified number of an undertaking is known as controllable cost.

E.g. direct material, direct labor etc.

- Uncontrollable costs

A cost which cannot be influenced by the action of a specified number of an undertaking is known as uncontrollable cost

E.g. rent, rates, taxes, insurance, salary etc.

5. **Classification into direct and indirect costs**

(a) Direct and

(b) Indirect costs

a) Direct costs are those which can be identified with the cost centre or cost unit and can conveniently be connected with any cost unit.

b) Indirect costs cannot be identified with but can be apportioned or absorbed by cost centre's or cost unit.

6. **Classification according to capital and revenue**

a) Capital costs

b) Revenue costs

a) Capital costs are those incurred in the acquisition of assets, either to earn income or increase the earning capacity of the business.

E.g. cost of plant, machinery.

b) Revenue costs are those incurred to maintain earning capacity of the firm.

7. **Classification according to normality costs**

a) Normal costs

b) Abnormal costs

a) Normal costs is a cost which is normally incurred at a given level of output.

b) Abnormal costs are not normally incurred at a given level of output in the conditions in which that level of output is normal.

Cost concepts:

Cost unit

A cost unit is a unit of product, service or time in relation to which cost may be ascertained.

Cost centre

A cost centre is a location, person or item of equipment for which cost may be ascertained and used for the purpose of cost control.

The sub divisions of cost centre are:

1. The personal cost centre
2. Impersonal cost centre
3. Operation cost centre

4. Process cost centre

Profit centre

Profit centre is a segment of a business that is responsible for all activities involved in the production and sales of products, systems and services.

Cost control

Cost control is defined as "the guidance and regulation by executive action of costs of operating an undertaking".

Cost reduction

Cost reduction is concerned with reducing costs. It is concerned with reduction programme which is a continuous process, it strives to achieve permanent reduction, starts where cost control ends. Cost can be reduced on account of savings in cost.

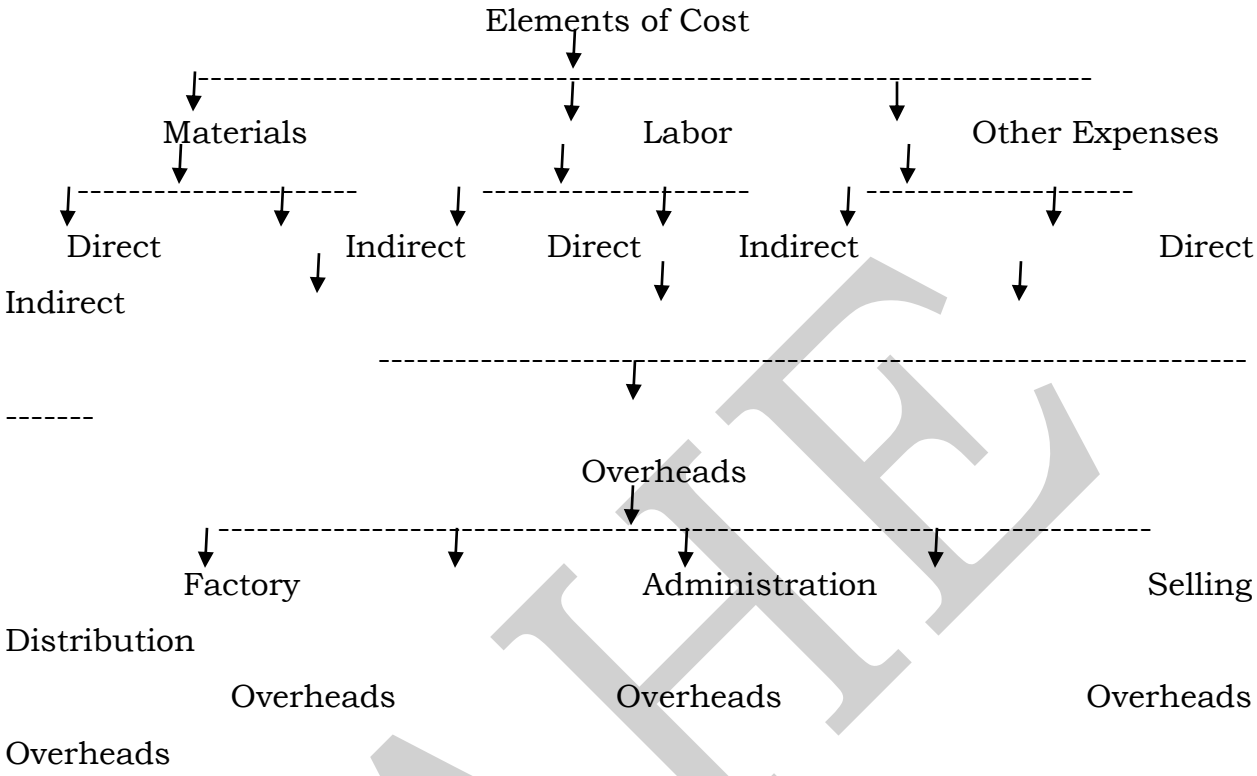
The advantages are:

1. Reasonable price for the customers
2. Continued employment for the workers
3. Increase in productivity
4. Expected return on capital
5. Prosperity of the industry
6. Economic use of resources
7. Increased credit worthiness

Cost audit

"Cost audit is the verification of cost accounts and a check on the adherence to the cost accounting plan".

ELEMENTS OF COST



Cost of production/manufacturing consists of various expenses incurred on Production/ manufacturing of goods or services. These are the elements of cost which can be divided into three groups: Material, Labor and Expenses.

I Material

To produce or manufacture material is required; all material which becomes an integral part of finished product and which can be conveniently assigned to specific physical unit is termed as "Direct Material". It is also described as raw material, process material, prime material, production material, stores material, etc. The substance from which the product is made is known as material. It may be in a raw or manufactured state. Material is classified into two categories:

- **Direct material**

Direct Material is that material which can be easily identified and related with specific product, job, and process. Timber is a raw material for making furniture, cloth for making garments, sugarcane for making sugar, and Gold/ silver for making jewellery, etc are some examples of direct material.

- **Indirect material**

Indirect Material is that material which cannot be easily and conveniently identified and related with a particular product, job, process, and activity. Consumable stores, oil and waste, printing and stationery etc, are some examples of indirect material. Indirect materials are used in the factory, the office, or the selling and distribution department.

II Labor Expenses

Labor is the main factor of production. For conversion of raw material into finished goods, human resource is needed, and such human resource is termed as labor. Labor cost is the main element of cost in a product or service. Labor can be classified into two categories:

- **Direct labor**

Labor which takes active and direct part in the production of a commodity. Direct labor is that labor which can be easily identified and related with specific product, job, process, and activity. Direct labor cost is easily traceable to specific products. Direct labor costs are specially and conveniently traceable to specific products. Direct labor varies directly with the volume of output. Direct labor is also known as process labor, productive labor, operating labor, direct wages, manufacturing wages, etc. Cost of wages paid to carpenter for making furniture, cost of a tailor in producing readymade garments, cost of washer in dry cleaning unit are some examples of direct labor.

- **Indirect labor**

Indirect labor is that labor which can not be easily identified and related with specific product, job, process, and activity. It includes all labor not directly engaged in converting raw material into finished product. It may or may not vary directly with the volume of output. Labor employed for the purpose of carrying out tasks incidental to goods or services provided is indirect labor. Indirect labor is used in the factory, the office, or the selling and distribution department. Wages of store-keepers, time-keepers, salary of works manager, salary of salesmen, etc, are all examples of indirect labor cost.

III Other Expenses

All cost incurred in the production of finished goods other than material cost and labour cost are termed as expenses.

- **Direct expenses**

These are expenses which are directly, easily, and wholly allocated to specific cost center or cost units. All direct cost other than direct material and direct labor are termed as direct expenses. Direct expenses are also termed as chargeable expenses. Some examples of the direct expenses are hire of special machinery, cost of special designs, moulds or patterns, feed paid to architects, surveyors and other consultants, inward carriage and freight charges on special material, Cost of patents and royalties.

1. Cost center means a location, person, or item of equipment or group of these for which costs may be ascertained and used for the purpose of cost control.

2. Cost object is anything for which a separate measurement of cost is desired. It may be a product, service, project, or a customer.

- **Indirect expenses**

These expenses cannot be directly, easily, and wholly allocated to specific cost center or cost units. All indirect costs other than indirect

material and indirect labor are termed as indirect expenses. Thus, Indirect Expenses = Indirect cost – Indirect material – Indirect labor. Indirect expenses are treated as part of overheads. Rent, rates and taxes of building, repair, insurance and depreciation on fixed assets, etc, are some examples of indirect expenses.

COST SHEET

Cost Sheets are statements setting out the costs of a product giving details of all the costs. Presentation of costing information depends upon the method of costing. A cost sheet can be prepared weekly, monthly, quarterly or annually.

In a cost sheet besides total expenditure incurred, cost per unit of output in case of each element of cost can be shown in a separate column. The cost sheet should give cost per unit in the previous period for the purposes of comparison

PREPARATION OF COST SHEET

1. Prime Cost = Direct Materials + Direct Labor + Direct Expenses
2. Works or Factory Cost = Prime Cost + Works or Factory Overheads
3. Cost of Production =Factory or Works Cost + Administration Overheads
4. Total Cost or Cost of Sales = Cost of Production + Selling and Distribution Overheads

SPECIMEN OF COST SHEET

Particulars	**Cost per unit (Rs.)**	**Total Cost (Rs.)**
Direct materials consumed:		

Opening stock		
Add: purchases		
Less: closing stock		
Cost of drawings		
Direct expenses		
Primary packing materials		
PRIME COST	-------	---------
Add: works/factory overheads:	-	
Indirect materials		
Indirect wages		
Factory rent and rates		
Factory lighting and heating		
Power and fuel		
Repairs and maintenance		
Drawing office expenses		
Research and experiment cost		
Depreciation of factory plant		
Works stationery		
Insurance of factory		----------
Works managers salary	--------	
WORKSCOST/FACTORY COST/MANUFACTURING COST		
Add: office and administrative overheads:		
Office salaries		

Office rent and rates		
Lighting and heating		
Cleaning		
Telephone and postages		
Printing and stationery		
Depreciation of office furniture		
Depreciation of office equipment		
Insurance		
Legal expenses		
COST OF PRODUCTION		
Add: selling and distribution overheads:		
Advertising		
Salesman salaries		
Samples and free gifts		
Sales office rent		
Sales promotion expenses		
Packing and demonstration		
Showroom rent and rates		
Repair of delivery vans		
Carriage freight outwards etc.		
COST OF SALES		

Advantages of Cost Sheet

1. It is a simple and useful medium of communication which gives information about costs to all levels of management in a simple and lucid form.
2. It helps in comparative study of the various elements of costs with the past results and standard cost. Thus it helps the management in control process.
3. It helps the management in fixing up the selling price more accurately.
4. If acts as a guide to the manufacturer and helps him in formulating a definite and profitable production policy.
5. It enables a producer keep a close watch and control over the cost of production.
6. It shows the total cost and the per unit of the units produced during the given period.

Tender or quotation:

It is a kind of contract mostly followed by public companies especially when govt want to construct bridge, road, railways, airways and these kind of activities then govt call the top player in that field and ask them to give their quotation which means the minimum amount that is required to completed that project and the one who quotes the least price get that contract which is called tender.

It is a request to interested parties to send in their quotation for supplying goods or services. Tender system is usually followed in Government purchases, normally when the purchases are of large value, like building an airport etc. the specifications of the goods and services are available in Tender Documents, which the bidder (or the party quoting) can obtain from the tenderer. The documents may or may not be priced.

Tenders also carry the last date or deadline for submission of bids or quotes and also a date when all the quotations received will be opened. The parties quoting are then invited to participated in the opening. Prior to the opening of the bids, the prices are secret, since the bids are sealed and kept securely.

Usually, the party complying with all or most of the technical requirements and with the lowest price quoted is awarded the contract.

Tender in business means a type of quotation offering lowest prices for supply of some goods or service or job works. Normally, in tender you have to deposit some amount (refundable or non-refundable), whereas it is not compulsory in quotation.

It's a bid for a contract. We tender (give) our estimate, usually in competition with other potential contractors.

Problem 1

The following particulars have been extracted from the costing records of a manufacturing co., for the year ended 30th June, 1991.

	Rs.
Raw material purchase	1,00,000
Wages :	
Direct	60,000
Indirect	10,000
Office Salaries	22,000
Finished Goods stock	10,000
Advertising	6,000
Agent's Commission	10,000
Rent, rates & taxes etc (9/10 for works , 1/10 for office)	2,000
Works	4,000
Building-repairs	2,000

Salaries-plant	4,000
Depreciation	**Rs.**
Plant Machinery	4,000
Building	2,000
Carriage inward	2,000
Carriage Outward	6,000
Sales	4,00,000
Opening Stock-	
Raw material	40,000
Travelling expenses	2,000
Power	2,000
Plant Maintenance	8,000
Miscellaneous expenses	
Plant	2,000
Office	2,000
Closing Stock	
Raw Materials	40,000
Finished goods	6,000

Building is occupied 9/10 by factory and 1/10 by office. Production 20,000 (Units)

You are required to prepare a detailed cost statement showing

i) Materials consumed
ii) Prime cost
iii) Works on cost.
iv) Cost of production
v) Cost of sales and

vi) Profit earned

Solution:

Particular		**Total Cost**		**Cost per unit**
Opening Stock of raw material	40,000			
Add Purchases	1,00,000			
Add Carriage inward	2,000			
	1,42,000			
Less Closing stock or raw materials	40,000			
i) Materials consumed		1,02,000		5.10
Direct labour		60,000		3,00
ii) Prime Cost		1,62,000		8.10
Add: **Factory overheads**				
Indirect Wages	10,000		0.50	
Power	2,000		0.10	
Plant Maintenance	8,000		0.40	
Rent, rates and taxes (9/10)	1,800		0.09	
Misc. Expenses	2,000		0.10	

Repairs – Building (9/10)0.20	1,800		0.20	
Salaries – Plant	4000		0.20	
Depreciation – Plant	4,000		0.09	
-Building (9/10)	1,800	34,000		1.77
iii) Works cost		1,97,400		9.87
Add: Office Overheads				
Office Salaries	22,000		1.10	
Rents, Rates and Taxes (1/10)	200		0.01	
Misc. expenses	4,000		0.20	
Repairs – Building (1/10)	200		0.01	
Depreciation- Building (1/10)	200	26,600	0.01	1.33
iv) Cost of Production		2,24,000		11.20
Add: Opening Stock of finished product		10,000		
		2,34,000		
Less: Closing stock of finished goods		6,000		
Cost of goods sold		2,28,000		
Add: Selling and distribution overheads				
Carriage outwards	6,000			
Travelling expenses	2,000			
Advertising	6,000			

Agent's Commission	10,000	24,000		
Cost of Sales		**2,52,000**		
Add Profit margin		1,48,000		
v) Sales value		4,00,000		

Problem 2

The cost of Sale of Product A is made up as follows:

Materials used in Manufacturing	55000	Direct Expenses	5000
Materials used in Primary packing	10000	Indirect Expenses (factory)	1000
Materials used in selling product	1500	Administration expenses	1250
Materials used in Factory	750	Depreciation of office building & equipments	750
Materials used in office	1250	Dep. On factory buildings	1750
Labour required in Producting	10000	Selling expenses	3500
Labour required for factory supervision	2000	Freight on material purchased	5000
		Advertising	1250

Assuming that all products are manufactured are sold, what should be the selling price to be obtained as a profit of 20% on selling price?

Solution

COST SHEET

STATEMENT OF COST AND PROFIT

Direct material	**Rs.**	**Rs.**
Materials used in manufacturing	55000	100000
Materials used in primary packing	10000	

Freight on material purchased	5000	70000
Direct labour		10000
Direct expenses-factory		5000
Direct expenses-factory		85000
PRIME COST		
Factory overheads	750	
Labour required for factory supervision	2000	
Indirect expenses – factory	1000	
Dept. on factory building	1750	5500
WORKS COST		90500
Administration Overhead		
Materials used in Overhead	1250	
Administration expenses	1250	
Dept. on office building equipment	750	3250
COST OF PRODUCTION		93750
Selling Distribution Overhead		
Materials used in selling the product	1500	
Selling expenses	3500	
Advertising	1250	6250
COST OF SALES		100000
Profit (20% on selling price or 25% on cost)		25000
SELLING PRICE		125000

Problem 3

From the following data prepare a cost & profit statement of Vijay stoves manufacturing company for the year 1990.

Stock of materials as on 1.1.1990	35000	Establishment expense	10000
Stock of materials as on 31.12.1990	49000	Completed stock in hand 1.1.90	-
Purchase of materials	52500	Completed stock in hand 31.12.90	35000
Direct wages	95000		
Factory expenses	17500	Sales	189000

The number of stoves manufacturing during the year 1990 was 1000. The company wants to quote for the contract for the stoves to be quoted are of uniform quality and make similar to those manufacturing in the previous year. But cost of materials has increased 15% and cost of factory labour by 10%. Prepare a statement of net profit to be quoted to give the same percentage of net profit of turnover as was realized during the year 1990 assuming that the cost per unit of O.H. charges will be the same as the previous year.

Solution

COST AND PROFIT STATEMENT OF STOVES 1990		
Particulars	**Amount Rs.**	**Amount Rs.**
Opening Stock of Materials 35000		
Purchase of Materials 52500		
87500		
Closing stock of Materials 4900		

VOLUME OF MATERIAL CONSUMED	82600	20.65
Direct wages	95000	23.75
PRIME COST	177600	44.40
Factory expenses	17500	4.37
WORK COST	195100	48.77
Establishment expenses	10000	2.50
COST OF PRODUCTION	205100	51.27
Opening completed stock	-	
Cost of production during the prd	205100	
Closing completed stock	35000	
COST OF SALES	170100	
PROFIT	18900	
SELLING PRICE	189000	

STATEMENT SHOWING QUOTATION PRICE FOR 1000 STOVES

Materials consumed	20650	
15% increase	3098	
		23748
Factory wages	23750	
10%a increase	2375	
PRIME COST		26125
Factory expenses		49873
		4370
WORK COST		54243
Establishment expenses		2500
TOTAL COST		56743
(profit 10% of selling price of 1/9 of cost)		6305
SELLING PRICE		63058

Limitations and objections to cost accounting

1. It is expensive
2. It is unnecessary
3. Matter of routine forms and statements
4. Failure of costing system
5. Not applicable to many industries
6. It is not reliable

Costing is an aid to management

1. Planning is thinking in advance i.e. Looking ahead and deciding in advance what to do, how to do it, when to do it and who is to do it. In planning, the management is concerned with laying down objectives and determining the courses of actions to be followed out of the several alternatives available to achieve those objectives.
2. Thus, planning is concerned with future activity and formulates budgets to meet the objectives of the organization. Since management has to make a choice of one course of action out of the several alternative courses of action available, it involves decision-making. All rational decisions are based on accounting information.
3. Decisions may relate to various problems like fixation of price, whether or not price should be reduced for increased level of sales, whether a change in production should be followed, whether or not factory should operate at full capacity, determination of the most profitable levels of production, whether to make or buy a spare part, whether a new product should be discontinued to avoid the present loss and whether or not an investment in a particular asset will be worth while.
4. Controlling is that part of management activity whereby managers compare actual performance against the planned performance, find out the deviations and take remedial steps to remove the deviations.

Part A

One Mark

Online Examination

Part B

Two Marks

1. Define Cost Accounting.
2. How does Cost Accounting differ from Financial Accounting?
3. Explain the advantage and limitations of cost accounting.
4. Define Cost Accounting and Management Accounting.
5. How does Cost Accounting differs from Management Accounting ?
6. Discuss the advantages of Cost Accounting and Objections to Cost Accounting.
7. Differentiate Cost accounting from financial accounting?

PART C

SIX MARKS

1. The following data have been extracted from the books of Sun Ind. Ltd. For the year 2006 :

PARTICULARS	Rs.	PARTICULARS	Rs.
Opening Stock of Raw Material	25,000	Indirect Consumption of Material	500
Purchase of Raw Material	85,000	Salary – Office Salesmen	2,500 2,000
Closing stock of Raw Material	40,000	Other Factory Expenses	5,700
Carriage Inward	5,000	Other Office Expenses	900

Wage – Direct	90,000	Manager's Remuneration	12,000
Wages – Indirect	10,000	Bad Debts written off	1,000
Rent and Rates – Factory - Office	5,000 500	Advertisement Expenses	2,000
Depreciation - Plant and Machinery - Office Furniture	1,500 100	Traveling Expenses of Salesmen	1,100
Cash Discount	5,000	Carriage and Freight Outward	1,000
Sales	2,50,000	Advance Income – tax paid	15,000

The manager has the overall charge of the company and his remuneration is to be allocated at Rs. 4,000 to the factory, Rs. 2,000 to the office and Rs. 6,000 to the selling operations.

From the above particulars prepare a statement showing (a) Prime cost (b) Factory cost (c) Cost of production (d) Cost of sales and (e) Net profit

2. From the following details, you are required to prepare a Statement of Cost and Statemer Profit :

Particulars		Amount Rs.
Opening Stock	(1) Materials	2,00,000
	(2) Work – in – Progress	60,000
	(3) Finished Goods	5,000
Closing Stock	(1) Materials	1,80,000
	(2) Work – in – Progress	50,000
	(3) Finished Goods	15,000
Material Purchased		5,00,000
Direct Wages		1,50,000
Manufacturing Expenses		1,00,000
Sales		8,00,000
Selling and Distribution Expenses		20,000

3. The following extract of costing information relates to commodity 'A' for t ending 31st December, 1997

Particulars	Amount Rs.	Particulars	Amount Rs.
Purchases of Raw Materials	1,20,000	Sales - Finished Goods	3,00,000
Works Overheads	48,000	Work – in – progress (1st July, 1997)	4,800
Direct Wages	1,00,000	Work – in – progress (31st December, 1997)	16,000
Carriage on Purchases	1,440	997): Raw Materials	22,240
Stock (1st July, 1997) : Raw Materials	20,000	Finished Goods (2,000 Tons)	32,000
Finished Goods (1,000 Tons)	16,000		

Selling and Distribution overheads are Re. 1 per Ton sold, 16,000 tons of commodity

were produced during the period.

You are to ascertain (i) Cost of Raw Materials used, (ii)Cost of output for the

period, (iii) Cost of Sales, (iv) Net Profit for the period and (v) Net profit for ton of the

commodity.

4. From the following data, prepare a cost and production statement of Popular Stove

Manufacturing Company for the year 2004

Particulars	Amount Rs.
Stock of Materials on 01.01.2004	35,000
Stock of Materials on 31.12.2004	4,900
Purchase of Materials	52,500
Factory Wages	95,000
Factory Expenses	17,500
Establishment Expenses	10,000
Completed Stock in hand on 01.01.2004	Nil
Completed Stock in hand on 31.12.2004	35,000
Sales	1,89,000

The number of stoves manufactured during the year was 4,000.

The company wants to quote for a contract for the supply of 1,000 electric stoves during the year 2005. The Stoves to be quoted are of uniform quality and make, and are similar to those manufactured in the previous year; but the cost of material has increased by 15 % and cost of factory labour by 10 %.

Prepare a statement showing the price to be quoted to give the same percentage of net profit on turnover as was released during the year 2004 assuming that the cost per unit of overhead charges will be the same as in the previous year.

5. The following figures relates to the costing of a tarpaulin manufactured in respect of a certain type of sheet for a period of three months

	Rs.
Stock of material, 1st January	5,500
Stock of material, 31st March	3,500
Factory wages	83,000
Materials purchased	61,500
Sales	1,41,500

Indirect expenses	13,000
Completed Stock, 1st January	Nil
Completed Stock, 31st March	29,000

The number of sheets manufactures during three months was 2,200 and the price is to be quoted for 648 sheets, in order to realize the same percentage of profits as for the period under review, assuming no alteration in rates of wages and cost of materials.

Prepare a statement of cost for the manufacture of 2200 sheets and quotation for 648 sheets.

KARPAGAM ACADEMY OF HIGHER EDUCATION
DEPARTMENT OF COMMRCE
APPLIED COST ACCOUNTING
III B.COM PA
UNIT 1

QUESTION	Option A	Option B	Option C	Option D	Answer
The accounting which provides the methods and techniques to reduce the cost of production is called	Profit and Loss Account	Balance Sheet	Cost Accounting	Financial Accounting	Cost Accounting
Cost accounting includes only the activities of	Non-Operating	Operating	Operating & Non-operating	Cost Auditing	Operating
Cost incurred even after the stoppage of production is called	Shut down cost	Sunk Cost	Historical Cost	Relevant Cost	Shut down cost
The difference between the purchase price of a fixed asset and its realized value, from sales is known as	Relevant Cost	Imputed Cost	Sunk Cost	Opportunity Cost	Sunk Cost
If there is an increase in cost from one alternative to another, the differential cost is called	Incremental Cost	Decremental Cost	Sunk Cost	Imputed Cost	Incremental Cost
The difference in the total cost between the two alternatives is called	Sunk Cost	Fixed Cost	Variable Cost	Differential Cost	Differential Cost
The method of costing adopted for the production of identical products is called	Job Costing	Batch Costing	Contract Costing	Output Costing	Batch Costing
The method of costing adopted in specific order is known as	Fixed Cost	Variable Cost	Job Costing	Batch Costing	Job Costing
The method of costing adopted when the period of a job is long is called	Contract Costing	Fixed Cost	Sunk Cost	Historical Costing	Contract Costing
The cost which is partly fixed and partly variable is known as	Fixed Cost	Marginal Cost	Semi-variable cost	Contract Cost	Semi-variable cost
Determination of cost before the cost is incurred is called	Historical Costing	Variable Costing	Marginal Costing	Standard Costing	Standard Costing

The location or person for which cost is ascertained and used is	Cost Centre	Cost Unit	Costing Method	Uniform Cost	Cost Centre
Costs which can easily be identified in a product is called	Indirect Cost	Direct Cost	Variable Cost	Differential Cost	Direct Cost
The cost which remains constant up to a certain level of activity is known as	Semi-variable cost	Variable cost	Marginal cost	Fixed Cost	Fixed Cost
Marginal Costing is otherwise called as	Variable costing	Operation costing	Process costing	Operating costing	Variable costing
__is a method of costing adopted by concerns which produce one product with identical and standard units through two or more process	Job Costing	Batch Costing	Single Costing	Operation Costing	Single Costing
The method of costing adopted by concerns which render services is called	Job Costing	Batch Costing	Operating costing	Operation Costing	Operating costing
___includes only operating activities	Cost Accounting	Financial Accounting	Management Accounting	Corporate Accounting	Cost Accounting
__ is concerned with both operating and non-operating activities	Cost Accounting	Financial Accounting	Management Accounting	Corporate Accounting	Financial Accounting
___ is a method of costing adopted to concerns which produces group of identical or similar product in large units	Job Costing	Batch Costing	Operating costing	Operation Costing	Batch Costing
__ is adopted by the concerns which produce product of constructions type	Operating costing	Operation Costing	Contract Costing	Process Costing	Contract Costing
___ is adopted by concerns which produce products of mass scale with two or more processes	Operating costing	Operation Costing	Contract Costing	Process Costing	Process Costing
___is a method of costing adopted for the concerns, producing products with number of process or operations	Operating costing	Operation Costing	Contract Costing	Process Costing	Operation Costing
The determination of cost after the costs are incurred is called	Historical Costing	Standard Costing	Absorption Costing	Marginal Costing	Historical Costing

The determination of cost before the costs are incurred for the production is called	Historical Costing	Standard Costing	Absorption Costing	Marginal Costing	Standard Costing
___is also known as Full Costing	Historical Costing	Standard Costing	Absorption Costing	Marginal Costing	Absorption Costing
Under ___ different costs incurred for manufacturing a product are charged to the product	Historical Costing	Standard Costing	Absorption Costing	Marginal Costing	Absorption Costing
___is also called variable costing	Historical Costing	Standard Costing	Absorption Costing	Marginal Costing	Marginal Costing
__ helps the management to take decisions on the basis of variable cost and fixed cost	Historical Costing	Standard Costing	Absorption Costing	Marginal Costing	Marginal Costing
__is an adoption of similar costing principles and practices	Historical Costing	Uniform Costing	Absorption Costing	Marginal Costing	Uniform Costing
A cost centre which consists of a person or group of persons for which costs may be ascertained is called as ___	Personal Cost Centre	Impersonal Cost Centre	Operation Cost Centre	Process Cost Centre	Personal Cost Centre
A cost centre which consists of a location or item of equipment or group of these is called ___	Personal Cost Centre	Impersonal Cost Centre	Operation Cost Centre	Process Cost Centre	Impersonal Cost Centre
A cost centre which consists of the machines or person carrying out similar operations is called ____	Personal Cost Centre	Impersonal Cost Centre	Operation Cost Centre	Process Cost Centre	Operation Cost Centre
A cost centre which consists of a specific process or a continuous sequence of operations is called	Personal Cost Centre	Impersonal Cost Centre	Operation Cost Centre	Process Cost Centre	Process Cost Centre
The cost incurred for the purchase and storage of material is called ___	Material Cost	Labour Cost	Expenses	Production Cost	Material Cost
____ are those material cost which can be easily identified in a product	Direct Material Cost	Direct Labour Cost	Direct Expenses	Direct Production Cost	Direct Material Cost
___ can be easily allocated to the process of production	Material Cost	Labour Cost	Expenses	Production Cost	Material Cost

___ are those material costs which cannot be easily identified in the product	Direct Material Cost	Indirect Material Cost	Direct Expense	Indirect Expenses	Indirect Material Cost
___cannot be allocated but apportioned, to the process of production	Direct Material Cost	Indirect Material Cost	Direct Expense	Indirect Expenses	Indirect Material Cost
__ incurred in the form of wages and salaries to the employees	Material Cost	Labour Cost	Expenses	Production Cost	Labour Cost
The costs other than the material costs and labour cost are called ___	Material Cost	Labour Cost	Expenses	Production Cost	Expenses
The cost incurred in the factory or work place of a concern is called __	Production Cost	Administration Cost	Selling & Distribution Cost	None of the Above	Production Cost
The cost of administration of an organization is called	Production Cost	Administration Cost	Selling & Distribution Cost	None of the Above	Administration Cost
The costs incurred for selling and distribution of a product are called ___	Production Cost	Administration Cost	Selling & Distribution Cost	None of the Above	Selling & Distribution Cost
___are those costs which can easily be identified in a product	Direct Costs	Indirect Costs	Fixed Costs	Variable Costs	Direct Costs
___ are those costs which cannot be easily be identified in a product	Direct Costs	Indirect Costs	Fixed Costs	Variable Costs	Indirect Costs
The cost which remains constant up to a certain level of activity is called	Direct Costs	Indirect Costs	Fixed Costs	Variable Costs	Fixed Costs
The costs which changes according to the changes in the volume of production is called ___	Direct Costs	Indirect Costs	Fixed Costs	Variable Costs	Variable Costs
The costs which is partly fixed and partly variable is called	Fixed Costs	Variable Costs	Semi-variable costs	Sunk Cost	Semi-variable costs

The costs which can be influenced by the action of the management of a concern are called	Controllable Cost	Uncontrollable Costs	Semi-variable costs	Sunk Cost	Controllable Cost
The costs which cannot be influenced by the action of the management of a concern are called	Controllable Cost	Uncontrollable Costs	Semi-variable costs	Sunk Cost	Uncontrollable Costs
Costs which have already been incurred are called	Historical Cost	Pre-determined Costs	Relevant Costs	Irrelevant Costs	Historical Cost
Costs which are estimated in advance before the commencement of production are called as ___	Historical Cost	Pre-determined Costs	Relevant Costs	Irrelevant Costs	Pre-determined Costs
___ are those costs which are reliable for taking managerial decision	Historical Cost	Pre-determined Costs	Relevant Costs	Irrelevant Costs	Relevant Costs
___ are those costs which are not relevant for taking managerial decision	Historical Cost	Pre-determined Costs	Relevant Costs	Irrelevant Costs	Irrelevant Costs
__means expired cost	Cost	Expenses	Loss	Opportunity Cost	Expenses
__is the amount of expenditure incurred for the activities like production of product or services	Cost	Expenses	Loss	Opportunity Cost	Cost
When the revenue is less than expenses it is known as ___	Cost	Expenses	Loss	Opportunity Cost	Loss
The cost connected with the loss of an opportunity is called __	Cost	Expenses	Loss	Opportunity Cost	Opportunity Cost
__cost be stated as the difference between book value and scrap value of an asset	Opportunity Cost	Sunk Cost	Differential Cost	Imputed Cost	Sunk Cost
The difference in the total cost between any two alternatives is called ___	Opportunity Cost	Sunk Cost	Differential Cost	Imputed Cost	Differential Cost
__ are those cost which are maintained or estimated for managerial decision making	Opportunity Cost	Sunk Cost	Differential Cost	Imputed Cost	Imputed Cost

__means the cost actually spent for manufacturing a product	Opportunity Cost	Sunk Cost	Differential Cost	Out-of-pocket cost	Out-of-pocket cost

UNIT II

SYLLABUS

Elements of Cost: Materials - Material/Inventory Control Techniques. Accounting and Control of Purchases, Storage and Issue of Materials. Methods of Pricing of Materials Issues — FIFO, LIFO, Simple Average, Weighted Average, Replacement, Standard Cost. Treatment of Material Losses. **Labour -** Accounting and Control of labour cost. Time Keeping and Time Booking. Concept and Treatment of Idle Time, Over Time, Labour Turnover and Fringe Benefits- Methods of Wage Payment and the Incentive Schemes- Halsey, Rowan, Taylor's Differential Piece Wage.

Introduction

Meaning of Material

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 purposes, it is very essential to know the important aspects of material, material control and material purchase control.

Materials:

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.

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.

Indirect Materials:

Indirect materials 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 have 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

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.

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.

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 codification 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 balances.

(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.

Essentials of Material Control

Effective materials control is required for the following essesentials 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 codification 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.

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.

Economic Order Quantity

- This represents the normal quantity to be placed on order when the stock has reached its re-order level.
- Re-ordering quantity is to be fixed taking into account the maximum and minimum stock levels. The quantity ordered must be that which, when added to the minimum stock, will not exceed the maximum stock to be carried at any point of time.

The following factors govern the re-ordering quantity.

1. Average consumption
2. Cost of pacing order
3. Cost of storage
4. Interest on capital etc.,

Carrying cost of inventory consists of

i) The costs of physical storage, such as cost of space, handling and upkeep expenses, insurance, cost of obsolescence etc.

ii) Interest on capital invested (the opportunity cost of the capital blocked up) and

iii) Cost of placing the order each time.

Economic order quantity or economic lot size (if it relates to production) refers to the number ordered in a single purchase or number of units should be manufactured in a single run so that the total costs-ordering or set up costs and inventory carrying costs are at the minimum level.

In other words, it is the quantity that should be ordered at one time so as to minimize the total of

i) Cost of placing orders and receiving the goods, and

ii) Cost of storing the goods as well as interest on the capital invested.

The economic order quantity can be determined by the following simple formula.

$$E.O.Q. = \sqrt{\frac{2AS}{I}} \text{ ; where}$$

EOQ = Economic order quantity or number of units in one lot.

A = Annual usage in units
S = Ordering costs for one order (or set-up costs for one set-up)
I = Inventory carrying costs per unit per year.

This formula is based in three assumptions:

i) Price will remain constant throughout the year and quantity discount is not involved.

ii) Pattern of consumption, variable ordering costs per order and variable inventory carrying charge per unit per annum will remain the same throughout, and

EOQ will be delivered each time the stock balance, excluding safety stock, is just reduced to nil.

A-B-C Analysis

To exercise proper control on stores, it is essential that the store items should be classified according to values so that the most valuable items may be paid greater and due a attention regarding their safety and care, as compared to others. The stores are divided into three categories generally, viz., A, B, and C.

In the ABC system, greatest care and control is to be exercised on the items of 'A' list as any loss or breakage or wastage of any items of this list may prove to be very costly; proper care need be exercised on 'B' list items and comparatively less control is needed for 'C' list items. The rules relating to receipt maintenance issue and writing off stores items should be formed in accordance with the utility and value of the items based on the above categorization.

Advantages:

1) A Strict Control is exercised on the items which represent a high percentage of the material costs.
2) Investment in inventory is reduced to the minimum possible level.
3) Storage cost is reduced as a reasonable quantity of materials, which account for high percentage of value of consumption, will be maintained in the stores.

Perpetual Inventory System

Perpetual Inventory is a system of records maintained by the controlling department, which reflects the physical movement of stocks and their current balance. It aims at devising the system of records by which the receipts and issues of stores may be recorded immediately at the time of each transaction and the balance may be brought out so as to show the up-to-date position.

The records used for perpetual inventory are:

(1) Bin Cards;

(2) Store Ledger Accounts or Stores Record cards;

(3) The forms and documents used for receipt, issue and transfer of materials.

Advantages of Perpetual Inventory system

1. It keeps the record of stocks up to date.
2. The materials are kept within the Minimum and Maximum Limits. Non-observance of the limits fixed is detected.
3. The materials going out of stock are easily detected and purchased at the appropriate time to avoid the risk of closing down.
4. It acts as a moral check on the staff of the stores Department and so the possibilities of loss or theft of materials are minimized.
5. The recording of stocks in Bin cards as well as Store Record cards minimizes the error in entering the receipts and issues of stocks.
6. The discrepancies noted after physical counting are detected and corrective action is taken promptly to avoid future occurrence.
7. The materials getting state or being wasted are detected and placed in right atmosphere.
8. The prompt balancing of closing stocks enables quick preparation of final accounts.
9. The slow moving inventories, obsolete or dormant stocks are brought to the notice of the Purchase Department so that such stocks may purchased future in lesser quantities as required.

10. The availability of correct figures of stocks helps in the insurance of the stocks.

Purchasing Procedure

(1) Bill of Materials.
(2) Purchase Requisition.
(3) Selection of Suppliers.
(4) Purchase Orders.
(5) Goods Received Note.
(6) Inspection of Materials.

(1) Bill of Materials (Specification of Materials):

Bill of Materials is a list of containing all materials required for manufacturing a product. In other words, it is a form which indicates the quantity and quality and other specifications of materials required for a particular job or process or operation. This is a form sent to the purchase department for asking to purchase the said materials required for a particular work order. At least five copies of bill of materials are prepared by materials requiring department. Out of these copies one copy is sent to purchase department, to the stores, to the production section, to the cost office and to the office copy for further reference.

(2) Purchase Requisition:

It is a form which indicates indent for materials. In any industry, the purchase department places orders for materials based on the purchase requisition form. Usually the purchase requisition form is initiated by the storekeeper for the standard items, the stock which require restocking again and again. Sometimes, it is initiated by other departments for special materials which are not stocked in stores. Whenever any special material is required for production, the purchase requisition form is prepared in three copies. Out of these copies one copy is sent to purchase department, one to the production control department and one to the initiating department.

(3) Selection of Suppliers:

On receipt of the purchase requisition, the purchasing department prepares a list of suppliers who deals with the business of the materials to be purchased and are reliable. It is useful for the purchasing department to call for quotations. If the material to be purchased is of small Materials Cost Control quantities and is required urgently, it may be purchased locally. After receiving the quotations, prepare a comparative statement of the rates, terms

and conditions mentioned in the tenders. If required samples may be received from the suppliers who have quoted the lowest rates. After satisfying the above, select the suitable suppliers to place the purchase order for required materials.

(4) Purchase Order:

Purchase order is a letter which is sent to the suppliers for asking to supply the specified materials. Purchase order must contain the rates, terms, quantity, quality, time of delivery and other conditions mentioned therein. At least five copies of purchase order are prepared by the purchase section and each copy sent to :

(1) Original to the Suppliers.
(2) Storekeeping Department.
(3) Account Section.
(4) Inspection Department.
(5) Retained in the purchase department for further reference.

(5) Goods Received Note:

The materials receiving section is responsible to receive the goods and verify the contents of the packages along with Goods Received Note sent by the suppliers. This section should ensure that the goods have been received as per the purchase order and record the same in the Consignment Note. Five copies of the materials received report are generally prepared. Out of these copies, the original is sent to purchasing department and remaining each copy sent to Stores department, Inspection, Accounts department and one copy retained by it for future reference.

(**6) Inspections of Materials**:

A detailed inspection is carried out after the materials are received. The Inspection Section should ensure that the goods have been received according to purchase order specification. Return of materials to suppliers, if any, damaged, spoiled, excess or not in accordance with orders. If the materials are found to be satisfactory the bill of the suppliers is passed and the payment is made to the suppliers.

Stores Requisitions

Forms used to keep track of materials charged to a particular job or department. The form contains such items as job number, department, and description of the material, quantity, unit cost, and dollar amount.

STORES REQUISITION

Job No. _____ Date _____
Department _____
Debit Account _____
Authorized By _____

Description	Quantity	Unit Cost	Amount

Factors to be contributed to purchase control:

i) **Determination of Quantity to be purchased**

- Quantities purchased in excessive number or weight block the working capital and the quantities purchased below the reasonable limit endanger the continuous working of the factory.

ii) **Determination of the Ordering Point**

- The ordering point of the ordering level is one at which the order for purchase of materials is to be placed with the suppliers when the stock of that material is reduced to that point by consumption or otherwise.

iii) **Determination of Price at which to be purchased**

- The selection of right suppliers and the best terms available out of the quotations received helps this factor.

The Purchase cycle constitutes the following:

1. Initiating the purchase;
2. Receiving of the Purchase Requisitions;
3. Deciding important factors relating to purchase;
4. Selecting the suppliers;
5. Placing purchase-orders and follow-up

6. Receiving the supply and returning unwarranted suppliers;
7. Inspecting the material received; and
8. Passing invoices for payment.

The important factors to be decided are:

a) What to purchase;
b) When to purchase; and
c) How much to purchase.

STORES RECORDS

1. **Bin Card**
   - A Bin card, also known as Bin Tag or Stock card, is a card showing quantitative record of the receipts, issues and closing balances of the material kept in the corresponding bin.
   - The Bin card is placed in the bin or shelf or is hung over the almirah or the rack otherwise known as 'Bin'.
   - Separate Bin cards are prepared for each item of stores and if two different materials are kept in one almirah, two Bin cards, one for each, are prepared, treating the almirah as two bins.
2. **Stores Ledger**
   - Stores Ledger is a record of stores, both in quantity and value and is maintained by the stores Accountant.
   - It is similar to Bin card but with the main difference that value of material is shown in the Stores ledger.
   - Stores Ledger is an important book and the account of each item of stores is maintained separately.
   - While Bin cards are maintained by store-keeper in the store, Store Ledger is maintained in the accounting department by the Stores Accountant.

Material Control and its Requirements

"Material Control' may be defined as the regulation of the procedures for requisitioning, buying, receiving, storing, handling and usage of materials".

The main requirements of a system of material control are:

- Planning and fixation of definite responsibility for each function of material.
- Co-ordination between departments responsible for requisitioning, purchasing, receiving, inspecting, storing and utilizing the materials,
- Centralization on purchases.
- Use of material purchase budget and material requirement budget.
- Use of standard and uniform forms, and
- Proper system of stock control.

For proper application of the material control the following steps are necessary.

1. Purchasing of materials
2. Receiving and inspecting of materials
3. Storing of materials
4. Pricing material Issues
5. Accounting materials losses.
6. Keeping physical and perpetual inventory

Purchasing of Materials

- In a large manufacturing concern, a separate purchase department is set up with the object of affecting all purchases.
- The top management lays down the purchase department.
- It is the function of the purchaser department to decide:

i) What to purchaser;
ii) When to purchase;
iii) form where to purchase;
iv) how much to purchase, and
v) finally at what price the material should be purchased.

Maintenance of Stock Levels

- The next important point after determination of EOQ is to decide as to when the order for purchase should be placed.
- The answer is simple. The order for purchase should be placed when the stock is reduced by usage to the Order Point.
- The Order Point is one where the order should be placed for the economic order quantity.
- For deciding Order Point, two things, viz.,
  (1) Lead time and
  (2) Usage during Lead time, are the determining factors.
- Lead time is the supply time, or to be more specific, Lead Time is "the time interval between placing an order and having materials on the factory floor ready for production…"
- Usage means the sue of materials by consumptions for productions, or the stock of finished goods sold.
- Sometimes purchase are made in large bulk in a season if the goods are seasonal, i.e., available in one season only, or at a time when it is feared that the goods may not be found available in the near future due to some reason.
- Special items for which no limit or order-points are fixed may be purchased as and when needed.
- To avoid over-stocking and under stocking each items of the inventory has the Maximum Level. Minimum Level and an Order point.

Order Point

It is also known; 'Ordering Level'; or 'Reorder Point', or 'Reordering Level or 'Ordering Limit', it has been stated earlier that Order Point is at which order for supply of materials or goods is placed. To decide the Order Point, three factors are considered, viz.,

(1) Lead time
(2) Usage during Lead time, and
(3) Minimum Limit, or the Safety stock.

In order to ensure that the optimum quantity of material is purchased and stocked, neither less nor more, the storekeeper applies scientific techniques of materials management.

Fixing of certain levels for each item of materials is one of such techniques.

The following levels are generally fixed.

1. Maximum level 2. Minimum level
3. Order level 4. Danger level

1. **Maximum level**

- The maximum stock level indicates the maximum quantity of an item of material which can be held in stock at any time.
- The maximum stock can be calculated by applying the following formula.
- Maximum level – Re-order level + re-order quantity – (minimum consumption X minimum re-order period)

2. **Minimum level**

- Minimum level represents the quantity below which the inventory of any items should not allowed to fall;
- In other words, an enterprise must maintain minimum quantity of stock so that the production is not hampered due to non-availability of materials.
- If some buffer inventory is acting as a cushion against reasonable expected maximum usage.

Formula:

Minimum level = Re-order level – (Normal consumption x normal re-order period)

3. **Re-ordering Level Point**

- Re-ordering stock level in relation to an items of stock is the point at which it becomes essential to initiate purchase orders for its fresh supplies.

- Normally, re-ordering level is a point between the maximum and the minimum levels.
- Fresh orders must be placed before the actual stocks touch the minimum level.

Formula:

Reorder level = maximum re-order period x maximum usage.

4. **Danger level**
   - The danger level is below the minimum level and represents a stage where immediate steps are taken for getting stock replenished.
   - When the stock reaches danger level it is indicative that if no emergency steps are taken to restock the material, the stores will be completely exhausted and normal production stopped.
   - Generally the danger level of stock is fixed above the minimum level but below the re-ordering level.

CONTROL OVER WASTAGE, SCRAP AND SPOILAGE:

Material Losses

1. **Waste:** Waste is defined as discarded substances having no value.
   - ❖ **Normal Waste:** It is the loss which is unavoidable on account inherent nature of material. Some materials such as liquid materials lose their weight due to evaporation. Similarly, there are some materials (i.e. coal) which are wasted due to loading and unloading.

Example:

	Units	Amount
Suppose, total cost of input(i.e. material, labour & o/h)	2,000	20,000
Less: Normal waste @ 5% (assumed)	100	-
Cost of normal output	1,900	20,000

Therefore, cost per unit = $\frac{20,000}{}$ = Rs. 10.53

1,900

- **Abnormal Waste:** Any loss caused by unexpected or abnormal conditions such as sub-standard materials, carelessness, accident etc. or loss in excess of the margin anticipated for normal process loss should be regarded as abnormal waste.

  The value of abnormal loss is calculated with the help of the following formula

$$\text{Abnormal Waste} = \frac{\text{Normal cost of normal output}}{\text{Normal output}} \times \text{Units of abnormal Waste}$$

1. **Scrap**

Scrap is discarded material having some value. It represents fragments or remnants of material that are left from certain type of manufacture. It is a material loss but has small value without further processing. Example of scrap are available in operations like turning, boring, punching, sawing, shavings, moldings, etc. from metals on which machine operations are carried out; saw dust and trimmings in the timber industry; dead heads and bottom ends in foundries; and cuttings, pieces and splits in leather industry.

2. **Defectives**

Defective products or units are those which do not meet with dimensional or quality standards and reworked for rectification of defects by application of material, labour and /or processing and salvaged to the point of either standard product or sub-standard product to be sold as seconds. So defectives are that portion which can be rectified at some extra cost of re-operation. Defectives may arise due to the following reasons:

1. Sub-standard materials
2. Poor workmanship
3. Poor maintenance of machines
4. Wrong tool setting
5. Faulty design of products
6. Bad supervision

7. Careless inspection
8. Poor working conditions
9. Lack of Control, such as humidity, furnace temperature etc
10. Excessive short runs.

3. **Spoilage**

Spoilage refers to production that does not meet with dimensional or quality standards in such a way that it cannot be rectified economically and is junked and sold for a disposal value. So it occurs when goods are so damaged in course of manufacturing process as to become not rectifiable with some additional cost. Material used in spoiled units can be used again as material by the same or another process or product. Spoilage cost is the difference between the costs incurred upon the point of rejection less salvage value or cost of material used.

Need for Inventory Control

The term 'Inventory' is used to denote

(i) goods awaiting sale (the stock items of a trading concern and the finished stocks of a manufacturer);

(ii) the goods in course of manufacture, known as work-in-progress, and

(iii) goods to be used directly or indirectly in production, i.e., raw materials and supplies.

Objectives of Inventory Control

1. To exercise proper control on the purchases and issues of inventories; proper storing; elimination of wastage; and regulating the proper supplies to works and to customers;
2. Pricing of the inventories on suitable basis;
3. Proper recording, and scientific inventory management
4. To have proper assessment of income through the process of matching appropriate costs against revenues.
5. To maintain inventory of sufficient size for the operations to go on uninterruptedly but the size should match with the optimum financial

involvement.

Methods of pricing

There are different methods of pricing materials issue. The various methods used fall under the following main categories:

I. Cost Price Methods

(a) First in First out (FIFO)

(b) Last in First out (LIFO)

(c) Base Stock

II. Average Price Methods

(a) Simple Average.

(b) Weighted Average

III. Notional Price Method

(a) Standard Price.

(b) Inflated Price.

(c) Replacement price.

First in First out Method (FIFO)

Under this method materials are used in the order in which they are received. In other words, materials received first are issued first. This process is repeated throughout.

The price of the earliest consignment is taken first and when that is exhausted, the price of the next consignment is adopted and so on. This method is most suitable for use where the material is slow moving and has comparatively high unit cost This method is also useful in times of falling prices because the issue price of material to the job will be high while the replacement cost of material will be below.

Illustration

Show the Stores Ledger entries for the month of Jan, 2008 as they would appear when using FIFO method:

Jan.1 Purchased 300 units @ Rs.3 per unit

Jan.4 Purchased 600 units @ Rs.4 per unit

Jan.6 Issued 500 units.

Jan. 10 Purchased 700 units @ Rs.4 per unit.

Jan. 15 Issued 800 units.

Jan.20 Purchased 300 units @ Rs.5 per unit.

Jan.23 Issued 100 units.

Ascertain the quantity and value of closing stock as on 31st Jan under FIFO method. Solution:

Stores ledger Account (FIFO Method)

200 units @ Rs.4 = 800 300 units @ Rs.5 = 1,500 Rs. 2,300

Advantages of FIFO method:

(i) It is simple to understand and easy to calculate.

(ii) FIFO method is based on sound principle that materials are issued in order of purchase. Thus materials received first are issued first.

(iii) The value of closing stock will reflect current market price.

(iv) This method is suitable when prices are falling.

(v) This method is also useful if transactions are few and prices of material remain stable.

(vi) Unrealized profit or loss does not arise as materials are issued at actual cost but not on estimate.

(vii) Deterioration and obsolescence can be avoided by exhausting oldest materials at the time of issue.

Disadvantages

This method suffers from the following disadvantages:

(i) The calculation becomes difficult and cumbersome when purchases are made very frequently at different prices.

(ii) Issue price does not reflect current market price and so does cost of production.

(iii) For pricing one requisition, more than one price has often to be taken.

(iv) Cost of production tends to be high during the period of falling prices.

(v) Two similar jobs cannot be compared as the issue price of one lot differs from that of other.

Last in First Out Method: (LIFO)

This method is exactly the opposite of FIFO method. Under this me materials received last are issued first. The price of the material to be issued would the cost price of the last lot of materials purchased.

This method is useful during t period of rising prices because materials will be issued from the latest consignment a price which is closely related to the current price levels. Under this method product' cost is calculated on a basis which approximates to replacement cost.

Advantages of LIFO Method:

The following are the advantages of LIFO method:

(i) This method is very simple to operate and quite useful where transactions are not too many and prices are fairly steady.

(ii) Production is charged at the most recent prices so that it is based on the principle that costing should be related to current price levels.

(iii) During the period of rising prices there is no windfall profit as in case of FIFO method.

(iv) Closing stock will be valued at earlier price and will not, therefore, show unrealized profit.

(v) This method reduces burden of income tax during the period of price rise Disadvantages

Disadvantages:

This method suffers from the following disadvantages:

(i) Like FIFO system, calculations become complicated and cumbersome when transactions are many with frequent price fluctuations.

(ii) Two similar jobs cannot be compared because of charging different rates of materials to different jobs.

(iii) Under this system, closing stocks are not shown at current market price.

(iv) Sometimes more than one price has to be adopted for pricing a single requisition.

(v) When prices are falling it will lead to low charge to production, whereas materials in the stock purchased at higher rate need adjustment for valuation of closing stock.

(vi) This system of material issue is not accepted by Income Tax Authorities.

Base Stock Price

This is not a distinct method of pricing materials issue. This method is based o^ the principle that a certain minimum quantity of material is always maintained in to ensure continuous production.

This minimum stock is treated as fixed asset and is called as base stock. Since minimum stock is created out of first lot of material purchased, it is always valued at cost price of first lot of materials. The quantity in excess of this base stock is issued at a price similar to FIFO or LIFO method.

This bad stock method operates in conjunction with some other methods like FIFO or LIFO and is called Base Stock - FIFO method or Base Stock - LIFO method. The advantages of FIFO and LIFO are applicable in this method.

Simple Average Price Method

Under this method, materials issued are valued at average price. This is calculated by dividing the total of the price of the materials on the stock from which the material to be priced could be drawn by the number of prices used in that total.

Unit pieces of material in stock Issue Price - Number of purchases.

A new simple average price is to be determined when a fresh receipt is made. The rate is also revised when an earlier consignment is exhausted.

The following example will illustrate this. Suppose, following are three different lots of materials in stock when materials is to be priced:

100 units purchased @ Rs.4.00 200 units purchased @ Rs.5.00 300 units purchased @ Rs.6.00

The simple average price will be = Rs.5.00

Advantages of Simple Average Price Method

The following are the advantages of simple average method:

(1) It is easy to calculate and simple to operate**.**

(2) A particular purchase at higher or lower rate cannot disturb the price to a great extent.

(3) Issue rate remains the same until a fresh purchase is made.

Disadvantages:

(1) It is not a logical method as it takes into account purchase price but not quantity.

(2) The value of closing stock becomes absurd.

(3) The issue price does not relate to the current market price.

Weighted Average Method

Merits

1. This method irons out the wide fluctuations in the prices.
2. With every new issue, a new rate is not calculated.
3. The total value of the material issued does not behave up and down to the total value of the material received, as is the case with Simple Average Method.

Demerits

1. Calculations are tedious. Prices are worked out in decimals to get correct results.
2. A lot of materials purchased at a very high price at one time continues to reflect its effect in the average, for a considerable time after it is exhausted.

1) Show the Store Ledger entries as they would appear when using

i) FIFO

ii) LIFO

iii) Weighted average method

iv) Simple average method

April	1.	Balance	300 units	Rs. 600/-
	2.	Purchase	200 units	Rs. 440/-
	4.	Issued	150 units	
	6.	Purchase	200 units	Rs. 460/-
	11.	Issued	150 units	
	19.	Issued	200 units	
	22.	Purchase	200 units	Rs. 480/-
	27.	Issued	250 units	

Problem 4

The following is the record of receipts and issues a certain material in the factory during a week.

April 1997

1. Opening Balance 50 tonnes @ Rs. 10 per tone.

   Issued 30 tonnes @ Rs. 10 per tones

2. Received 60 tonnes @ Rs. 10.20 per tone.
3. Issued 25 tonnes @ Rs. 10.20 per tone (stock verification reveals loss of tone)
4. Received back from orders 10 tonnes @ Rs. 10.20 per tone (Previously issued at Rs. 9.15 per tone)
5. Issued 40 tonnes @ Rs. 10.20 per tone.
6. Received 22 tonnes @ Rs. 10.30 per tone.
7. Issued 38 tonnes @ Rs. 10.30 per tone.

Solution 3

1) **Stores Ledger Account as per FIFO METHOD**

Date	Details	Receipt	Issued	Balance						
		Qty	Rate	Amt	Qty	Rate	Amt	Qty	Rate	Amt
April 1	Balance	300	2/-	600	-	-	-	300	2/-	600
2	Purchase	200	2.20	440	-	-	-	300	2.00	600
								200	2.20	440
4	Issue				150	2.00	300	150	2.00	300
								200	2.20	440
6	Purchase	200	2.30	460				150	2.00	300
								200	2.20	440
								200	2.30	460
11	Issue				150	2.00	300	200	2.20	440
								200	2.30	460
19	Issue				200	2.20	440	200	2.30	460
22	Purchase	200	2.40	480				200	2.30	460
								200	2.40	480
27	Issue				200	2.30	460	150	2.40	360
					50	2.40	120			

Value of Closing Stock : 150 units at the rate of Rs. 2.40 value Rs. 360/-

2) **LIFO METHOD**

Date	Details	Receipt	Issued	Balance						
		Unit	Rate	Amt	Unit	Rate	Amt	Unit	Rate	Amt

April 1	Balance	300	2.00	600	-	-	-	300	2.00	600
2	Purchase	200	2.20	440	-	-	-	300	2.00	600
								200	2.20	440
4	Issue				150	2.20	330	300	2.00	600
								50	2.20	110
6	Purchase	200	2.30	460				300	2.00	600
								50	2.20	110
								200	2.30	460
11	Issue				150	2.30	345	300	2.00	600
								50	2.20	600
								50	2.30	115
19	Issue				50	2.30	115	200	2.00	400
					50	2.20	110			
					100	2.00	200			
22	Purchase	200	2.40	480	-	-	-	200	2.00	400
								200	2.40	480
27	Issue				200	2.40	480	150	2.00	300
					50	2.00	100			

Value of Closing Stock : 150 units @ Rs. 2.00 value is Rs. 300/-

3) **WEIGHTED AVERAGE METHOD**

Date	Details	Receipt	Issued	Balance						
		Unit	Rate	Amt	Unit	Rate	Amt	Unit	Rate	Amt
April 1	Balance	300	2.00	600	-	-	-	300	2.00	600
2	Purchase	200	2.20	440	-	-	-	500	2.08	1040
4	Issue	-	-	-	150	2.08	312	350	2.08	728
6	Purchase	200	2.30	460	-		-	550	2.16	1118
11	Issue	-	-	-	150	2.16	324	400	2.16	864
19	Issue	-	-	-	200	2.16	432	200	2.16	432
22	Purchase	200	2.40	480	-	-	-	400	2.28	912
27	Issue	-	-	-	250	2.28	570	150	2.28	342

Value of Closing Stock : 150 units at the rate of Rs. 2.28 value Rs. 342.00/

4) **SIMPLE AVERAGE METHOD**

Date	Details	Receipt	Issued	Balance						
		Unit	Rate	Amt	Unit	Rate	Amt	Unit	Rate	Amt
April 1	Balance	300	2.00	600	-	-	-	300	2.00	600
2	Purchase	200	2.20	440	-	-	-	500	2.10	1050
4	Issue	-	-	-	150	2.10	315	350	2.10	35
6	Purchase	200	2.30	460	-		-	550	2.17	1193..50
11	Issue	-	-	-	150	2.17	325.50	400	2.17	868
19	Issue	-	-	-	200	2.17	434	200	2.17	434
22	Purchase	200	2.40	480	-	-	-	400	2.23	892
27	Issue	-	-	-	250	2.23	557.50	150	2.23	334.50

Value of Closing Stock : 150 units at the rate of Rs. 2.23 value Rs. 334.50

Solution 2

Stores Ledger Account Under LIFO

Date	Receipts	Issues	Balance						
	Qty	Rate	Amt	Qty	Rate	Amt	Qty	Rate	Amt
1				30			50	10	500
1				30	10	300	20	10	200
2	60	10.20	612	-	-	-	20	10	200
							60	10.20	612
3	-	-	-	25	10.20	255	20	10	200
				1	10.20	10.20	35	10.20	357
							20	10	200
4	10	9.15	91.5				34	10.20	346.80
				-	-	-	20	10	200

							34	10.20	346.80
							10	9.15	91.50
5	-	-	-	10	9.15	31.50	20	10	200
				3	10.20	306.0	4	10.20	40.80
6	22	10.30	226.6				20	10	200
							4	10.20	40.80
7	-	-	-	22	10.30	226.6			
				4	10.20	40.80	8	10.00	80.00
				12	10.00	120.0			

Closing Stock 8 tonnes @ Rs. 10 = Rs. 80/-

Stores Ledger Under FIFO

Date	Receipts	Issues	Balance						
	Qty	Rate	Amt	Qty	Rate	Amt	Qty	Rate	Amt
1				30			50	10	500
1				30	10	300	20	10	200
2	60	10.20	612	-	-	-	20	10	200
							60	10.20	612
3	-	-	-	20	10	200			
				5	10.20	51	55	10.20	561
				1(loss)	10.20	10.20	54	10.20	550.80
4	10	9.15	91.5	-			54	10.20	550.80
					-	-	10	9.15	91.50
5	-	-	-	40	10.20	408	14	10.20	142.80
							10	9.15	91.50
6	22	10.30	226.6	-			14	10.20	142.80
							10	9.15	31.50
							22	10.30	226.60
7	-	-	-	14	10.20	142.80			
				10	9.15	91.50	8	10.3	82.40
				22	10.30	226.60			
Closing stock 8 tonnes @ Rs. 10.30 = 82.40									

Meaning

"Labour Cost, representing the human contribution to production, is an important cost factor which requires constant control, measurement and analysis."

A rational approach to the problems of labor, fair maintenance of wage records for wage ascertainment, fair wage policy, and the incentives for earning more wages go a long way in providing a sense of security and stability to the workmen, in minimizing the labour turnover, and in exercising effective labour cost control.

Labour cost control aims at the control of the labour cost per unit of production and not at the reduction of the wage rates of the workmen. Efficiency of labour (a concept meaningless to material) has an important impact on the successful working of a business.

Labour cost is second major element of cost. Proper control and accounting for labour cost is one of the most important problems of a business enterprise. But control of labour cost presents certain practical difficulties unlike the control of material cost.

Labour costs represent the various items of expenditure Such as:

Monetary Benefits:

i) Basic Wages;

ii) Dearness Allowance;

iii) Employer's Contribution to Provident Fund;

iv) Employer's Contribution to Employee's State Insurance (ESI) Scheme;

v) Production Bonus;

vi) Profit Bonus;

vii) Old age Pension;

viii) Retirement Gratuity;

Fringe Benefits:

i) Subsidized Food;

ii) Subsidized Housing;

iii) Subsidized Education to the children of the workers;

iv) Medical facilities;

v) Holidays pay;

vi) Recreational facilities.

Control of labour costs is an important objective of management and the realization of this objectives depends upon the cooperation of every member of the supervisory force from the top executive to foreman.

From functional point of view, control of labour cost is effected in large industrial concern by the coordinated efforts of the following six departments-

1) Personnel Department,
2) Engineering Department,
3) Rate or time and Motion Study department
4) Time-Keeper Department
5) Cost Accounting Department
6) Pay-roll Department

Factors Governing a Satisfactory system of Wage Payment

The system should depend upon the nature of the worked and the efforts involved.

a) It should guarantee a minimum living wage to ensure a satisfactory standard of living.
b) It should be based upon a scientific time and motion study.
c) It should be capable of being understood by al the employees.
d) It should be flexible and capable of being adapted to changed circumstances.
e) Its incidence on the cost per unit should be such that it does not form a considerable proportion of the total cost per unit to deprive the employer of a fair margin of profit, given the market price of the commodity produced by concern.

f) It should reduce the labour turnover.

g) The cost of working the system should be the least.

h) It should boost employee morale.

i) It should be acceptable to trade unions.

j) It should be correlated to the capacity of the concern to pay.

Characteristics of Good Wage System

1. **Fair to both the Parties:**

   The system should be such as may be acceptable gladly to the employer and the employees. for this purpose, the employer should decide the system in consultation with the workers.

2. **Easy to Calculate**

   The workers should be in a position to calculate their wages correctly and feel sure that they have been correctly paid. Easy calculation will help the employer also in maintaining simple records.

3. **Related to Efficiency**

   'Fair remunerations for fair output', should be the idea and remuneration should be related to the individual efficiency of the workers.

4. **Minimum wage guaranteed**

   There should be a guarantee of minimum wages to the workers to enable them to maintain their basic standards of life, and to do away with uncertainty-concept.

5. **Incentive-oriented**

   The wage system should be such that the workers may feel encouraged to product more and earn more wages.

6. **Quality Improvement-oriented**

   In the race to earn more wages with an increase in production, the chances are that the quality of the output may deteriorate. The system should, therefore, ensure 'better wages for better quality'.

Labour Turnover

Labour turnover is an index denoting change in the labour force for an organisatoin during a specified period. In every industry, works leave their job a new workers have to be appointed to replace them. The

ratio of the replaced workers to the number of works is the Labour Turnover Ratio. If more workers leave the factory, the turnover would be high, and vice versa. A high turnover is a costly affair and must be avoided.

Causes of Labour Turnover

The workers leave the factory either by

i) Resignation, or by

ii) Discharge by the employer, or

iii) Due to a cause not within one's control.

Measurement of Labour Turnover

Labour Turnover is measured by applying any one of the following three Methods:

1. Separation Method

$$\frac{\text{Number of employees left during a period}}{\text{Average number of employees during the period}} \times 100$$

$$\text{Average Number} = \frac{\text{No. at the beginning} + \text{No. at the end}}{2}$$

Multiplication of the formula by 100 indicated Ratio of the turnover in percentage.

2. Replacement Method

$$= \frac{\text{Number of replacement in the period}}{\text{Average number of employees during the period}} \times 100$$

In this method, only the actual replacement are counted irrespective of the number of workers left. If new workers are appointed for expansion programme, they are excluded from the number or replacements.

3. Flux Method

$$\frac{\text{Number of Separations} + \text{Number of replacement}}{\text{Average number of employees during the period}} \times 100$$

This method is the combination of Method 1 and Method 2.

Effect of Labour Turnover on Cost

A high turnover has an adverse effect on the cost of production due to the following reasons:

1. Change in workers interrupts production and the production goes down.
2. New comers take time in learning the factory procedure and the work procedure.
3. The tools and machines cannot be handled as efficiently by the new workers as hither to done by the old staff. There are chances of more break-downs and of greater cost of repairs of machines.
4. What is true of machines is also true of material handling and usage by the new workers.
5. The rate of accidents may increase, the rate of defectives in the finished output may increase, and there may be increased wastage of time.
6. The cost of making selections and cost of imparting training to the new entrants would further increase the cost and reduce the profits.

Cost of Labour Turnover

There are two types of costs

i) Preventive cost and

ii) Replacement costs

And amenities to the workers that they may be tempted to continue at their job in the factory and not to leave it for example:

i) Personnel Administration: Only that portion of the cost of this department which is related to the maintenance of good relationship between labour and management.

ii) Medical Services-Preventive as well as curative.

iii) Welfare activities and services.

iv) Miscellaneous schemes and benefits, e.g., Provident fund scheme, Pension scheme, Bonus incentives schemes, etc.

The replacement costs are those incurred to recruit new workers and also the costs consequent or incidental to replacement, for example:

i. Cost in selection and appointment
ii. Training cost
iii. Loss of output due to delay in recruitment workers
iv. Cost of inefficiency of new workers
v. Cost of breakage of tools and machinery
vi. Cost of increased spoilage and defectives
vii. Cost of frequent accidents

IDLE TIME

The time when the worker does no work and remains idle, is the idle time. So the idle time cost represents the wages paid for the time lost. The following are its causes:

1. **Lack of proper planning:**

That the production work should go on smoothly depends upon proper planning. If the workers do not have material at the right time, or the machines are not kept fir for working, the time goes waste. Sometimes, delay in the proceeding process delays the operations of the succeeding progress. Here also the workers have to wait due to faulty planning or bad management.

2. **Careless in Supervision:**

If the foreman of a department does not take his duty seriously, the labour working under him also becomes careless and spoils time in the idle way.

3. **Confrontation between labour management:**

The confrontation between labour and management arising form any cause, does waste time in discussions, dialogues, strikes etc., and the wages paid, if any, for this period form the idle time cost.

4. **Economic Factors:**

Trade depression, or serve competition lowers the production, and so labour remains effectively unutilized.

5. **Others reasons:**

The electricity may fail or the machine may break down for some or more time. They make labour to remain idle for the time being.

OVER-TIME

The time worked over and above the normal hours is overtime. The remuneration usually paid for the overtime work is at double the normal rate. The need for over time work arises due to:

1. Increase in demand for the products where the production during the normal hours falls short to meet it;
2. Shortage of workers due to absence or non-availability and so it is decided to give overtime work to the existing staff;
3. Utilization of perishable raw materials by working overtime;
4. Execution of urgent orders, or to complete the work o9n the same day;
5. Shortage of equipments, machines, or space for the completion of jobs;
6. Lack of administrative control on workers, on account of which the production during normal hours remains less the standard output and overtime work has to be done by the workers.

Disadvantages of overtime working

The following are the disadvantages:

1. Worker's health is adversely affected;
2. The quality of the output is at a discount; and
3. The cost of production rises due to increased labour cost.

System of Wage Payment

Strictly speaking, there are only two basic methods of wage payment, viz., wages based on the time spent in the factory, and wages based on the quantum of work turned out. These are thus known respectively as the 'time wage' and the 'piece wage' methods of remuneration. Since each of these has its own advantages and disadvantages, attempts are made to combine the two, mainly with a view to overcoming their disadvantages. We have therefore, the premium bonus or the incentive schemes which may either be considered to be merely variations of the two, or as another of wage payment. These three methods may also be re-classified into only two groups, viz., the time wage system and the payment by results.

Methods of Remuneration

The methods of remuneration can be classified into:

1. Time Rate System
2. Pieced Rate System
3. Incentive Schemes

1. **Time Rate System**

In this system, a worker is paid on the basis of attendance for the day or according to the hours of the day, regardless of the output. This system is also known as time work, day work, day age rate or day rate. The wage rate of the day worker may be fixed on hourly, daily, weekly, fortnightly, or monthly basis depending on the practice followed in the concern.

The basic feature of this system is that the worker is paid so much per unit of time regardless of the output he produces. The unit of time may be an hour, a day, a week or a month. Under this method, wages depend entirely upon the time clocked, but not on the efficiency of the worker. There are three variants of this system, each differing only in so far as the fixation of the time rate is concerned. They are:

a) Flat Time or Time Rate at Ordinary level;
b) High Day Rate or Time Rate at high level;
c) Measured Day work or Graduated Time Rate.

Graduated Time Rate

Under this method wages are paid at time rates which vary according to

a. Merit-rating of the workers, or
b. Changes in the cost of living index.

It the cost of living goes up, the wages also go up proportionately, and vice versa. Thus the works get the real wages. Similarly, the workers having higher merit rating get higher wages, and the workers with lower rating get lower wages.

Differential Time Rate

Workers are paid rate accounting to their individual efficiency. They are paid normal rate upto a certain percentage of efficiency and the rate increases in steps for efficiency slabs beyond the standard. As the efficiency is measured in terms of output, this method does not fall strictly under the area of time rate system.

2. **Payment by Results-Piece-work Rate**

The payment of wages under this system is based upon the out turn of the worker. The rate is fixed per piece of work and the worker is paid according to the pieces of work completed or the volume of work done by him, irrespective of the time taken by him in completing that work. A workman is free to earn as much as his ability, energy, or skill would allow to him to produce.

The various schemes falling under 'Payment by results' make speed as the basis of payment, instead of time. Accordingly, these schemes are just the opposite of the time wage system. They are so called because of the fact that wages are linked to the volume of work done regardless of the time taken by workers. Efficiency is recognized in all these schemes and workers get wages according to their avility, efficiency, and speed. The following schemes fall under the payment by results method of wage payment.

a. Straight Piece Rate.

b. Differential Piece Rate.

Stability of the System

This system is suitable in the following cases:

1. Where the production can be measured in standard units.
2. Where strict supervision is not possible.
3. Where quality and precision are not of primary importance.

Advantages

1. It provides initiative and incentive to the workers to product more.
2. The productivity increases and cost of production per unit goes down.
3. As there is little wastage of time on the part of the workers, the fixed overheads and resources like plant, machinery and space are well utilized.
4. Workers feel free to work, complete with fellow workers, exhibit their efficiency, and earn more of wages.
5. Less supervision is required over the workers, and happy relations are maintained with them.
6. It is easy to calculate the labor of products.

Disadvantages

1. In the race to earn more wages by producing more, the quality of products is likely to deteriorate. So it requires strict inspection and quality control.
2. Continuous and increased working for some days may cause fatigue and ill health to the workers.
3. To speed up production, the machines, tools, and equipments are sometimes not handled with the care that they require, and so the workers expose themselves to accidents, besides causing loss of breakdown to the machines, equipments etc.,
4. The inefficient workers earning less of wages start feeling jealous of other workers who earn more. This creates unhealthy atmosphere.
5. The workers feel insecure of earning during the days of ill health, holidays, etc.
6. This system is not useful for quality products.

The piece rate System can be classified into:

Straight Piece Rates

It is a simple method of making payment at a fixed rate per unit for the units manufactured.

Earnings = Number of units X Rate per unit

The rate is fixed taking into consideration

a. Time rate for the same class of workers, and
b. Standard output during a given time.

Differential Piece Rates

Under this system, efficient workers are paid wages at a lower rate. A definite standard of efficiency is set for each job and for efficiency below or above the standard different piece rates are paid according to different levels of

efficiency. The following two methods of wage payment are studied under this system:

a. Taylor Differential Piece-rate Method, and

b. Merrick Differential Piece rate Method

Taylor Differential Piece-Rate

F.W. Taylor thought to improve the efficiency of workers by suggesting two rates of payment of wages:

(I) A higher rate to the workers who product equal to or more than the standard fixed for production during the day, and

(II) A lower rate to the workers who do not achieve the standard.

Merrick Differential Piece-rate

In the Taylor Method, the effect on the wages is quite sharp in the marginal cases. To remove this defect Merrick suggested three piece rates for a job as follows:

Percentage of Standard Output	Payment under Merrick Method
Upto 83%	Normal piece rate
Above 83% and upto 100%	110% of normal piece rate
Above 100%	120% of normal piece rate

3.Incentive Schemes

Factors for Selecting Incentive Scheme

The following factors should be considered for selecting an incentive scheme:

1. **Productivity**

The object of the incentive scheme is to increase productivity. Therefore, this factor is very important. The increased productivity lowers the cost to the benefit of the employers.

2. **Simplicity**

The scheme should be simple in operations and well understood by the workers. The scheme should be amenable to the setting up of standards and the comparison of the results with the actual.

3. **Cost Reduction**

The scheme, when introduced, is bound to increase the pay-bill of the workers, and thus *increase the cost. But the simultaneous increase in production would reduce the cost per unit or production. The fixed overheads remain constant up to a certain limit of plant capacity. As such, the increased productivity reduces the cost of fixed overheads per unit.

4. **Better Labour Psychology**

The scheme should not affect worker's health adversely, should reduce labour turnover and help to improve the standard of living of the workers.

Under this heading, we study the following methods:

(I) Halsey Premium Scheme;

(II) Halsey Weir Scheme;

(III) Rowan Premium Scheme;

1. **Halsey Premium Scheme**

Under this plan,

(i) Time rate is guaranteed;

(ii) Standard time is fixed for the job or operation;

(iii) The workers producing more than the standard, or the workers completing the work in less than the standard time fixed, get bonus in addition to the ordinary time wage;

(iv) The bonus of the premium, by whatever name called, is 30 to 70 percent of the wages of time saved, the usual percentage being 50%,

(v) The remaining of the bonus percentage is shared by the employer.

Merits of Halsey Plan

(i) Day wage or the time rate is guaranteed. Even if output is less than the standard, one gets the time wage;

(ii) Workers get premium for the output above the standard. It provides incentive to the workers to produce more;

(iii) As the premium is not 100% but only 50% or so, the employers feel happy about it is a they share the remaining 50%;

(iv) The scheme is very simple and understood easily by the workers.

Demerits

(i) A significant share of the bonus goes to the employers. So the workers object to it;

(ii) Incentive is not so attractive as it is with the piece work;

(iii) Where the workers start saving more than 50% of the time, they earn premium in huge amounts, which the employers do not relish.

2. **Halsey – Weir Scheme**

This schedule is similar to Halsey scheme except that in this scheme the workers and employers share the premium in 1:2 ratio.

3. **Rowan Premium Scheme (variable sharing plan)**

Mr. James Rowan introduced this scheme in Glasgow in 1898. It is similar to Halsey scheme but the premium concept here is different. Here the premium is in the ratio of Time saved to Standard time, calculated on the ordinary wages.

Premium = Wages of time worked x Time saved / Standard Time

Or; (AT x R) TS / ST

This scheme also guarantees day wage as is done by Halsey Plan.

Problem 1

Calculate the earnings of a worker from the following information as under.

a) Time Rate Method: Standard time 30 hours Time taken 20 hours. Hourly rate of wages of Re. 1 per hour plus dearness allowance 50 paise per hour worked.

Problem 2

On the basis of the following information calculate the earnings of A and B on the straight price Rate basis and Taylor's differential piece rate system.

Standard Production 8 units per hour

Normal time rate Rs. 0.40 per hour

Differential to be applied:-

80% of piece rate below standard

120% of piece rate at or above standard. In a 9 hour day, A produces 54 units and B products 75 units.

Problem 3

Calculate the earning of workers A,B and C under Merrick's multiple piece system from the following particulars.

Normal rate per Hour Rs. 1.80

Standard time per unit 1 minute

Output per day as follows:-

Worker A: 384 units

Worker B: 450 units

Worker C: 552 units

Working rows per day are 8

Problem 4

Calculate the earnings of workers A and B under straight piece rate system and Taylor's differential piece rate system from the following particulars.

Normal Rate per hour Rs. 2.40

Standard time per unit 30 seconds

Differentials to be applied:-

80% of piece rate below standard

120% of piece rate at above standard

Worker A produces 800 units per day and

Worker B produces 1000 units per day.

Problem 5

From the following data, total monthly remuneration of three workers A, B and C under the

Gant's Task and Bonus Scheme:-

i) Standard Production per month per worker is 1000 units.

ii) Actual Production during the month A = 850 units,

B = 1000 units

C = 1100 units

iii) Piece works rate 50 paise per unit

Problem 6

The existing incentives system of a certain factory is

Normal working week – 5 days of 9 hours plus 3 rate shifts of 3 hrs each.

Rate Payment - Daywork = Re. 1 per hour

- Late shift = Rs. 1.50 per hour

Additional bonus payable – Rs. 2.50 per day shift
Rs. 1.50 per Late shift

Average output per operative for 54 hour week – 120 articles i.e. including 3 Late shifts

In order to increase output and eliminated overtime it was decided to with on to a system of payment by results the following information is obtained.

Time rate Re. 1 per hour
Basic time allowed for 15 articles 5 hours
Piece work rate – Add 20% to piece
Premium – Add 50% to time
You are required to show

i) Hours worked
ii) Weekly earnings
iii) Number of articles produce and
iv) Labor cost per article for one operative under the following sysem

a) Existing time rte
b) Straight piece work
c) Rowan system
d) Halsey weir system

Assume that 135 articles produces in a 45 hours work under (b) (c) and (d) and that the worker earns half time saved under the Halsey system. The additional bonus under the existing system will be discontinued on the proposed incentive scheme.

Problem 7

The Worker earns Rs. 2 as bonus @ 50%. So total bonus at 100% should be Rs. 4. The hourly rate of wages being Re. 1. The time saves should be 4 hours.

Standard time allowed	-	10 hours
Less: time saved	-	4 hours
Time taken	-	6 hours

A worker completes a job in a certain number of hours. The standard time allowed for the job is 10 hrs, and the hourly rate of wages (i.e. Re. 1 the worker earns at the 50% rate of bonus Rs. Under Halsey plan.

Ascertain the total wages under the Rowan premium plan:-

Problem 8

For a certain work order the Standard time is 20 hours, wages Rs. 5 per hour the actual time taken is 13 hours and factory overhead charges are 80% of standard time.

So out a comparative statement showing the effect on paying wages Halsey plan.

Problem 9

A Workman whose basic rate of pay is Re. 1 per hour of working under the 'Rowan' system of premium bonus. In addition he gets dearness allowance of Rs. 20 per week of 48 hours. During one week he does the following jobs.

i) Job 101 for which 25 hours are allowed. He takes 20 hours.

ii) Job 102 for which 30 hours are allowed he takes 24 hours.

During the week, his waiting time amounts to 4 hours. Find the worker's earning and the amounts to be charged to each job and to overhead.

Problem 10

The guaranteed time table is Re. 1 per how high piece rate is Re. 0.20 per unit and standard output is 10 units per hour. In a day of 8 hours, A produces 70 units and B produces 80 units and C produces 90 units. Calculate the earning of A,B and C under Gantt task plan.

Problem 11

Standard output is 10 units per hour and basic wage rate is Re. 1.50 per hour. In a day of 8 hours. A produces 40 units. B 75 units and C produces 90 units. Calculate the wages of A,B and C under Merrick's differential piece rate.

Solution 1:

Time Rate Method:-

Time Put in by workers x Rate per hour = 30 x 1 = Rs. 30

Solution 2

Standard production per hour 8 units
Normal time rate per hour Rs. 0.40
Piece Rate Rs. 0.40/8 = Rs. 0.05

Earnings under the straight piece rate system:-

A: 54 units @ Rs. 0.05 = Rs. 2.70

B: 75 units @ Rs. 0.05 = Rs. 3.75

Differential Piece Rate:-

Low Piece rate: 80% of piece rate (0.05 x 80 / 100) = Rs. 0.04

High Piece rate: 120% of piece rate = (0.05 x 120 / 100) = Rs. 0.06

Standard output per hour is 8 units, So Standard Output for a 9 hour day is 72 units. A produces only 54 units which is less than the standard output of 72 units. So he is entitled to get a lower price rate of Rs. 0.04 per unit. On the other hand, B's output of 75 units is more than the standard output of 72 units. So SA is to get higher piece rate of Re. 0.06 per unit.

A's earning: 54 units @ Re. 0.04 = Rs. 2.16

B's earning: 75 units @ Re. 0.06 = Rs. 4.50

Solution 3

Standard output per minute	= 1 units
Standard Production per hour	= 60 units
Standard Production per day of 8 hour i.e. (60 x 8)	= 480 units
Normal rate per hour	= Rs. 1.80
Normal output per hour	= 60 units
Therefore Normal piece rate	= (1080/60) x 5 paise

Calculation of level of Performance:-

Standard output per day	= 480 units
Worker A's Output per day	= 384 units
Worker A's level of performance	= (384/480) x 100 = 80%
Worker B's Output per day	= 450 units
Worker B's level of performance	= (450/480) x 100 = 43%
Worker C's Output per day	= 550 units
Worker A's level of performance	= (550/480) x 100 = 1150%

Earnings of workers A:-

Merrick's multiple piece rate system:-

For 384 units @ 3 paise per unit = (384 x 3) /100 = 11.50

Normal piece rate has been applied because worker A's level of performance is 807. Which is below 83%.

Earning of Worker B:-

For 450 units @ 3.3 Paise per unit = 450 x 3.3/100 = Rs. 14.85

Worker B's level of Performance is 93.75% which is between 83% and 100%. So he is entitled to get 110% of normal piece rate.

Earning of Worker C:-

For 552 units @ 3.6 paise per unit = (552 x 3.6)/100

Rs. 19.87

Worker C's level of performance is 115% which is more than 100% of standard output. So it is entitled to get 120% of normal Piece rate.

Solution 4

$$\text{Hourly Production} = \frac{3600}{1000} = 120 \text{ units}$$

$$\text{Piece rate} = \frac{2.210}{120} = 0.005$$

Low piece rate:-

LPR = 80% of normal piece rate

= 80% x 0.005

= 0.004

High piece rate:

HPR = 120 of 0.005

= 0.006

Standard Production per day = 120 units x 8

= 960 units

Computation of earnings of A and B:-

	A	B
Normal Piece Rate	0.005	0.005
Production per day	800	1000
Standard Production Per day	960 units	960 units
a. Straight piece Rate System	800 x 0.005	1000 x 0.005
Earning	Rs. 4.80	Rs. 5
b. Taylor's Differential piece Rate	0.004 x 800	0.006 x 1000
	Rs. 3.2	Rs. 6.00

Solution 5

Standard Production per month is 1000 units and piece rate is 50 paise per unit so guaranteed monthly payment is Rs. 500 (i.e. 1000 units @ 50 paise)

Level of Performance:-

Standard output per month	1000 units
Worker A's Output	850 units

$$\text{Worker A's level of Performance} = \frac{1000}{1000} \times 100 = 85\%$$

Workers B's Output:-

Worker B's level of Performance x 100 = 100%

Workers C's Output:-

Worker C's level of Performance x 100 = 110%

Earning of Worker A:-

Worker A's level of Performance is 85% which is below the standard performance so it will get Rs. 500 the guaranteed monthly payment.

Earning of Worker B:-

Worker B's level of performance is 100% so he will get piece wages for 1000 units plus 20% bonus

Piece Wages for 1000 units @ 50 paise per unit	Rs. 500
Add: 20% bonus i.e. (500 x 20)/100	Rs. 100
Total earning	Rs. 600

Earning or Worker C:-

Worker C's level of Performance is 110% which is more than the standard Performance so he will get piece wage prices 20% bonus.

Thus dis earnings are as follows:-

Price wages for 1,100 units @ 50 paise per unit	Rs. 550
Add: 20% bonus (550 x 20)/100	Rs. 110
Total earning	Rs. 660

Solution 6

a) Existing time Rate:-

	Rs.
Weekly wages 45 hrs. @ Re. 1 per hour	4500
9 hrs @ Re. 1.50 per hour	13.50
Day shift bonus 5 x 2.50	12.50
Late shift bonus 3 x 1.50	4.50

Total Earning 75.50

b) Piece rate system:-

Basic time: 5 hours for 15 articles
Therefore cost of 15 articles 5.00
Add: 20% 1.00

Total Earning 6.00
Therefore Rate per article Rs. 6.00 / 15 = Rs. 0.40
Articles products in a week = 45 x 15/5 = 135
Hence Earning = 135 x 0.40 = Rs. 54.00

c) Rowan Premium System:-

Basic time = 5 hrs for 15 articles
Adding 50%= 7½ has for 15 articles
Therefore time for producing one articles
= 7½ hrs / 15 = 30 minutes
Therefore time allowed for 135 articles = 67 ½ hrs
Actual time taken for 135 articles 45 hrs
Therefore time saved = 22½ hrs
Earning = Time wages x (% of time saved / Standard Time) x Time wage
= 45 x 1 + (22½ / 67½) x 45 = 45 + 15 = 60

d) Halsey-Weir Premium System

Earning = Time wage + 50% (Time saved x Time rate)
= 45 x 1 + 50% (67½ - 45) x 1
= 45 + 11.25 = Rs. 56.25

The other requirements of the problems have been shown in the following table

Methods

	a	b	c	d
i) Hours worked	45	54	45	45
ii) Weekly earning Rs.	75.50	54.00	60.00	56.25

iii) Articles produces	120	135	135	135
iv) Labour cost per article	0.629	0.400	0.444	0.417

Solution 7

The worker earns Rs. 2 as bonus at 50% so total bonus at 100% should be Rs. 4. The hourly rate of wages being Re. 1 the time saved should be 4 hrs.

Standard time allowed 10 hours
Less: Time saved 4 hours
Time taken 6 hours

Earning under the roman Premium Plan:-

Earning = T x R + (S – T / S) x T x R
Where T = Time taken i.e., 6 hours
S = Standard time i.e. 10 hours
R = Rate per hour i.e. Re. 1
Therefore Earning = 6 x 1 + (10-6/10) x 6 x 1
= Rs. 6 + Rs. 2.40
= Rs. 8.40

Solution 8

Earning = A.T x T.R + 50% (T.S. x T.R)
= 13 x 5 + 50% (7 x 5)
= 65 + 17.5
= Rs. 82.50

Solution 9

Workers earning form Job 101 :-
Standard time 25 hours
Time taken 20 hours
Rate per hour Re. 1
Wages for actual time = 20 hrs @ 1 Re.
Premium according to Roman System
= Time taken x Rate per hr. + (Time saved / Standard time) x Actual time x Rate per hr
= 20 x 1 + (5/25) x 20
= Rs. 24 Rs. 24.00

Proportion of dearness allowances:-

= 20 x (25/55)

Earning from job 101 Rs. 9.09

Total Rs. 33.09

The workers earning from job 102:-

Standard time = 30 hours
Time taken = 24 hours
Rate per hour = 1 Re.
Earning = T x R + (T.S /Std) x A.T x R
= 24 x 1 + (6/30) x 24
= 24 + 4.8
= Rs. 28.80

Proportion of Dearness allowance:-

= 20 x (30 / 55)
= Rs. 10.91

Earning from job 102 Rs. 39.71

Total earning of the worker:-

Job 101 = Rs. 33.09
Job 102 = Rs. 39.71
Read = Rs. 4.00
Total = Rs. 76.80

Solution 10

Standard Output at 10 units per hour is 80 units.

A's output is below the Standard

B's output is at the standard and C's output is above the standard.

Accordingly A gets time wages, B gets a bonus of 20% of the time rate and C gets high piece rate.

Earnings: A = 8 hours x Re. 1 = Rs. 8
B = 8 hours x Re. 1.20 = Rs. 9.60
C = 90 hours x Re. 0.20 = Rs. 18

Solution 11

Standard output = 10 units per hour
Basic wage Rate = Rs. 1.50 per hour
Piece rate = 1.50 / 10 = Rs. 0.15

Percentage efficiency:-

=(Actual output / Standard output) x 100

For A	=	(40 x 100/80)	=	50%
For B	=	(75 x (100/80)	=	93.75%
For C	=	(90 x 100/90)	=	112.5%

A's efficiency being less than 83% he is paid the ordinary piece rate. B's efficiency being 83% to 100%. He is paid at 110% of ordinary piece rate. C's efficiency being more than 100% he is paid at 120%.

Thus: A gets 40 x Re. 0.15 = Rs. 6.00
B gets 75 x 0.165 = Rs. 12.37
C gets 90 x Re. 0.18

POSSIBLE QUESTIONS

PART A

ONE MARKS

ONLINE EXAMINATIONS

PART B

TWO MARKS

1. Explain the term minimum level.
2. Write a short notes on EOQ.
3. What do you understand by Classification of materials?
4. What is ABC Analysis?
5. What is perpetual Inventory?
6. Describe briefly job evaluations.
7. Write short notes on Idle time.

PART – C

SIX MARKS

1. Zee is a product manufactured out of three raw materials, 'M', 'N' and 'Q'. Each unit of Zee requires 10 Kgs., 8 Kgs. and 6 Kgs. of M, N and Q respectively. The re – order levels of M and N are 15,000 Kgs. and 10,000

Kgs. respectively while the minimum level of Q is 2,500 Kgs. The weekly production of Zee varies from 300 to 500 units, while the weekly average production is 400 units. You are required to compute :

(a) The Minimum Stock of M

(b) The Maximum Stock level of N and

(c) The Re – order level of Q.

The following additional data are given :

Particulars	**M**	**N**	**Q**
Reorder Quantity (Kg)	20,000	15,000	20,000
Delivery (in weeks):			
Minimum	2	4	3
Average	3	5	4
Maximum	4	6	5

2. The following particulars have been extracted in respect of Material X. Prepare Ledger account showing the receipts and issues, pricing the materials issued on the basis of Simple Average Method.

Receipts

3rd Oct. Purchased 500 units @ Rs. 4.00 per unit
13th Oct. Purchased 900 units @ Rs. 4.30 per unit
23rd Oct. Purchased 600 units @ Rs. 3.80 per unit

Issues

5th Oct. Issued 400 units
15th Oct. Issued 600 units
25th Oct. Issued 600 units

3. Show the Store Ledger entries as they would appear when using

i) FIFO ii) LIFO

April	1	Balance	300 units	Rs. 600/-
	2	Purchase	200 units	Rs. 440/-
	4	Issued	150 units	
	6	Purchase	200 units	Rs. 460/-
	11	Issued	150 units	
	19	Issued	200 units	
	22	Purchase	200 units	Rs. 480/-

27 Issued 250 units

4. Two materials X and Y are used as follows :

Minimum usage : 50 units per week each
Maximum usage : 150 units per week each
Normal usage : 100 units per week each
Ordering quantities - X – 600 units and Y – 1,000 units
Delivery period - X – 4 to 6 weeks, Y – 2 to 4 weeks

Calculate for each material
(a) Minimum level (b) Maximum level and (c) Ordering level

5. Show the Stores Ledger entries for the month of Jan, 2008 as they would appear when

using FIFO method:

Jan.1 Purchased 300 units @ Rs.3 per unit

Jan.4 Purchased 600 units @ Rs.4 per unit

Jan.6 Issued 500 units.

Jan. 10 Purchased 700 units @ Rs.4 per unit.

Jan. 15 Issued 800 units.

Jan.20 Purchased 300 units @ Rs.5 per unit.

Jan.23 Issued 100 units.

Ascertain the quantity and value of closing stock as on 31st Jan under FIFO meth

6. In a factory three components E, F, G are used as follows:

Normal Usage 900 Units Per Week Each
Maximum Usage 1,350 Units Per Week Each
Minimum Usage 450 Units Per Week Each
Re – order quantity E - 7,200 F - 9,000 G – 10,800
Re – order period E – 2 – 4 weeks F – 4 – 6 weeks G – 3 – 5 weeks

Calculate for each component :

(a) Re – order Level (b) Minimum Level

(c) Maximum Level (d) Average Stock Level

7. The following particulars have been extracted in respect of Material X. Prepare Ledger account showing the receipts and issues, pricing the materials issued on the basis of Weighted Average Method.

Receipts

3rd Oct.	Purchased 500 units @ Rs. 4.00 per unit
13th Oct.	Purchased 900 units @ Rs. 4.30 per unit
23rd Oct.	Purchased 600 units @ Rs. 3.80 per unit

Issues

5th Oct.	Issued 400 units
15th Oct.	Issued 600 units
25th Oct.	Issued 600 units

8. Calculate the total earnings and the rate earned per hour of three workers under the Halsey

and Rowan Plans; the hours under Halsey Plan is 50 % of the time saved

Standard time 20 hours

Hourly rate of wages Rs. 4

Time taken by A – 16 hours, B- 10 hours and C – 8 hours.

9. From the following particulars supplied by the personal department of a firm, calculate

Labour turnover:

Total number of employees at the beginning of the month	2,010
Number of employees who are recruited during the month	30
Number of employees who left during the month	50
Total number of employees at the end of the month	1,990

10. Standard time allotted for a job is 20 hours and the rate per hour is Rs. 2 plus a

dearness allowance @ 50 paise per hour worked. The actual time taken by a worker is

15 hours.

Calculate the earnings under

(a) Time System

(b) Piece Wage System

(c) Halsey Plan

(d) Rowan Scheme

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UNIT 2

QUESTION	Option A	Option B	Option C	Option D	Answer
The cost of labour which cannot be easily identified in the production is called ___	Indirect Labour cost	Direct labour cost	Total labor cost	Fixed labor cost	Indirect Labour cost
The method of recording the time spent by each worker in a company is known as___	Pay Roll	Time Keeping	Time Study	Motion Study	Time Keeping
The recording of the time spent by worker on each job or operation is called	Time Management	Pay Roll	Personal Department	Time Booking	Time Booking
The card given to each worker to record the time spent by him in a job is called ____	Job Card	Bin Card	Wage Card	Salary Card	Job Card
The difference between the time spent in the factory and in the job is known as _	Real time	Work time	Job time	Idle time`	Idle time`
The time spent by workers over and above the normal working hours is called	Idle time	Over time	Actural Time	Job Time	Over time
A study about the job and its method is known as ___	Work Study	Time Study	Motion Study	Idle Time	Work Study
A study about the movement of workers in a factory is called	Motion Study	Time Study	Work Measurement	Work Study	Motion Study
The process of assessment and analysis of each job is known as	Merit Rating	Time Keeping	Work Study	Job Evaluation	Job Evaluation
The systematic evaluation of the performance of the employee is called___-	Job evaluation	Merit rating	Work study	Time Study	Merit rating
The rate of change of labour force in an organization is known as	Material Turnover	Debtors Turnover	Labor Turnover	Work Assessment	Labor Turnover
The payment of wages on the basis of time spent by workers is called	Piece wage	Time wage	Indirect wage	Direct wage	Time wage
The payment of wages on the basis of the number of units produced is called__	Piece wage	Time wage	Indirect wage	Direct wage	Piece wage

The payment of wages according to the efficiency of the workers is called	Incentive wages	Time wage	Direct wage	Piece wage	Incentive wages
When the incentive is shared by all the workers in a job, it is known as ____	Incentive wages	Time wage	Direct wage	Group Bonus	Group Bonus
If purchasing is done at one central place, it is called	Decentralized Purchasing	Optimum Purchasing	Centralized Purchasing	Economical Purchasing	Centralized Purchasing
The process of assigning numbers or symbols to materials is called	Store Keeping	Codification	Store	Bin Card	Codification
Maximum consumption X Maximum re-order period is called	Re-ordering level	Maximum level	Minimum level	Re-ordering Quantity	Re-ordering level
Cost of storage of materials is known as	Ordering Cost	EOQ	Carrying Cost	Total Cost	Carrying Cost
The quantity of which material ordering cost and carrying cost equal is called	Maximum Quantity	Economic Ordering Quantity	Minimum Quantity	Re-ordering Quantity	Economic Ordering Quantity
A quantitative record of receipts, issues and closing balances of a particular item of stores is known as	Material Order	Wage Card	Material Card	Bin Card	Bin Card
The physical movement of receipts and issues of material is recorded in	Stores Ledger	Pay Roll	Cost Sheet	Wage Sheet	Stores Ledger
The analysis based on the concept of selective inventory management is known as	EOQ Analysis	VED Analysis	BEP Analysis	ABC Analysis	ABC Analysis
The analysis used primarily for the control of spare parts is called	EOQ Analysis	VED Analysis	BEP Analysis	ABC Analysis	VED Analysis
Inventory turnover ratio is a ratio between cost of material consumed and	Average Stock	Base Stock	Opening Stock	Closing Stock	Average Stock
When the issue price is based on the price of the oldest material, it is called	LIFO	FIFO	HIFO	Average Price	FIFO
When the issue price is based on the price of latest material, it its called	LIFO	FIFO	HIFO	Average Price	FIFO
__ is the process of receiving and maintaining of material in a place called storehouse	Store Keeping	Codification	Store	Bin Card	Store Keeping
__ are those materials which can easily be identified in the product	Direct Material	Indirect Material	Direct Labour	Indirect Labour	Direct Material

__ are those materials which cannot easily be identified in the product	Direct Material	Indirect Material	Direct Labour	Indirect Labour	Indirect Material
__ is the person in charge of the store house	Store Keeper	Production Manager	Sales Manager	Human Resource Manager	Store Keeper
__ is a card maintained by the store-keeper to record the quantitative date of receipt, issue and balance of the material	Bin Card	Stock Verification	Stock Ledger	Voucher	Bin Card
__ is the process of comparing the physical quantity or weights of materials in the store with the records	Bin Card	Stock Verification	Stock Ledger	Voucher	Stock Verification
__is a method of verifying the stock periodically	Perpetual Stock Verification	Periodic Stock Verification	Irregular Stock Verification	None of the Above	Periodic Stock Verification
__ is otherwise called as continuous stock verification	Perpetual Stock Verification	Periodic Stock Verification	Irregular Stock Verification	None of the Above	Perpetual Stock Verification
In ___ method the verification of stock is done continuously	Perpetual Stock Verification	Periodic Stock Verification	Irregular Stock Verification	None of the Above	Perpetual Stock Verification
___level means the maximum quantity of material kept as stock at any time	Maximum level	Minimum level	Reorder level	Danger Level	Maximum level
The stock level should not be raise beyond	Maximum level	Minimum level	Reorder level	Danger Level	Maximum level
__is a level below which the quantity of material should not be allowed to fall	Maximum level	Minimum level	Reorder level	Danger Level	Minimum level
__is a level at which the order for material should be placed	Maximum level	Minimum level	Reorder level	Danger Level	Reorder level
__ is a level below the minimum level	Maximum level	Minimum level	Reorder level	Danger Level	Danger Level
Under this method a minimum stock is kept as base stock	FIFO	LIFO	Base Stock	Average Stock	Base Stock
In this method, the average of the price of previous purchase should be considered	Simple Average Method	Weighted Average Price Method	LIFO	FIFO	Simple Average Method
Under this method, the issue price of material is calculated by dividing the total cost of available in the store with the total quantity of material	Simple Average Method	Weighted Average Price Method	LIFO	FIFO	Weighted Average Price Method

___ costs are those costs which are incurred to reduce the rate of labour turnover	Preventive Costs	Replacement Costs	Idle Cost	Imputed Costs	Preventive Costs
__ are those costs incurred due to labor turnover	Preventive Costs	Replacement Costs	Idle Cost	Imputed Costs	Replacement Costs
___ arises due to unavoidable circumstances	Normal Idle Time	Abnormal Idle Time	Avoidable Idle Time	Unavoidable Idle time	Normal Idle Time
__arises due to abnormal situation is called	Normal Idle Time	Abnormal Idle Time	Avoidable Idle Time	Unavoidable Idle time	Abnormal Idle Time
__card contains columns to record the attendance time and job work time of the workers for one week	Time and Job Card	Weekly Time Sheets	Labor Cost Card	Job Ticket	Time and Job Card
__is a card given to each worker to record the time spent by him in a job	Time and Job Card	Weekly Time Sheets	Labor Cost Card	Job Ticket	Job Ticket
When the job involves many operations __ is issued by the concern	Job Card	Labor Cost Card	Daily Time Sheet	Weekly Time Sheets	Labor Cost Card
This sheet is meant for recording the daily time spent by the workers in different jobs	Job Card	Labor Cost Card	Daily Time Sheet	Weekly Time Sheets	Daily Time Sheet
__contains columns to fill the time spent by work for a week	Job Card	Labor Cost Card	Daily Time Sheet	Weekly Time Sheets	Weekly Time Sheets
__is otherwise called as Stock Turnover Ratio	Inventory Turnover Ratio	Debtors Turnover Ratio	Creditors Turnover Ratio	Asset Turnover Ratio	Inventory Turnover Ratio
Under this method, the materials are grouped into high priced, medium priced and low priced materials	ABC Analysis	VED Analysis	Input Output Analysis	FIFO	ABC Analysis
__ is used for classifying and controlling the spare parts	ABC Analysis	VED Analysis	Input Output Analysis	FIFO	VED Analysis
__is the ratio between standard cost of actual quantity consumed and standard cost of standard quantity of output	ABC Analysis	VED Analysis	Input Output Analysis	FIFO	Input Output Analysis
If the stock level falls below the __, it will hamper the production	Maximum Level	Minimum Level	Danger Level	Reorder Level	Minimum Level

__ should be determined by taking into account of the requirement of material for production for a particular period	Maximum Level	Minimum Level	Danger Level	Reorder Level	Minimum Level

UNIT – III

SYLLABUS

Elements of Cost: Overheads - Classification, Allocation, Apportionment and Absorption of Overheads- Under and over-Absorption- Capacity Levels and Costs- Treatments of certain items in costing like Interest on Capital, Packing Expenses, Bad debts, Research and Development Expenses- Activity Based Cost Allocation.

Overheads

Meaning and Definition

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 WeItmer define overhead as follows :

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

Importance of Overhead Cost

Nowadays business is a dynamic organism. Advancement of technological development and innovation, economic situations and social considerations are the important factors for modernization of industries at 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.

- **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 :

Classification of Overhead

On the Basis of

Nature	Variability	Normality
(1) Indirect Material	(1) Fixed Overhead	(1) Normal Overhead
(2) Indirect Labour	(2 Variable Overhead	(2)Abnormal Overhead
Indirect (3) Expenses	Semi-Variable (3 Overhead	
Function	Control	
Manufacturing Overhead	(1) Controllable Overhead	
(2 Administrative Overhead	(2) Uncontrollable Overhead	
(3) Selling Overhead		
(4)Distribution Overhead		

(1) On the Basis of Nature

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 is known as function wise overheads. Here there are four important functional overheads such as :

(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) On the Basis of Variability

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

(d) 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) On the Basis of Normality

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) On the Basis of Control

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, wastages etc. can be controlled. Uncontrollable overheads cannot be controlled by the action of the executive heading the

Procedure or Steps in Overhead

Overheads are incurred for work in general. Overhead is added tQ 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.

(1) **Classification Overhead**: We have already discussed the classification of overh~ad in the preceding pages, and the discussion on other procedures would follow in this chapter and the subsequent one.

(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*
Indirect Materials	Materials Requisition
Power and light	Meter Reading
Indirect wages	Time Cards, Pay Rolls, Wage Analysis
Salaries	Salaries Sheet
Depreciation	Plant Register, Machinery Register
Rates	Lease
Rates	Local Government Assessment
Office Stationery	Supplier's Invoices
Postage	Postage Book

(3) Overhead Analysis : (a) Allocation and Apportionment of Overhead to Cost Centres

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.

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

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.

Apportionment: Apportionment is the process of distribution factory overheads to cost centres 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 centres 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 centres.

(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.

Basis 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	*Basis of Distribution*
(1) Lighting	No. of light points, floor space or meter reading
(2) Rent, Rates and Taxes	Floor Area
(3) Insurance of building	
(4) Depreciation of building, Heating	Area of floor
Depreciation of	

	plant and Equipments	-	Machinery and Book value
(5)	E S I, Canteen, Safety, compensation, welfare, fringe benefits	-	supervision 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

Illustration: 1

A departmental store has several departments. What bases would you recommend for apportioning the following items of expenses to its departments :

(I) Fire Insurance of building
(2) Sales commission
(3) Advertisement
(4) Salesmen's salaries
(5) Commission paid to salesmen
(6) Show room expenses
(7) Depreciation on plant
(8) Rent of finished goods, warehouse
(9) Factory power
(10) Delivery Van expenses

Solution:

	Items	*Basis of Apportionment*
(I)	Fire Insurance Building	Floor space or Value
(2)	Sales Commission	Sales value
(3)	Advertisement	Sales value
(4)	Salesmen's Salaries	Sales value
(5)	Commission paid to Salesmen	Sales value
(6)	Show room expenses	Sales value or Total cost
(7)	Depreciation on plant	Value of plant
(8)	Rent of finished goods warehouse	Floor space or Area
(9)	Factory power	H.P. Power (or) K.W. hours
(10)	Delivery Van expenses	Weight, Volume

Illustration: 2

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

	Rs.
Supervision	6,000
Repairs of Plant 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 :

Particulars	*A*	*B*	C	*D*	*E*
Direct Wages (Rs.)	4,000	3,000	2,000	2,000	1,000
Area of Square feet	2,000	1,000	500	500	100
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

Solution:

Primary Overhead Distribution Summary

Particulars	*Basis of Apportionment*	*Total Rs.*	*Production Department*			*Sen'ice Department*	
			A	*B*	C	*D*	*E*
Supervision	No. of Employees 5:4:2:2:1	6,000	2,142	1,715	857	857	429
Repairs of Plant } and Machinery	Value Machinery 10:5:3:3:1	3,000	1,364	681	409	409	137
Rent	Area square feet 20:10:5:5:1	8,000	3,902	1,951	976	976	195
Light	Light points	2,000	727	545	273	273	182

	8: 6: 3 : 3: 2						
	H.P.	of3,00	1,42				
Power	Machines	0	9	714	357	357	143
	20:10:5:5:2						
Employers	Direct Wages	600	200	150	100	100	50
Contribution							
to ESI	4: 3 : 2 : 2: 1						
Canteen	No.	of1,00					
Expenses	Employees	0	357	286	143	143	71
	5:4:2:2:1						
		23,6	10,1		3,11	3,11	1,20
	Total	00	21	6,044	5	5	7

(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 centres to production centres 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	No. of Employees or Direct wages
	(Canteen, Welfare, Medical,	
	Employer's liability)	
(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

	Service Department	*Basis of Apportionment*
(9)	Transport Department	Car hours, Truck hours, Tonnage handled
(10)	Power House	K.W. Hours
(11)	Fire Insurance	Stock Value

Methods or 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:

Methods of Secondary Distribution

(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.

Illustration: 3

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

Production Departmentss

A	Rs.16,000
B	Rs.10,000
C	Rs.12,000
	Rs38,000

Service Departments

Stores	Rs.2,OOO
Timekeeping	Rs.3,OOO
Maintenance	Rs. 1,000
Power	Rs.2,OOO
Walfare	Rs. 1,000
Supervision	Rs.2,OOO

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

Total	**Rs.49,OOO**

The other information available in

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

Solution:

Departmental Overhead Re-distribution Summary

(2) **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 department until the cost of all the service departments are redistributed to the production department.

Illustration: 4

Production Departments	*Rs.*

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

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. 2003.

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

Particular	*Production Departments*		*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:

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)

Stores: 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) Trail 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 reapportioned 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 tum repeatedly until the figures become too small to matter.

(c) *Trail 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.

Illustration: 5

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,ooO

Q Rs.l,5oo

R Rs.l,ooo

Service Departments:

S Rs. 500

T Rs.4oo

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

	Productions Departments			*Service Departments*		
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:

(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

Y = 400 + 0.10 X

X = 500 + 0.20 (400 + O.IOX) X = 500 + 80 + 0.02X

X - 0.20X = 580 (or) 0.98 X = 580

580 .. X = -- = 591.83 / 0.98

Y = 400 + 0.10 (592) = 400 + 59

Y =459

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

Departmental Overhead Distribution Summary

Illustration: 6

You are supplied with the following infonnation and required to work out the production hour rate of recovery of overhead in Departments X, Y and Z.

		Production Deplts.			*Service Deptts.*	
Particulars	*Total*	X	*Y*	*Z*	*P*	*Q*
	Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*	*Rs.*
Rent	12,000	2,400	4,800	2,000	2,000	800
Electricity	4,000	800	2,000	500	400	300
Indirect Labour	6,000	1,200	2,000	1,000	800	1,000
Depreciation	5,000	2,500	1,600	200	500	200
Sundries	4,500	910	2,143	847	300	300
Estimated working						
Hours		1,000	2,500	1,400		

Expenses of Service Department P and Q are apportioned as under :

	X	*y*	z	*P*	*Q*
P	30%	40%	20%		10%
Q	10%	20%	50%	20%	

Solution:

Departmental Overhead Distribution Summary

		Production Deptts.			*Service Deptts.*	
Particulars	***Total***	**X**	***Y***	***Z***	***P'***	***Q***
	Rs.	***Rs.***	***Rs.***	***Rs.***	***Rs.***	***Rs.***
Rent	12,000	2,400	4,800	2,000	2,000	800
Electricity	4,000	800	2,000	500	400	300
Indirect Labour	6,000	1,200	2,000	1,000	800	1,000
Depreciation	5,000	2,500	1,600	200	500	200
Sundries	4,500	910	2,143	847	300	300
Total	31,500	7,810	12,543	4,547	4,000	2,600

Departmental Overhead Distribution Summary

	x	*y*	z	*P*	*Q*
	Rs.	*Rs.*	*Rs.*	*Rs.*	*Rs.*

Total (given)	7,810	12,543	4,547	4,000	2,600
Exp. of P Dept. Rs. 4,612	1,384	1,845	922	(-4,612)	461
Exp. of Deptt Q Rs. 3,061	306	612	1,531	612	(-3,061)
	9,500	15,000	7,000		-
Estimated Working Hours	1,000	2,500	1,400		
Rate Per Hour Rs.	9.50	6.00	5.00		

Absorption of Overheads

Meaning

Absorption of overhead is also termed as levy, recovery, or application of overhead. Cost absorption refcm 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 centres or cost units is known as Overhead Absorption.

Overhead Rate

The apponionment of overhead expenses is done by adopting suitable basis such as output, materials, prime cost. labour houm, machine houm 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 :

(I) Actual Overhead Rate

(2) Predetermined Overhead Rate

(3) Blanket Overhead Rate

(4) Multiple Overhead Rate

(S) 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 budgeted overhead for the accounting period by the budgeted base for the period. The formula is :

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

(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 :

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

(4) Multiple Overhead Rate: Multiple oveihead rates involve 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 :

Overhead Cost Allocated and Apponioned to Each Cost Centre

Corresponding Base

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

Normal Overhead Rate = ——————————

Actual Overhead Incurred – Absorbed Overhead Base Unit or Hour

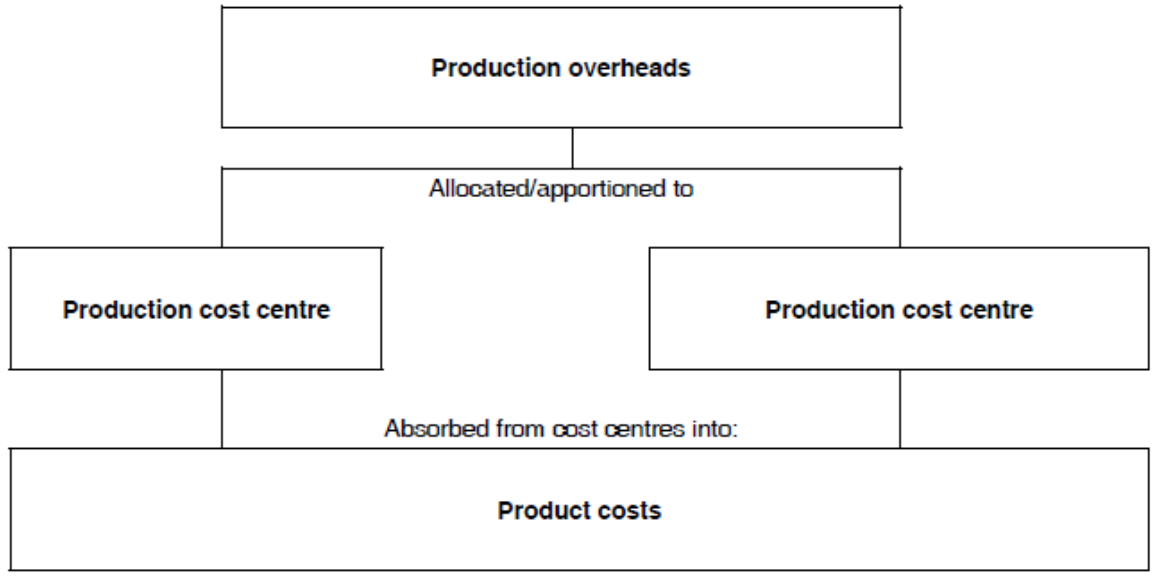
(6) Supplementary Overhead Rates: These rates used to carryout adjustment between overhead absorbed and overhead incurred. These are used in addition to some other rates and is calculated as under:

Supplementary Overhead Rate = ——————————

Methods of Absorption of Overhead

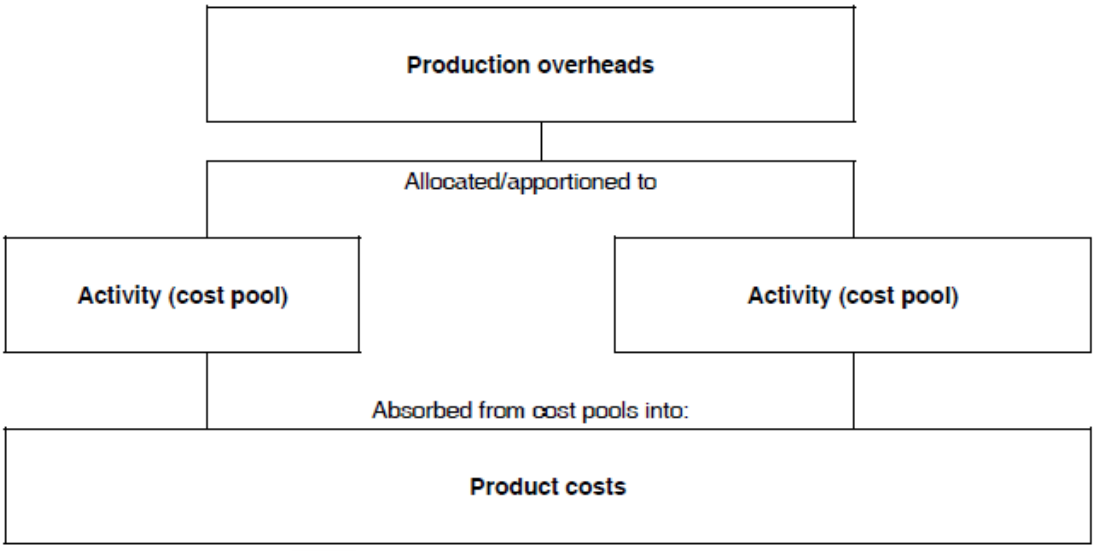
There are number of methods applicable for computing overhead absorption rate. The following are the various methods of absorbing "Manufacturing Overhead" depending upon the suitable basis selected for the purpose

Traditional absorption costing



:

Activity-based costing



1. Direct Material Cost Method

According to the material cost method, we calculate the rate of overhead on the basis of past actual direct material and past actual overheads. For example, past actual direct material's cost is Rs. 10,000 and past actual overhead cost is Rs. 2000. So, Overhead

rate will be 20%. If we have obtained any specific order for producing any product, we will include the 20% cost of overhead. For example, we have produced one unit for our customer for this, we have used our Rs. 1000 material. Our overhead cost in it will be Rs. 1000 X 20% = Rs. 200. We this, we need not to go to deep study of calculating each overhead like electricity consumption in this one unit, depreciation for this one unit, salary cost for this one unit and other overhead cost for producing this one unit. Ok.

2. Direct Labour Cost Method

According to the Direct Labour Cost method, we calculate the rate of overhead on the basis of past actual cost of direct wages and past actual overheads

following is the formula **= Actual Overhead Cost / Direct Labour Cost X 100**

For example, past actual direct wage's cost is Rs. 10,000 and past actual overhead cost is Rs. 2000. So, Overhead rate will be 20%. If we have obtained any specific order for producing any product, we will include the 20% cost of overhead. For example, we have produced one unit for our customer for this, we have paid Rs. 1000 to our laborers for their labour. Our overhead cost in it will be Rs. 1000 X 20% = Rs. 200.

3. Prime Cost Method

Under prime cost method, we calculate the actual or estimated prime cost in which direct material cost and direct labour cost will be added. We also calculate the budgeted Overhead Cost. After this, we calculate the rate of overhead. On this rate, we absorb our overhead cost on any new production.

Following is the formula of overhead rate **= Budgeted Overhead**

Expenses / Anticipated Prime Cost

4. Direct Labour Hour Method

Under this method of overhead absorption, we calculate the total direct labour hours by using our accounting information. We also see the total cost of overhead in these labour hours. After dividing this overhead cost with direct labour hours, we can easily calculate the rate of overhead. On this rate, we can absorb the estimated amount of overhead in any unit or units of production. Following is the formula **= Overhead Cost / Direct labour Hours** For example, total direct labour hours are 10,000. Total overhead cost in these hours are Rs. 5,000. Our overhead rate is the 50% of labour hours in any production.

5. Machine Hour Rate Method

This is very good method of absorption of overhead cost in the industry where we do all works with the help of machines. We just have to calculate the machine hour rate and same rate will be the overhead rate and on this basis, we can absorb the estimated cost of overhead when we produce any unit of production. Following is the formula of calculating the machine hour rate **= Total Overhead Cost / Total Machine Hours**

We have to apportion all the overhead cost on the basis of our machines.

a) Rent Expense

It is divided on the basis of area for each machine.

b) Lighting Expenses

It is divided on the basis of No. of Points for Each Machine

c) Supervision Cost

It is divided on the basis of time spent on each machine.

d) Insurance It is divided on the basis of value of each machine.

e) Depreciation

It is divided on the basis of cost of each machine.

f) Power

It is divided on the basis of consumption by each machine.

g) Repair

It is divided on the basis of working life of each machine.

6. Rate Per Unit of Production Method

In this method, we calculated estimated overhead rate on the basis of units output and same is used for absorption of actual units of production.

Rate of Overhead **= Budgeted Overhead Cost / Budgeted Units of Production**

7. Sales Price Method

Under this method of absorption of overhead, we calculate the rate of overhead on the basis of sales of units and budgeted overhead cost. Same rate is used for absorption.

= Budgeted Overhead Expenses / Sales of Units of Production

POSSIBLE QUESTIONS

PART A

ONE MARKS

ONLINE EXAMINATIONS

PART B

TWO MARKS

1. What is meant by overhead Charges?
2. What do you understand by allocation of cost?
3. What do you understand by overhead expenses?
4. Write the meaning of Fixed, Semi fixed and variable overhead.
5. What do you understand by departmentalization?
6. Discuss the various methods of allocation of cost.

PART C

SIX MARKS

1. Amit company has five departments P, N, R, S are producing departments and T is a service department. The actual costs for a period are as follows :

Particulars	Rs.
Repairs	2,000
Rent	2,500
Depreciation	1,200
Supervision	4,000
Insurance	1,500
Employer's Liability of employees Insurance	600
Light	1,800

The following data are also available in respect of the five department :

Particulars	Dept. P	Dept. N	Dept. R	Dept. S	Dept. T
Area Sq. Ft.	140	120	110	90	40
No. of workers	25	20	10	10	5
Total Wages	Rs.	Rs. 8,000	Rs. 5,000	Rs. 5,000	Rs.

	10,000				2,000
Value of Plant	Rs. 20,000	Rs. 18,000	Rs. 16,000	Rs. 10,000	Rs. 6,000
Value of Stock	Rs. 15,000	Rs. 10,000	Rs. 5,000	Rs. 2,000	-

Apportion the costs to the various departments on the equitable basis.

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

Particulars	***Rs.***
Supervision	6,000
Repairs of Plant 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 :

Particulars	**A**	**B**	**C**	**D**	**E**
Direct Wages (Rs.)	4,000	3,000	2,000	2,000	1,000
Area of Square feet	2,000	1,000	500	500	100
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

3. International Motors Manufacture Crankshafts for Jeep and Trucks. They have furnished the following particulars for the quarter ended 31st March :

PARTICULARS	**AMOUNT (Rs.)**
Materials	2,98,000
Direct Wages	42,000
Stock Expenses	20,000
Machinery Maintenance	4,600
Depreciation	22,300
Staff Welfare	12,000
General Expenses	30,000
Administration & Selling Expenses	27,000

Additional information provided by them :

Particulars	Jeep	Truck
Production (Nos.)	300	400
Material Cost ratio per Vehicle	1	2
Direct Labour ratio per Vehicle	2	3
Machine Hour ratio per Vehicle	1	2

Calculate the cost per crankshaft, of each vehicle, indicating the basis of apportionment adopted by you.

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

Particulars	Rs.
Supervision	1000
Repairs of Plant and Machinery	5,000
Rent	10,00
Light	3,000
Power	4,000
Employer's contribution to ESI	600
Canteen Expenses	2,000

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

Particulars	P	Q	R	S	T
Direct Wages (Rs.)	3,000	3,000	2,000	2,000	1,000
Area of Square feet	2,000	1,000	500	500	100
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

5. You are supplied with the following information and required to work out the production hour rate of recovery of overhead in departments A, B and C

Particulars	Total (Rs.)	Production Depts.			Service Depts.	
		A (Rs.)	B (Rs.)	C (Rs.)	P (Rs.)	Q (Rs.)
Rent	12,000	2,400	4,800	2,000	2,000	800
Electricity	4,000	800	2,000	500	400	300
Indirect Labour	6,000	1,200	2,000	1,000	800	1,000
Depreciation	5,000	2,500	1,600	200	500	200
Sundries	4,500	910	2,143	847	300	300
Total	**31,500**	**7,810**	**12,543**	**4,547**	**4,000**	**2,600**
Estimated Working Hours		1,000	2,500	1,400		

Expenses of Service Departments P and Q are apportioned as under :

	A	B	C	P	Q
P	30 %	40 %	20 %	-	10 %
Q	10 %	-	20 %	50 %	20 %

-

6. An engineering firm has three departments. The budgeted expenses for the current year

are :

Particulars	**Dept. A (Rs.)**	**Dept. B (Rs.)**	**Dept. C (Rs.)**
Materials	1,00,000	1,00,000	79,700
Direct Wages	1,36,640	87,840	79,300
Direct Expenses	1,760	2,280	900
Works Expenses	97,600	65,880	61,100
Administration Expenses	26,880	25,600	19,890
Direct Labour Hours	78,080	57,645	48,880

Works expenses are charged to output at a man-hour rate and administration expenses

as a percentage on works cost.

Compute man-hour rate and percentage of administration overhead on works cost.

7. Small Company Ltd. has three production departments and four service departments.

The expenses for three departments as per Primary Distribution Summary were:

Production Departments :	**Rs.**	**Rs.**
A	30,000	
B	26,000	
C	24,000	80,000
Service Departments :		
Stores	4,000	

Time-keeping and accounts	3,000	
Power	1,600	
Canteen	1,000	9,600
Total		**89,600**

The following information is also available in respect of the production departments :

Particulars	**Dept. A**	**Dept. B**	**Dept. C**
Horse Power of Materials	600	600	400
Number of workers	40	30	30
Value of Stores Requisitioned	Rs. 5,000	Rs. 3,000	Rs. 2,000

Apportion the costs of the various service departments to the production departments.

8. From the following information relating to the machine, Shylock, installed in a factory, calculate the machine-hour rate :

Purchase price of the machine with the scrap value zero Rs. 90,000

Installation and incidental charges incurred on the machine Rs. 10,000

Life of the machine is 10 years of 2,000 working hours each

Repair charges : 50 % of depreciation

Machine consumes 10 units of electric power per hour @ 40 paise per unit

Oil expense @ Rs. 2 per day of eight hours

Consumable stores @Rs. 10 per day of eight hours

Two workers are engaged on the machine @ Rs. 4 per day of eight hours.

9. The following data were obtained from the books of Light Engineering Company for the half year ended 30th September. Calculate the departmental overhead rates for each of the production departments,

assuming that the overheads are recovered as a percentage of direct wages :

Particulars	Production Departments				Service Departments	
		A	B	C	X	Y
Direct Wages	Rs.	7,000	6,000	5,000	1,000	1,000
Direct Materials	Rs.	3,000	2,500	2,500	1,500	1,000
Employees	Nos.	200	150	150	50	50
Electricity	Kwh.	8,000	6,000	6,000	3,000	3,000
Light Points	Nos.	10	15	15	5	5
Assets Value ('000)	Rs.	50	30	20	10	10
Area Occupied	Sq.yd.	800	600	600	200	100

The expenses for 6 months were :

Stores Overhead Rs. 400 Depreciation Rs. 6,000

Motive Power Rs. 1,500 Repairs & Maintenance Rs. 1,200

Electric Lighting Rs. 200 General Overheads Rs. 10,000

Labour Welfare Rs. 3,000 Rent and Taxes Rs. 600

Apportion the expenses of department X in the ratio of 4:4:3 and that of department in proportion to direct wages, to department A,B and C respectively.

10. Calculate labour hour rate from the following:

Total number of workers	100
Working days in a year	300
No. of hours per day worked	8
Idle Time	5%
Factory Overheads	Rs. 11,40,000
Gift to workers	Rs. 7,000

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UNIT 3

QUESTION	Option A	Option B	Option C	Option D	Answer
Indirect cost is known as ____	Overhead	Expenses	Cost Centre	Cost Unit	Overhead
Indirect cost incurred for the production department is called ___	Administration Overhead	Factory Overhead	Selling Overhead	Works Cost	Factory Overhead
The division of factory into production cost centres and service cost centre is called _	Codification	Centralization	Departmentalization	Stores	Departmentalization
Electricity expenses is allocated on the basis of ____	Area Occupied	No. of Workers	Horse Power	Light Points	Light Points
Rent is allocated on the basis of ___	Horse Power	Area Occupied	Light Points	Labor Hours	Area Occupied
Apportionments of overheads to the production and service department is called__	Secondary Distribution	Repeated Distribution	Primary Distribution	Trial & Error Distribution	Primary Distribution
Apportionment of service department cos	Secondary Distribution	Repeated Distribution	Primary Distribution	Trial & Error Distribution	Secondary Distribution
The basis of apportionment of store-keeping department cost to various production	Wages paid	Material Cost	No. of Employees	Factory Overhead	Material Cost
Inter service rendered by the service departments are taken into consideration in ___	Secondary Distribution	Repeated Distribution	Primary Distribution	Trial & Error Distribution	Repeated Distribution
Depreciation is apportioned on the basis of the value of ___	Fixed Assets	Total Assets	Current Assets	Fictitious Assets	Fixed Assets
Canteen cost is apportioned on the basis of ____	Material Cost	Factory Overhead	Administration Overhead	Number of Employees	Number of Employees
__ is otherwise called as Indirect cost	Raw Material	Overhead	Expenses	Loss	Overhead

___costs are those costs which cannot easily be identified in the cost centre	Direct	Indirect	Variable	Fixed	Indirect
__could not be allocated to a particular cost centre	Direct Cost	Indirect Cost	Variable Cost	Fixed Cost	Indirect Cost
___ would be apportioned to the cost centre since these costs are commonly incurred for two or more cost centres	Direct Cost	Indirect Cost	Variable Cost	Fixed Cost	Indirect Cost
__can be easily be identified in a cost centre	Direct Cost	Indirect Cost	Variable Cost	Fixed Cost	Direct Cost
__ should be allocated to the respective cost centre	Direct Cost	Indirect Cost	Variable Cost	Fixed Cost	Direct Cost
__constitute direct material, direct labour	Direct Cost	Indirect Cost	Variable Cost	Fixed Cost	Direct Cost
__ is those material cost which could not be easily identified in the product	Indirect material cost	Indirect labor cost	Indirect expenses	None of the above	Indirect material cost
__is those cost which could not be easily identified in the product	Indirect material cost	Indirect labor cost	Indirect expenses	None of the above	Indirect labor cost
__ are those expenses which could not be identified in the product	Indirect material cost	Indirect labor cost	Indirect expenses	None of the above	Indirect expenses
__is otherwise called as factory overhead	Manufacturing overhead	Administration overhead	Selling and distribution overhead	None of the above	Manufacturing overhead
___ is the indirect cost incurred in the manufacturing of the product	Manufacturing overhead	Administration overhead	Selling and distribution overhead	None of the above	Manufacturing overhead
___is the indirect cost incurred for the performance of the administrative function of an organization	Manufacturing overhead	Administration overhead	Selling and distribution overhead	None of the above	Administration overhead
__ are the indirect costs incurred for the selling and distribution department	Manufacturing overhead	Administration overhead	Selling and distribution overhead	None of the above	Selling and distribution overhead

___are those indirect expenses which varies according to the variation in the unit of production	Fixed Overhead	Variable Overhead	Semi-variable overhead	None of the above	Variable Overhead
__ are those indirect expenses which remain constant up to certain level of activity	Fixed Overhead	Variable Overhead	Semi-variable overhead	None of the above	Fixed Overhead
__ are those indirect expenses which are partly fixed and partly variable	Fixed Overhead	Variable Overhead	Semi-variable overhead	None of the above	Semi-variable overhead
Under this method semi-variable overhead at various levels of activities should be plotted on a graph paper	Graphic Method	High Low Points Method	Average Method	Simultaneous Equation Method	Graphic Method
Under this method the two levels of activities should be ascertained	Graphic Method	High Low Points Method	Average Method	Simultaneous Equation Method	High Low Points Method
Under this method the semi-variable overheads for different level of activities should be grouped in to two or three sets	Graphic Method	High Low Points Method	Average Method	Simultaneous Equation Method	Average Method
In this method, the straight line equation Y=a+bX is applied	Graphic Method	High Low Points Method	Average Method	Simultaneous Equation Method	Simultaneous Equation Method
__is an important method of Regression anlysis	Graphic Method	High Low Points Method	Average Method	Least Square Method	Least Square Method
Factory expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	No. of Employees
Personal expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	No. of Employees
Recreation expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	No. of Employees
Medical expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	No. of Employees

Payroll expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	No. of Employees
Time keeping department are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	No. of Employees
Engineering department expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	Machine hours
Maintenance expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	Machine hours
Repair expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	Machine hours
Purchasing expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	Cost of Material
Receiving Department expenses are apportioned based on	No. of Employees	Machine hours	Cost of Material	Number of Units	Cost of Material
In this method the service department costs are directly apportioned to all the production departments	Direct Re-apportionment Method	Step Ladder Method	Reciprocal Distribution Method	None of the above	Direct Re-apportionment Method
This method also known as ___	Direct Re-apportionment Method	Step Method	Reciprocal Distribution Method	None of the above	Step Method
In this method the service departments are classified according to their importance	Direct Re-apportionment Method	Step Ladder Method	Reciprocal Distribution Method	None of the above	Step Ladder Methods
___is a method of secondary distribution	Direct Re-apportionment Method	Step Ladder Method	Reciprocal Distribution Method	None of the above	Reciprocal Distribution Method
Under ___each service department expenses are repeatedly apportioned	Repeated Distribution Method	Trial and Error Method	Simultaneous Equation Method	None of the above	Repeated Distribution Method

In this method, each service department costs are apportioned repeatedly to other service departments on the basis of inter services performed by them	Repeated Distribution Method	Trial and Error Method	Simultaneous Equation Method	None of the above	Trial and Error Method
In this method, the total cost of each service departments, after taking into account of the inter departmental service cost	Repeated Distribution Method	Trial and Error Method	Simultaneous Equation Method	None of the above	Simultaneous Equation Method
___is calculated by dividing the actual overhead incurred for a period with the actual quantum of the basis of the period	Actual Overhead Rate	Pre-determined Overhead rate	Blanket Overhead rate	Multiple overhead rate	Actual Overhead Rate
__is otherwise called as Budgeted overhead rate	Actual Overhead Rate	Pre-determined Overhead rate	Blanket Overhead rate	Multiple overhead rate	Pre-determined Overhead rate
__is calculated by dividing the budgeted overhead for the period with budgeted total quantum of basis	Actual Overhead Rate	Pre-determined Overhead rate	Blanket Overhead rate	Multiple overhead rate	Pre-determined Overhead rate
__is also known as single overhead rate	Actual Overhead Rate	Pre-determined Overhead rate	Blanket Overhead rate	Multiple overhead rate	Blanket Overhead rate
__is also known as plant wide rate	Actual Overhead Rate	Pre-determined Overhead rate	Blanket Overhead rate	Multiple overhead rate	Blanket Overhead rate
__ is a single overhead rate for the factory as a whole	Actual Overhead Rate	Pre-determined Overhead rate	Blanket Overhead rate	Multiple overhead rate	Blanket Overhead rate

__means different overhead rates for different cost centres	Actual Overhead Rate	Pre-determined Overhead rate	Blanket Overhead rate	Multiple overhead rate	Multiple overhead rate
When the service rendered by one service	Direct Re-apportionment Method	Reciprocal Method	Primary Distribution Method	Step ladder Method	Direct Re-apportionment Method

UNIT – IV

SYLLABUS

Methods of Costing : Unit Costing- Job Costing - Contract Costing - Process Costing -Process Losses, Valuation of Work in Progress, Joint and By-products- Service Costing (only Transport).

Meaning:

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:

METHODS OF COSTING

(1) Job costing and

(2) Process costing.

(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 of a work, it is not possible to estimate its 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.

(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 306 A Textbook of Financial Cost and Management Accounting

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.

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."

(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 was 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. .

SOME OTHER METHODS OF COSTING

The methods used for the calculation of cost per unit of output are known as costing methods. Different methods are available for the calculation of the cost per unit of output. The choice of a specified method depends on the manufacturing process. According to the terminology of CIMA, there are two generic classes of costing methods:

1. Specific order costing
2. Process costing

Specific order costing:

This is also known as job costing or terminal costing. This category of costing method is suitable for the work (job, batch, contract) of separate identity in nature which is mostly authorized by a specific order. Under this category, job costing, batch costing, contract costing are included.

Process costing:

This is also known as operation costing or period costing. This category of costing method is suitable for industries manufacturing goods using a series of continuous or repetitive processes or operations. Under this category, operation costing (single unit or output and multiple), process costing, and some times batch costing are included.

These methods are discussed briefly.

Process costing:

This is suitable for industries manufacturing goods using a series of continuous or repetitive processes or operations. Many units of the same product are manufactured during a period. Examples: paper, soap, paint, textiles and chemicals. Under this method, costs are assigned to each process and the product cost assigned on an average basis.

Operation costing (One operation costing):

This is also known as unit or output costing. This is suitable for industries where manufacture is continuous and units are identical. Example: brick kilns, paper mills. Under this method, the entire production cycle is

costed and the total accumulated cost is divided by the number of units produced to ascertain cost per unit.

Operation costing (Multiple operations costing):

This method of manufacture consists of a number of distinct operations. Usually this method refers to conversion cost—the cost of converting raw materials into finished goods. Input units and cost are determined after taking into account the rejections in each operation. The cost per unit is ascertained with reference to final output.

Multiple costing:

This is also known as composite costing. This is suitable for industries where a number of component parts are produced separately but all are assembled in the final product. In such industries (e.g., cycle, radio, automobile), a combination of different costing methods are used. This method is not included in the terminology of CIMA, of late.

Service costing:

This is also known as operating costing. This is suitable for concerns which render services. Examples: transport, power, hospitals, canteens. This method is applied to ascertain the cost of services rendered. This is usually expressed in compound units.

Examples:

Transport → Tonne, kilometres
Power supply → Kilowatt-hour
Hospital → Patient day

MEANING OF OPERATING COSTING

Operating costing is a method of ascertaining the cost of providing or operating a service. It is also known as service costing.

CIMA London defines Operating Costing as "that form of operation costing which applies where standardized services are rendered either by an undertaking or by a service cost renter with in an undertaking".

Cost Unit:

Determining the suitable cost unit to be used for cost ascertainment is a major problem in service costing. Selection of a proper cost unit is a difficult task. A proper unit of cost must be related with reference to nature of world and the cost objectives. The cost unit related must be simple i.e. per bed in a hospital, per cup of tea sold in a canteen and per child in a school.

In a certain cases a composite unit is used i.e. Passenger – Kilometer in a transport company.

The following are some of example of cost units used in different organizations

Enterprises	Cost per unit
Passenger transport	Kilometer
Goods transport	Ton – Kilometer
Hotel	Per room per day
Hospital	Per bed per day
Canteen	Per item, per meal
Water supply	Per 1000 liters
Electricity	Per kilowatt

Collection of costing data:

After determining the cost unit, the cost relating to the service is collected. The collected cost is a presented under the heads suitable for control

purpose i.e. fixed expenditure and variable expenditure. The presentation of cost data under difficult categories helps to improve managerial control over cost.

Different industries follow different methods of costing because of the differences in the nature of their work. The various methods of costing are as follows:

1. Job Costing:

In this case the cost of each job is ascertained separately. It is suitable in all cases where work is undertaken on receiving a customer's order like a printing press, motor workshop, etc. In case a factory produces a certain quantity of a part at a time, say 5,000 rims of bicycle, the cost can be ascertained like that of a job. The name then given is Batch Costing.

2. Batch Costing:

It is the extension of job costing. A batch may represent a number of small orders passed through the factory in batch. Each batch here is treated as a unit of cost and thus separately costed. Here cost per unit is determined by dividing the cost of the batch by the number of units produced in the batch.

3. Contract Costing

Here the cost of each contract is ascertained separately. It is suitable for firms engaged in the construction of bridges, roads, buildings etc.

4. Single or Output Costing

Here the cost of a product is ascertained, the product being the only one produced like bricks, coals, etc.

5. Process Costing

Here the cost of completing each stage of work is ascertained, like cost of making pulp and cost of making paper from pulp. In mechanical operations, the cost of each operation may be ascertained separately; the name given is operation costing.

6. Operating Costing

It is used in the case of concerns rendering services like transport, supply of water, retail trade etc.

7. Multiple Costing

It is a combination of two or more methods of costing outlined above. Suppose a firm manufactures bicycles including its components; the parts will be costed by the system of job or batch costing but the cost of assembling the bicycle will be computed by the Single or output costing method. The whole system of costing is known as multiple costing.

Cost Units and Methods of Costing for Different Industries

Industry	***Cost Unit***	***Method of Costing***
1. Sugar	Quintal	Process
2. Chemicals	Kilogram	Process
3. Cement	Kg; tonne	Process
4. Timber	Cubic foot	Process
5. Confectionery	Kilogram	Process

6. Automobile	Number	Process
7. Soft drinks	Per bottle	Process
8. Oil Refinery	Per tonne—quintal	Process
9. Bicycle	Number	Multiple
10. Hospital	Per bed /per day or number of patients (OP)	Service
11. Transport	Tonne—km or Passenger km	Service
12. Advertising	Per ad	Job
13. Interior Decoration	Per job	Job
14. Garments	Number	Batch
15. Pharmaceutical	Per number	Batch

Illustration 1:

From the following information calculate fare for passenger KM.

The cost of the Bus	Rs. 450000
Insurance charges	3 % p.a.
Annual tax	Rs. 4500
Garage rent	Rs. 500 p.m.
Annual repairs	Rs. 4800
Expected life of the bus	5 yrs
Value of scrap at the end of 5 years	Rs. 3000
Route distance	20 km long
Driver's salary	Rs. 550 p.m.
Conductor's Salary	R. 500 p.m.
Commission to Driver & conductor (shared equally)	10 % of the takings
Stationary	Rs. 250 p.m.
Manager-cum-accountant's Salary	Rs. 1750 p.m.
Diesel and Oil (for 100 kms)	125

The bus will make 3 rounds trips for carrying on the average40 passenger's in each trip. Assume 15 % profit on takings. The bus will work on the average 25 days in a month.

Solution:

Operating Cost Statement

Bus No.

Capacity: 40 persons

Particulars		Per Annum Rs.	Per Annum Rs.	Per Annum Rs.
A.	Standing Charges			
	Depreciation	84,000		
	Tax	4,500		
	Insurance	13,500		
	Stationery	3,000		
	Manager's Salary	21,000	1,26,000	00.08750
B.	Maintenance Charges			
	Garage Rent	6,000		
	Repairs	4,800	10,800	00.00750
C.	Operating (or) Running Charges			
	Diesel & Oil	3,750		
	Driver' Salary	6,600		
	Conductor's Salary	6,000	16,350	00.01135
	Total		1,53,150	00.10635
	Add : Commission and Profit 25/75			00.03545
	Fare per passenger km.			00.14180

Working Note:

(1) No. of Km run in a month : 3 x 2 x 20 x 25 = 3000 km

(2) No. of passenger km per annum : 3000 x 40 x 12= 14,40,000

(3) Diesel and oil : 3000 x 125 / 100 = Rs. 3750

(4) Commission & Profits: Commission 10 % of taking + profit

15 % of Taking total = 25 % of taking so the cost

Cost is only 75 %

Joint Products and Joint Product Costs:

Joint products are produced simultaneously by a common process or series of processes, with each product processing more than a nominal value in the form in which it is produced.

By Products:

The term "by product" is generally used to denote one or more products of relatively small total value that are produced simultaneously with a product of greater total value.

JOINT PRODUCTS AND BY-PRODUCTS

Joint products are products produced simultaneously by a common process or series of processes, with each product processing more than a nominal value in the form in which it is produced.

The term by-product is generally used to denote one or more products of relatively small total value that are produced simultaneously with a product of greater total value.

The meaning of joint products and by-products are as follows: Agricultural product industries, chemical process industries, sugar industries and extractive industries are some industries where two or more products of equal or unequal importance are produced either simultaneously or in the course of the processing operation of a main product.

In all such industries, managements are faced with problems such as valuation of inventory, pricing of products and income determination and problem of making decisions in matters of further processing of by-products and/or joint products after a certain stage.

Difficulties in costing by products and joint products

By products and joint products are difficult to cost because a true joint cost is indivisible. For example, an ore might contain both lead and Zink. In the raw state, these minerals are joint products, and until they are separated by reduction of the ore, the cost of finding mining and processing is a joint cost

I. General Characteristics of Joint Production

Joint products are two or more products produced simultaneously by the same process.

Joint products become separate and identifiable at the **split-off point**.

A. Cost Separability and the Need for Allocation

1. Joint costs are the total of the raw material, labor, and overhead costs incurred up to the initial split-off point.
   a. Joint costs can be allocated to the final product only in some arbitrary manner because such costs cannot be traced directly to the products they benefit.
   b. Joint cost allocation is performed to meet the requirements of financial reporting (GAAP) and federal income tax law for income measurement and inventory valuation. In addition, joint cost allocation is useful in costing for government cost-type contracts and in justifying prices for legislative or administrative regulations.
   c. Joint cost allocation is much less useful for cost control and managerial decision making.
2. **Separable costs** are those costs incurred after the split-off point; they can be easily traced to individual products.

B. Distinction and Similarity between Joint Products and By-Products

1. The distinction between joint products and by-products rests solely on the relative importance of their sales value.
2. A **by-product** is a secondary product whose total sales value is relatively minor in comparison with the sales value of the main product (joint product).
3. Relationships between joint products and by-products change over time as technology and markets change.
   a. By-products may become more and more important, eventually becoming joint products.
   b. When the relative importance of individual products changes, the products need to be reclassified and the costing procedures need to be changed.

II. Accounting for Joint Product Costs

A. Introduction

1. Joint cost allocations must be done for financial reporting purposes: to value inventory and to determine income. An allocation method must be found, though arbitrary, to allocate the joint costs as reasonably as possible.
2. The joint cost allocation approaches include the following:
   a. Benefits-received approaches, which include the following methods:
      - Physical units method
      - Weighted average method

b. Allocation based on the relative market value, using the following methods:

- Sales-value-at-split-off method
- Net realizable value method
- Constant gross margin percentage method
- Sales-to-production-ratio method

B. Benefits-Received Approaches

1. Physical Units Method

a. Under the **physical units method**, units of physical output, such as heat content, volume, or weight, that measure the benefits received are used to distribute joint costs. This method allocates to each joint product the same proportion of joint costs as the underlying proportion of units.

- Example: Manufacturers of forest products use the physical units method to apply the average conversion cost to all finished products, regardless of their type, grade, or market value.

b. Disadvantages of the physical units method include the following:

- It ignores the fact that not all costs are directly related to physical quantities.
- It may result in incorrect managerial decisions because high profit may be reflected from the sale of high-grade products, with low profit or losses reflected from the sale of low-grade products.

2. Weighted Average Method

`The weighted average method uses the **weight factors** to include such diverse elements as amount of material used, difficulty to manufacture, time consumed, difference in type of labor used, and size of unit.

Weighted physical units = Number of units × Weight factor

- Example: The canning industry uses weight factors to distinguish between can sizes or quality of product. The weighted average method allocates relatively more of the joint cost to the high-grade products because they represent more desirable and profitable products.

C. Allocation Based on Relative Market Value

The methods in this approach try to assign costs based on the product's ability to absorb joint costs. They are based on the assumption that the joint costs would not be incurred unless the products yield enough revenues to cover all costs plus a reasonable profit.

The relative market value approach of allocation is better than the physical units approach if (1) the physical mix of output can be altered by incurring more (or less) total joint costs, and (2) this alteration produces more (or less) total market value.

1. Sales-Value-at-Split-Off Method

   a. The **sales-value-at-split-off method** allocates joint cost based on each product's proportionate share of market or sales value at the split-off point.

b. In this method, the higher the market value, the greater the joint cost assigned to the product.

2. Net Realizable Value Method
   a. The **net realizable value method** allocates joint costs based on **hypothetical sales values** because there may not be a ready market for the product at the split-off point.
   b. This method is particularly useful when one or more products cannot be sold at the split-off point but must be processed further.

Hypothetical sales value = Market price – Further processing costs after split-off point

3. Constant Gross Margin Percentage Method
   a. The **constant gross margin percentage method** allocates joint costs such that the gross margin percentage is the same for each product.
   b. This method assumes that the further processing yields an identical profit percentage across all products.
   c. Using the constant gross margin percentage method, the joint cost allocation steps include the following calculations:

$$\textbf{Grand gross margin percentage} = \frac{\text{(Total revenue – Total costs)}}{\text{Total revenue}}$$

Joint product gross margin = Market price × Grand gross margin

Joint cost allocated to product = Market value – Gross margin – Separable costs

4. Sales-to-Production Ratio
   a. The **sales-to-production-ratio method** allocates joint costs in accordance with a weighting factor that compares the percentage of sales with the percentage of production.
   b. In this method, the products that sell the most are allocated a larger share of the joint cost of current production.
   c. Using the sales-to-production-ratio method, the joint cost allocation steps include:
      (1) Compute the percentage of total sales based on the joint product units sold.
      (2) Compute the percentage of total production based on the joint product units produced.
      (3) Compute the sales-to-production ratio of the joint product.

$$\textbf{Sales-to-production ratio} = \frac{\text{Percentage of total sales}}{\text{Percentage of production}}$$

      (4) Use the sales-to-production ratio to allocate joint cost.
5. The limitations of allocation based on relative market value include the following:
   - All methods are based on price. If price is used to determine cost, then those costs cannot be used to determine price. The decision would be circular.
   - Changes in relative market prices will cause changes in the costs allocated to the product, even when there has been no change in total costs or the method of production.
   - Using allocation based on relative market value produces the same margin per dollar of allocated cost. This could be

misleading to management if the impression is created that all products are equally profitable.

III. Accounting for By-Products

A. Introduction

1. The main objective of by-product accounting is to determine income and inventory for financial reporting purposes. By-products are of less significance than the main products and may not require precise cost allocation.
2. Relevant factors that influence by-product valuation and accounting include:
   - The uncertainty of by-product value at the time of production.
   - The use of the by-product in other production.
   - The use of the by-product as an alternative to main products.
   - The need for separate profit calculations for sales incentives or for control.
3. By-products can be accounted for using the following:
   a. Non cost methods
      - Other income
      - By-product revenue deducted from main product cost
   b. Cost methods
      - Replacement cost method
      - Total costs less by-products valued at standard price method
      - Joint cost operation method
      -

B. Non cost Methods of Accounting for By-Products

Non cost methods make no attempt to allocate joint cost to the by-product or its inventory but instead make some credit either to income or to the main product.

1. Other Income Method
   a. The net sales of by-products for the current period is recognized as "Other Income" or "Miscellaneous Income" and is reported in the income statement. The market value of by-product inventory, if material, should be reported in a footnote to the balance sheet.
   b. The other income method is used by those firms where:
      - The value of the by-product is small,
      - Any other allocation would be more expensive than the benefits received, or
      - Carrying by-products with the main products would not appreciably affect the cost of the main product.
   c. Disadvantages of this method include the following:
      - Inventories on the balance sheet are misstated since no value is placed on the by-products.
      - Matching of revenues with expenses is improper if production of by-products occurs in one accounting period and sales occur in another. No entry for by-products is made at the time of production, only at the time of sale.
      - No attempt is made to control the inventory of by-products and to prevent them from losses due to fraud or errors.
2. By-Product Revenue Deducted from Main Product Cost

a. The net sales of by-products will be treated as a deduction from the cost of the main product.
   - Example: The beef-packing industry uses this method because of the great variety of products resulting from operations and the complexity of the processing.

b. Disadvantages of this method include the following:
   - The method tends to understate the value of the main product.
   - The cost of the main product can vary from month to month because of the varying quantities of by-products sold.

C. Cost Methods of Accounting for By-Products

Cost methods attempt to allocate some joint costs to by-products and to carry inventories at the allocated cost levels.

1. Replacement Cost Method

The **replacement cost method** values the by-product inventory at its opportunity cost of purchasing or replacing the by-products.

- Example: In the oil refining industry, increasing output of one product will cause a reduction in the output and the profit of the other product.

2. Total Costs Less By-Products Valued at Standard Price Method

a. By-products are valued at a standard price to avoid fluctuations in by-product value.

b. The standard price approach shelters the main product cost from any fluctuations in the by-product price.

c. The standard price may be set arbitrarily, or it may reflect an average price over time.

d. A variance account is used to account for the difference between actual and standard prices.

3. Joint Cost Proration Method

The by-product is allocated some portion of the joint costs using any one of the joint cost allocation methods mentioned in Section II. This method is rarely used in practice.

IV. Effect of Joint Product Costs on Cost Control and Decision Making

Joint product costing may affect cost control and decision making in the following areas: output decisions, further processing of joint products, and pricing jointly produced products**.**

A. Output Decisions

1. Output decisions are normally based on the comparison of total cost of the joint products and the combined sales revenues for measuring profitability at any given point.
2. If management cannot change the product mix or the product mix is determined by customer demand, cost allocation is useless for output decisions because the entire package has to be produced.

B. Further Processing Decisions

1. In making decisions on whether to sell a joint product at split-off or to process it further, only the costs and revenues incurred after the split-off point are pertinent.
2. Joint costs include those costs incurred prior to the split-off point and, thus, are considered sunk costs with respect to further processing decisions (that is, the joint cost is not a relevant cost).

C. Pricing Joint Products

Methods used to set joint product prices include:

1. Sales or market price method
   a. This method maintains a constant relationship of cost to market prices, but it cannot be used to set prices since price has to be known in order to determine cost.
   b. The method is circular but useful in limited situations.
      - Example: The meat-packing industry uses the market value of by-products as an important determinant of the main product's price.
      - Example: The natural gas industry uses it to justify prices and existing price relationships to regulatory bodies. Joint cost allocation is used to determine inventory values, not as a basis to determine a cost to be used in price regulation.
2. Historical market differentials between products method

   When market differentials are stable over time, this method provides a guide to pricing individual products by giving figures comparable to those of competitors.

D. Pricing Based on Cost of Further Production

This method differs from the benefits-received approaches because it does not assign average cost based on physical or weighted units. It is different from the relative market value because the joint product itself does not have a market value.

- Example: The practice of organ transplant sets the costs of the jointly available organs based on the eventual cost of the subsequent transplant operation.

V. Joint Production of Services

Normally services do not yield a true joint output because a service can be directed to one effect rather than to two effects simultaneously.

Joint cost allocation issues with services usually relate to pricing problems.

- Example: An insurance company may allow only a portion of a massage therapy charge to be allocated to the therapeutic aspect.
- Example: The IRS might allow the cost of a two-day seminar as a deductible business expense. But if the seminar were offered on a cruise ship and spread out over a five-day period, the IRS would look closely if claimed as a deduction and not separated from the overall cost of the cruise.

Methods of Allocating the Joint Production Cost:

The allocation of joint product cost incurred up to the split-off point can be made by:

1. The market or sales value method, based on the relative market values of the individual products.
2. The quantitative or physical unit method, based on some physical measurement unit such as weight, linear measure, or volume.
3. The average unit cost method.
4. The weighted average method, based on a predetermined standard or index of production.

Joint Product Cost Analysis for Managerial Decisions and Profitability Analysis:

Get information about how managerial decisions are affected by joint production costs and methods used to allocate joint costs.

INTRODUCTION:

Process costing is a form of operations costing which is used where standardized homogeneous goods are produced. This costing method is used in industries like chemicals, textiles, steel, rubber, sugar, shoes, petrol etc. Process costing is also used in the assembly type of industries also. It is assumed in process costing that the average cost presents the cost per unit. Cost of production during a particular period is divided by the number of units produced during that period to arrive at the cost per unit.

MEANING OF PROCESS COSTING

Process costing is a method of costing under which all costs are accumulated for each stage of production or process, and the cost per unit of product is ascertained at each stage of production by dividing the cost of each process by the normal output of that
process.

Definition:

CIMA London defines process costing as "that form of operation costing which applies where standardize goods are produced".

Features of Process Costing:

(a) The production is continuous

(b) The product is homogeneous

(c) The process is standardized

(d) Output of one process become raw material of another process

(e) The output of the last process is transferred to finished stock

(f) Costs are collected process-wise

(g) Both direct and indirect costs are accumulated in each process

(h) If there is a stock of semi-finished goods, it is expressed in terms of equivalent units

(i) The total cost of each process is divided by the normal output of that process to find out cost per unit of that process.

General Principles

Following general principles are followed for cost determination under Processes Costing

(a)The production activities of the factory are classified by processes or departments. Each process or department includes a number of operations, none of which is separately measurable and each of which completes a distinct stage in the manufacture of the product. The boundaries of the process are determined by (i)jurisdiction or supervision, (ii) similarity of work performed, (iii) physical location of men and machines in the plant.

(b) All direct and indirect cost of a particular period are classified by processes. Each process account is debited with the amount of direct material, and labour and with a proportionate part of overhead expenses.

(c) Production in terms of physical quantities is recorded in respective process accounts.

(d) The total cost of each process is divided by the total production of the process and average cost per unit for the period is obtained.

(e) When products are processed in more than one department, costs of one department are transferred to the next department as initial costs. The total cost and cost per unit is thus determined by cumulating costs of different departments.

(f) In case of loss or spoilage of units in a department, the loss is borne by the units produced in that department. Thus the average cost per unit is increased.

Advantages of process costing:

1. Costs are be computed periodically at the end of a particular period
2. It is simple and involves less clerical work that job costing
3. It is easy to allocate the expenses to processes in order to have accurate costs.
4. Use of standard costing systems in very effective in process costing situations.
5. Process costing helps in preparation of tender, quotations
6. Since cost data is available for each process, operation and department, good managerial control is possible.

Limitations:

1. Cost obtained at each process is only historical cost and are not very useful for effective control.
2. Process costing is based on average cost method, which is not that suitable for performance analysis, evaluation and managerial control.
3. Work-in-progress is generally done on estimated basis which leads to inaccuracy in total cost calculations.
4. The computation of average cost is more difficult in those cases where more than one type of products is manufactured and a division of the cost element is necessary.

5. Where different products arise in the same process and common costs are prorated to various costs units. Such individual products costs may be taken as only approximation and hence not reliable.

Steps to approach process accounting problems

Step 1: Draw up a T account for the process account. (There may be more than one process, but start with the first one initially.) Fill in the information given in the question.

Process account

	Units	$		Units	$
Opening WIP	X	X	Normal loss	X	X
Materials		X	Transfer to Process 2 or Finished goods	X	X
Labour		X	Abnormal loss	X	X
Overheads		X	Closing WIP	X	X
Abnormal gain	X	X			

Step 2: Calculate the normal loss in units and enter on to the Process account. (The value will be zero unless there is a scrap value.

Step 3: Calculate the abnormal loss or gain (there won't be both). Enter the figure on to the Process account and open a T account for the abnormal loss or gain.

Step 4: Calculate the scrap value (if any) and enter it on to the Process account. Open a T account for the scrap and debit it with the scrap value.

Step 5: Calculate the equivalent units and cost per unit.

Step 6: Repeat the above if there is a second process.

DISTINCTION BETWEEN JOB COSTING AND PROCESS COSTING

Job order costing and process costing are two different systems. Both the systems are used for cost calculation and attachment of cost to each unit completed, but both the systems are suitable in different situations. The basic difference between job costing and process costing are

	Basis of Distinction	Job order costing	Process costing
1.	Specific order	Performed against specific orders	Production is contentious
2.	Nature	Each job many be different.	Product is homogeneous and standardized.
3.	Cost determination	Cost is determined for each job separately.	Costs are complied for each process for department on time basis i.e. for a given accounting period.
4.	Cost calculations	Cost is complied when a job is completed.	Cost is calculated at the end of the cost period.
5.	Control	Proper control is comparatively difficult as each product unit is different and the production is not continuous.	Proper control is comparatively easier as the production is standardized and is more suitable.
6.	Transfer	There is usually not transfer from one job to another unless there is some surplus work.	The output of one process is transferred to another process as input.

COSTING PROCEDURE

For each process an individual process account is prepared. Each process of production is treated as a distinct cost centre.

Items on the Debit side of Process A/c.

Each process account is debited with :

a) Cost of materials used in that process.

b) Cost of labour incurred in that process.

c) Direct expenses incurred in that process.

d) Overheads charged to that process on some pre determined.

e) Cost of ratification of normal defectives.

f) Cost of abnormal gain (if any arises in that process)

Items on the Credit side:

Each process account is credited with

a) Scrap value of Normal Loss (if any) occurs in that process.

b) Cost of Abnormal Loss (if any occurs in that process)

Cost of Process:

The cost of the output of the process (Total Cost less Sales value of scrap) is transferred to the next process. The cost of each process is thus made up to cost brought forward from the previous process and net cost of material, labour and overhead added in that process after reducing the sales value of scrap. The net cost of the finished process is transferred to the finished goods account. The net cost is divided by the number of units produced to determine the average cost per unit in that process. Specimen of Process
Account when there are normal loss and abnormal losses.

Dr.			Process I A/c.		Cr.
Particulars	Units	Rs.	Particulars	Units	Rs.
To Basic Material	xxx	xx	By Normal Loss	xx	xx
To Direct Material		xx	By Abnormal Loss	xx	xx
To Direct Wages		xx	By Process II A/c.	xx	xx
To Direct Expenses		xx	(output transferred to		
ToProduction Overheads		xx	Next process)		
ToCost of Rectification of Normal Defects		xx	By Process I Stock A/c.	xx	xx
To Abnormal Gains		xx			
	xx	xxx		xx	xx

Process Losses:

In many process, some loss is inevitable. Certain production techniques are of such a nature that some loss is inherent to the production. Wastages of material, evaporation of material is un avoidable in some process. But sometimes the Losses are also occurring due to negligence of Labourer, poor quality raw material, poor technology etc. These are normally called as avoidable losses. Basically process losses are classified into two categories

(a) Normal Loss

(b) Abnormal Loss

1. Normal Loss:

Normal loss is an unavoidable loss which occurs due to the inherent nature of the materials and production process under normal conditions. It is normally estimated on the basis of past experience of the industry. It may be in the form of normal wastage,

normal scrap, normal spoilage, and normal defectiveness. It may occur at any time of the process. No of units of normal loss: Input x Expected percentage of Normal Loss.

The cost of normal loss is a process. If the normal loss units can be sold as a crap then the sale value is credited with process account. If some rectification is required before the sale of the normal loss, then debit that cost in the process account. After adjusting the normal loss the cost per unit is calculates with the help of the following formula:

Cost of good unit:

$$\frac{\text{Total cost increased} - \text{Sale Value of Scrap}}{\text{Input} - \text{Normal Loss units}}$$

2. Abnormal Loss:

Any loss caused by unexpected abnormal conditions such as plant breakdown, substandard material, carelessness, accident etc. such losses are in excess of pre-determined normal losses. This loss is basically avoidable. Thus abnormal losses arrive when actual losses are more than expected losses. The units of abnormal losses in calculated as under:

Abnormal Losses = Actual Loss – Normal Loss

The value of abnormal loss is done with the help of following formula:

Value of Abnormal Loss:

$$\frac{\text{Total Cost increase – Scrap Value of normal Loss}}{\text{Input units – Normal Loss Units}} \times \text{Units of abnormal loss}$$

Abnormal Process loss should not be allowed to affect the cost of production as it is caused by abnormal (or) unexpected conditions. Such loss representing the cost of materials, labour and overhead charges called abnormal loss account. The sales value of
the abnormal loss is credited to Abnormal Loss Account and the balance is written off to costing P & L A/c.

Dr. Abnormal Loss A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process A/c.	xx	xx	By Bank	xx	xx
			By Costing P & L A/c.	xx	xx
	xx	**xxx**		**xx**	**xx**

3. Abnormal Gains:

The margin allowed for normal loss is an estimate (i.e. on the basis of expectation in process industries in normal conditions) and slight differences are bound to occur between the actual output of a process and that anticipates. This difference may be positive or negative. If it is negative it is called ad abnormal Loss and if it is positive it is Abnormal gain i.e. if the actual loss is less than the normal loss then it is called as abnormal gain. The value of the abnormal gain calculated in the similar manner of abnormal loss.

The formula used for abnormal gain is:

$$\frac{\text{Total Cost incurred} - \text{Scrap Value of Normal Loss}}{\text{Input units} - \text{Normal Loss Units}} \times \text{Abnormal Gain Unites}$$

The sales values of abnormal gain units are transferred to Normal Loss Account since it arrive out of the savings of Normal Loss. The difference is transferred to Costing P & L A/c. as a Real Gain.

Dr. Abnormal Gain A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Normal Loss A/c.	xx	xx	By Process A/c.	xx	xx
To Costing P & L A/c.	xx	xx			

Problem1: (Normal / Abnormal Loss)

Prepare a Process Account, Abnormal Loss Account and Normal Loss Account from the following information.

Input of Raw material	1000 units @ Rs. 20 per unit
Direct Material	Rs. 4,200/-
Direct Wages	Rs. 6,000/-
Production Overheads	Rs. 6,000/-
Actual output transferred to process II	900 units
Normal Loss	5%
Value of Scrap per unit	Rs. 8/-

Solution :

Dr. Process – I A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
ToRawmaterial @ 20	1000	20000	By Normal Loss		
To Direct Material		4200	(5% on 1000)	50	400
To Direct Wages		6000	By Abnormal Loss A/c.	50	
To Production			BY Process – II A/c.		
Overheads		6000	(output transferred)	900	
	1000	36200		1000	36200

Dr. Abnormal Loss A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process – I A/c.	50		By Bank A/c.	50	400
			By Costing P & L A/c.		
	50			50	400

Normal Loss A/c. Cr.

ılars	Units	Rs.	Particulars	Units	Rs.
ss – I	50	400	BY Bank	50	400

Dr.

Particu
To Proce A/c.

Working notes:

(1) Cost of abnormal Loss :

$$= \frac{\text{Total Cost increased – Sales value of Scrap}}{\text{Input units – Normal Loss Units}} \times \text{abnormal units}$$

$$= \frac{36200 - 400}{1000 - 50} \times 50$$

(2) It has been assumed that units of abnormal loss have also been sold at the same rate i.e. of Normal Scrap

Problem 2: (Normal / Abnormal Loss and Abnormal Gain)

The product of a company passes through 3 distinct process. The following information is obtained from the accounts for the month ending January 31, 2008.

Particulars	Process – A	Process – B	Process – C
Direct Material	7800	5940	8886
Direct Wages	6000	9000	12000
Production Overheads	6000	9000	12000

3000 units @ Rs. 3 each were introduced to process – I. There was no stock of materials or work in progress. The output of each process passes directly to the next process and finally to finished stock A/c.

The following additional data is obtained :

Process	Output	Percentage of Normal Loss to Input	Value of Scrap per unit (Rs.)
Process – I	2850	5 %	2
Process – II	2520	10 %	4
Process – III	2250	15 %	5

Prepare Process Cost Account, Normal Cost Account and Abnormal Gain or Loss Account.

Solution:

Dr. Process – A A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Units introduced	3000	9000	By Normal Loss A/c.	150	300
To Direct Material		7800	By Process – B A/c.	2850	28500
To Direct Wages		6000	(Units transferred		
To Production			@ Rs. 10/-)		
Overheads		6000			
	3000	**28800**		**3000**	**28800**

Dr. Process – B A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process – I A/c.	2850	28500	By Normal Loss A/c.	285	1140
To Direct Material		5940	By Abnormal Loss A/c.	45	9000
To Direct Wages		9000	By Process – C A/c.	2520	50400
To Production					
Overheads		9000			
	2850	**52440**		**2850**	**52440**

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Dr. Process – C A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process – II A/c.	2520	50400	By Normal Loss A/c.	378	1890
To Direct Material A/c		8886	By Finished Stock A/c.	2250	85500
To Direct Wages		12000			
To Production					
Overheads		12000			
To Abnormal Gain A/c.	108	4104			
	2628	**87390**		**2628**	**87390**

Dr. Abnormal Gain A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Normal Loss A/c.	108	540	By Process – C A/c.	108	4104
To Costing P&L A/c.		3564			
	108	**4104**		**108**	**4104**

Dr. Normal Loss A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process – A A/c.	150	300	By Bank A/c. (Sales)		
To Process – B A/c.	285	1140	Process – A A/c.	150	300
To Process – C A/c.	378	1890	Process – B A/c.	285	1140
			Process – C A/c.	270	1350
			By Abnormal Gain A/c.	108	540
	813	**3330**		**813**	**3330**

INTER PROCESS PROFITS:

Normally the output of one process is transferred to another process at cost but sometimes at a price showing a profit to the transfer process. The transfer price may be made at a price corresponding to current wholesale market price or at cost plus an agreed percentage.

The advantage of the method is to find out whether the particular process is making profit (or) loss. This will help the management whether to process the product or to buy the product from the market. If the transfer price is higher than the cost price then the process account will show a profit. The complexity brought into the accounting arises from the fact that the inter process profits introduced remain a part of the prices of process stocks, finished stocks and work-in-progress.

The balance cannot show the stock with profit. To avoid the complication a provision must be created to reduce the stock at actual cost prices. This problem arises only in respect of stock on hand at the end of the period because goods sold must have realized the internal profits. The unrealized profit in the closing stock is eliminated by creating a stock reserve. The amount of stock reserve is calculated by the following formula.

$$\text{Stock Reserve} = \text{Transfer Value of stock} \times \frac{\text{Profit included in transfer price}}{\text{Transfer Price}}$$

Problem 3:

A product passes through three processes before its completion. The output of each process s charged to the next process at a price calculated to give a profit of 20% on transfer price. The output of Process III is transferred to finished stock account on a similar basis. There was no work-in-progress at the beginning of the years. Stock in each process has been valued at prime cost of the process. The following data is available at the end of 31st March, 2009

	Process I	Process II	Process III	Finished Stock Rs.
Direct Material	20000	30000	10000	--
Direct Wages	30000	20000	40000	--
Stock on 31st March 2009	10000	20000	30000	15000
Sale during the year	--	--	--	180000

1. Process Cost Account showing the profit at each stage.
2. Actual realized profit and
3. Stock Valuation as would appear in the balance sheet

Solution:

Dr. Process – I A/c. Cr.

Particulars	Total Rs.	Cost Rs.	Profit Rs.	Particulars	Total Rs.	Cost Rs.	Profit Rs.
To Materials	20000	20000	--	By Process IIA/c. (Transfer)	50000	40000	10000
To Wages	30000	30000	--				
Total	50000	50000	--				
Les Closing							
Stock c/d	10000	10000	--				
Prime Cost	40000	40000	--				
To Gross							
Profit	10000	--	10000				
(20% on							
Transfer							
Price)	50000	40000	10000		50000	40000	10000
ToStockB/d.	10000	10000	--				

Dr. Process – II A/c. Cr.

Particulars	Total Rs.	Cost Rs.	Profit Rs.	Particulars	Total Rs.	Cost Rs.	Profit Rs.
To Process – I A/c.	50000	40000	10000	By Process-III			
				A/c.	100000	72000	28000
To Material	30000	30000	--	(Transfer)			
To Wages	20000	20000	--				
	100000	90000	10000				
Less : Closing							
Stock C/d.	20000	18000	2000				
Prime Cost	80000	72000	8000				
To Gross Profit							
(20% on							
Transfer Price)	20000	--	20000				
	100000	72000	28000		100000	72000	28000
To Stock	20000	18000	2000				

Process III A/c

Particulars	Total Rs.	Cost Rs.	Profit Rs.	Particulars	Total Rs.	Cost Rs.	Profit Rs.
ToprocessII A/c	100000	72000	28000	ByFinished stock A/c	150000	97600	52400
To Material	10000	10000					
To Wages	40000	40000	-------				
TOTAL	150000	122000	28000				
Less.Closing stock	30000	24400	5600				
To Gross profit	120000	97600	22400				
(20%of transfer price)	30000	--------	30000				
	150000	97600	52400		150000	97600	52400
To Stock b/d	30000	24000	5600				

Finished stock A/c

Particulars	Total Rs.	Cost Rs.	Profit Rs.	Particulars	Total Rs.	Cost Rs.	Profit Rs.
To process III A/c	115000	97600	52400	By Sales	180000	87840	92160
(-)Stock	15000	9760	5240				
To gross profit	135000	87840	92160				
	45000	---	45000				
	180000	87840	92160		180000	87840	92160
To Stock A/c	15000	9760	5240				

Calculation of profit on closing stock

Profit included in stock = $\frac{\text{Profit included in transfer price}}{\text{Transfer price}} \times \text{Value of stock}$

Process I = No profit

Process Ii $= \frac{10000}{100000} \times 20000 = 2000$

Process Iii $= \frac{28000}{150000} \times 30000 = 5600$

Finished stock $= \frac{52400}{150000} \times 15000 = 5240$

Problem 4:

A product process through three process A, B and C. The details of expenses incurred on the three process during the year 2008 were as under :

	Process A	Process B	Process C
Units introduced	10000		
Cost per unit is Rs. 50/-			
	Rs.	Rs.	Rs.
Sundry Material	6000	9000	3233
Labour	18000	48000	39000
Direct Expenses	3000	11000	18000
Selling price per unit of output	70	100	200

Management expenses during the year were Rs. 80000 and selling were Rs. 5000. There are not allocable to the processes. Actual output of the three process were A – 9300 units, B – 5400 units and C 2100 units. Two-thirds of the output of process A and one half of the output of process B was passed on to the next process A and one-half of the output of process B was passed on to the next process and the balance was sold. The entire output of process C was sold. The normal losses of the three process, calculated on the input of every process was: Process A – 5%, B – 15% and C – 20%. The loss of process A was sold @ Rs. 3 per unit that of B @ Rs. 5 per unit and of process C @ Rs. 10 per unit. Prepare process A, B and C account and the Profit and Loss Account.

Solution:

Dr. Process A A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
ToUnits Introduced			By Normal Loss	500	1,500
@ Rs. 50	10000	5,00,000	By Abnormal	200	11063
ToSundry Materials		6,000	Loss A/c.	6,200	342958
To Labour		18,000	By Process B A/c.	3,100	171479
ToDirect Expenses		3,000	By P & L A/c.		
			(@ 55.32)		
	10000	5,27,000			5,27,000

Dr. Process B A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process A A/c.	6200	342958	By Normal Loss	930	4650
ToSundry Materials		9000	By Process C A/c.	2700	2,08,165
To Labour		48000	By P & L A/c.	2700	2,08,165
To Direct Expenses		11000			
ToAbnormal Gains		100221			
A/c. (@ 77.19)					
	6330	**420980**		**6,330**	**4,20,980**

Dr. Process C A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process B A/c.		208165	By Normal Loss	540	5400
ToSundry Materials		3233	By Abnormal Loss	60	7305
To Labour		39000	By P & L A/c.	2100	255693
To Direct Expenses		18000	(@ 12.76)		
	2700	**268398**		**2700**	**268398**

Dr. Profit & Loss A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process A A/c.	3100	171479	By Sales(@ Rs. 70)	3100	217000
To Process B A/c.	2700	208165	By Sales(@Rs. 100)	2700	270000
To Process C A/c.	2700	265693	BySales(@Rs.2000)	2700	420000
To Management Expenses A/c.		80000	BY Abnormal Gain A/c.		9372
ToSelling Expenses		50000			
To Abnormal Loss A/c.		17168			
To Net Profit		133867			
		916372			**916372**

Dr. Abnormal Loss A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process A A/c.	200	11063	By Bank Sales		
To Process B A/c.	60	7305	(@ Rs. 30)	200	600
			By Bank		
			(@ Rs. 10)	60	600
			By P & L A/c.		17168
	260	**18368**		**260**	**18368**

Dr. Abnormal Gain A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Normal Loss A/c.	130	650	By Process B /c.	130	10022
To Costing P & L A/c.		9372			
	130	**10022**		**130**	**10022**

Problem 5

Mahesh Ltd process a material which passes through three processes. Figures relating to production for the first 6 months of 2009 are as follows.

	Process A	Process B	Process C
Raw material used	1000 tones @ Rs. 200		
Manufacturing Wages	Rs. 40000	Rs. 30000	Rs. 7000
Expenses	Rs. 32500	Rs. 10800	Rs. 3710
Scrap sold @ Rs. 50 per tone	50 tones	30 tones	51 tones
Selling price per tone	Rs. 320	Rs. 450	Rs. 800
Weight Loss	5%	10%	20%

Management expenses were Rs. 10500, selling expenses Rs. 8000 and interest on borrowed capital Rs. 2000. Two third of process I and one half of process 2 are passed on to the next process and the balance are sold.

Prepare Process Account, Process Stock Account and Costing Profit & Loss A/c.

Solution

Dr. Process No. 1 A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Material @ Rs. 200	1000	200000	By Normal Loss (sale of Scrap)	50	2500
To Wages		40000	By Weight Loss	50	--
To Expenses		32500	By Process I Stock A/c.(@300per tone)	900	270000
	1000	**272500**		**1000**	**272500**

Dr. Process No. 1 Stock A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process I A/c.	900	270000	By Bank (@ 320)	300	96000
To Costing Profit & Loss A/c.		6000	ByProcessNo.2 A/c.	600	180000
	900	**276000**		**900**	**276000**

Dr. Process No. 2 Stock A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process 2 A/c.	510	219300	By Bank		
ToCosting P&L A/c.		5100	(sale @ 450)	255	114750
			By Process 3 A/c.	255	109650
	510	**244400**		**510**	**244400**

Dr. Process No. 3 A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process 2 Stock A/c.	255	109650	By scrap	51	2550
To wages		7000	By Weight Loss	51	--
To Expenses		3710	By Process 3 stock A/c	153	117810
	255	**120360**		**255**	**120360**

Dr. Process No. 3 Stock A/c. Cr.

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process 3 A/c.	153	117810	By Bank		
To Costing P & L A/c.		4590	(sale @ 800)	153	122400
	153	**122400**		**153**	**122400**

Dr. Costing Profit & Loss A/c. Cr.

Particulars	Rs.	Particulars	Rs.
To Management Expenses	10500	By Process 1 Stock A/c.	6000
To Selling Expenses	8000	By Process 2 Stock A/c.	5100
To Interest on Capital	2000	By Process 3 Stock A/c.	4590
		By Net Loss	4810
	20500		**20500**

IMPORTANT TERMS TO UNDERSTAND

In a manufacturing process the number of units of output may not necessarily be the same as the number of units of inputs. There may be a loss.

Normal loss

This is the term used to describe normal expected wastage under usual operating conditions. This may be due to reasons such as evaporation, testing or rejects.

Abnormal loss

This is when a loss occurs over and above the normal expected loss. This may be due to reasons such as faulty machinery or errors by laborers.

Abnormal gain

This occurs when the actual loss is lower than the normal loss. This could, for example, be due to greater efficiency from newly-purchased machinery.

Work in progress

This is the term used to describe units that are not yet complete at the end of the period. Opening WIP is the number of incomplete units at the start of a process and closing WIP is the number at the end of the process.

Scrap value

Sometimes the outcome of a loss can be sold for a small value. For example, in the production of screws there may be a loss such as metal wastage. This may be sold to a scrap merchant for a fee.

POSSIBLE QUESTIONS

Part A

One Mark

Online Examination

Part B

Two Marks

1. What is output Costing?
2. Define unit costing.
3. What do you understand by job order cost Accounting?
4. What do you mean by the term Batch Costing?
5. What do you mean by process costing?

PART – C

SIX MARKS

1.From the following information calculate fare for passenger KM.

The cost of the Bus	Rs.450000
Insurance charges	3 % p.a.
Annual tax	Rs.4500
Garage rent	Rs.500 p.m.
Annual repairs	Rs.4800
Expected life of the bus	5yrs
Value of scrap at the end of 5 years	Rs.3000
Route distance	20 km long
Driver's salary	Rs.550 p.m.
Conductor's Salary	R. 500 p.m.
Commission to Driver & conductor (shared equally)	10 % of the takings
Stationary	Rs.250 p.m.

Manager-cum-accountant's Salary	Rs.1750 p.m.
Diesel and Oil (for 100 kms)	125

The bus will make 3 rounds trips for carrying on the average40 passenger's in each

trip. Assume 15 % profit on takings. The bus will work on the average 25 days in a month.

2. Following expenses were incurred by a contractor on a contract which he started on 1st January :

Particulars	Amount (Rs.)
Materials	40,000
Wages	50,000
Other Expenses	15,000
Plant at cost	50,000
Work Certified	1,20,000
Work Uncertified	60,000
Material on Hand (on 31st Dec.)	11,000
Plant value at close	43,000
Cash received from contractee	1,00,000
Materials returned to store	2,000

Prepare Contract Account and Work – in – Progress, assuming that the contract price was Rs. 3,50,000. How will Work – in – progress appear in the Balance Sheet of the Contractor?

3. From the following data relating to two different vehicles A and B, compute cost per running mile.

Particulars	Vehicle A	Vehicle B
Mileage run (annual)	15,000	6,000
Cost of vehicles	Rs. 25,000	Rs. 15,000
Road License (Annual)	750	750

Immune (Annual)	700	400
Garage rent (Annual)	600	500
Supervision and Salaries (Annual)	1,200	1,200
Driver's wage per hour	3	3
Cost of fuel per gallon	3	3
Miles runs per gallon	20	15
Repairs and maintenance per mile (Rs.)	1.65	2.00
Tire allocation per mile	0.80	0.60
Estimated life of vehicle (miles)	1,00,000	75,000

Charge interest @ 5 % p.a. on cost of vehicles. The vehicles run 20 miles per hour on an average

4. The following are the expenses on a contract which commences on 1st Jan. 2003

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 2003. Charge indirect expenses at 15% on wages. Provide Rs.10.000 for depreciation on plant.

Prepare the contract account and the Contractee's account.

5. You are required to calculate a suggested fare per passenger – km from the following information for a mini bus.

(i) Length of route 30 km

(ii) Purchase price Rs.4,00,000.

(iii) Part of above cost meet by loan, annual interest Rs.10,000 p.a.

(iv) Other annual charges : Insurance Rs.15,000, Garage Rent Rs.9,000, Road Taxes Rs. 3,000, Repairs and Maintenance Rs.5,000. Administrative charges Rs.5000.

(iv) Running expenses : Driver & Conductor Rs.5000 p.m., Repairs / Replacement of tyre tube Rs.3600 p.a. Diesel and Oil cost per Km Rs. 5/-

(v) Effective life of vehicle is estimate[redacted] it will have a scrap value of Rs.10,000.

(vi) Mini Bus has 20 seats and is planned to make six two way trips for 25 days / p.m.

Provide profit @ 20 % of total revenue

6. Jain and company obtained a contract for the building of an office for Rs. 3,00,000. Building operations started on 1st April 2003 and at the end of the financial year i.e. 31st March 2004, they received from the party a sum of Rs. 1,20,000 being 80 % of the amount of the surveyors certificW0.art009(s 0 612 792 reW nBT/F4 12 Tf1 0 0 1 /F084 3054 3eTm5.320(%W nB

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March 2004. Also discuss whether Jain and Company would be justified in taking the full amount of this profit to the credit of their Profit and Loss Account.

7. From the following information, calculate total kilometers and total passenger kilometers :

Number of Buses	:	5
Days operated in the month	:	25
Trips made by each bus	:	4
Distance of route	:	25 Km. (one side)
Capacity of Bus	:	50 Passengers
Normal Passenger Travelling	:	90 % of capacity

8. The following was the expenditure on a contract for Rs. 12,00,000 commenced in January.

	Rs.
Materials	2,40,000
Wages	3,28,000
Plant	40,000
Overheads	17,200

Cash received on account of the contract up to 31st December was Rs. 4,80,000 being 80 % of the work certified. The value of materials in hand was Rs. 20,000. The plant had undergone 20 % depreciation.

Prepare Contract Account.

9. A transport service company is running 4 buses between two towns 50 miles apart. Seating capacity of each bus is 40 passengers. The following particulars were obtained from their books:

	Rs.
Wages of drivers, conductors and cleaners	2,400

Salaries of office and supervisory staff		1,000
Diesel oil and other oils	4,000	
Repairs and maintenance		800
Taxation, insurance etc.	1,600	
Depreciation	2,600	
Interest and other charges		2,000
		14,400

Actual passengers carried were 75 % of the seating capacity. All the four buses ran on all the days of the month. Find out the cost per passenger mile.

10. The following are the expenses on a contract which commences on 1st Jan. 2003

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 2003. 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.

UNIT V

SYLLABUS

Book Keeping in Cost Accounting - Integral and Non-integral Systems- Reconciliation of Cost and Financial Accounts

1. Book Keeping in Cost Accounting

Since cost accounts and financial accounts are kept for different purposes, the patterns of collecting information are different. The basis of passing journal entries (i.e., double entry system) is the same, both in cost accounts and financial accounts. There are two systems of cost control accounting to keep costs books:

(i) Non-integral or Non-Integrated Accounting, and

(ii) Integral or Integrated Accounting.

Where cost and financial transactions are kept separately, the system is referred to as non-integral accounting. Where both financial and costing transactions are recorded in one set of books, it is referred to as integral or integrated accounting. While non- integrated system of accounting necessitates reconciliation between financial and cost accounts, no reconciliation between two sets of accounts is required under integrated accounting.

2. Non-Integrated accounting systems

3. Book Keeping in Cost Accounting

Since cost accounts and financial accounts are kept for different purposes, the patterns of collecting information are different. The basis of passing journal entries (i.e., double entry system) is the same, both in cost accounts and financial accounts. There are two systems of cost control accounting to keep costs books:

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4. Non-Integrated accounting systems

Non-Integrated accounting system is also referred to as cost ledger accounting system. Under this system, there are separate sets of books for cost accounts and financial accounts. While cost accountant is responsible for recording cost ledgers, financial accountant is responsible for financial ledgers. Some items appear in cost ledgers only and some items appear only in financial accounts. This does not affect the double entry system.

The Chartered Institute of Management Accountants, London has defined non-integrated accounting system as "a system in which cost accounts are distinct from financial accounts, the two sets of accounts being kept continuously in agreement by the use of control accounts or made really reconcilable by other means."

Principal Ledgers in Cost Departments

Since personal accounts and real accounts (except stock items) are not kept in cost accounts therefore, cost accounts department maintain only four important ledgers under non-integrated accounting system. These include:

(i) Cost Ledger:

This is the principal ledger of costing department. It contains all impersonal accounts. It is made self-balancing by maintaining therein a control account for each of the other ledgers.

(ii) Stores Ledger:

This contains all stores accounts. A separate account is opened for each item of stores.

All purchases, issues, losses, etc. of stores items are entered in their respective accounts. This ledger contains the opening and closing balance of the stores items in their individual accounts.

(iii) Work-in-progress Ledger:

This ledger keeps record of each type of jobs undertaken and cost incurred therefore. All material costs, wages and overheads for each job in progress are posted to the respective job account in this ledger.

(iv) Finished Goods Ledger:

This contains account of completely finished product or job. A separate account is opened for each type of finished product.

Control Accounts

Control accounts are the total accounts in the cost ledger. In these accounts, entries are made once in each accounting period. Periodically total of all transactions in related subsidiary ledger is entered as one entry in the concerned control account.

Advantages of Control accounts

The main advantages of control accounts are:

(i) Cost control accounts provide summary of the accounting period transactions of various subsidiary ledgers.

(ii) These accounts facilitate early preparation of costing profit and loss account and the trial balance because of availability of cost and revenue information in totals.

(iii) Job-wise ascertainment of cost and profitability is made simple.

(iv) Control accounts help in prompt reconciliation of cost and financial accounts.

Principal Control Accounts

Following are the accounts, which are generally maintained, when a separate cost ledger is kept.

(1) General Ledger Adjustment Account:

This is also known as cost ledger control account. This account is operated to make cost ledger self-balancing. All transactions of income and expenditure, which originate in financial accounts, are entered in this account for eventual transfer to some control account. If a transaction is of internal nature affecting cost accounts only, i.e., transfer from stores ledger control account to work-in-progress control account, then no entry is necessary in general ledger adjustment account, because double entry is possible without recourse to this balancing account. Main purpose of this account is to complete entry in cost ledger. No entry should be made direct from financial books to cost books. All entries pass through general ledger adjustment account. The balance of this account at the end of a particular period represents the total of all balances of impersonal account.

(2) Stores Ledger Control Account:

This account is debited for the purchase of material and credited for issue of materials from stores. The balance of this account indicates total balance of stores, which should agree with aggregate of balance of individual account in the stores ledger. Abnormal losses or gains are transferred to profit and loss account. Entries are made on the basis of goods received notes and stores requisition etc.

(3) Work-in Progress Ledger Control Account:

This account is debited with cost of production i.e., direct material, direct labour, direct Expenses, if any, and production overhead recovered. This account is credited with the value of finished goods completed. The balance of this account will show total balance of jobs/works, which are in progress as per various individual job accounts.

(4) Finished Goods Ledger Control Account:

This account is debited with the value of goods transferred from work-in-progress account. Administration overhead recovered is also debited to this account. This account is credited with cost of sales account. The balance of this account will

represent the value of finished goods lying at hand.

(5) Wages Control Account:

Total wages (direct and indirect) paid are debited to this account. Direct wages are transferred to work-in progress control account and indirect wages are transferred to respective overhead control account in production-administration or selling. It is not strictly a control account, because it does not have subsidiary ledger.

(6) Production Overhead Control Account:

This account is debited with indirect manufacturing expenses like indirect material cost, indirect wages and indirect expenses. The entry is made on the basis of particulars available from material issue analysis sheet; wages analysis sheet, standing order numbers and cost account numbers, the account of manufacturing overhead recovered is credited to this account and debited to work-in-progress ledger control account. Any balance of this account represents balance of, under/over absorbed overhead, which is transferred to profit and loss account.

(7) Administration Overhead Control Account:

This account is debited with administration overhead incurred. Administration overhead recovered is credited to this account and debited to finished goods ledger control account. Any balance in this account represents over/under absorbed administration overhead which is transferred to profit and loss account.

(8) Selling and distribution Overhead Control Account:

This account is debited with selling and distribution overhead incurred. For selling and distribution overhead recovered, this account is credited and cost of sales account is debited.

(9) Cost of Sales account:

This account is credited with cost of goods sold and selling and distribution overhead recovered. This account is closed by transferring it to profit and loss account.

(10) Costing Profit and Loss Account:

This account is debited with cost of goods sold, under-absorbed overhead and abnormal

losses. This account is credited with sales value, over-absorbed overhead and abnormal gains. The balance of this account shows profit or loss as per cost books, which is reconciled with financial profit and loss account. If there is profit, costing profit and loss account is debited and general ledger adjustment account is credited. If there is loss, costing profit and loss account is credited and general ledger adjustment account is debited.

Accounting Entries under Non-Integrated System

The table given below summarises the journal entries to be passed for various transactions in cost ledger:

Transactions	Entry in Cost Ledger
1. Material Purchased	
(a) For Stock	Dr. Stores Ledger Control A/C Cr. General Ledger Adjustment A/C
(b) For Special jobs	Dr. WIP ledger Control A/C Cr. General Ledger Adjustment A/C
2. Material Issued	
(a) Direct material	Dr. WIP ledger Control A/C Dr. Stores Ledger Control A/C
(b) Indirect material	Dr. Respective Overhead A/C Dr. Stores Ledger Control A/C
(c) Returns to Supplier	Cr. General Ledger Adjustment A/C

	Dr. Stores Ledger Control A/C
3. Material returned from shop floor	Dr. Stores Ledger Control A/C Dr. WIP ledger Control A/C
4. Material transferred from one job to another	No Entry in Control A/C
In Work-in-Progress Ledger	Dr. Transferee Job A/C Cr. Transferor Job A/C
5. Labour	
(a) Total salary and wages paid	Dr. Wages Control A/C Cr. General Ledger Adjustment A/C
(b) Allocation	
For Direct Labour	Dr. WIP ledger Control A/C Cr. Wages Control A/C
For Indirect Labour	Dr. Respective Overhead Control A/C Cr. Wages Control A/C
6. Direct Expenses	Dr. WIP ledger Control A/C Cr. General Ledger Adjustment A/C
7. Overheads	
(a) Incurred	Dr. Respective Overhead A/C Cr. General Ledger Adjustment A/C
(b) Recovered	Dr. WIP ledger Control A/C Dr. Finished Goods Ledger Control A/C

	Dr. Cost of Sales A/C Cr. Respective Overhead Control A/C
8. Finished Stock	
(a) Produced	Dr. Finished Goods Ledger Control A/C Cr. WIP ledger Control A/C
(b) Sold (at cost)	Dr. Cost of Sales A/C Cr. Finished Goods Ledger Control A/C
(c) Sales	Dr. General Ledger Adjustment A/C Cr. Costing Profit and Loss A/C
(d) Sales Return	Dr. Costing Profit and Loss A/C Cr. General Ledger Adjustment A/C
9. For transferring cost of goods sold to P&L A/C	Dr. Costing Profit and Loss A/C Cr. Cost of Sales A/C
10. Under-absorption of overhead	Dr. Costing Profit and Loss A/C Cr. Respective Overhead A/C
11. Over-absorption of overhead	Dr. Respective Overhead A/C Cr. Costing Profit and Loss A/C
12. For Profit in Costing P&L A/C	Dr. Costing Profit and Loss A/C Cr. General Ledger Adjustment A/C
13. For Loss in Costing P&L A/C	Dr. General Ledger Adjustment A/C

	Cr. Costing Profit and Loss A/C
14. Miscellaneous	
(a) Transportation of incoming material	Dr. Stores Ledger Control A/C Cr. General Ledger Adjustment A/C
(b) Administration Overhead allocated to production	Dr. Work-in-Progress A/C Cr. Administration Overhead A/C
(c) Administration Overhead allocated to Sales	Dr. Cost of Sales A/C Cr. Administration Overhead A/C

5. Integrated Accounting Systems

Integrated accounting is the name given to a system of accounting whereby cost and financial accounts are kept in the same set of books. The term 'Integrated Accounting' means integration or merger of financial and cost accounts and maintenance of a single set of accounts to record both financial and cost transactions.

In other words, it refers to the unified system of accounting which serves the purpose of both financial and cost accounting. The accounts are maintained on double entry system.

Basic Features of Integrated System

(i) Stored Ledger	It contains separate accounts for each item of store.

(ii) Work-in-Progress Ledger	It contains separate accounts for each job, work/product in progress.
(iii) Finished Goods Ledger	It contains separate accounts for each job/work/product finished.
(iv) Sales Ledger	It contains separate personal accounts for each customer.
(v) Purchase Ledger	It contains separate personal accounts for each supplier.
(vi) Overhead Ledger	It contains separate accounts for factory, administration and selling and distribution overheads.

Control Accounts
1. Stores Ledger Control Account
2. Work-in-Progress Control Account
3. Finished Stock Control Account
4. Sales Control Account
5. Purchase Control Account
6. Production Overheads Control Account
7. Administration Overheads Control Account
8. Selling and Distribution Overheads Control Account
9. Wages Control Account

(e) Balances of Overheads Control Accounts: The balances of overheads control accounts which represent under/over absorption of overheads are transferred to Profit and Loss Account.

(f) Profit as per Profit and Loss Account: The profit as per Profit and Loss account is transferred to Profit and Loss Appropriation Account.

Advantages of Integrated System

The advantages of integrated accounting system are summarised below:

(i) No need for Reconciliation:

This system requires maintenance of single set of accounts and discloses only one profit figure therefore, there is no need for reconciliation.

(ii) Simple and Economical:

This system is simple and economical. It avoids maintenance of different set of books and hence duplicate recording of transactions is avoided.

(iii) Centralisation of Accounting Work:

Maintenance of one set of accounts leads to centralisation of accounting work under one department. This leads to improved efficiency and better control in accounting function.

(iv) Provides prompt cost information:

As the system also requires maintenance of almost all cost records kept under non-integrated system, therefore necessary cost information can also be promptly provided under this system.

(v) Suitable for Computerised Accounting: The integrated system of accounting is more suitable for computerisation of accounts and hence reduces paper work, cost and time.

Limitations of Integrated Accounting System

The system has the following limitations:

(i) Non Suitable for Large Firms:

Large firms require cost and financial information on continuous basis. One system cannot handle the accounting work and full benefits of keeping separate set of accounts cannot be realised under integrated system.

(ii) Complex System:

The integrated system sometimes becomes very complex and cannot meet the requirements of providing timely and prompt cost information.

Essential Pre-requisites of Integrated Accounting System

The essential pre-requisites of integrated accounting system include the following:

(a) Decision as to Extent of Integration:

The management must decide about the extent of integration of the two sets of books. Some concerns find it useful to integrate up to the stage of prime cost or factory cost while other prefers full integration of the entire accounting records.

(b) Suitable Coding System:

A suitable coding system must be made available so as to serve the accounting purposes of financial and cost accounts.

(c) Accounting Policy:

An accounting policy with regard to the treatment of provision for accruals, prepaid expenses, other adjustment necessary for preparation of interim accounts, must be laid down in advance.

(d) Co-ordination:

Perfect coordination should exist between the staff responsible for the financial and cost aspects of the accounts and an efficient processing of accounting documents should be ensured.

Transaction	Journal Entries under Integral System

1. Material Purchased on Credit	
(a) For stock	Dr. Stores Control A/C Cr. Sundry Creditors A/C
(b) For jobs	Dr. Work-in-Progress A/C Cr. Sundry Creditors A/C
2. Material Issued	
(a) Direct material	Dr. Work-in-Progress A/C Cr. Stores Control A/C
(b) Indirect Material	Dr. Relevant Overhead A/C Cr. Stores Control A/C
3. Material returned from Shop Floors	Dr. Stores Control A/C Cr. Work-in-Progress A/C
4. Material returned to supplier	Dr. Creditors A/C Cr. Stores Control A/C
5. Material transferred from One Job to another Job	Dr. Transferee Job A/C Cr. Transferor Job A/C
6. Salary and Wages Paid- Direct and Indirect	Dr. Wages Control A/C Cr. Cash A/C
7. Direct Expenses	Dr. Work-in-Progress A/C Cr. Cash A/C

8. Overhead Incurred	Dr. Relevant Overhead A/C Cr. Cash A/C
9. Overhead Recovered	Dr. Work-in-Progress A/C Dr. Finished Stock A/C Dr. Cost of Sales A/C Cr. Relevant Overhead A/C
10. Overhead on Work-in-Progress	Dr. Work-in-Progress A/C Cr. Production Overhead A/c
11. Finished Goods Produced	Dr. Finished Goods A/C Cr. Work-in-Progress A/C
12. Goods sold (at cost)	Dr. Cost of Sales A/C Cr. Finished Goods A/C
13. For sales	Dr. Debtors A/C Cr. Sales A/C
14. Sales Returned	Dr. Sales A/C Cr. Debtors A/C
15. Capital Work	Dr. Sundry Assets A/c Cr. Work-in-Progress A/C
16. Repair Work	Dr. Relevant Overhead A/C Cr. Work-in-Progress A/C
17. Under Absorbed Overhead	Dr. Profit and Loss A/C Cr. Relevant Overhead A/C

18. Over Absorbed Overhead	Dr. Relevant Overhead A/C Cr. Profit and Loss A/C

Distinguish between Non-Integral System and Integral System

Non-integral system differs from integral system in the following respects :

Basis of Distinction	Non-Integral system	Integral System
1. No. Of Sets of Books	Two separate sets of books are maintained - one to record cost transactions and the other to record financial transactions.	Only one set of books is maintained to record both the cost transactions and financial transactions.
2. Cost Ledger	Cost Ledger is maintained.	Cost Ledger is not maintained.
3. Control Accounts	Control accounts are opened in the Cost ledger.	Control accounts are opened in the General ledger.
4. Figure of Profit/Loss	There are two figures of profit/loss - one as per cost books and another as per financial books.	There is only one figure of profit/loss because only one set of books is maintained.

5. Need for Reconciliation	There is need for reconciliation of cost accounts and financial accounts because there are two figures of profit/loss as there are two sets of books.	There is no need for reconciliation because there is only one figure of profit/loss as there is only one set of books.
6. Balances of Overheads Control Accounts	Balances of Overhead Control Accounts which represents under/over absorption of overheads are transferred to Costing Profit and Loss Account.	Balances of Overhead Control Accounts which represents under/over absorption of overheads are transferred to Profit and Loss Account.
7. Economical	It is expensive because of duplication of recording the ansactions in two sets of books.	It is economical because it avoids the duplication of recording the transactions in two sets of books.

6. Reconciliation of Cost and Financial Accounts

Need for Reconciliation of Cost and Financial Accounts

Under non-integrated accounting system, separate set of books is maintained for financial accounting and cost accounting. Since, financial accounts and cost accounts are kept independent of each other and adopt different approaches; hence profit disclosed under one set of accounts may differ from the profit shown under other set of accounts. Hence, the need for reconciliation of cost and financial

accounts arises:

1. To identify the reasons for the difference between the results shown by the cost accounts and financial accounts.

2. To check the arithmetic accuracy and reliability of both the sets of books.

The difference in profit figures shown in two sets of accounts necessitates the need to reconcile their operating results. Since, financial accounts are the audited financial

records; hence reconciliation of the two sets of accounts will certainly establish the accuracy of cost accounts.

Reasons for the Difference between the Results Shown by the Cost Accounts and Financial Accounts

The various reasons for the difference between the results shown by the cost accounts and financial accounts are given below:

(1) Under or Over-absorption of Overhead

he overheads absorbed at a pre-determined rate in Cost Accounts may be different from the actual overheads recorded in financial accounts. Over absorption of overheads arises when the overheads absorbed in Cost Accounts are more than the actual overheads recorded in Financial Accounts. Under absorption of overhead arises when the overheads absorbed in Cost Accounts are less than the actual overheads recorded in Financial Accounts. Both over and under absorption lead to difference in profit figures if the amount of over or under absorbed overheads has been carried forward to the next period.

The effect of over/under absorption of overheads on profits is shown below:

Particulars	Effect on Profits as per	
	Cost Accounts	Financial Accounts

1. Over absorption of overheads in Cost Accounts	Less Profits	More Profits
2. Under absorption of overheads in Cost Accounts	More Profits	Less Profits

(2) Different Bases of Stock Valuation

Using different bases for valuation of stocks in cost accounts and financial accounts may lead to differences in profit figures. In financial accounts, Stock of work-in-Progress is generally valued at prime cost but in cost accounts it is usually valued at factory cost.

In financial accounts, Stock of Finished Goods is valued at cost or market price whichever is lower but in cost accounts, it is valued at cost. The effect of over/under valuation of stock on profits is shown below:

Particulars	Effect on Profits as per	
	Cost Accounts	Financial Accounts
1. Over valuation of Opening Stock in Cost Accounts	Less Profits	More Profits
2. Under valuation of Closing Stock in Cost Accounts	Less Profits	More Profits
3. Under valuation of		

Opening Stock in Cost Accounts	More Profits	Less Profits
4. Over valuation of Closing Stock in Cost Accounts	More Profits	Less Profits

(3) Different Methods of Charging Depreciation

Using different methods of depreciation in cost accounts and financial accounts may lead to differences in profit figures. In financial accounts, the straight line method or written down method may be used but in cost accounts machine hour rate method of depreciation may be used.

(4) Items included in Financial Accounts Only

he following items of income and expenditure are normally included in financial accounts and not in cost accounts. Their inclusions in cost accounts might lead to unwise managerial decisions. These items are:

A. Incomes
- (a) Profit on sale of Fixed Assets
- (b) Profit on sale of Investments
- (c) Interest Income
- (d) Dividend Income
- (e) Rental Income
- (f) Transfer Fees
- (g) Insurance Compensation
- (h) Cash Discount Received

B. Expenditures
- (a) Loss on sale of Fixed Assets
- (b) Loss on sale of Investments

(5)

(c) Interest on mortgage and loans

(d) Preliminary expenses written off

(e) Goodwill written off

(f) Underwriting Commission written off

(g) Debenture Discount written off

(h) Fines and Penalties

C. Appropriations (a) Income Tax

(b) Dividend Distribution Tax

(c) Transfer to General Reserves

(d) Transfer to Special Reserves

Items Included in Cost accounts only

There are some items which are included in cost accounts but not in financial accounts. These are:

(a) Notional interest on capital.

(b) Notional rent on premise owned.

(c) Notional salary of the proprietor/partner.

A specimen Performa of Reconciliation Statement

Proforma of Reconciliation Statement

			Rs.	Rs.
		Profit as per Cost Accounts		******
Add :	(1)	Over-absorption of overheads in cost accounts	******	
	(2)	Financial incomes not recorded in cost accounts	******	
	(3)	Under-valuation of Closing Stock in cost accounts	******	
	(4)	Over-valuation of Opening Stock in cost accounts	******	
	(5)	Items charged only in cost accounts (i.e., Notional rent and interest on capital etc.)	******	******
Less :	(1)	Under-absorption of overheads in cost accounts	******	******
	(2)	Financial charges not considered in cost accounts (e.g. Bad debts written off, preliminary expenses, goodwill and discount on issue of shares written off)	******	
	(3)	Under-valuation of Opening Stock in cost accounts	******	
	(4)	Over-valuation of Closing Stock in cost accounts	******	******
		Profit as per Financial Accounts		******

Memorandum Reconciliation Account

Memorandum reconciliation account is basically presentation of reconciliation statement in 'T' account form. It is not part of double entry system because all the items posted in this account do not have their corresponding debits/credits in the books of accounts.

The procedure is simple and same as discussed under the head 'preparation of reconciliation statement'. Start writing the profit disclosed in cost accounts on the credit side of the account (write on the debit side if it is a loss). The amount of items which are to be added to the cost accounts profit will be credited while the amounts of items to be deducted are debited to this account. The balancing figure will disclose the profit as per financial account. Similarly, memorandum reconciliation account can also be prepared by taking profit as per financial books as starting point and finding profit as per cost accounts as finishing point.

A specimen Performa of Memorandum Reconciliation Account

MEMORANDUM RECONCILIATION ACCOUNT

To Financial expenses :	By Profit as per Cost Accounts
Discount	* Financial income :
Fines and penalties	Rent
Bank interest	Interest
Underwriter's commission	Dividend
Donations	Profit on [illegible]
* Goodwill written off	* Items charged in cost accounts :
* Under-absorption of overheads	Interest on own capital
* Under-valuation of opening stock in cost accounts	Rent on own building
* Over-valuation of closing stock in cost accounts	* Over-absorption of overheads
* Under charge of depreciation in cost accounts	* Over-valuation of opening stock in cost accoun
* Profit as per Financial Accounts	* Under-valuation of closing stock in cost accour
	* Over charge of depreciation in cost accounts.

Illustration 1

7. Comprehensive Illustrations

From the following figures prepare a reconciliation statement:

	Rs.
Net loss as per costing records	1,72,400
Works overhead under recovered in costing	3,120
Administrative overhead recovered in excess	1,700
Depreciation charged in financial records	11,200
Depreciation recovered in costing	12,500
Interest received not included in costing	8,000
Obsolescence charged (loss) in financial records	5,700

Income tax provided in financial books	40,300
Bank interest credited in financial books	750
Stores adjustment (credit) in financial books	475
Value of opening stock in cost accounts	52,600
Value of opening stock in financial accounts	54,000
Value of closing stock in cost accounts	52,000
Value of closing stock in financial accounts	49,600
Interest charged in cost accounts but not in financial accounts	6,000
Preliminary expenses written off in financial accounts	800
Provision for doubtful debts in financial accounts	150

Particulars	Rs.
Net Loss as per Cost Accounts	-1,72,400
Less: Under recovered works overhead	3,120
Add: Over recovered administrative overhead	1,700
Add: Over charged depreciation in cost accounts	1,300
Add: Interest received	8,000
Less : Loss due to obsolescence	5,700
Less: Income tax	40,300
Add: Bank Interest	750
Add: Stores adjustment	475

Less: Undervalued opening stock	1,400
Less: Overvalued closing stock	2,400
Add: Interest charged in cost accounts	6,000
Less : Preliminary expenses	800
Less: Provision for doubtful debts	150
Net Loss as per Financial Accounts	-2,08,045

Illustration 2

From the following figures prepare Reconciliation Statement:

	Rs.
Profit as per costing records	5,000
Factory overheads under recovered in costing	3,000
Selling and Administration overheads over recovered in costing	2,000
Discount credited in financial books	500
Preliminary expenses written off in financial books	6,500
Opening Stock value:	
in Cost Books	5,000
in Financial Books	4,000
Closing Stock value :	
in Cost Books	12,000
in Financial Books	10,000
Interest charged by the bank not considered in financial accounts and cost accounts	1,500

Particulars	Rs.
Profit as per Costing Records	5,000
Add: Selling & Administration overheads over recovered in costing	2,000
Discount credited in financial books	500
Opening Stock under valued in financial books	1,000
Less: Factory overheads under recovered in costing	3,000
Preliminary expenses written off in financial books	6,500
Closing stock under valued in financial books	2,000
Loss as per financial Records	3,000

Profit and Loss Account

For the year ending 31-3-2015

Particulars	Rs.	Particulars	Rs.
To Direct Materials	10,000	By Sales	50,000
To Direct Labour	20,000	By Work-in-Progress in hand	
To Factory Expenses	9,500	Direct Labour 600	
To Administration Expenses	5,200	Direct Material 400	
To Selling and Distribution	3,800	Factory Expenses 300	1,300

Expenses			
To Interest on Capital	1,000	By Finished Stock in hand	2,700
To Goodwill written off	1,500		
To Net Profit	3,000		
	54,000		54,000

Cost Accounts manual states that the factory overheads are to be recovered at 50% of direct wages, administration overheads at 10% of works cost and selling and distribution overheads @ Re. 1 per unit sold.

Particulars	Rs.
Direct Material	10,000
Direct Labour	20,000
Prime Cost	30,000
Add: Factory Overheads (50% of Direct Labour)	10,000
Gross Works Cost	40,000
Less: Work-in-Progress	1,300
	38,700
Add: Administration Overheads @ 10% of Works Cost	3,870
Cost of Goods produced (Output 4,257 units)	42,570
Less: Closing Stock of Finished Goods (257 @	2,570

10)	
Cost of Goods Sold	40,000
Add: Selling and Distribution Overheads	4,000
Cost of Sales	44,000
Profit	6,000
Sales	50,000

Particulars	Rs.
Profit as per Financial Accounts	3,000
Add: Interest on capital not charged in cost accounts	1,000
Goodwill not written off in cost accounts	1,500
Under recovery of administration overheads in cost accounts	1,330
Less: Over recovery of Factory overheads in cost accounts	500
Under valuation of closing stock in cost accounts	130
Over recovery of selling & Dist. Overheads in cost accounts	200
Profit as per Cost Accounts	6,000

Illustration 3

A manufacturing company has disclosed a net loss of Rs. 8,75,000 as per their cost accounting records for the year ended 31st March, 2016. However, their financial accounting records disclosed a net loss of Rs. 7,19,250 for the same period. A scrutiny of the data of both the sets of books of accounts revealed the following information:

	Rs.
Factory overheads over absorbed	47,500
Administrative overheads under absorbed	32,750
Depreciation charged in financial accounts	2,25,000
Depreciation charged in cost accounts	2,42,250
Interest on investments not included in cost accounts	62,750
Income tax provided in financial accounts	7,250
Transfer fees credited in financial accounts	12,500
Preliminary expenses written off	27,500
Under valuation of opening stock in cost accounts	6,250
Under valuation of closing stock in cost accounts	17,500

Particulars	Rs.	Particulars	Rs.
To Net Loss as per Cost Accounts	8,75,000	By Factory overheads absorbed	47,500
To Administrative overheads under absorbed	32,750	By Excess charge of depreciation in cost accounts	17,250
To Income tax provided in Financial accounts	7,250	By Transfer fees	12,500
To Preliminary Expenses written off	27,500	By Interest on investment not included in cost accounts	62,750
To Under valuation of Opening stock in cost accounts	6,250	By Under valuation of Closing stock in cost accounts	17,500
		By Net Loss as per Financial accounts	7,91,250
	9,48,750		9,48,750

POSSIBLE QUESTIONS

Part A

One Mark

Online Examination

Part B

Two Marks

1. Write a short note on "Cost Ledger Control Account".

2. List the financial expenses which are not included in cost.

3. What are Cost Control Accounts? Describe their advantages.

4. Explain briefly Integrated Accounting System.

5. When is the reconciliation statement of cost and financial accounts not required?

6. What are the advantages of 'Integrated Accounts'?

7. What is Memorandum Reconciliation Account? How is it prepared? Give its specimen.

PART C

SIX MARKS

1. Explain the system of non-integrated accounting and state the principal ledgers that are to be maintained.

2. Non-integrated accounting is one of the systems of cost control accounting to keep cost books". Discuss.

3. What do you understand by reconciliation of cost and financial accounts? Why is reconciliation of cost and financial accounts of an organisation necessary?

4. Explain the reasons for the disagreement of profit between cost books and financial books.

5. What is the difference between integrated and non-integrated system of accounting?

6.Prepare Cost Sheet from the following data provided by R Ltd. for the year ending 31st March, 2015:

Raw Materials	Rs. 15000
Direct labour	Rs. 9000
Machine Hours	Rs. 900
Machine Hour Rate	Rs. 5
Production	Rs. 17100
Sales	16,000 units
Selling Price per unit	Rs. 4
Selling Overhead per unit	50 paisa

Office overheads are 20% of Works cost.

Also prepare a reconciliation statement, if Factory, Office and selling expenses are Rs.5,000, Rs. 5,000 and Rs. 10,000 respectively, while closing stock is valued at Rs. 2,500 in financial books.

Answer: Profit as per Cost Accounts Rs. 24,000, as per Financial Accounts Rs. 22,500

7.The following is the Trading and Profit and Loss account of ABC Electronics for the year ended 31st March, 2015:

Particulars	Rs.	Particulars	Rs.
To Direct Materials	12,000	By Sales (350 units)	70,000
To Direct Labour	4,000	By Finished Stock (50 units)	3,500
To Works Expenses	12,000	By Interest received	1,500
To Administration Expenses	12,000		
To Goodwill written off	4,000		
To Discount on Debentures written off	3,000		
To Net Profit	28,000		
	75,000		75,000

Particulars	Rs.	Particulars	Rs.
To Direct Materials	45,000	By Sales (4,800 units)	96,000
To Direct Labour	33,000	By Closing Stock (1,200)	20,400
To Works Expenses	24,000		
To Administration Expenses	6,000		
To Net Profit	8,400		
	1,16,400		1,16,400

The Company's Cost Accounts show that:

(i) Works Overheads have been absorbed at Rs. 3 per unit produced.

(ii) Administrative Overheads have been absorbed at Rs. 1.50 per unit produced. Prepare: (a) A statement of cost indicating

net profit.

(b) A Reconciliation statement. Answer: Profit as per Cost Accounts Rs. 1,200

8. The following information is available from the financial books of a company having anormal production capacity of 60,000 units for the year ended 31st March, 2014: (i) Sales Rs. 10,00,000 (50,000 units)

(ii) There was no opening or closing stock of finished goods.

(iii) Direct material and direct wages cost were Rs. 5,00,000 and Rs. 2,50,000 respectively.

(iv) Actual factory expenses were Rs. 1,50,000 of which 60% are fixed.

(v) Actual administration expenses were Rs. 45,000 which are completely fixed.

(vi) Actual selling and distribution expenses were Rs. 30,000 of which 40% are fixed.

(vii) Interest and dividend received

Rs. 15,000. You are required to:

(a) Find out the profit as per financial books for the year ended 31st March, 2014.

(b) Prepare a Statement of Cost and Profit to ascertain the profit as per cost accounts for the year ended 31st March,2014 assuming that the indirect expenses are absorbed on the basis of normal production capacity.

(c) Prepare a Reconciliation Statement.

Answer: Profit as per Financial Accounts Rs. 40,000; Profit as per Cost Accounts Rs. 49,500

KARPAGAM ACADEMY OF HIGHER EDUCATION
DEPARTMENT OF COMMRCE
APPLIED COST ACCOUNTING
III B.COM PA
UNIT 5

QUESTION	Option A	Option B	Option C	Option D	Answer
In integrated accounting one set of books is maintained for financial transactions and ___	Accounting transactions	Material transactions	Costing transactions	Inventory transactions	Costing transactions
Integration is done through___	Control accounts	Inventory accounts	Work-in-progress	Contribution	Control accounts
For purchase of material, cost ledger control account should be __	Debited	Credited	Added	Deducted	Credited
Balance in overhead suspense account is transferred to __	Balance sheet	Overhead control account	Cost sheet	Profit and loss account	Profit and loss account
Cost of sales account is debited in__	Sales account	Purchase account	Wages account	Administration overhead account	Sales account
Work-in-progress account is debited in __	Sales account	Purchase account	Finished goods account	Cost of sales account	Finished goods account
Administration overhead account is debited in ___	Cost of sales account	Sales account	Factory overhead account	Finished good account	Finished good account
Over-absorption of overhead in cost account is a ___	Profit	Gross Profit	Profit or Loss	Cost of Sales	Profit
Under absorption of overhead in cost account is a ___	Profit or loss	Loss	Cost of Sales	Prime cost	Loss
Profit on sale of fixed assets is a ___	Costing transaction	Financial and Costing transaction	Financial transaction	Personal transaction	Financial transaction
In reconciliation statement, over-valuation of opening stock in cost account is added with ___	Financial profit	Gross Profit	Net Profit	Costing Profit	Costing Profit

In reconciliation statement, over-valuation of closing stock in cost account is added with ___	Costing Profit	Financial profit	Gross Profit	Net Profit	Financial profit
For reconciliation, interest received is deducted with ____	Financial profit	Costing profit	Gross profit	Net loss	Financial profit
In reconciliation, goodwill written off is deducted with ___	Fixed Cost	Variable cost	Financial profit	Costing profit	Costing profit
If work completed _____of the contract price is taken to profit and loss account	one fourth	two fourth	three fourth	one fifth	one fourth
_____contracts such as constuctions of bridgs, theatres and hospitals takes a long time to complete	Large	small	medium	Very small	Large
operating costing is also called _____	Process	Job costing	Contract costing	Service costing	Service Costing
_____is a method of costing applied to ascertain the cost of providing a service	Operating Costing	Job costing	Contract costing	Service costing	Operating Costing
_____type of costing used in transport services	Operating Costing	Job costing	Contract costing	Service costing	Operating Costing
Service rendered in the same oraganisation is known as _____	Internal Service	External Service	Both	Costing Service	Internal Service
_____percent is calculated by dividing the toatl cost by number of service units produced or renderd	Operating Costing	Job costing	Contract costing	Service costing	Operating Costing
A proper cost unit must be selected in oredr to ascertain the _____unit of services	Cost	Demand	Sales	Supply	Cost
other name of service costing	Operating Costing	Job costing	Contract costing	Service costing	Operating Costing
industries using _____costing do not produce goods but render service	Operating Costing	Job costing	Contract costing	Service costing	Operating Costing
service rendered to the customers is known as	Internal Service	External Service	Both	Costing Service	external service
Example sof external services_____	Hospital	Manufacttuting industry	service outlet	distributors	Hospitals

In _____case only one variable is taken	Simple cost unit	composite cost unit	Multiple cost unit	single cost unit	simple cost unit
In _____case more than one variabke is combined	Composite costing	multiple costing	single unit costing	opertaing costing	composite costing
the basic problem in _____costing is the selection of cost unit	Composite costing	multiple costing	single unit costing	opertaing costing	Operating Costing
_____changes are incurred weather the vechicle is running or not	Standing Charges	operating charges	maintenance charges	variable charges	standing charges
in Standing charges variables are _____in nature	Fixed	Variable	Semivariable	Changed	Fixed
_____is one of the example of standing charge	Rent	Salary	Fuel	Power	Rent
_____expenses variable in nature	Standing Charges	operating charges	maintenance charges	variable charges	operting charges
_____is an example of operating charge	Pertol/ diesel	annual tax	Insurance	Rent	Petrol/Diesel
_____charges are semi variable in nature	Standing Charges	operating charges	maintenance charges	variable charges	maintenance charges
_____is an example of maintenance charge	Repairs	Depreciation	Wages	Annual Tax	Repairs
Garrage rent will occur in _____	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Fixed Cost
Tax and insurance will occur in _____	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Fixed Cost
general supervision will occur in _____	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Fixed Cost
tyres and tube cost will appear in _____	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Maintenance cost
repair cost will appear in _____	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Maintenance cost
Painting Cost will appear in _____	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Maintenance cost

Pertol, oil, grease Cost will incurr in	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Operating Cost
Wages of operators will incurr in _____cost	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Operating Cost
Depriciation will incur in _____cost	Fixed cost	Variable Cost	Maintenance Cost	Operating Cost	Operating Cost
_____costing is generally for long duartion	Job costing	Process costing	unit costing	Contract Costing	contract costing
the contract price is paid in _____depending on the process of work	monthly	annually	installments	quaterly	Installments
Each contract is treated as a _____unit	Cost	Sales	Purchase	Supply	Cost
All cost are accumulated and ascertained for _____contract	All	Each	Single	Multiple	All
A _____contract accounts are prepared for each contract	Multiple	seprate	Single	All	Seprate
_____on contract is usually excecuted at the size of the contract	Work	Process	Account	Sales	Work
_____usaually constitute a major portion	Direct cost	Indirect cost	total cost	Fixed Cost	Direct Cost
_____expenses which cannot be directly changed to contracts	Direct expenses	Indirect Expenses	variable expenses	Fixed Expenses	Direct Expenses
_____can be ascertained only on completion of the contract	Profit	Loss	Sales	Demand	Profit
In Standing charges variables are _____in nature	Fixed	Variable	Semivariable	Changed	Fixed
the direct expenses incurred for the contract is also _____ to the contract account	Debited	Credited	Enetered	Fixed	Debited
_____which cannot be directly charged to contract	Dircet expenses	Indirect Expenses	Fixed Expenses	Variable Expenses	Indirect Expenses
_____contracts take a long time for completion and require huge investments	Large	Small	Medium	Very High	Large

_____money is paid to the contractor after the expiry of a stipulate time	usable	recovery	wastage	useful	recovery
_____is treated as a reserve	Notional profit	recovery	wastage	useful	Notionla Profit
the _____price is paid in installments depending on the process of work	Process costing	Job costing	Unit costing	Contract costing	Contract Costing
_____contract is a contract in which the contractee agrees to pay the cost of work done plus a percenatge of it towards profit	Cost + contract	Esclation clause	Retention money	Unit Contract	Cost + contract
In which contract _____contracts is assure a fixed percentage of profit	Cost + contract	Esclation clause	Retention money	Unit Contract	Cost + contract
_____is clause in contract agreement	Cost + contract	Esclation clause	Retention money	Unit Contract	Esclation clause