

COST ACCOUNTING

INTRODUCTION

Every businessman tries to reduce the cost of manufacture to the minimum in the stage of complexity and competition more particularly in the large-scale production. Therefore, the businessman looks for information to study the cost of a manufacture in the past and on this basis, he assesses what it will cost in the future. Therefore, more importance is given to profit and loss account, which is prepared on the cost principle.

Q. WHAT DO YOU MEAN BY COST? (2Marks)

It refers to the total expenses which are incurred to produce an article cost includes both variable and fixed cost.

Q. DEFINE OF COST? (2Marks)

W.M.Harper in this cost accountancy defined cost as follows: “cost is the value of economic resources used as a result of producing or doing the thing costed”.

Q. WHAT DO YOU MEAN BY COSTING? (2Marks)

Costing is the body of principal and rules for ascertaining the costs of products and service. It is the day-to-day routine of ascertaining costs.

Q. DEFINE OF COSTING? (2Marks)

The **I.C.M.A., London** has defined costing as the ascertainment cost. “It refers to the techniques and processes of ascertaining costs and studies the principles and rules concerning the determination of cost of products and services”.

Q. GIVE THE MEANING OF COST ACCOUNTING? (2 Marks)

MEANING OF COST ACCOUNTING:

It is the method of accounting for cost. The process of recording and accounting for all the elements of cost is called cost accounting.

Q. DEFINE OF COST ACCOUNTING? (2Marks)

The Institute of cost and works Accounts, 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”.

Q. WHAT DO YOU MEAN BY COST ACCOUNTANCY? (2Marks)

It is the specialized branch of accountancy. It is a recent development in the accounting world. It has been developed due to the limitation of financial.

Q. DEFINE COST ACCOUNTANCY? (2Marks)

Cost accountancy is the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and ascertainment of profitability. It includes the presentation of information for the purpose decision making.

Q. EXPLAIN THE SCOPE OF COST ACCOUNTING? (5Marks)

SCOPE OF COST ACCOUNTING:

The term scope refers to field of activity. Cost ascertainment and control of costs. The information provided to the management is helpful for cost control and cost reduction through functions of planning, decision making and control.

In the initial stages of evolution, cost accounting confined itself to cost ascertainment and presentation of the same with the main objective of finding the product cost. With the development of business activity and introduction of large-scale production the scope of cost accounting was providing information for cost control and cost reduction has assumed equal significance along with finding out cost of production.

In addition to enlargement of scope the area of application of cost accounting has also widened. Initially cost accounting was applied in manufacturing activities only. Now it is applied in service organization, government organization, local authorities, forms, extractive industries.

Q. WHAT ARE THE OBJECTIVES OF COST ACCOUNTING? (5Marks)

OBJECTIVES OF COST ACCOUNTING:

Main objectives of cost accounting are;

- a) Finding (or) ascertainment of cost
- b) Control of cost
- c) Reduction of cost
- d) Fixation of selling price
- e) Providing information for framing business policy

a. Ascertainment of cost

The primary objective of cost accounting is ascertainment of cost. It is done through the methods and techniques of costing. Costing is the process of collection, classification and analysis of costs or expenses.

b. Control of cost

A basic function of cost accounting is to control costs. The object is to minimize the cost of manufacturing. Comparison of actual cost with standards cost. If the variances are adverse, the management enters into investigation so as to adopt corrective action immediately.

c. Cost reduction

Cost accounting is helpful to management in cost reduction through the techniques of budgetary control, standard costing, material control, labour control and overhead control.

d. Fixation of selling price

Cost data are useful in the determination of selling price. Apart from cost ascertainment, the cost accountant analyses the total cost into fixed and variable costs. This will help the management to fix the selling price.

e. Forming business policy

Cost accounting helps the management in formulating business policy and decision making. Break even analysis, cost-volume-profit relationship differential costing etc. are helpful to the management in taking decisions regarding:

- 1) Production or discontinuation of a product.
- 2) Utilization of ideal capacity.
- 3) The most profitable sales mix.
- 4) Export decision.
- 5) Make or buy decision.

Q. EXPLAIN THE VARIOUS METHODS & TECHNIQUES / TYPES OF COST ACCOUNTING (10Marks)

Different methods of cost findings are used because industries vary in their nature in the types of products, service. The following are important methods of costing.

1) Job costing

Job costing means an industry which produces a definite article against individual order from customers. This type of costing is suitable to printing press, furniture manufacture, and heavy machine.

2) Contract costing

The method of contract costing is applied where the job is big and of longer duration. For each individual contract, separate accounts have to be kept. It applies to concern like constructional work, roads, bridges, buildings.

3) Batch costing

A batch may represent a number of small orders passed in batches through the factory. This type of costing is adopted by industries producing medicines, biscuits, spare parts and components.

4) Multiple costing

It means combination of two or more of the above methods. This system of costing is adopted in manufacturing concerns where varieties of parts are produced separately and later assemble into a final product. This type of costing is adopted by industries produce cycles, radios, typewriters.

5) Process costing

It applies to industries where production is carried on through different stages before becoming a finished product. Finished product of one process becomes the raw material of the subsequent process. This type of cost accounting is suitable for industries such as chemical, oil paint, rubber, glass.

6) Unit costing

Under this method production is continuous and units are identical. This method is suitable to industries producing pencils, dairy products, and steel work.

7) Operation costing

This method is used where there is a mass production and processes are repetitive in nature. This method is adopted by industries like toy-making, leather and spare parts.

8) Operating costing

It is suitable to those industries which render services instead of producing goods. This system is adopted where expenses are incurred for provision of service; for example transport companies, electricity companies, railways, hospitals and canteen.

9) Department costing

It is a method of cost finding adopted to ascertain the cost of operating a department or a cost centre separately. Where the factory is divided into a number of departments this method is adopted.

Technique or types of costing

The following are the main types of costing applied for cost ascertainment.

❖ **Historical costing**

It is ascertainment of cost after they have been incurred. It aims at ascertaining the cost incurred on the work done in he cost.

❖ **Marginal costing**

This technique classifies the total cost of a product or operation into two class viz i) fixed cost which do not change but remain constant for any level of production and ii) variable cost which proportionately vary to the change in the volume.

❖ **Absorption costing**

It is also known as total cost approach. It is defined as “the practice of charging all costs, both variable and fixed to operations, process or products.

❖ **Standard costing**

A standard costing is a predetermined cost. Standard costing is the ascertainment of the standard cost and its comparison with the actual cost in order to ascertain variations.

❖ **Uniform costing**

“The use by several undertakings of the same costing principles and /or practices”. – I.C.M.A.

Q. WHAT ARE THE ESSENTIAL CHARACTERISTICS OF COST ACCOUNTING? (10Marks)

The ideal system of cost accounting must possess some characteristics. The main characteristics are:

1) Simplicity

It must be simple, flexible and adoptable to the changing conditions. And it must be easily understandable to the personnel.

2) Flexibility and Adoptability

The costing system must be flexible to accommodate the changing conditions. The expansion or changes must be adopted in the existing system with minimum changes.

3) Economy

The costing system must suit the finance available. The expenditure must be less than the benefits derived from the system adopted.

4) Comparability

The management must be able to make comparison of the facts and figures with the past figures, figures of other concerns or other departments of the same concern.

5) Suitability to the firms

Before accepting a costing system, the nature, requirements, size, conditions of a business must be carefully considered.

6) Minimum changes to the existing one

When introducing a costing system, it may cause minimum disturbance to the existing set up of the business.

7) Uniformity of forms

Forms of different colours can be used to distinguish them. Forms must be uniform in size and quality.

8) Less clerical works

Printed forms will involve less labour to fill in as the workers may be a little educated, they may not like to spend much time in filling the forms.

9) Efficient material control and wages system

There must be a proper procedure for recording the time spent on different jobs by workers for the payment of wages. The systematic method of wage system will help in the control of labour cost.

10) A sound plan

There must be proper and sound plans to collect to allocate and the overhead expenses on each job or each product in order to find out the cost accurately.

Q. EXPLAIN THE ADVANTAGES OF COST ACCOUNTING? (10Marks)

ADVANTAGES OF COST ACCOUNTING:

Cost accounting is useful to the management, to the employees, to the public and to the creditors.

They are discussed below:

a) To the Management

1. Effective decision making

Cost accounting provides information regarding individual products, departments, divisions and cost centers. This facilitates the management to identify unprofitable operation and improve overall profitability.

2. Measuring efficiency

With the help of cost accounting the management can set budgets and standards for various elements of cost and compare them with actual to measure efficiency.

3. Cost reduction

Cost accounting is helpful to management in reduction of cost through its techniques by efficient and effective utilization of raw materials, labour and optimum production of output.

4. Fixation of selling price

Cost accounting provides information in detail regarding variable and fixed costs helps in selling price under different circumstance.

5. Effective cost control

The fundamental objective of cost accounting is to ascertain and control costs.

6. Increasing efficiency

Under an efficient cost accounting system, proper inventory control, labour utilization and proper analysis of expenditure is possible. This results in increasing efficiency through out the organization.

7. Effective inventory control

An effective cost accounting system and check are provided on all materials and stores.

8. Reduction of wastages of materiel and labours

Cost accounting sets predetermined costs for different elements which are compared with actual to reveal variances. The unfavourable variances are dealt with and controlled effectively.

9. Effective utilization of resources

Managerial costing helps in decision making regarding 'make or buy' of components, profit planning, sales mix etc. Standard costing and budgetary control are also helpful in effective utilization of resources.

10. Effective budgeting

Cost accounting records both historical cost and pre-determined costs, which are essential for the technique of budgetary.

b) To the employees

1. Sound wages policy

Cost accounting introduces incentive wages schemes, bonus plans etc, which bring better reward to sincere and efficient workers.

2. Higher bonus plans

Cost accounting leads to an increase in productivity, lowering of cost and increasing in productivity, workers get share in profits in the form of bonus. Higher profit naturally allows higher bonus distribution.

3. Distinction between efficient and inefficient workers

Cost accounting provides standards for the measurement of efficiency of workers. This means increasing in earnings, through the motion study and time study in doing jobs.

4. Security of job

Employees get better remuneration, security of job etc, due to the increasing prosperity of the industries.

c) To the creditors

Before the creditors offer the loan to a firm, they can have better understanding of the progress and profitability of the firm through relevant reports.

d) To the government

Cost data of specific industries and general trend of cost can influence the Government to initiate appropriate changes in granting of subsidies, formulating taxation policies, import and export legislation etc,

e) To the public

Good costing system helps in proper utilization of resources. Cost reduction helps in fair price of products and profitability of organizations is helpful in prosperity of the industry through more employment opportunities to the members of the public.

Q. WHAT IS THE LIMITATION OF COST ACCOUNTING? (5Marks)

LIMITATION OF COST ACCOUNTING:

Cost accounting has become an indispensable tool to management for exercising effective decision. However the following are the limitations of cost accounting:

a) Cost accounting is costly to operate

Cost accounting involves heavy expenditure to operate. Double set of accounts books has to be maintained and it is not economical for small concerns.

b) It is unnecessary

It is argued that costing is only recently originated and that many industries have prospered well and are still prospering without cost accounting. Therefore the system is unnecessary.

c) Cost accounting involves many forms and statements

It is pointed against cost accounting that it involves usage of many forms and statements. This leads to monotony in filling up of forms and increase of paper work.

d) Costing may not be applicable in all types of industries

Existing methods of cost accounting may not be applicable in all types of industries. Cost accounting methods can be devised for all types of industries and services.

e) It is based on estimations

Some people claim that costing system relies on predetermined data and therefore it is not reliable.

Q. GIVE THE SHORT NOTE ON COST UNIT, COST CENTRE, PROFIT CENTRE (2Marks)

a) Cost unit

The selection of cost unit is important in a cost accounting system. A cost unit is a unit of product, service or time in relation to which cost may be ascertained. The unit of measurement must be clearly defined and selected before the process of cost finding can be started. For example in a cotton spinning mill, cost may be calculated in terms of a meter.

b) 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 cost may be a department or a machine or a plant or a salesman or a particular work etc.

c) Profit centre

Profit center is a segment of a business that is responsible for all activities involved in the production and sales of products and services. It is thus a segment of the organization which has been assigned control over both revenues and costs. A profit center is created by the top management of evaluating performance of a division.

Q. WHAT ARE THE FUNCTIONS OF COST ACCOUNTING? (5Marks)

1. It helps in optimum utilization of men, material and machine.
2. Cost accounting identifies the areas that require corrective action.
3. It helps management in the formulation of policies.
4. It provides appropriate solutions to the various problems of management.
5. Costing helps management making short-term decisions by the use of techniques like managerial costing, standard costing etc.
6. It provides useful data for the preparation of final accounts by giving cost of closing stock of raw materials, work-in-progress and finished products.

7. It provides a data-base for reference to Government, wage tribunals, trade union etc.
8. It helps in the formation of cost centre and responsibility centre to exercise control.
9. It helps in fixing prices of products and services.
10. Costing facilitates use of specialized techniques like cost prediction, value analysis etc.

Q. WHAT ARE THE STEPS FOR INSTALLATION OF COSTING? (10Marks)

- **Determination of objectives**

The first and important step is to clearly lay down the objectives of the costing system. If the objective is only to ascertain the cost, a simple system will be sufficient. If the objective is to get information for decision making, planning and control, a more elaborate system of costing is necessary.

- **Study of the nature of business**

The nature of the business and other technical aspects like nature of the products, method and stage of production cycle should be carefully analysed. It is necessary to decide the method of costing to be adopted.

- **Study of the nature of the organization**

The costing system should be designed to meet the requirement of the organization.

- **Deciding the structure of cost accounts**

The cost office with adequate staff must be located as close as possible to the factory cost accountant must have the necessary authority to discharge his duties effectively.

- **Introducing the system**

Introducing of the system in an existing organization should be done gradually. Before introducing the feature of the system, its advantages must be explained to the concerned employees to secure their co-operation.

- **Determination of accounting system**

Determination of unit of cost, classification of operating expenses, coding system of material, developing the measures of inventory control, cost control, budgetary control, presentation of cost to managerial level of making decisions are the general problems to be dealt with.

- **Elasticity and economy**

The system we adopt must be capable of being flexible and adaptive to the changing circumstances. The system should not be complicated and expensive.

- **Regularity**

Cost data and costing information must reach the person concerned regularly and promptly. Otherwise significance of the costing system will be lost.

Q. EXPLAIN THE PROBLEMS OF INSTALLING A COSTING SYSTEM AND STEPS TO OVERCOME PROBLEMS IN INSTALLING A COSTING SYSTEM?(Marks)

The management may face additional difficulties in the installation of costing system, and in brief they are:

- 1) Lack of support and interest and interest from the employers, executives and the top management.
- 2) Lack of cost consciousness among the production personnel.
- 3) Shortage of trained staff.
- 4) Non-co-operation and resistance from the personnel.

Steps to overcome problems in installing a costing system

❖ Board of system is to be explained to all the employees.

- ❖ The cost accountant would have to explain the advantage of the system to the management and employees.
- ❖ The introduction and filling up of forms and various cost statement have to be made easy.
- ❖ Frequent meeting should be convened to remove any doubts and difficulties the employees have.

**Q. WHAT ARE THE DIFFERENCE BETWEEN COST AND FINANCIAL ACCOUNTING?
(10Marks)**

Cost accounting Vs financial accounting

	Cost accounting	Financial accounting
Objective	The main objective of cost accounting is to provide cost information to management for decision making.	The main objective of financial accounting is to prepare profit and loss account and balance sheet to report to owners and outsiders.
Legal requirement	Cost accounts are maintained to fulfill the internal requirement of the management as per conventional guidelines.	Financial records are maintained as per the requirement of Companies Act and Income Tax Act
Classification of transaction	Cost accounting records and analyses expenditure in an objective manner viz., according to purpose for which costs are incurred.	Financial accounting classifies records and analysis transactions in a subjective manner I.e. according nature of expenses.
Stock valuation	In cost accounts stock are valued at cost.	In financial accounts, stocks are valued at cost or realizable value, whichever is less.
Analysis of profit & cost	Cost accounts reveal profit or loss of different products, departments separately.	In financial accounts the profit or loss of the entire enterprise is disclosed.
Accounting period	Cost reports are of continuous process and are prepared as per the requirements. Of managements may be daily, weekly, monthly, quarterly or annually.	Financial reports are prepared annually.
Nature	Cost accounts maintained on both historical and predetermined costs.	Financial accounts are maintained on the basis of historical records.
Wastages	Wastages, shortages, losses etc. are categorized into normal and abnormal losses. Its aims to eliminate abnormal losses.	There are no such categories.
Relative efficiency	It provides information for all operations and compare with standard cost and deviations can analyzed for corrective action.	It does not reveal the relative efficiency of workers plant & machinery etc.
Transaction	It deals with external transactions.	It deals with internal transactions.

Q. WHAT ARE THE DIFFERENCE BETWEEN COST AND MANAGEMENT ACCOUNTING? (5Marks)

Cost accounting Vs Management accounting

Cost accounting	Management accounting
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1. The cost accounting is primarily concerned with the ascertainment of cost and profitability and with the control of costs through budgetary control, standard costing etc.	The management accounting concerned with formation of policies, improvement of productivity, profitability etc.
2. Cost accounting evolved cost of financial accounting.	Management accounting evolved out of cost accounting.
3. Cost accounting suggests to the management the best of the alternatives by use of different cost method.	Management accountant takes into consideration the other non-cost factors also while deciding upon alternatives.
4. Cost accounting provides just cost information for managerial purpose.	Management accounting provides all accounting information.
5. Cost accounting uses both past and present figures.	It is generally concerned with the projection of figures for future.

Q. EXPLAIN THE ELEMENTS OF COST (10Marks)

The total expenditure consisting of material, labour and expenses can further be analysed as under.

Prime cost = Direct materials + Direct labour + Direct expenses

Work cost = Prime cost + Factory overheads

Cost of production = Factory cost + Administration overheads

Total cost = Cost of production + selling and distribution overheads.

Each elements of cost is explained in detail as below:

The elements of cost are:

- 1) Materials
- 2) Labour and
- 3) Expenses.

1) Material:

“The materials cost is the cost of commodities supplied to an undertaking”.-I.C.M.A
Materials cost is of two types, viz i) Direct materials cost and indirect materials.

❖ Direct materials cost:

Direct material is material that can be directly identified with each unit of the finished products. Cotton used in production of cloth, leather used in the case of production of leather goods etc. any material purchased and used for a specific job are also direct materials.

❖ Indirect materials:

Materials used for the product other than the direct materials are called indirect material. In other words, materials cost which cannot be identified with a product, job, process is known as indirect material cost.

Small tools, stationary used in works and office stationary etc.

2) Labour:

Labour is the remuneration paid for physical or mental effort expended in production and distribution. Labour cost is also divided into direct and indirect portions.

❖ Direct labour cost:

It is also called Direct wages. Direct labour cost is the cost of labour directly engaged in production operations. E.g. workmen engaged in assembling parts, carpenters engaged in furniture making etc.

❖ Indirect labour cost:

Indirect labour cost is the remuneration paid for labour engaged in helps the production operations. E.g. inspectors, watchmen, sweepers, store keepers etc.

3) Expenses:

Expenditure other than material and labour is the third element of cost. Expenses are of two types-
i) Direct expenses and ii) Indirect expenses.

i) Direct expenses:

These are the expenses which can be directly identified with a unit of output. The direct expenses are also known as chargeable expenses. The examples are:

- ❖ Hire charges of special plant used for a job.
- ❖ Royalty on products.

ii) Indirect expenses

Indirect expenses are expenses other than indirect material and indirect labour, cannot be directly identified with units of output, job, process or operation. For example, rent, power, lighting, depreciation, advertising etc.

4) Overheads:

Overheads are the total of all indirect expenses.

Classification of overheads;

On the basis of functions overhead is classified as i) factory overhead, ii) administration or office overheads iii) selling and distribution overhead.

❖ **Factory overheads;**

This is aggregate of indirect material, indirect wages and indirect expenses incurred in the factory. Examples of indirect factory expenses are rent, power, depreciation, lighting and heating incurred in the factory.

❖ **Administration or office overheads:**

All the indirect administration expenses come under this category. Salaries of office staff, accountants, director's fees, rent of office lighting and bank charge etc. are the example.

❖ **Selling and Distribution overheads:**

This includes selling and distribution expenses. Examples are salaries of salesmen, selling commission, advertising, warehouse rent, maintenance of delivery vans, warehouse staff expenses, warehouse lighting etc.

Expenses excluded from costing

The following items are excluded from computation of total cost.

❖ **Capital cost and capital losses:**

Purchase of fixed assets, plant and building, machinery etc. loss on sale of fixed assets, abnormal losses, and preliminary expenses.

❖ Transfer to reserves, Income Tax, dividend, bonus to shareholders etc.

❖ Financial items like cash discount, interest on debentures, interest on loans, interest on own capital etc.

Q. EXPLAIN THE COST CLASSIFICATION? (10Marks)

CLASSIFICATION OF COST

Cost classification is the process of grouping costs according to their common characteristics. The important classifications are:

1. Classification according to nature:

According to this classification, the costs are divided into three categories; i.e. material, labour and expenses. Material cost means the cost of commodities supplied to an undertaking. Labour cost or wages means the cost of remuneration such as wages, salaries, bonuses etc. of the employees of the undertaking. Expense means cost of services provided to an undertaking and notional cost of the use of owned asset.

2. Classification according to time:

- **Historical costs:** Costs relating to the past time period which has already been incurred. It is known as traditional costing.
- **Current costs:** Cost relating to present period.
- **Pre-determined costs:** Cost relating to the future period. Cost which is compute in advance predetermined costs are also known estimated costs.

3. classification according to function:

- **Production cost:** The cost of the set of operations are commencing with supply of materials, labours and services, and ending with primary packing of products. Thus it is equal to the total of direct materials, direct labour, direct expenses and production overheads.
- **Administrative cost:** Administrative cost is “the cost of formulating the policy, directing the policy, directing the organization and controlling the operations of the undertaking which is not directly related to production, selling, distribution, research or development activity or function”- I.C.M.A. Some examples are office rent, accounts department expenses audit and legal expenses, director’s remuneration etc.
- **Selling cost:** The cost of seeking to create and stimulate demand and of securing orders these are sometimes called marketing costs. Some examples are advertisement, salesman remuneration, showroom expenses etc.
- **Distribution cost:** The cost of sequence of operations which begins with making the packed product available for dispatch and ends with making the reconditioned returned empty package. Some examples are maintenance of delivery vans, carriage outwards, transporting and storage expenditure incurred in moving article to and from prospective customers.
- **Research cost:** The cost of researching for new or improved products, new applications of materials or improve methods.
- **Development cost:** When new products have to be manufactured or an improved the method is to be adopted. The costs are expected to be higher.
- **Pre-production cost:** The part of development cost incurred in making a trial production run prior to formal production.
- **Conversion cost:** The sum of direct wages, direct expenses and overhead cost of converting raw material into the finished stage or converting a material from one stage of production to another stage.

4. Classification according to variability:

- **Fixed cost:** There are costs which remain constant at various levels of production. They are not affected by volume of production. E.g. factory rent, insurance etc.
- **Variable cost:** These are costs which tend to change in relation to volume of production. E.g. cost of raw materials, direct wages etc. They increase in total as production increases and vice-versa.
- **Semi variable cost:** These are costs which are partly fixed and partly variable. These are fixed up to a particular volume of production and become variable thereafter for the next level of production. Some examples are repairs and maintenance of electricity, telephone etc.

5. Classification according to controllability:

- **Controllable cost:** Costs which can be minimized by the executive action are known as controllable costs. Costs are which can be influenced and controlled by the management action.
- **Non- Controllable cost/ uncontrollable costs:** Costs which cannot be minimized by the executive action are known as uncontrollable costs.

6. Classification according to normality:

- **Normal cost:** It is the cost which is not normally incurred at a given level of output under the conditions in which that level of output is normally attained.

- **Abnormal costs:** It is the cost which is not normally incurred at a given level of output, is normally attained. It is charged to costing profit and loss account.

7. Classification according to relationship:

- **Direct costs:** Costs which are directly related to the cost centre or the cost unit for example cost of basic raw material use in the finished produce, wages paid to site labour in construction contract etc.
- **Indirect costs:** Costs which are not directly identified with a cost centre or a cost unit for example factory rent incurred over various departments, salary of supervisor engaged in overseeing various construction contracts etc.

Q. WHAT DO YOU MEAN BY COST SHEET? (2Marks)

MEAN OF COST SHEET

The expenses of a product are analysed under different heads in the form of statement. This statement is called cost sheet.

Q. DEFINE COST SHEET (2Marks)

DEFINITION OF COST SHEET

Walter & Bigg define cost sheet as follows “The expenditure which has been incurred upon production for a period is extracted from the financial books and the stores records, and set out in a memorandum or a statement, if this statement is confined to the disclosure of the cost of the units produced during the period, it is termed as a cost sheet”.

Q. WHAT ARE THE PURPOSES OF COST SHEET? (5Marks)

PURPOSES OF COST SHEET

- It provides details of total cost under logical classification.
- It provides cost per unit in different stages.
- It helps in comparison and control of cost.
- Cost sheet is helpful in estimation of cost for preparation to tenders.
- It acts as basis for fixation of selling price.

Q. WHAT IS MEANT BY TENDER OR QUATATIONS? (5Marks)

MEANING OF TENDER OR QUATATION

The manufacturer of capital goods, Customer durable goods etc is required to quote the price at which he can supply a particular article. The price at which the supplier offers his goods for sales is known as tender or quotation. To prepare a tender the following details are carefully analyzed:

- 1) Cost of materials.
- 2) Cost of direct labour and chargeable.
- 3) Cost of works overhead.
- 4) Cost of office overheads.
- 5) Cost of selling overheads.
- 6) Estimated profit.

Estimated direct labour cost taking into account any proposed increase in wage rates. Overheads are estimated on the basis of past experience and current extends and than absorbed are estimated as percentage for example:

- 1) For percentage of factory overheads to direct wages= $\frac{\text{factory overheads}}{\text{Direct wages}} \times 100$
- 2) For percentage of office overheads to works cost= $\frac{\text{office overheads}}{\text{Works cost}} \times 100$

$$3) \text{ For percentage of selling overheads} = \frac{\text{selling overheads}}{\text{Works cost}} \times 100$$

ESTIMATING OF PROFIT FOR A TENDER (OR) QUOTATION:

Some time profit is given as percentage of cost. In that case profit for the tender is ascertained as given below:

$$\text{Profit} = \frac{\text{cost of sales} \times \text{profit percentage}}{100}$$

If profit is to be ascertained as a percent of selling price of the tender, the profit is to be calculated as given below:

$$\text{Profit} = \frac{\text{cost sales} \times \text{rate of profit on sales}}{100 - \text{Rate percentage on sales.}}$$

Q. GIVE THE SPECIMEN OF COST SHEET (5Marks)

SPECIMEN AND PREPARATION OF COST SHEET

Cost sheet offor the month of

particulars	Rs	Total cost	Cost per unit
Direct material	xxx		
Direct labour	xxx		
Direct expenses	xxx		
A) PRIME COST		xxx	xxx
Add: works overheads:			
Indirect material	xxx		
Indirect wages	xxx		
Factory rent and rates	xxx		
Factory lighting and heating	xxx		
Power and fuel	xxx		
Repairs and maintenance	xxx		
Drawing office expenses	xxx		
Depreciation of plant and machinery	xxx		
Factory stationary	xxx		
Insurance of factory	xxx		
Factory/works managers salary	xxx		
Water consumption in factory	xxx		
Total works overheads			
B) WORKS COST / FACTORY OVERHEADS		xxx	xxx
Add: office/administration overheads:			
Office rents and rates	xxx		
Office lighting	xxx		
Office stationary	xxx		
Office furniture depreciation and repairs	xxx		
Office salaries	xxx		
Legal charges	xxx		
Bank commission	xxx		

Telephone and postage	xxx		
Office cleaning	xxx		
Total administration overheads		xxx	xxx
C) COST OF PRODUCTION		xxx	xxx
Add: selling and distribution overheads			
Salesmen's salaries	xxx		
Salesmen's commission	xxx		
Showroom rent	xxx		
Showroom expenses	xxx		
Advertisement	xxx		
Sales office rent	xxx		
Traveling expenses	xxx		
Warehouse rent and rates	xxx		
Warehouse staff and salaries	xxx		
Repairs and depreciation of delivery vans	xxx		
Carriage outward	xxx		
Total selling & distribution overheads		xxx	xxx
D) COST OF SALES		xxx	xxx
E) PROFIT / LOSS		xxx	xxx
SALES		xxx	xxx

PROBLEM NO: 1

Prepare a cost sheet from the following data: -

Particulars	Rs	Rs
Direct material consumed		50,000
Direct wages paid		40,000
Chargeable expenses		10,000
Indirect material		
Used in factory	8,000	
Used in office	12,000	
Used in selling	6,000	
Used in distribution	4,000	30,000
Indirect labour		
In factory	15,000	
In office	20,000	
In selling	18,000	
In distribution	12,000	65,000
Indirect expenses		
Relating to factory	6,000	
Relating to office	3,000	
Relating to selling	1,000	10,000

PROBLEM NO: 2

You are required to compile a statement showing cost and profit from the information given, showing clearly:

- a) Material consumed
- b) Prime cost
- c) Works cost
- d) Cost of production
- e) Cost of sales
- f) Profit and
- g) Sales.

Material purchased	2,00,000
Wages	1,00,000
Direct expenses	20,000
Opening stock of material	40,000
Closing stock of material	60,000

A factory overhead is absorbed at 20% on wages. An administration overhead is 25% on the work cost. Selling and distribution overheads are 20% on the cost of production. Profit is 20% on sales.

PROBLEM NO: 3

Draw a statement of cost from the flowing particulars:

		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
Manufacturer expenses		1,00,000
Sales		8,00,000
Selling and distribution expenses		20,000

PROBLEM NO: 4

The following data relate to the manufacturer of a product during the month of January

particulars	Rs
Raw material consumed	80,000
Direct wages	48,000
Machine hours worked	80,00 hr
Machine hour rate	4
Office overheads 10% of works overheads	
Selling overheads Rs. 1.50 per unit	
Units produced	4,000 units
Units sold 3,600 at Rs. 50 each	

Prepare a cost sheet and show (a) cost per unit and (b) profit for the period.

PROBLEM NO: 5

From the following particulars, prepare a statement showing the components of the total sale and the profit for the year ended 31st December.

Particulars	Rs
Stock of finished goods (1 st Jan.)	6,000
Stock of raw materials (1 st Jan.)	40,000
Work-in-progress (1 st Jan.)	15,000
Purchase of raw materials	4,75,000
Carriage inwards	12,500
Factory rent, taxes	7,250
Other production expenses	43,000
Stock of goods (31 st Dec.)	15,000
Wages	1,75,000
Works managers salary	30,000
Factory employee's salary	60,000
Power expenses	9,500
General expenses	32,500
Sales for the year	8,60,000
Stock of raw materials (31 st Dec)	50,000
Work-in-progress (31 st Dec.)	10,000

PROBLEM NO: 6

The directors of a manufacturing business require a statement showing the production results of the business for the month of March. The accounts reveal the following information.

Particulars	Rs
Stock on hand 1st March:	
Raw materials	25,000
Finished goods	17,360
Stock on hand 31st March:	
Raw materials	26,250
Finished goods	15,750
Purchase of Raw Material	21,900
Work-in-progress 1 st March	8,220
Work-in-progress 31 st March	9,100
Sale of finished goods	72,310
Direct wages	17,150
Non-productive wages	8,30
Works Expenses	8,340
Office and Administrative Expenses	3,160
Selling and Distributing Expenses	4,210

You are requiring constructing a statement so as to show:

- The value of the material consumed.
- The total cost of production.
- The cost of goods sold.
- The net profit for the month.

BPROBLEM NO: 7

During the year 1998, X Ltd., produced 50,000 units of a product. The following were the expenses:

Particulars	Rs
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Stock of raw materials on 1-1-98	10,000
Stock of raw materials on 31-12-98	20,000
Purchases	1,60,000
Direct wages	75,000
Direct expenses	25,000
Factory Expenses	37,500
Office expenses	62,500
Selling Expenses	25,000

You are required to prepare a Cost Sheet showing cost per unit and total cost at each stage.

PROBLEM NO: 8

The following details have been obtained from the cost records of Raja Sekhar Ltd.

Particulars	Rs
Stock of raw materials on 1 st Dec. 1994	75,000
Stock of raw materials on 31 st Dec. 1994	91,500
Direct wages	52,500
Direct wages	2,750
Sales	2,11,000
Work-in-progress 1 st Dec. 1994	28,000
Work-in-progress 31 st Dec. 1994	35,000
Purchase of Raw Materials	66,000
Factory rent, rates and power	15,000
Depreciation of plant and machinery	3,500
Expenses on purchases	1,500
Carriage outwards	2,500
Advertising	3,500
Office rent and rates	2,500
Travelers wages and commission	6,500
Stock of finished goods (1 st Dec.1994)	54,000
Stock of finished goods (31 st Dec. 1994)	31,000

Prepare a cost sheet giving the maximum possible break up of costs and profit.

PROBLEM NO: 9

M/s. Indu Industries Ltd., are the manufactures of moonlight Torches. The following data relate to manufacturers of torches during the month of March 1991.

Particulars	Rs
Raw material consumed	20,000
Direct wages	12,000
Machine hour worked	9,500hr
Machine hour	2
Office overheads	20% of works cost
Selling overheads	50 paise per unit
Units produced	20,000 units
Units sold	18,000@Rs. 5 per unit

Prepare Cost Sheet showing the cost and the profit per unit and the total profit earned.

PROBLEM NO: 10

From the following information prepare a cost sheet for the month of Dec. 1985:

Particulars	Rs
Stock on hand 1st Dec.1985:	
Raw materials	25,000
Finished goods	17,300
Stock on hand 31st Dec. 1985:	
Raw materials	26,200
Finished goods	15,700
Purchase of Raw Materials	21,900
Carriage on purchase	1,100
Work-in-progress 1-12-85 at works cost	8,200
Work-in-progress 31-12-85 at works cost	9,100
Sale of finished goods	72,300
Direct wages	17,200
Non-productive wages	8,00
Direct expenses	1,200
Factory overheads	8,300
Administrative overheads	3,200
Selling and Distributing overheads	4,200

PROBLEM NO: 11

The cost accounts department of a company has supplied the following data for the supply of 2,000 units of product.

Direct materials: 40,000 tons at Rs.5 per ton.

Direct wages: 8,000 labour hours at Rs. 50 per hour.

Overheads:

Variable: Factory Rs. 10 per labour hour.

Selling Rs. 20 per unit.

Fixed: Factory Rs. 1, 00,000

Office Rs. 2, 00,000

Prepare a statement showing the price to be fixed which will fetch a profit of 25% on cost.

PROBLEM NO: 12

The following is the manufacturing and profit and loss account of Raj Manufacturing Co. for the year ended 31-3-93, output 850 units.

Particulars	Rs.	Particulars	Rs.
To Material	64,000	By sales	3,20,000
To Wages	96,000		
To Works expenses	40,000		
To Salaries	48,000		
To Office expenses	8,000		
To General expenses	24,000		
To Selling expenses	16,000		
To Net profit	24,000		
	3,20,000		3,20,000

PROBLEM NO: 13

Calculate the prime cost from the following particulars of an optical manufacturer:

particulars	Rs
Cost of lens purchases	10,000
Cost of frames purchased	2,000
Cost of screws	200
Wages paid for manufacturing opticals	4,000
Hire of a special machine	800

PROBLEM NO: 14

From the following compute the value of raw materials consumed

Particulars	Rs
Raw material purchased	50,000
Opening stock	10,000
Closing stock	8,000

PROBLEM NO: 15

Calculate the Factory Cost from the following particulars

Particulars	Rs
Material consumed	50,000
Productive wages	30,000
Un productive wages	3,000
Salary of factory manager	6,000
Consumable spares	1,000
Rent of factory premises	2,500
Machine depreciation and repairs	1,500
Oil, grease etc.	500
Salary of factory clerks	2,000
Rent of factory furniture	800

PROBLEM NO: 16

From the following calculate the Works Cost:

Particulars	Rs
Materials	60,000
Labour	40,000
Direct expenses	10,000
Factory overheads	50,000
Work-in-progress: Opening stock	10,000
Closing stock	8,000

PROBLEM NO: 17

From the following particulars compute the Cost of Production of product:

Particulars	Rs
Material used	120
Labour employed	80
Salary of inspector engaged on this product	10
Proportionate lighting and heating (factory and office 3:2)	5
Proportionate depreciation, repairs and rent (50% is related to factory)	10

Municipal taxes and insurance of building (40% is related to office)	8
Trade subscription	1

PROBLEM NO: 18

The accounts of a machine manufacturing company disclose the following information for six months ending 31st December 1978.

Particulars	Rs
Material	1,50,000
Direct wages	1,20,000
Factory overheads	30,000
Administrative expenses	15,000

Prepare cost sheet for the half year and calculate the price which the company should quote for the manufacture of a machine requiring materials valued at Rs. 1,250 and expenditure in productive wages Rs. 750 so that the price might yield a profit of 20% on the selling price.

PROBLEM NO: 19

From the following particulars you are required to prepare a statement showing (a) the cost of materials consumed (b) the prime cost (c) the works cost (d) the total cost (e) the percentage of works overhead to productive wages and (f) the percentage of general overheads to works cost.

Particulars	Rs
Stock of finished goods on 1-1-1980	72,800
Stock of raw materials on 1-1-1980	33,280
Purchases of raw materials	7,59,200
productive wages	5,16,880
Sales of finished goods	15,39,200
Stock of finished goods on 31-12-1980	78,000
Stock of raw materials on 31-12-1980	35,360
Works overheads charges	1,29,220
Office and general expenses	70,161

The company is about to send a tender for a large plant. The costing department has estimated that the materials required would cost Rs. 52,000 and the wages to workmen for making the plant would cost Rs. 31, 200. The tender is to be made at a net profit of 20% on the selling price. Show what the amount of tender would be, if it is based on the above percentages.

PROBLEM NO: 20

From the following information, prepare a cost sheet for the month of December 1999.

Particulars	Rs
Stock on hand-1st Dec: 1999:	
Raw materials	25,000
Work-in-progress	8,200
Finished goods	17,300
Raw materials consumed during Dec. 1999	21,800
Works cost for the month (after adjusting work-in-progress)	48,400
Cost of production of goods sold	53,200
Purchase of raw materials	21,900
Carriage on purchases	1,100
Sales of finished goods	72,300

Direct wages	17,200
Direct expenses	1,200
Factory overheads	9,100
Administrative overheads	3,200
Selling and distribution overheads	4,200

PROBLEM NO: 21

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

Particulars	Rs
Stock of materials, 1 st January	5,500
Stock of materials, 31 st March	3,500
Factory wages	83,000
Material purchased	61,500
Sales	1,41,500
Indirect expenses	13,000
Completed stock 1 st January	Nil
Completed stock 31 st March	29,000

The number of sheets manufactured during three months was 2,200 and the prices to be quoted for 648 sheets, in order to realize the same percentage of profit 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.

PROBLEM NO: 22

The following data have been extracted from the books of M/S Moonshine Industries for the calendar year 2010.

Particulars	Rs	Particulars	Rs
Opening stock of raw material	25,000	Purchase of raw material	85,000
Closing stock of raw material	40,000	Carriage inward	5,000
Wages: Direct	75,000	Rent and rates; Factory	5,000
Indirect	10,000	Office	500
Other direct charges	15,000	Indirect consumption materials	500
Depreciation: Plant etc.	1,500	Salary: Office	2,500
Office furniture	100	Salesmen	2,000
Other factory expenses	5,700	Other office expenses	900
Managing directors remuneration	12,000	Other selling expenses	1,000
Traveling expenses of salesmen	1,100	Carriage and freight outward	1,000
Sales	2,50,000	Advance income tax paid	15,000
Advertisement	2,000		

The managing director's remuneration is to be allocated as Rs. 4,000 to the factory, Rs. 2000 to the office and Rs. 6,000 to the selling departments. From the above information prepare (a) Prime cost (b) Works cost (c) Cost of production (d) Cost of sales and (e) Net profit.

PROBLEM NO: 23

The following extracts of costing information relate to a product for the year ending 31st March 2010.

Particulars	Rs
Purchase of raw materials	48,000
Direct wages	40,000
Stock on 1st April 2009:	
Raw materials	8,000
Finished products 1,600units	6,400
Stock on 31st March 2010:	
Raw materials	8,800
Finished products 3,200units	12,840
Works on cost	16,800
Work-in –progress:	
On 1 st April 2009	1,920
On 31 st March 2010	6,400
Office Administrative Overheads	3,200
Sales (Finished Products)	1,20,000

PROBLEM NO: 24

Usha Company submits the following information for the year 2010.

Particulars	Rs
Sales for the year	2,75,000
Inventories at the beginning of 2010:	
Finished goods	7,000
Work-in-progress	4,000
Purchases of material	1,10,000
Material inventory:	
Opening	3,000
Closing	4,000
Direct labour	65,000
Factory overheads 60% of direct labour cost	
Inventories at the close of the year:	
Finished good	7,000
Work-in-progress	6,000
Other expenses for the year were as follows:	
Selling expenses 10% of sales	
Administration expenses 5% of sales	

Prepare a statement of cost.

MATERIAL MANAGEMENT

Q: EXPLAIN THE MEANING & DEFINITION OF MATERIAL OR STOCK CONTROL AND STATE ITS OBJECTS? (2/5 MARKS)

INTRODUCTION:

Material is the most important element of cost. More than fifty percent of the total cost of a product or a job is generally composed of material cost in several industries. Therefore, a control on material is quite essential to meet the objective of cost control. The importance of material control lies in that fact that any saving made in the cost of material will go a long way in reducing the cost of production and improving the profitability of the organization.

MEANING OF MATERIAL CONTROL (OR) STOCK CONTROL

The material means and include raw material, spare parts, components, factory supplies, packing material etc., the term material control means the regulation of an organization relating to procurement, storage, and usage of material in such a way as to maintain an even flow of production without excessive investment in material stock.

DEFINITION OF MATERIAL CONTROL (OR) STOCK CONTROL

Material control can be defined as “a systematic control over purchasing, storing and consumption of material, so as to maintain a regular and timely supply of material, at the same time avoiding over-stocking”. There are mainly three stages where material control is exercised viz., at the time of purchase of material, storage of material, and issue of materials to different jobs

OBJECTIVES OF MATERIAL CONTROL:

To make available all types of material and stores of right quality without any interruption.

- To make purchase of material of required quality according to the standard fixed for finished product.
- To make purchase of material at reasonably low cost or at maximum economy. Quality should not be sanctified for low cost.
- Investment in material shall not tie up huge amount of capital which may be used for better activities. Moreover over-storing has its own limitations. Maximum store level should be fixed.
- To avoid abnormal storage, leakage, theft, etc., of the material storekeeper must be trained to minimize loss of stores.
- To avoid obsolescence of material by adopting better methods to issue of material
- To provide the management with information of raw material cost, availability etc.
- To ensure proper usage and storage of material.

Q: WHAT ARE THE SALIENT FEATURES OF MATERIAL COST CONTROL? (OR) WHAT ARE THE ESSENTIALS OF GOOD SYSTEM OF MATERIAL CONTROL? (5 Marks)

FEATURES OF MATERIAL COST CONTROL

To achieve maximum managerial control on materials:

- There should be co-operation & co-ordination among the department dealing with material – purchasing, receiving, testing, storage, and production planning of material.
- Purchasing material should be centralized under expert, personnel, who have been trained.
- All items in the store should be codified, classified and standardized.
- Proper forms should be used for dealing of store items, issues, transfer, return of material etc.,
- Material storage should be carefully planned to avoid losses from theft, deterioration, damage, evaporation, pilferage etc.,
- Store control measures, like ABC analysis and stock verification, should be introduced.
- Stock at different level should be fixed to ensure that there is no shortage and overstocking of material.
- Purchasing quantity should be fixed to reduce the orderly costs and carrying costs.
- Material & supplies should be properly stored.
- Requisitions & stock must be priced on a suitable basis in order to ensure reliable costs.
- Receiving and inspection procedure must be chalked out.
- Regular reports on material purchased, issued, obsolete, spoiled defective etc., are be submitted to the management.

Q: EXPLAIN THE ADVANTAGES OF MATERIAL CONTROL. (5 Marks)

ADVANTAGES OF MATERIAL CONTROL

A good system of material control will facilitate the following advantages.

- Elimination of waste in the use of materials.
- Availability of the right quality of material in the right time.
- Avoidance of over stocking.
- Buying the economic order quantity (ideal quantity).
- Reduction of risk of loss on account of theft, loss, fraud, etc.,
- Quick and easy availability of data relating to material, Prevention of production delays.

Q: WHAT ARE THE TECHNIQUES OF INVENTORY CONTROL? (5 Marks)

TECHNIQUES OF INVENTORY CONTROL:

Various techniques commonly used for inventory control are listed below:

- ABC techniques.
- Minimum, maximum and re-order levels.
- Economic Order Quantity.
- Proper purchase procedure.
- Proper storage of material.
- Inventory turnover ratio to overview slow and non-moving material.
- Perpetual inventory system.
- Fixation of material cost standards.
- Preparation of material budgets.

Q: WHAT IS PURCHASE CONTROL? WRITE SHORT NOTES ON PURCHASE DEPARTMENT. PURCHASE CONTROL? (5Marks)

MEANING OF PURCHASE CONTROL

An effective material control requires a good amount of attention to the purchasing procedure of material as to its cost. Quality, volume, timely delivers etc. Low cost material will reflect in the finished product causing more wastage, resulting in high cost and sub-standard articles. Lack of proper purchase interrupts the production. Purchase control is one of the aspects of material control; it generally starts with initiation of purchase requisition and ends with receipt of material by the stores and payment of the bill. Generally, the following procedures are adopted, in most of the concerns.

▪ **Purchase department:**

In small concerns, all the purchases of raw materials are done by the owner himself. But in large firms, job of purchasing is entrusted to an efficient purchasing department headed by a purchase manager or chief buyer.

▪ **Centralized Vs. Decentralized purchasing:**

Whether purchasing should be centralized or decentralized is a matter of policy after consideration of a number of factors. Centralized purchase means that all the purchases are made by the specialized department. Decentralized purchase means that the purchases are made by the individual departments. The centralized purchasing system has many advantages and is preferred.

Q. DESCRIBE THE PROCEDURE OF PURCHASING MATERIAL FROM OUTSIDE (OR) WHAT IS BILL OF MATERIALS? (10 Marks)

PURCHASE PROCEDURE (OR) BILL OF MATERIALS

a. Bill of material (specification of materials):

It is a complete schedule of material & components needed for a particular work order. The buying department is informed through the bill of material as to the quality, quantity and other specifications of the material required for a particular work. The advantages are:

- The purchasing department is able to collect quotations, select suppliers & make quick purchase when the indent is received.
- If stock is exhausted, initiate purchase requisition.
- Cost of a job can be fixed in advance.
- The bill is prepared in five copies, one for each of the following: (a) Purchasing department, (b) Stores, (c) Production section, (d) Cost office, and (e) Office copy which is retained for reference.

b. Purchase requisition (indent for material):

A purchase requisition is a formal request, initiated by the store-keeper for the materials required to replenish the stock of items. Sometimes, the purchase requisition is also initiated by other department. Generally printed forms are used for this purpose. It is a basis on which the purchasing department is to make the purchase.

c. Selection of supplier:

After the receipt of purchase requisition, the source of material supply is to be selected. Generally, the purchasing department keeps a list of suppliers for all needed items. The quotation will be called for, by keeping in view the benefits to the concern-lowest price better quality, quick delivery, reliable supplies according to the specifications etc. After receiving the quotations, they are opened at the time prescribed and a comparative statement is prepared.

d. Goods received note & inspection of materials:

When the ordered goods arrive at the factory door, the clerk concerned verifies the goods with the help of the delivery. Note and the copy of the purchase order. In big concerns, an inspector is there who inspects all the materials and makes out a material inspection report.

e. Passing the bill:

Having checked all the items, the bill is passed and sent to the accounts section, which makes the payment by accepting a stamped receipt.

Q: EXPLAIN THE TERMS ‘MINIMUM LEVEL’, ‘MAXIMUM LEVEL’ AND ‘ORDERING LEVEL’ WITH REGARD TO MAINTENANCE OF STOCK. (10 Marks)

VARIOUS STOCK LEVELS OF MATERIALS:

One of the objectives of material control is to maintain the stock of raw material as low as possible and ensure the availability of a material as and when required. Over stocking and under stocking lead to unnecessary blocking up of working capital and under stocking may interrupt production. The object of fixing stock levels for each item of material is to maintain required quantity of material in the store and thereby the expenses may be reduced.

The different stock levels:

I. Maximum Stock Level:

It is a stock level above which stock should not be allowed to rise. This is maximum quantity of stock of raw material which can be had in the stock. If it goes above, it will be over stocking and it will lead to the following disadvantages:

Demerits of over stocking:

- Capital is blocked.
- More space is needed.
- Deterioration of stock is possible.
- There will be loss due to obsolescence.
- There is the danger of depreciation in value.

The maximum level is fixed by taking into account the following factors:

- Availability of capital.
- Space available in stores.
- Rate of consumption.

- Re-order level.
- Delivery time to obtain fresh stock.
- Change in price.
- Seasonal nature of supply.
- Restriction imposed by goods.
- Economic order quantity.
- Cost of maintaining the stock.
- Possibility of change in fashion.

Formula:

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

II. Minimum Stock Level:

It represents the minimum quantity of an item of materials to be kept in the stores at any time. Material should not be allowed to fall below this level. If the stock goes below this level production may be held up for want of material. This stock is also known as safety stock level or buffer stock. In determining the minimum level the following factors are to be considered:

- Lead time i.e. time required for getting fresh delivery of material.
- Date of consumption of material during the lead time.
- Availability of substitute and re-order level.

Formula:

Minimum stock Level = Re-order Level – (Normal Consumption x Normal Re-order Period).

III. Re-order Level:

It is the point at which the storekeeper should initiate purchase requisition to for fresh supply. This level lies between the maximum stock level and minimum stock levels. The re-ordering point is fixed slightly higher than the minimum stock in such a way that the difference between minimum level & re-ordering level is sufficient to meet the demand for production up to the time of fresh supply. The level depends upon the lead time, state of consumption and economic order quantity.

Formula:

Re-ordering level = Maximum Consumption x Maximum Reorder Period.

IV. Danger Level:

This stock level is below the minimum quantity. It is level at which normal issues of the material are stopped but issued under special instructions. When the materials reach below the minimum level i.e. danger levels the storekeeper must make special arrangement to get fresh so that production may not be held up for want of material.

V. Average Stock Level:

This stock level shows the average quantity of material kept in the store. This is regarded as the average of maximum and minimum stock levels.

Formula:

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

If maximum level is not available:

Average stock level = Minimum Stock Level + 1/2 Re-order quantity.

Q. WHAT DO YOU UNDERSTAND BY ECONOMIC ORDER QUANTITY? HOW ARE THEY CALCULATED? (5 Marks)

ECONOMIC ORDER QUANTITY (EOQ):

Economic order quantity refers to the quantity of material to be purchased at one time to optimize the cost thereon. At this point of quantity the total of carrying costs and ordering costs will be the lowest. It is known by different names like ‘Optimum quantity’, (or) ‘Ideal quantity’ of purchase etc.

Ordering costs are the expenses incurred for the placement of purchasing order and other related expenses. More quantities of material ordered at one time reduces the ordering costs and if the quantity ordering is less, more frequent purchases are to be made and the ordering cost will increase.

Carrying cost are the expenses incurred for preserving the purchased material. It includes, interest on money invested in material, storage cost like insurance, lighting, rent, salaries of the staff employed in store etc., higher quantities of material purchased increase the carrying cost and vice versa.

Both ordering cost & carrying cost move in opposite direction. At a particular quantity of material purchased the total of both carrying cost & ordering cost will be the lowest, and this level of quantity is called EOQ.

Determination of EOQ:

Formula:

$$\text{Economic Order Quantity (EOQ)} = \sqrt{\frac{2AB}{CS}}$$

A= Annual usage; B = Buying cost/order; C = Cost/unit; S = Storage & carrying cost / unit.

Q: WHAT IS BIN CARD, DOUBLE BIN SYSTEM & STORE LEDGER? SPECIMEN OF BIN CARD & STORE LEDGER (2/5 Marks)

MEANING OF BIN CARD AND SPECIMEN

Bin is a place where materials are kept in. It may be a rack, container, shelf or space where stores are kept. Bin card is a document showing the particulars of material kept in the bin. It is a document attached to the bin disclosing the quantitative details of material received, issued and the closing balance. A bin card is used for each item of material each receipt and issue is recorded on the bin card in a chronological order & the latest balance is shown after each receipt & issue.

Bin card is maintained by the store keeper. It indicates information like different stock levels. No, name of materials, material code number, and store ledger folio no, quantity of material received issued and the balance in hand.

Specimen of Bin Card

Material:

Code No:

Bin No:

Stores ledger folio No:

Maximum level:

Minimum Level:

Re-order level:

Re-ordering Quantity:

Date	Receipts		Issues		Balance quantity	Remarks
	G.R. note no.	Quantity	M.R. note no.	Quantity		

Double bin system:

The bin will be divided into two parts, one part usually the smaller part contain the minimum level of stock from which issues are made. The other part of the bin contains the remaining quantity of material. Issues will be made from this portion only when the minimum quantity in the small part is finished.

MEANING OF STORE LEDGER AND SPECIMEN

A store ledger is a record of stock both in quantity and value. It consists of the same column as a bin card; but in addition, there is the amount column in which the values are entered. The ledger shows the balance in hand at any time.

Specimen of Store ledger

Material:

Code No:

Bin No:

Stores ledger folio No:

Maximum level:

Minimum Level:

Re-order level:

Re-ordering Quantity:

Date	Receipt				Issue				Balance		
	G.R.N. No.	Quantity	Rate	Amount	M.R. No.	Quantity	Rate	Amount	Quantity	Rate	Amount

Q. DISTINGUISH BETWEEN BIN CARD & STORE LEDGER?

DIFFERENCE BETWEEN BIN CARD & STORE LEDGER

Bin card	Store ledger
It is a record of quantity only	It is a record of both quantity and value
It is maintained by the storekeeper	It is maintained by the cost clerk.
It is attached to the bin	It is kept in the cost office
Entries are made by the storekeeper	Entries are made by the cost clerk.
Entries are made on the basis of actual quantity received & issued	Entries are made on the basis of documents like good received note, material requisition note etc.,
Posting are made before the transactions	Posting are made after the transactions.
Individual transaction are recorded	Transactions are periodically recorded.
Inter departmental transfer are not shown	Inter departmental transaction are recorded for costing purpose.
Facilitates physical verification of closing stock	Facilitates valuation of closing stock.

Q. WHAT IS PERPETUAL INVENTORY SYSTEM? WHAT ARE ITS MERITS? EXPLAIN ITS OPERATION. (5 Marks)

MEANING OF PERPETUAL INVENTORY SYSTEM

The perpetual inventory system is also known as automatic inventory system. The ICMA defines the perpetual inventory system as, “A system of records maintained by the controlling departmental which reflects the physical movement of stocks and their current balance”. According to Weldon, “Perpetual inventory system is a method of recording stores balances after every receipt and issue, to facilitate regular checking and to obviate closing down for stock taking”.

Merits of perpetual inventory system:

- ✓ It is not necessary to stop production to carry out stock taking.
- ✓ The long and costly stock-taking (periodic) is avoided.
- ✓ Discrepancies are detected easily and quickly.
- ✓ Bin cards & stock ledger give ready figures.
- ✓ It facilitates the preparation of final account, even at short notice
- ✓ Stock levels can be revised from time to time in order to avoid under or overstocking.
- ✓ A detailed and reliable check on the stores is facilitated.
- ✓ Since it is a regular work, experts can be appointed.
- ✓ Deterioration, obsolescence etc., can be avoided.

The balance of stock is always correct, because checking is done on random basis, selecting certain items; but the storekeeper does not know which items will be checked, therefore he keeps all the stock always correct.

OPERATIONS OF PERPETUAL INVENTORY SYSTEM:

- The entries for receipt or issue of the material are made in the bin card and store ledger account and the balance is ascertained.
- Store received but not inspected are not mixed up with regular stocks.
- Stock taking is done continuously. The stores records are compared & entered in stock verification report for suitable treatment.

Q: WHAT IS THE MEANING OF PERIODICAL AND CONTINUOUS STOCK TAKING? (2Marks)
MEANING OF PERIODICAL INVENTORY SYSTEM

Under this system, stock taking is undertaken at the end of the accounting year. As the stock taking involves verifying the physical quantities of stores in hand, some firm temporarily suspend plant operations when this is done. This is because it is rarely feasible to take stocks while production continues. Thus, the annual stock taking should be organized well in advance to minimize production hold ups.

MEANING OF CONTINUOUS STOCK TAKING

In any perpetual inventory system, the book balance as shown by bin cards and store ledger should agree with actual physical balance in store. This is best done by continuous stock taking, which is an integral part of the perpetual inventory system. The primary objectives of continuous stock taking are to confirm that the perpetual inventory system is functioning properly and that to bring records into line with the physical stocks.

Q. WHAT ARE THE MAIN FEATURES OF CONTINUOUS STOCK TAKING? (2/5 MARKS)
MAIN FEATURES OF CONTINUOUS STOCK TAKING:

- A few items are physically counted daily or at frequent intervals
- All items are checked within a definite period such as, one month or two months, so that each item is checked a specific number of times in each year.
- The checking is carried out by special staff, having no other responsibility for physical stocks or stocks records.
- All differences are recorded in appropriate reports.

Q: DIFFERENCE BETWEEN PERIODICAL AND CONTINUOUS STOCK TAKING? (5 Marks)
DIFFERENCE BETWEEN PERIODICAL AND CONTINUOUS STOCK TAKING

Periodical stock taking	Continuous stock taking
Persons from other departments or temporary committee can be appointed.	Permanent personnel are required.
Generally held once in a year.	Held throughout the year.
All work will be paralyzed.	Normal and routine work will not be affected.
There is delay in taking actions.	Discrepancies can be rectified without delay
All items are checked.	All items are not checked. Items are selected at random and selection of items is kept secret.
It is a cheaper method.	It is a costly affair.

Q: WHAT IS THE VARIOUS METHOD OF PRICING OF MATERIAL ISSUE? (10 MARKS)
PRICING OF MATERIAL ISSUES:

When materials are issued for any production work or any job, they have to be valued in the costing department. If materials are purchased for any particular job, the total cost of the material can be charged to that job. But generally raw materials are purchased in anticipation and issued whenever they are needed for production, assuming that the rate of raw material is the same. But this is not the case always. Price of everything change on the prevailing condition of the market.

(FIFO, LIFO, SIMPLE AVERAGE AND WEIGHTED AVERAGE METHOD)

I Actual price method:

FIRST IN FIRST OUT METHOD (FIFO):

Under this system, materials are issued in the order in which they are received in the store. The material received first will be issued first. "First come first served". In other words old stocks are issued first and new stock will be issued afterwards. As a result of this system, when we value the closing stock of material that will be at the latest price.

Advantages:

- The method is simple & easy to operate
- Closing value of material will reflect to current market price.
- This system is good for slow moving materials.
- When prices are falling, this method gives better result.
- "First come, first served" is a logical system.
- Deterioration and obsolescence can be avoided.

Disadvantages:

- When price fluctuate, calculation becomes complicated.
- Complicated calculation will invite clerical errors.
- Under fluctuating prices, material charged to different but similar jobs vary, leading to non-comparison.
- When prices fall, jobs are charged with higher price of earlier material; the quotations are less competitive.
- When materials are returned to the stores, they are treated as new purchase, for the purpose of next issue.

LAST IN FIRST OUT METHOD (LIFO):

This method is opposite to FIFO. Here, material received last are issued first. Issues are made from the latest purchases. The issues are priced at the unit cost of the latest lot or the most recent purchase. The issues are not in chronological order, and cost of material reflects current market price.

Advantages:

- Material cost represents current price.
- It facilitates complete recovery of material cost.
- It is most suitable when pricing are rising.
- There is better matching of cost & revenue.

Disadvantages:

- It involves considerable clerical work.
- Due to variation of prices, comparison of cost of similar jobs in non-comparable.
- Stock of material shown in balance sheet will not reflect market prices.
- This system is not accepted by IT authorities.

SPECIFIC PRICE METHOD (IDENTICAL COST):

This is the price actually paid for the material for a particular job or work or contract. Under this method, material purchased for specific jobs, are kept separately and when issued, the job is charged with the actual

price paid. Material of special nature, costing items etc., when used for specific work, are priced at the actual price & charged to the work. This method is good on individual jobs, contracts etc., against specific orders.

Advantages:

- True or actual price is charged.
- It is suitable when the items are costly.

Disadvantage:

- Separate records have to be kept, when involves clerical work.

BASE STOCK METHOD:

In almost all concerns, a minimum quantity of stock is always kept in store. A fixed minimum stock of the material is always maintained and is known as 'safety' or 'base stock'. This stock is valued at a price at which the first lot of material is received. The stock should not be issued until emergency arises. The quantity in excess of this base stock may be valued either FIFO or LIFO method.

HIGHEST IN FIRST OUT METHOD (HIFO):

Under this method materials of the highest price are issued first. According to this method the closing stock will be of the minimum price or as low as possible. In short, material purchased at the highest price will be first issued, irrespective of the order of purchase; when the whole lot of the highest price is exhausted, material purchased at the next higher price are issued. This method is suitable for cost plus contracts, but is not common. It rather operates similar to FIFO & LIFO.

II Average price method:

SIMPLE AVERAGE METHOD:

Issue prices of raw material are fixed at the calculated average unit price. When new purchases are made at different rates, and the average changes. This method of simple average is not generally followed, because it fails to recover the cost price of material. For example:

$$\text{Issue price} = \frac{\text{total of unit price of material in stock}}{\text{number of prices}}$$

Advantages:

- It is easy to operate.
- It reduces clerical work
- When there are slight fluctuations in price, it gives good result.

Disadvantages:

- Costs are not fully recovered.
- This system is not generally followed.

WEIGHTED AVERAGE METHOD:

This method gives weightage, a part from the price, to the quantity also. Weighted average price is a price obtained by dividing the total cost of material in the stock by the total quantity of material in the stock; and issues are priced accordingly.

Formula:

$$\text{Weighted average price} = \frac{\text{value of material in stock}}{\text{quantity in stock}}$$

Advantages:

- It will smooth out fluctuation.
- It facilitates recovery of the cost paid for material
- It is accepted by all.

Disadvantages:

- When a large number of purchases are made at different rates, the calculation is tedious.

PERIODIC SIMPLE AVERAGE PRICE:

The simple average rate is calculated, for a particular period, ignoring the rate of opening stock. The computation of the issue rate is found out by totaling the unit prices of all purchases of opening stock. The rate thus computed is used for all issues of the period & for valuing the closing stock.

Advantages:

- Calculation is easy, as the rate is to be computed only once at the end of the period.
- The issue price of material does not change during the period.
- Comparison of similar jobs in respect of material is easy.

Disadvantages:

- Delay is involved.
- Closing stock will not be in true value.

PERIODIC WEIGHTED AVERAGE PRICE:

Like the weighted average method, the rate is found out by computing the total cost paid for the material and dividing it by the total quantities purchased during a period, say a month, ignoring the opening stock. The rate thus calculated is used for issue as well as for closing stock of material.

Advantages:

- This method is superior to the above.
- Price fluctuations have been removed.

Disadvantages:

- The rate is calculated at the end of the period.
- Pricing of material is delayed.

III Other methods:

STANDARD PRICE METHOD:

This is a method of valuing the issues on a pre-determined price. The standard price of the material is decided, taking into account the quantity purchased, market conditions, future trend of the prices and all other matter connected with the material. Under such circumstances, the cost of the issue of the material will neither be at the cost price nor at the market price.

Advantages:

- It is simple in working.
- Material cost can be fixed in advance.
- Comparison of jobs becomes easy.
- Control over purchase is possible.

Disadvantages:

- Sometimes, it fails to recover the cost of material.
- It will reflect the market price.
- Price variance account has to be created, in addition.

MARKET PRICE METHOD (Replacement price method):

This is based on the principle that material issued to any job on a particular day, should be charged at the rate prevalent in the market. In other words, materials issued are valued at a price at which they can be replaced. After the issue, the closing stock is adjusted to the net value.

Advantages:

- Latest price is reflected

- Comparison is easy

Disadvantages:

- Lost of production varies with the market trends.
- It is not easy to know the latest price.
- Difference in value arises (purchase price & issue price), and needs adjustment.
- Profit or loss may arise on account of rise and fall in price of raw material.

INFLATED PRICES:

When purchases are made, looking at the invoice, one is able to understand that the seller charges the cost of the material and the expenses like packing, forwarding, freight, etc. Then, after purchasing additional expenses – sorting, preservation, issuing etc., are there.

Q: WRITE A NOTE ON STOCK CONTROL? (2 Marks)

MEANING OF STOCK CONTROL:

Inventory control/stock control is a system which ensures the maintenance of required quantity of inventories of the required quality at the required time with minimum amount of investment. The term inventory includes raw materials, stores, supplies, spare parts, tools, components; assemblies partly finished goods & finished goods.

Q: WHAT DO YOU UNDERSTAND ABC ANALYSIS? WHAT ARE ITS ADVANTAGES? (5Marks)

MEANING OF ABC ANALYSIS:

ABC analysis is also known as proportional past value analysis. Under this method (always better control) efficient control of store is required to give more case on cost items. As such, on the basis of the value of different material, items are grouped into three categories:

- **High priced material (A)**
- **Medium priced material (B)**
- **Low priced material (C)**

The material, which are costly and form a small part of the total inventory, can be taken in storing and in the use of such items market “A”. For this category of material, high price has to be paid and the number of items is small. On the other hand, certain materials do not require much investment, and the number of such items is usually large, market “C”. The materials which have moderate value may be marked “B”.

ADVANTAGES OF ABC ANALYSIS:

- Ensures strict control over such items having a sizable investment in them.
- We could be put to use in a better way.
- Helps in maintaining enough safety stock for ‘C’ category store items.
- Enables the maintenance of a high inventory turnover rate.

PROBLEM NO: 1

Calculate Economic Order Quantity from the following information:

Annual usage	: 600 units
Cost of placing an order	: Rs. 12
Price of material per unit	: Rs. 20
Cost of storage	: 20%

PROBLEM NO: 2

A factory requires 1,500 units of an item per month, each costing Rs. 27. the cost per order is Rs.150 and the inventory carrying charges work out to 20 percent of the average inventory. Find out the Economic Order Quantity and the number of orders per year.

PROBLEM NO: 3

Calculate Economic Order Quantity from the following information. Also state the number of order to be placed in a year.

Consumption of materials per annum : 10,000 kg
 Order placing costs per order : Rs. 50
 Cost per kg of raw material : Rs. 2
 Storage costs 8% on average in inventory.

PROBLEM NO:4

The average annual consumption of material: 20, 000 kg at a price of Rs. 2 per kg. The storage cost is 16% on average inventory. The cost of placing one order is Rs. 50. How much is to be purchased at a time?

PROBLEM NO: 5 (Input-Output Ratio)

From the following, compute input-output ratio.

	Standard	Actual
Input of material	5 kg.	1000kg
Output of raw material in final product	4.5kg	800kg
Cost per kg of material	Rs.9	

PROBLEM NO: 6 (Inventory Turnover Ratio)

The following data are available in respect of a material X for the year ended 31st December:

Opening Stock : Rs. 90,000
 Purchase during the year : Rs. 2, 70,000
 Closing Stock : Rs. 1, 10,000

Calculate (i) Inventory Turnover Ratio, and (ii) Number of days for which average inventory is held.

PROBLEM NO: 7

From the following data, calculate the inventory turnover ratio:

	Material X	Material Y
Opening stock	Rs. 25,000	87,500
Closing stock	15,000	62,500
Purchases	1, 90,000	1, 25,000

Determine the fast-moving material.

PROBLEM NO: 8

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

	Material A	Material B
Opening Stock 1 st Jan	Rs. 10,000	9,000
Purchase during the year	52,000	27,000
Closing Stock 31 st Dec	6,000	11,000

PROBLEM NO: 9 (Various Stock Level)

From the following information, you are required to calculate Maximum level, Minimum level and Ordering level for Materials X and Y:

	X	Y
Normal usage per week	150	200
Reordering Quantity	900	1,500
Maximum usage per week	225	250
Minimum usage per week	75	100
Reorder period (weeks)	12 to 18	6 to 12

PROBLEM NO: 10

From the following data for the last twelve months compute the stock level for a component:

Maximum usage in month	300 Nos.
Minimum usage in month	200 Nos.
Average usage in month	225 Nos.
Time –lag procurement of material:	Maximum 6 months; Minimum 2 months, Reordering quantity: 750 Nos.

PROBLEM NO: 11

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) Maximum level, (b) Minimum level and (c) Ordering level.

PROBLEM NO: 12

Calculate Maximum level, Minimum level and Order level from the following:

Re-order quantity	1500 units
Re-order period	4 to 6 weeks
Maximum consumption	400 units per week
Normal consumption	300 units per week
Minimum consumption	250 units per week

PROBLEM NO: 13

Two components A and B are used as follows:

- Normal usage: 50 units per week each,
- Minimum usage: 25 units per week each,
- Maximum usage: 75 units per week each,
- Reorder Quantity: A-300 units, and B-500 units,
- Reorder Period: A-4 to 6 weeks, B-2 to 4 weeks.

Calculate for each component:

- (a) Reorder level;
- (b) Minimum level,
- (c) Maximum level and
- (d) Average Stock level.

PROBLEM NO: 14

The stock in hand of a material as on 1st September was 500 units at Rs. 10 per unit. The following purchases and issues were subsequently made. Prepare the Stores Ledger Account showing how the value of the issues would be recorded under FIFO method.

Purchases:

6th Sept. 100 units at Rs.11
 20th Sept. 700 units at Rs.12
 27th Sept. 400 units at Rs.13
 13th Oct. 1,000 units at Rs.14
 20th Oct. 500 units at Rs.15
 17th Nov. 400 units at Rs.16

Issues:

9th Sept. 500 units
 22nd Sept. 500 units
 30th Sept. 500 units
 15th Oct. 500 units
 22nd Oct. 500 units
 11th Nov. 500 units

PROBLEM NO: 15

Record the following transactions in Stores Ledger, pricing the materials under FIFO method:

May 1 Balance 50 units at Rs. 25 per unit
 3 Received 300 units at Rs. 30 per units
 5 Issued 200 units
 7 Issued 120 units
 8 Received back 10 units (issued on 7th May)
 10 Returned to Vendor 15 units purchased on 3rd May.
 15 Received 200 units at Rs.32
 18 Issued 150 units
 19 Issued 50 units

The stock verifier found a shortage of 10 units on 20th and left a note.

PROBLEM NO: 16 (Base Stock-FIFO)

Prepare Store Ledger Account from the following information:

Jan. 1 purchased 500 kg. at Rs. 20 per kg
 10 Purchased 300 kg. at Rs. 21 per kg
 15 Issued 600 kg
 20 purchased 400 kg. at Rs. 22 per kg
 25 Issued 300 kg.
 27 purchased 500 kg. at Rs. 21 per kg
 31 Issued 200 kg.

Adopt the Base Stock Method of issue and ascertain the value of closing stock under FIFO method, Base Stock 200 kg.

PROBLEM NO: 17 (LIFO)

From the following particulars write up the prices Stores Ledger under Last-in-first-out:

Dec. 1 Stock in hand 500 units at Rs. 20
 3 Issued 200 units
 3 Purchased 150 units at Rs.22

- 4 Issued 100 units
 - 5 Purchased 200 units at Rs.25
 - 6 Issued 300 units
 - 6 Returned to Store 10 units (Issued on 4th Dec.)
 - 7 Issued 100 units
 - 8 Issued 50 units
- On 10th, it was noticed that there is a shortage of 10 units.

PROBLEM NO: 18 (Base Stock-LIFO)

By solve the problem No: 18 under base stock LIFO method.

PROBLEM NO: 19 (HIFO)

Laxmi and Co. has purchased and issued material D as under.

1998.

- May 1 Opening stock 2,000 units at Rs. 5 per unit.
- 3 Purchased 500 units at Rs. 6 per unit.
- 7 Purchased 700 units at Rs. 6.50 per unit
- 10 Issued 800 units.
- 11 Purchased 300 units at Rs.8 per unit.
- 15 Purchased 200 units at Rs.7 per unit.
- 18 Issued 400 units.
- 25 Purchased 200 units at Rs.9 per unit.
- 28 Purchased 150 units at Rs.8.5 per unit.
- 30 Issued 200 units.

Ascertain the closing stock value under HIFO method of pricing of issues.

PROBLEM NO: 20 (Simple Average Method)

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 at Rs. 4.00 per unit.
- 13th Oct. purchased 900 units at Rs. 4.30 per unit
- 23rd Oct. purchased 600 units at Rs. 3.80 per unit

Issues:

- 5th Oct. issued 400 units.
- 15th Oct. issued 400 units.
- 25th Oct. issued 600 units

PROBLEM NO: 21 (Periodic Simple Average Price)

The following particulars are furnished in respect of a material;

- Jan 1 Stock on hand 100 units @ Rs.2 per unit
- 5 Purchases 200 units@ Rs.3 per unit.
- 10 Issues 120 units.
- 16 Purchases250 units@ Rs.3.20 per unit.
- 20 Issues150 units.
- 31 Purchases 100 units@ Rs.3.40 per unit.
- Feb 10 Issues300 units.
- 15 Purchases200 units@ Rs.3.60 per unit

20 Issues 150 units.

25 Purchases 100 units @ Rs.4 per unit.

Draw up stores ledger accounts for this material using Periodic Simple Average (for each month).

PROBLEM NO: 22 (Weighted Average Method)

By solve the problem No. 22 under the Weighted Average Method.

PROBLEM NO: 23 (Periodic Weighted Average Method)

Prepare a store ledger for the following receipts and issues under periodic weighted average system:

April 1 Purchases 6,000 units @ Rs.7 per unit.

April 10 Purchases 4,000 units @ Rs.5.50 per unit.

April 15 Purchases 3,000 units @ Rs.8.00 per unit.

April 20 Purchases 2,000 units @ Rs.8.50 per unit.

April 4 Issues 2,000 units

April 12 Issues 3,500 units

April 18 Issues 2,500 units

PROBLEM NO: 24 (Standard Price)

The purchases and issues of material X in the month of January were as follows:

Jan 3 Purchases 800 units @ Rs.20 per unit.

Jan 8 Purchases 700 units @ Rs.18 per unit.

Jan 9 Issues 600 units

Jan 11 Issues 800 units

Jan 17 Purchases 800 units @ Rs.20 per unit

Jan 25 Purchases 500 units @ Rs.25 per unit

Jan 31 Issues 600 units

The standard price per unit of material is Rs.20 fixed for the year. Show the Stores Ledger entries and determine the price variance for the month of January.

UNIT - II
LABOUR COST

INTRODUCTION:

Labour constitutes the second important major element of cost, but equally important is the cost of raw material. Material can be easily stored to be used as and when required but labour is a perishable commodity, which should it is a waste and ultimately the cost of production will be increased. Labour once appointed, cannot easily be removed. Therefore the right man at the job must be appointed.

Q. WHAT DO YOU MEAN BY DIRECT LABOUR?

MEANING OF DIRECT LABOUR:

The labour spent in altering the construction, composition, or condition of product i.e. converting raw material into finished product, is known as Direct Labour cost can easily identified and allocated to cost units.

Q. WHAT DO YOU MEAN BY INDIRECT LABOUR?

MEANING OF INDIRECT LABOUR:

Indirect labour cost is the amount of wages paid to workmen, who are not engaged in the production of goods or services, but at the same time, indirectly help the direct labour. In short wages paid such workers cannot be identified with any particular work. Examples of indirect labour cost are wages paid to supervisors, inspectors, watchmen, time keeper, repairers, cleaners etc.

Q. WHAT ARE THE IMPORTANCE OF LABOUR COST?

IMPORTANCE OF LABOUR COST

- Fair incentive wage plans can be established.
- Ideal time to men and machines can be known.
- Work method can be improved.
- Labour cost control can be easily exercised.
- Labour cost budget can easily be prepared.
- Percentage of spoiled work can be reduced.
- Lower direct and indirect cost.
- Increased moral of employees.
- Lower labour turnover.
- Better control of production.
- Adds to capacity to face competition.
- Standard time for a job can be determined.

Q. STATE THE MEANING OF LABOUR TURNOVER? AND EXPLAIN THE METHOD OF MEASURING LABOUR TURNOVER. (2/5 MARKS)

MEANING OF LABOUR TURNOVER:

Labour turnover may be defined as the rate of change in the labour force, i.e., it denotes the percentage of change in the labour force of an organization. In other words, it is a term used to describe the movement of shifting into and out of an organization by the employees.

METHODS OR MEASUREMENT OF LABOUR TURNOVER

There are three types of methods of measuring labour turnover:

1. Separation method
2. Replacement method
3. Flux method

• Separation method:

Under this method, labour turnover for any period is measured by dividing the total number of separation by the average number of workers on the roll, then multiply by 100. Thus

$$\text{Labour turnover} = \frac{\text{Number of separation during a period}}{\text{Average number of workers during the period}} \times 100$$

• Replacement method:

Under this method only the actual replacement of labour during a period is taken into account irrespective of the number of workers leaving. Thus

$$\text{Labour turnover} = \frac{\text{Number of replacement in a period}}{\text{Average number of workers in the period}} \times 100$$

When new recruitment is there for expansion purpose they should be excluded from the number of replacement.

• Flux method:

Labour turnover is obtained by dividing the total number of separations and replacement by the average number of workers. Thus

$$\text{Labour turnover} = \frac{\text{Number of additions} + \text{Number of separations}}{\text{Average number of workers during the period}} \times 100$$

Q. EXPLAIN THE METHOD OF REDUCTION OF LABOUR TURNOVER? (5 Marks)

METHODS OF REDUCTION OF LABOUR TURNOVER:

Following measures are suggested to management to maintain a happy and contented labour force.

- Better working conditions may be provided to workers.
- Selection of candidates must be made on the basis of scientific principles and workers must be placed on appropriate jobs.
- Well organized programmes must be chalked out to increase their efficiency.
- There must be a cordial relation between employer and employees.
- There must be job security and opportunities for career advancement.
- A good wages policy and incentive plans must be devised.
- An efficient grievance procedure is to be adopted.
- Labour participation in management must be encouraged.
- A good working condition conducive to health and efficiency should be provided.
- The personnel department must prepare a periodical reports relating to causes of labour turnover and suggest remedies.

Q. ENUMERATE THE CAUSES AND EFFECTS OF LABOUR TURNOVER? (5 Marks)

CAUSES AND EFFECTS OF LABOUR TURNOVER:

The causes can be broadly divided into two categories.

1. **Avoidable causes**
2. **Unavoidable causes**

❖ **Avoidable causes:**

- Dissatisfaction with job
- Dissatisfaction with wages.
- Poor working condition.
- Unsuitable working hours.
- Non-cooperative attitude
- Lack of promotions.
- Unfair method of promotion
- Unsympathetic attitude of management
- Inadequate protection.
- Weakness (employee – employer relations).
- Unrest situation
- Lack of knowledge about the work

❖ **Unavoidable causes:**

- Quitting the job (due to inefficiency)
- Lack of work
- Retirement or death
- Accident or illness.
- Marriage
- Disliking a job
- Personal department
- Worker's roving nature.
- National service.

❖ **Effects of labour turnover:**

- Fall in production.
- Increased in cost, selection, training etc.

- Dislocation of even flow of production.
- Increase of scrap, defective work, additional supervision etc.
- Higher accident rate.
- Mishandling of machines.
- Instability of labour & their low team spirit.

Q. WHAT DO YOU MEAN BY COST OF LABOUR TURNOVER? (2 Marks)

COST OF LABOUR TURNOVER:

❖ **Preventive cost**

These costs are incurred to prevent the labour turnover. They include administration cost, cost of health care facilities, cost of welfare facilities, old age facilities etc.

❖ **Replacement cost:**

These costs include recruitment and training cost, cost of machine break down, spares, tools etc.

Q. HOW TO CONTROL LABOUR COST (OR) METHODS OF LABOUR COST CONTROL? (5 Marks)

CONTROL OF LABOUR COST:

The control of labour is very important, engaging unfit person in the factory; result in poor output at high cost of production in the product find no place in the market or fetches less profits, and a time arrives when the industry has to be closed down. Therefore the management takes measures for an effective control on the labour. Labour cost includes monetary benefits and fringe benefits.

METHODS OF LABOUR COST CONTROL:

- ❖ The scientific methods of selection of personnel.
- ❖ Imparting training to them
- ❖ A good system of incentives
- ❖ Production planning made in advances.
- ❖ Time and motion studies which help to determine standards of time required for each job.
- ❖ A proper system of job evaluation.
- ❖ Introducing mechanical devices in labour costing.
- ❖ A good system of control over idle time and over time.
- ❖ A control labour turnover ratio.
- ❖ Co-ordination and co-operation among the workers of the concern.

Q. WHAT DO YOU MEAN BY JOB EVALUATION? EXPLAIN ITS ADVANTAGES. (2/5 Marks)

MEANING OF JOB EVALUATION:

Breach defines job evaluation as “Method of determining the relative worth of job on some scale usually by an analysis of the content of jobs under classified headings”. ICO states that “Job evaluation may be defined as an attempt to determine and compare the demand which the normal performance of the workers concerned”. Thus job evaluation is a systematic and orderly process of determining the worth of job in relation to other jobs.

ADVANTAGES OF JOB EVALUATION

- ❖ It helps in job classification and work simplification.
- ❖ It helps in bringing uniformity in wage structure.
- ❖ It facilitates cost control.
- ❖ It simplifies wage administration by bringing about uniformity in wage rates.
- ❖ There develops good relationship between employee and the employer as no scope is left for personal bias of the employer.

- ❖ It helps in avoiding anomalies, confusion, unrest etc.,

Q. WHAT DO YOU MEAN BY MERIT RATING? (2Marks)

MEANING OF MERIT RATING:

Merit rating may be defined as a systematic evaluation of an employee's performance on the job in terms of the requirements of the job. Merit rating aims at evaluating the employee's actual performance of a job. The main object of merit rating is that an employee is to be rewarded suitably, on the basis of merits. Higher wages naturally fetch sense of responsibility and trustworthiness in the minds of the workers. The relative worth of each job is ascertained carefully, studying the characteristics required for each workers.

- Educational qualification (knowledge, skill etc.)
- Experience in the work.
- Physical fitness.
- Discipline.
- Sense of responsibility.
- Attendance and regularity.
- Quality and quantity of the work.
- Sense of judgment.
- Initiative, leadership, reliability, integrity.
- Co-operation.

Q. EXPLAIN ITS MERITS AND DEMERITS. (5 Marks)

MERITS AND DEMERITS OF MERIT RATING:

Merits of merit rating:

- Promotion and wages rate are determined on sound basis.
- The employees are encouraged through a good system of reward and effort; thus further improvement is aimed at.
- It simplifies wages structure.
- Labour turnover is reduced.
- A sense of competition in the minds of workers is developed.
- Promotion or demotions or transfers are justified.

Demerits of merit rating:

- The worker may be rated high based on a single trait. The rater may ignore the other traits in which the worker may not be good.
- The difference of opinion between the members of merit rating committee may lead to unsatisfactory evaluation.
- The men doing the rating may be influenced by their personal feelings towards particular workers which may lead to unsatisfactory rating.

Q. EXPLAIN THE MEANING OF REMUNERATION? (2Marks)

MEANING OF REMUNERATION:

Remuneration is a reward for the labour and service. Labour are two kind-direct and indirect. Both kind of labour are employed in an organization. They are to be paid remuneration for the services rendered by them. Labour costing is the responsibility of the cost Accounting Department. In order to prepare pay-rolls labour hours are to be converted into money at the rate prevalent.

Q. WHAT ARE THE ESSENTIAL OR FEATURES OF GOOD WAGES SYSTEM? (5 Marks)

ESSENTIAL OR FEATURES OF GOOD WAGES SYSTEM:

- The wage system adopted must be simple so that the workers may be able to understand it.
- The system must ensure satisfaction to both the employees and the employer.
- It should be based upon scientific time and motion study.
- It should guarantee a minimum wage at satisfactory level.
- It should enable an efficient worker to earn more.
- It should reduce labour turnover.
- It must be accepted by trade unions.
- It must increase the morale of the employees.
- It should be according to the capacity to pay.
- It should be flexible to adjust to the changes in the cost of living.
- The cost of the scheme must be minimum level.
- It should encourage productivity.
- It should not be in violation of Government policy.
- It should minimize absenteeism.
- The method should be correlated to the capacity of the firm to pay.

Q. DISCUSS THE DIFFERENT METHODS OF WAGE PAYMENT TO WORKER? EXPLAIN MERITS AND DEMERITS OF TIME RATE SYSTEM. (10 Marks)

METHODS OF WAGE PAYMENT:

For convenience, the various method of remuneration may be divided as follows:

I) TIME RATE SYSTEM OR DAY RATE OR FLAT RATE:

This is the simplest, oldest and the most common method of wages payment. Under this method the wages are calculated on the basis of time spend on a job irrespective of the volume of output.

The time may be an hour, a day, a week or a month. Total amount of wages is calculated by multiplying time rate with the time spend.

$$\text{Wages} = \text{Time worked} \times \text{Rate of wages}$$

❖ **Time rate at ordinary level:**

Under this method payment is made on the basis of time, which may be an hour, day, week or a month, irrespective of the output. It means that a definite amount of payment is guaranteed for the specified period.

$$\text{Earnings} = \text{Hours worked} \times \text{Rate per hour}$$

❖ **Time rate at high level:**

In this case the time rate is fixed at a level higher than the rate prevailing in the locality for similar employment. Consequently a high standard of efficiency and output are fixed for the workers. If any worker cannot attain that level of efficiency, he is excluded from the scheme and is paid only ordinary time rate.

❖ **Guaranteed time rate:**

Under this system payment is at time rates, but adjusted to cost of living. Merit awards for personal qualities, skill, ability, punctuality, etc., are also considered. The employer is not losing but compensates, it by increasing the price of the products.

❖ **Differential time rate:**

Under this system different time rates are fixed for different level of efficiency. A percentage of efficiency is fixed, up to which a worker gets normal time rate. If he crosses that percentage of efficiency his time rate shall increase step by step.

ADVANTAGES OF TIME RATE SYSTEM:

1. Simplicity
2. Security to workers
3. Equality of wages
4. Better quality
5. Less wastage
6. Acceptable to trade unions
7. Adaptability

❖ **Simplicity:**

An important advantage of time rate system is its simplicity. It is very easy to measure the time spent on the job and to calculate the amount of wages earned.

❖ **Security to workers:**

It gives the worker a feeling of security as he known in advance what will be his total remuneration at the end of the period. This will give him an assurance and he can plan his own expenditure accordingly.

❖ **Equality of wages:**

All workers doing similar jobs get the same rate of wages and a sense of equality prevails among the workers. This sense of equality among the workers helps in the smooth working of the organization.

❖ **Better quality:**

There the quality of products is more important than quantity, time rate is more advantageous.

❖ **Less wastage:**

Under this time rate, the workers need not speed up their operations to earn higher wages. So there will be less wastage of material and less wear and tears of tools and machinery.

❖ **Adaptability:**

This system can be adapted to all kinds of work. Even if a worker does a variety of jobs, he can be compensated on time wages basis.

❖ **Acceptable to trade unions:**

Labour unions always prefer time wages since this form of payment does not make any discrimination between efficient and inefficient workers. This method ensures stable income to all the employees.

DISADVANTAGES OF TIME RATE SYSTEM:

1. Inefficiency
2. Lack of motivation
3. Increased supervision

❖ **Inefficiency:**

This system does not check employees' inefficiency as there is no link between wages and productivity. The workers may deliberately show down the pace of work.

❖ **Lack of motivation:**

This system does not provide any incentive of efficiency. Both efficient and inefficient workers are treated alike.

❖ **Increased supervision:**

Time rate system leads to lower productivity so; strict supervision is required to ensure better productivity.

II) PIECE RATE SYSTEM (PAYMENT BY RESULT):

Here speed is the basis of payment, instead of time. This system is opposite to time wage system according to this system, the volume of work done is the basis for payment of wages to workers. Efficiency is recognized in this system. The worker gets payment according to his speed, ability, efficiency etc. A specific rate is fixed per unit of output, and the workers are paid accordingly, irrespective of the time taken by him.

This method is applicable where:

- ❖ Quality of the work is not important.
- ❖ Work is of a repetitive nature.
- ❖ Job rate can easily be fixed.
- ❖ There is good demand and Job is standardized one.

ADVANTAGES OF PIECE RATE SYSTEM:

- ❖ The output is increased.
- ❖ The system works as an incentive to workers.
- ❖ Efforts and rewards are correlated.
- ❖ Efforts and rewards can be made confidentially and accurately.
- ❖ Supervision work is low.
- ❖ Breakage of machine will reduce wages; hence machines are handled with care.
- ❖ Idle time has no place.
- ❖ The worker develops skill and zeal to work.
- ❖ The rate of fixed overhead is reduced.

DISADVANTAGES OF PIECE RATE SYSTEM:

- ❖ Workers are always in hurry, hence accidents may happen.
- ❖ Quality of the products will be examined, as workers are interested in quantity; as a result overhead cost increase.
- ❖ In efficient workers will be thrown out.
- ❖ High speed work is injurious to the health of the workers.
- ❖ In order to maximize production, it is possible that machines are used recklessly.
- ❖ Breakdown of machine or power failure may disappoint the workers.
- ❖ When there is less demand, over production may arise.
- ❖ Fixation of a satisfactory piece rate is a difficult task.
- ❖ It is possible that material may be wasted or spoiled, as the workers are only anxious about speed.

TYPES OF PIECE RATE SYSTEM:

❖ **Straight piece rate:**

Under this system the workers gets a flat rate per unit of output. His earnings i.e.,

Piece working earnings = Rate per unit X Unit produced

❖ **Piece rate with guaranteed time rate:**

Under this system a worker gets a fixed amount of wages and he is also paid for the performance beyond a prescribed limit.

❖ **Differential piece rate:**

Under this scheme, the rate per piece is increased, as the output level is increased. That is, there is more than one-piece rate system. In other words, the increase in rates may be proportionate to the increase in output. By this system, inefficient workers are encouraged to earn more.

❖ **Taylor’s differential piece rate system:**

F.W. Taylor, the father of scientific management, introduced this system.

According to this system:

- There are two piece rate systems – one is lower and the other one is higher.
- Lower price rate is the output below standard and a higher piece rate is for the output above the standard.
- For each job standard time is stipulated.

Level of efficiency	Piece rate
----------------------------	-------------------

Below standard	83% of ordinary piece rate
Above standard	175% of ordinary piece rate

❖ **The Merrick's differential piece rate (or) multiple piece rate system:**

It is a modification of Taylor system, in order to reduce penalization of slow workers. Thus, these people are encouraged. Therefore, he introduced three rates in place of two. They are:

Level of efficiency	Piece rate
Up to 83%	Ordinary piece rate
83% to 100%	110% of ordinary piece rate
Above 100%	120% of ordinary piece rate

❖ **Gantt task and bonus plan:**

This is combination of time, bonus and piece rate plan based on the differential piece rate principles. A bonus of 20% of time rate is paid when output is achieved, thereafter high piece rate is paid. A standard is set and remuneration is calculated as follows:

Level of efficiency	Piece rate
Below standard	Payment at time rate
At standard	payment at time rate plus 20% bonus
Above standard	High piece rate

Q. DISTINGUISH BETWEEN TIME RATE SYSTEM AND PIECE RATE SYSTEM. (5 Marks)

DIFFERENCE BETWEEN TIME & PIECE RATE SYSTEM:

Time rate system	Piece rate system
It is simple to calculate and easy to understand	The rates have to be carefully fixed so as to avoid possible loss to management.
This pertains to hours of work	This pertains to output
General supervision is needed	Careful supervision is needed
It does not promise efficiency	It promise efficiency in working
Individual efficiency is not looked upon	Individual efficiency is measured and accounted for
Cost reduction is not possible	Cost reduction is possible
Benefit of efficient worker goes to the employer	Benefit of efficient workers is shared by the worker and the employer
There arises more idle time	There is no chance of idle time

Q. EXPLAIN THE VARIOUS INCENTIVE SCHEMES (OR) BONUS METHOD OF PAYMENT TO WORKERS? (10 Marks)

VARIOUS INCENTIVE SCHEMES OR BONUS METHODS:

The system of wage payment is of two types-time rate system and piece rate system. In the plan of incentive wage payment both time and piece rate are blended together. Under time rate system, the worker is not benefited for time saved. Under piece rate system the cost per unit falls even though labour remains constant. The purpose of this scheme is to overcome the limitation of both the system. In order to increase the production through encouragement the benefits are shared by employer and the employee. Before the introduction of incentive plant the following factors may be taken into consideration:

- It must be simple and understandable to workers.
- It must be fair to both – employer & employee.
- The standard should be fixed by time and motion study.

- Standard once fixed may not be altered.
- The cost of operating the scheme should be minimum.
- The work must be repetitive by nature.
- The workers should not raise objections.
- The system must be permanent; once introduced should not be discounted.
- The system should also benefit the indirect workers.
- It must reduce labour turnover.
- Employer – employee – customers are to be benefited.

The various schemes and premium bonus plans should combine time wages and piece rates. The chief schemes of them are:

A) Halsey premium plan:

This system is also known as split bonus plan or fifty-fifty plan. The plan was introduced by F.A.

Halsey, an American engineer. In the plan, the task time is decided on the basis of past experience and scientific studies are set. Under this plan a standard time is fixed for the performance of each job, and the worker is paid the agreed rate per hour for the time spend thereon plus a fixed percentage (may be 50%) of the time be saved on the standard.

$$\text{Total earnings} = (\text{Time rate} \times \text{Time taken}) + 50\% \text{ of } (\text{Time saved} \times \text{Time rate})$$

$$\text{(or) Time wages} + 50\% \text{ of time saved} \times \text{Time rate}$$

$$\text{Time saved} = \text{Standard time} - \text{Actual time}$$

Main features:

- Standard time for each job is fixed.
- Time rate is guaranteed.
- 50% of the time saved plus normal earnings go to worker.

Merits:

- It is simple to understand and easy to calculate.
- Standard time is fixed for each job or operation.
- Both employer and employee get equal benefit from time saved by the workers.
- It can be easily introduced in any modern industry.
- It provides incentive to efficient workers, at the same time below – average. Workers are not penalized.
- Savings in time reduce both labour cost and overhead expenditure.
- The system is based on time saved and not on output; thus prevents over production.

Demerits:

- Fixation of standard is very difficult.
- If wages rate is low, incentive value may be low.
- Careful supervision is necessary.
- Earnings are reduced at high level efficiency.

B) Halsey weir plan:

Here the workers gets a bonus of 30% of the time against 50% in the halsey plan. Except this point, halsey plan and halsey-weir scheme are similar.

C) Rowan system:

This scheme was introduced in the year 1991 by David Rowan of Glasgow. The guidelines of Halsey plan have been followed. It is similar to that of Halsey plan except in regard to the determination of bonus

(calculation). Under this plan the bonus is that proportion of the wages of the time taken which the time saved bears to the standard time allowed.

$$\text{Earnings} = \text{Time taken} \times \text{Time rate} + \frac{\text{Time allowed} - \text{Time taken}}{\text{Time allowed}} \times \text{Time taken} \times \text{Time rate}$$

(or)

$$\text{Earnings} = \text{Time wages} + \frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time wages}$$

Merit

- s:**
- It assures the minimum time wages.
 - Standard time is fixed; hence rates will not be changed.
 - It is suitable for learners and beginners.
 - The workers benefit with the employers.
 - The employer is protected even if the rate is not properly fixed.
 - It plays higher bonus to workers compared to Halsey plan.
 - Since bonus decline, at higher level of efficiency, the workers are not tempted to rush work thus over-production can be avoided.

Demerits:

- It is difficult to understand and calculate.
- This affects extraordinary efficiency as if the time saved is more than half; the total earning start decreasing i.e. efficiency beyond certain point is not rewarded.
- The system is more complex and expensive.

D) Barth variable sharing plan:

Under this plan wages are not guaranteed. This system is suitable to beginners and learners. The earning is computed by multiplying the rate per hour by the geometric mean of standard hour and actual hours worked. Thus,

$$\text{Wages under Barth plan} = \text{Time Rate} \times \sqrt{\text{Standard time} \times \text{Actual time}}$$

E) Emerson efficiency bonus plan:

It is similar to piece rate system but provides a guaranteed time rate. Incentive bonus paid at both low and high task level.

Level of efficiency	Piece rate
Below 66 2/3%	No bonus (only time wages)
66 2/3% to 100%	Bonus increase in steps and rises to 20% at 100 % efficiency
Over 100%	20% bonus plus 1% bonus for cash increase of 1% inefficiency

F) Bedaux point premium system:

It is a premium bonus system which uses minimum as the point and the standard time allowed is known as Bedaux point. Each job is allowed a number of points based on the standard time determined by means of time and motion study. Time rate is guaranteed and in addition a bonus equivalent to 75% of the points saved is allowed.

$$\text{Bonus} = 75\% (\text{Standard points} - \text{Actual points}) \times \text{Rate per min.}$$

- **Accelerating premium bonus plan:**

Under this plan bonus is paid to workers at an increased rate according to more and more time saved instead of as a fixed percentage under Halsey plan and as a decreasing percentage under Rowan plan. This provides a great inducement to workers to achieve the goal of higher production.

➤ **Group bonus system:**

These systems are employed to provide incentive to a group of workers whose individual efforts are difficult to measure or have little effect on the output of the group. The bonus payable is determined on the basis of collective output of the group and is shared in equal proportions by the workers of the group.

Q. WHAT IS IDLE TIME? WHAT ARE THE CAUSES FOR IDLE TIME? EXPLAIN THE TYPES OF IDLE TIME. (2/5 MARKS)

MEANING OF IDLE TIME:

When workers spend their whole time at different jobs, then the time booked for jobs must agree with the gate time. Ordinarily the time booked for job does not agree with the gate time. It so happens, because of reasons like, waiting for material, machine breakdown, waiting for instruction, power failure etc., and reconciliation of gate time with time booked is facilitated by preparing on idle time card. The idle time card shows the time which has been lost and the reasons thereof.

TYPES OF IDLE TIME:

Idle time is of two types namely

- Normal idle time and
- Abnormal idle time.

Normal idle time:

Normal idle time (or) the time wasted by the worker cannot be avoided. This must be borne by the employer.

Abnormal idle time:

It is the wasted time, which can be avoided.

REASONS OR CAUSES OF IDLE TIME:

- Power failure
- Waiting for work
- Waiting for instruction
- Waiting for tools
- Machine breakdown.
- Bad planning of work
- Accidents, strikes etc.,
- Time worked in changing from one job to another
- Seasonal nature of industry
- Time taken to reach the department form gate.

CONTROL OF IDLE TIME:

Following steps are suggested to control idle time.

- Vigilance must be exercised to control and eliminate idle time.
- The instruction to the workers should be given in advance so that workers need not wait.
- Plant and machine should be maintained properly so that their breakdown can be avoided.
- The causes of the idle time should be found out and the root cause must be removed.
- Regular and timely supply of raw material must be made available through a good system of storing materials.

**Q. EXPLAIN THE PROCEDURE FOR RECORDING OF LABOUR TIME AND IDEAL TIME.
(2/5/10 MARKS)**

RECORDING OF LABOUR TIME AND IDLE TIME

TIME KEEPING:

Time keeping is the recording of each worker's time of coming in and going out of the factory for the purpose of attendance and wage calculations.

THE OBJECTS OF TIME KEEPING ARE:

- The wages of time workers can be correctly calculated.
- The record of attendance meets the statutory requirements.
- It ensures punctuality and discipline.
- The waste of time or idle time of workers can be known.
- Cost of labour chargeable to the job, product or process can be ascertained.
- In certain cases, it helps in charging of overheads on the basis of wages.
- It helps in reducing the idle time and idle resources in the concern.

METHODS OF TIME KEEPING:

Time keeping methods are broadly classified into Manual methods and Mechanical methods. The methods which are done by human effort are said to be manual whereas the methods undertaken with the help of machines are mechanical methods.

• **Manual methods:**

The manual methods of time keeping are as follows:

❖ **Attendance register or muster roll:**

This is an old system of time keeping. At the factory gate or department, attendance register is kept under the custody of the time keeper. The register contains name of the workers, identification number, time of arrival and departure. The employees may be required to sign the register both at the time of entering and leaving the factory, noting down the time in and time out.

❖ **Token or discs method:**

Under this method, each worker is allotted a token or disc bearing his identification number. All such tokens or discs are hanged on a board near the main gate in a serial order. As and when the worker enters, he removes his token from the board and puts it in a box kept nearby. The box is removed after the grace period. Late comers will have to give their tokens to the time keeper personally, so that the exact time of arrival may be noted. The tokens still left on the board represent the absentee workers. With the help of the token in the box, the time keeper records the attendance in a register.

• **Mechanical methods:**

The mechanical methods of time keeping may be as follows:

❖ **Card time recorder:**

Each worker is given a clock time card bearing his identity number and other details. The machine may be installed at the factory gate. There will be a rack placed inside as well as outside gate. The clock time cards are serially arranged and kept in outer rack. When a worker enters the factory, he takes his card and inserts it into the machine which marks the exact time of his arrival. Late arrivals are marked in red ink. Then, the card is deposited in the inside rack. While going out, the same procedure is repeated.

❖ **Ideal time recorder:**

This recorder has a clock like face with several holes (about 150) around it. Each hole is serially numbered and each worker is allotted one hole. There is an arm at the centre of the dial. When the worker enters into the factory, he has to press the dial arm after placing it in the hold allotted to him. His incoming time is recorded along with his number on the paper roll kept inside the machine. Similarly, outgoing times are recorded.

TIME BOOKING:

A worker is not paid for his mere attendance in the factory. He is paid for the work he does or the time he works. The process of recording the time spent by a worker on different jobs is known as time booking.

OBJECTS OF TIME BOOKING:

- To ascertain the labour cost of each job;
- To ensure that the time for which the worker has been paid is properly utilized;
- To ascertain the idle time so as to control it;
- To provide basis for the apportionment of overhead expenses to various jobs;
- To compare the actual time taken and time allowed for a job so as to know the efficiency of workers and to pay bonus.

METHODS OF TIME BOOKING:

❖ Daily time sheet:

In small concerns, a daily time sheet is allotted to each worker. In it, he enters daily the time spent by him on each job and hands it over to the foreman for verification and signature.

❖ Weekly time sheet:

The purpose of this time sheet is the same as that of daily time sheet. Weekly time sheet is allotted to each worker for a week. In it, he enters the time spent by him on each job during the week.

❖ Job card:

Under this system a separate card is issued for each job. The card contains columns to record the time spent by a worker on each job. It helps to ascertain the labour cost of each job. It also contains instructions for doing the job.

Q. HOW DO YOU TREAT IDLE TIME IN COST ACCOUNTS? (5 MARKS)

ACCOUNTING TREATMENT:

NORMAL IDLE TIME:

The cost of labour of normal idle time can be treated in two ways.

- ★ A worker has to work for 8 hours a day's but he actually puts in only 7 ½ hours on job and half an hour is wasted. The labour cost of the normal idle time (here half an hour), may be charged to factory on cost and 7 ½ hours to the job concerned.
- ★ The hourly rate may be raised and the cost of complete labour may be charged to the job concerned. This is preferred.

ABNORMAL IDLE TIME:

Abnormal idle time expenditure or cost should not be included in cost. Such labour cost on account of abnormal nature may be debited to costing profit and loss account.

PROBLEMS ON LABOUR TURNOVER

PROBLEM NO: 1

From the following particulars supplied by the personal department of a fire, calculate labour turnover:

- 1) Separation method, 2) Replacement method and 3) Flux method

Number of employees at the beginning of the month	2010
Number of employees who are recruited during the month	30
Number of employees who are left during the month	50
Total number of employees at the end of the month	1990

PROBLEM NO: 2

The personal department of a concern gives you the following information in respect of labour.

No. of employees on 1 st Jan.	1800
No. of employees on 31 st Jan.	2200

During the month 20 persons quit and 80 persons are terminated. 300 workers are needed. Of these, 50 workers are recruited in the vacancies and the rest were engaged in the expansion scheme. Calculate the labour turnover: 1) Separation method, 2) Replacement method and 3) Flux method.

PROBLEM NO: 3

From the following data given by the Personnel Department, calculate the labour turnover rate by applying:

a) Separation method, b) Replacement method and c) Flux method

Number of employees at the beginning	900
Number of employees at the end	1100
Number of employees left	10
Number of employees discharged	40
Number of employees recruited (out of these 25 workers are replaced)	150

PROBLEM NO: 4

From the following information calculate the labour turnover by applying.

1) Separation method, 2) Replacement method and 3) Flux method

Number of workers at the beginning of the period:	3800
Number of workers at the end of the period	: 4200
Number of workers left	: 40
Number of workers discharged	: 160

600 workers are recruited, of these 150 are recruited to fill up vacancies and the rest are engaged on account of an expansion scheme.

LABOUR COST METHOD

PROBLEM NO: 5

From the following data, prepare a statement showing the cost per day of 8 hours of engaging a particular type of labour:

a) Monthly salary (basic plus dearness allowance)	Rs.1400
b) Employer's contribution to Provident fund	8% of salary (items a and c)
c) Leave salary payable to workmen	5% of salary
d) Employer's contribution to State Insurance	2 1/2% of salary (items a and c)
e) Pro-rata expenditure on amenities to labour	Rs. 20 per head, per month
f) No. of working hours in a month	200

PROBLEM NO: 6

From the following particulars given next, calculate the labour cost per man-day of 8 hours.

a) Basic salary	Rs. 75 per day
b) Dearness allowance	20 paise for every point over 100 costs of

c) Leave salary	living index for workers. Current cost of living index is 800 points.
d) Employer's contribution to Provident Fund	5% of (a) and (b)
e) Employer's contribution to State Insurance	8% of (a) and (b)
f) No. of working days in a month	5% of (a), (b) and (c)
	25 days of 8 hours each.

PROBLEM NO: 7

From the following particulars given next, calculate the labour cost per man-day of 8 hours.

a) Basic salary	Rs. 100 per day
b) Dearness allowance	2.50 paise per every point over 100 costs of living index for working class current index is 700 points.
c) Leave salary	10% of (a) and (b)
d) Employer's contribution to Provident Fund	8% of (a) and (b)
e) Employer's contribution to State Insurance	2.5% of (a), (b) and (c)
f) Expenditure to amenities to labour	25 days of 8 hours each.
g) No. of working days in a month	Rs. 200 per head per month. Rs. 25 days of 8 hours.

NORMAL AND OVERTIME WAGES METHOD

PROBLEM NO: 8

Calculate the normal and overtime wages payable to a workman from the following data:

Days	Hours worked
Monday	8
Tuesday	12
Wednesday	10
Thursday	10
Friday	9
Saturday	4
Total	53

Normal working hours – 8 hours per day; On Saturday-4 hours; Normal rate – 2 per hour.

Overtime rate – Up to 9 hours in a day a single rate and over 9 hours in a day at double rate or up to 48 hours in a week at single rate and over 48 hours at double rate, whichever is more beneficial to the workers.

TIME WAGES AND PIECE WAGES METHOD

PROBLEM NO: 9

Mr. A a worker in a factory is paid on time basis. During the month of October 99 he has worked for 200 hours. His hourly wages tare is Rs. 10 per hour.

Mr. B another employee of the company is paid on the basis of piece wages. During the month of January 99 his output was 1,000 units. Rate of wages per piece is Rs.3.

Calculate the wages of respective workers for the month of October 99.

PROBLEM NO: 10

The output of the worker A is 60 units in a 40 hour week. Guaranteed time rate is `5 per hour. Ordinary piece rate is `2 per units. Show the earnings of worker A under time rate and piece rate system.

PROBLEM NO: 11

The output of a worker X is 100 units in 40 hours per week. Graduated time rate is `4 per hour. Ordinary piece rate is `2 per unit. Show the earnings of the worker under piece rate and time rate system.

TAYLOR'S DIFFERENTIAL PIECE RATE SYSTEM**PROBLEM NO: 12**

On the basis of the following information, calculate the earnings of X and Y under the Straight Piece Rate System and Taylor's Differential Piece Rate System:

Standard production: 10 units per hour

Normal time rate: Rs. 5 per hour

Differential piece rate to be applied:

80% of piece rate for below standard performance

120% of piece rate for performance at or above the standard.

Actual performance:

X produced 80 units in a day of 10 hours.

Y produced 110 units in a day of 10 hours.

MERRICK DIFFERENTIAL PIECE RATE SYSTEM**PROBLEM NO: 13**

On the basis of the following information, calculate the earnings of A, B, C and C under Merrick Differential Piece Rate System. When basic piece rate is guaranteed below standard and the workers get 108% of basic piece rate between 100% to 120% efficiency and 120% of basic piece rate above 120% efficiency.

Standard production per hour : 12 units

Normal rate per unit : Re 0.60

In an 8-hour day

A produced - 64 units, B produced - 96 units, C produced - 84 units, D produced - 100 units.

PROBLEM NO: 14

On the basis of the following information, calculate the earnings of A, B, C and C under Merrick Differential Piece Rate System. When basic piece rate is guaranteed below standard and the workers get 108% of basic piece rate between 100% to 120% efficiency and 120% of basic piece rate above 120% efficiency.

Standard production per hour : 10 units

Normal rate per unit : Re 6

In an 8-hour day

A produced - 65 units, B produced - 97 units, C produced - 72 units, D produced - 100units.

GANTT'S TASK BONUS PLAN METHOD**PROBLEM NO: 15**

The following are the particular applicable to a work process: Time rate Rs. 5 per hour.

High task: 40 units per week.

Piece rate above the high task: Rs.6.5 per unit.

In a 40 hour week, the production of the worker was as follows:

A – 35 units; B – 40 units; C – 41 units; D – 52 units.

Calculate the wages of the workers under Gantt's task bonus plan.

PROBLEM NO: 16

The following are the particular applicable to a work process: Time rate Rs. 5 per hour.
High task: 42 units per week.
Piece rate above the high task: Rs.10.5 per unit.
In a 40 hour week, the production of the worker was as follows:
S – 37 units; T – 42 units; U – 48 units; V – 56 units.
Calculate the wages of the workers under Gantt's task bonus plan.

HALSEY PLAN METHOD

PROBLEM NO: 17

Calculate earnings of a worker under Halsey Premium Plan.
Time allowed – 48 hours; Time taken – 40 hours; Rate per hour – Rs.10.

PROBLEM NO: 18

A worker is paid at 25 paise per hour for completing a work within 8 hours. If he completes the work within 6 hours, calculate his wages under Halsey plan when the rate of premium is 50%. Also ascertain the effective hourly rate of earning by the worker.

HALSEY-WEIR PLAN METHOD

PROBLEM NO: 19

Calculate earnings of a worker under Halsey -weir scheme.
Time allowed – 48 hours; Time taken – 40 hours; Rate per hour – Rs.10.

PROBLEM NO: 20

Calculate earnings of a worker under Halsey -weir scheme.
Time allowed – 46 hours; Time taken – 37 hours; Rate per hour – Rs.8.

ROWAN PLAN METHOD

PROBLEM NO: 21

The following particulars apply to a job:
Standard time – 10 hours; Time taken – 8 hours; Time rate – Rs.2 per hour;
Calculate the earnings under Rowan plan.

PROBLEM NO: 22

Calculate the total earnings and the rate earned per hour of three workmen under the Halsey and Rowan plans; the bonus 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; C-8 hours.

PROBLEM NO: 23

Calculate the earnings of a worker A under a) Halsey plan and b) Halsey -weir scheme c) Rowan plan.
Information given: Time allowed – 48 hours; Time taken – 40 hours; Rate per hour Rs.1.

PROBLEM NO: 24

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.

BEDAUX POINT SCHEME

PROBLEM NO: 25

Standard time allowed for a job is 20 hours; Time taken for completion is 16 hours. Rate per hour is Rs.20.

Find total earnings as per Bedaux scheme.

BARTH SCHEME**PROBLEM NO: 26**

Calculate earnings of a worker under Barth plan if the time allowed is 48 hours, actual time is 40 hours and rate per hour is Rs.10.

PROBLEM NO: 27

Calculate wages according to the Barth system. Standard time is 10 hours, Actual time is 8 hours and Rate per hour is Rs.5.

PROBLEM NO: 28

Calculate earnings of a worker under Barth premium plan, if the standard time is 12 hours, standard rate per hour is Rs.0.50 paise, actual time taken: A- 16 hours, B- 12 hours and C-8 hours.

EMERSON'S EFFICIENCY PLAN METHOD**PROBLEM NO: 29**

Standard output per day of 8 hours is 16 units. Actual output of a worker for 8 hours is 20 units. Rate per hour is Rs.10. Calculate the wages payable to the workers according to the Emerson's efficiency plan.

PROBLEM NO: 30

In a manufacturing concern the daily wages guaranteed to workers is Rs.40. The standard output for the month is 1000 articles representing 100% efficiency. The rate of wages is paid without bonus to those workers who show up to 66 2/3 % efficiency. Beyond this, bonus is payable in graded scale:

Efficiency	Bonus
90%	10%
100%	20%

Further increase of 1% of bonus for every 1% further rises in efficiency.

Calculate the wages earned by A, B, C and D who has worked 26 days in a month and their output was 500, 900, 1000 and 1200 respectively.

OVERHEADS**INTRODUCTION:**

Generally speaking, any expenditure incurred over and above prime cost is known as overhead. It has been defined as the aggregate of Indirect material, Indirect wages and Indirect expenses. The term 'Indirect' here means that which cannot be allocated, but which can be appropriate to, or absorbed by cost centers or cost unit. Overheads is also known as 'overhead cost', 'overhead charges', 'non-productive cost', 'burden', 'loading', 'on cost', 'supplementary cost' etc.

Q. DEFINE OVERHEAD. (2Marks)**DEFINITION OF OVERHEAD:**

Wheldon says Overhead may be defined as "the cost of direct material, indirect labour and such other expenses including services as cannot be conveniently charged to a specific unit. Alternatively, overhead are all expenses, other than direct expenses".

Broker and weltmer defined “overhead costs are operating costs of a business enterprise, which cannot be traced directly to a particular unit of output. Further, such costs are invisible or unaccountable”.

Q. EXPLAIN THE CLASSIFICATIONS OF OVERHEAD. (5/10Marks)

CLASSIFICATIONS OF OVERHEAD:

There are various methods of classifying or grouping overhead which greatly depend upon the objectives of classification, the type or size of the firm. Generally the following is the classification according to:

1. According to nature:

➤ **Indirect material:**

The cost of material which cannot be allocated to a particular unit and does not form part of the finished product is termed as indirect material.

➤ **Indirect wages:**

All labour charges which cannot be allocated to a particular unit of cost is called Indirect labour or wages.

➤ **Indirect expenses:**

Most items of expenditure are classified as indirect since they are incurred for the business as a whole, rather than in regard to a particular product.

2. According to function:

➤ **Production overheads:**

They are also called work overhead or factory overhead. It is aggregate of indirect expenses of operating the manufacturing division of a concern and includes all expenses incurred by the concern from the time of the receipt of the order till its completion ready for dispatch.

➤ **Administrative Overheads:**

It is the cost of formulating the policy, directing the organization and controlling the operation of an undertaking which is not related to production, selling and distribution research and development activity or function.

➤ **Selling overheads:**

It means the cost of seeking to create demand and stimulate demand in securing orders for the product.

➤ **Distribution overheads:**

It means expenses connected with or incurred from the stage the production is completed in works until it reaches its destination. Distribution expenses relate to the total indirect cost associated with the distribution of finished products.

3. According to variability:

➤ **Fixed overheads:**

They are constant or called period cost and remain fixed in nature and do not vary with changes in the volume of output.

➤ **Variable overheads:**

This type of overhead varies with a change in the volume of output, but not in such a proportion as the output changes.

➤ **Semi- variable overheads:**

This type of overhead varies with a change in the volume of output, but not in such a proportion as the output changes.

4. According to Normality:

They are normal and abnormal overhead. Normal overhead expenses are expected to be incurred in attaining a given output. These are unavoidable. These can be included in production cost. Abnormal costs are those which are not expected to occur in attaining a given output.

5. According to Control:

It is known as control-wise classification. It may be controllable costs. Controllable costs are those costs which can be controlled by an efficient management.

Q. WHAT DO YOU MEAN BY DEPARTMENTS? (2Marks)

A factory may be divided and subdivided into departments for smooth and efficient functioning. The sub division is done in such a manner as to represent the functions or the activities such as stores department, workshop, cash department, costing department etc

Q. WHAT ARE THE DIFFERENT TYPES OF DEPARTMENTS? (5Marks)

TYPES OF DEPARTMENTS:

• **Production departments:**

Where actual activity is undertaken in these department the raw material are converted into finished goods with the help of manual and machine operations. The number and nature of such departments depends on the type of the industry.

• **Service departments:**

There is no production activity but they render service for the benefit of other departments. Depending on nature of industry, size of the factory and nature of service to be rendered, a company may have four service divisions, viz., Productive, Plant, General and administrative.

i) **Production services:**

Planning, receipt of material and material handling.

ii) **Plant services:**

Plant maintenance, tooling, plant protection, sanitation and safety.

iii) **General services:**

Welfare, personnel, inspection, purchasing, general manager and works manager.

iv) **Administrative services:**

Budgeting, general accounting, invoicing and cost accounting.

• **Partly producing departments:**

The nature of work done by these departments is such that it is not possible to place them into a particular category of either production or service.

Q. WHAT IS MENT BY COST ALLOCATION? (2Marks)

MENING OF COST ALLOCATION:

Cost allocation may be defined as the allotment of whole items of cost centers or cost unit. The nature of expenses is such that is can easily be identified and allocated to a cost centre. For example, salary paid to the sales manager is allocated to the sales department.

Q. WHAT DO YOU MEAN BY APPORTIONMENT OF OVERHEAD? (2Marks)

MEANING OF APPORTIONMENT OF OVERHEAD:

Apportionment means proportional allotment of overhead expenses which cannot be wholly charged to a particular department. The ICMA terminology defines it as “the allotment of proportions of items of cost to cost centre or cost unit”.

There are certain expenses which require division or apportionment over two or more cost centers or units. Apportionment requires a proper assessment of the “benefits received” by various cost centres from each common overhead. The benefit received need not be uniform for all items of expenses sometime, the ability of the department to bear such share of overhead is taken as the basis of apportionment.

Q. DISTIGUISH BETWEEN COST ALLOCATION AND APPORTIONMENT OF OVERHEAD. (5Marks)

DIFFERENCE BETWEEN COST ALLOCATION AND APPORTIONMENT OF OVERHEAD

S.NO	COST ALLOCATION	APPORTIONMENT OF OVERHEAD
1	It is the allotment of whole item of cost to cost centers or cost units	It is the allotment of proportion of items of cost-to-cost centers or cost units.
2	There is no need of a basis for the allocation of overheads to departments	There is the need of some suitable basis for the apportionment of overheads
3	The items of overheads are directly attributable to particular department or cost centre.	The items are shared by two or more departments. So they are indirect in nature.
4	Cost control is more easy as overheads are identified with each department	Cost control is difficult as overheads are not identified with specific department.

Q. EXPLAIN THE PROCEDURE OF LINKING OVERHEADS TO COST UNITS. (5Marks)

PROCEDURE OF LINKING OVERHEADS TO COST UNITS:

In order arrive at the total cost of production, overhead is added to the prime cost. The overhead, being common/general costs incurred for number of units/cost centers, is to be allocated and apportioned to various departments are then to cost centers and finally absorbed by cost units. Thus procedure involved for the final absorption is as under:

- ❖ Collection of overhead.
- ❖ Classification of overhead.
- ❖ Allocation of overheads.
- ❖ Apportionment of overheads.
- ❖ Absorption of overhead by cost units.

Q. WHAT DO YOU MEAN BY PRIMARY AND SECONDARY DISTRIBUTION? (5Marks)

MEANING OF PRIMARY DISTRIBUTION:

Primary distribution of overhead is the process of allocating and apportioning the costs on suitable basis to all the departments or cost centers. Primary distribution is done without distinction between production and service departments.

MEANING OF SECONDARY DISTRIBUTION:

Secondary distribution of overhead is the process of redistribution of service department cost to the production departments. This is done as output or jobs pass through one or more production cost centers only. This kind of distribution is called secondary apportionment. Suitable bases have to be adopted for redistribution of service department cost of production department.

Q. EXPLAIN THE VARIOUS METHODS OF SECONDARY DISTRIBUTION (OR) REAPPORTIONMENT (OR) REDISTRIBUTION OF OVERHEADS (OR) SERVICE DEPARTMENT COST? (5/10Marks)

METHODS OF SECONDARY DISTRIBUTION (OR) REAPPORTIONMENT (OR) REDISTRIBUTION OF OVERHEADS (OR) SERVICE DEPARTMENT COST:

a. Direct distribution:

A service department renders services to production departments and other service departments. This method ignores the services rendered by one service department to another service department. So overhead expenses of service department directly allocated to production department. This method is simple, but unscientific.

b. Step method:

Under this method the cost of most serviceable departments is first apportioned to the other production departments as well as the other service department. Therefore, a sequence of apportionment must be chosen. After apportioning to the first service department, the next service department is taken up. Thus the service departments are apportioned off one after another. The department to which apportioning has already been done is not charged again. Hence, the cost of the last service department is apportioned only to production department.

c. Reciprocal service methods:

When there are two or more service departments, it is recognized that they render services to each other. These inter departmental service are taken with consideration and are not ignore in redistributing expenses of the service department. There are mainly three methods.

- **Simultaneous equation method:**

The total overhead cost of service department is ascertained with the help of simultaneous equations. The result obtained through the help of simultaneous equation is redistributing to production department on the basis of given percentage.

- **Repeated distribution methods:**

The overhead expenses according to the primary distribution summary are written against the respective departments, one after another. The expenses of Service department are redistributed to other department as well as service department on the basis of agreed percentage. The process is repeated until the figures of the service departments are exhausted or become too small to consider further distribution.

- **Trial and error method:**

In this method the cost of service centers (S1) is apportioned to another service centre (S2). Then the cost of another service centre is again apportioned to the first service centre. This process is repeated till the amount becomes zero or negligible.

Q. WHAT DO YOU MEAN BY ABSORPTION OF OVERHEAD? (5Marks)

MEANING OF ABSORPTION OF OVERHEAD:

The amount of overhead allocated and apportioned to cost centers should be finally borne by all cost units passing through each cost centre. The process by which factory overhead is allocated to cost units is known as overhead absorption or overhead recovery. As a result of absorption, each product or job receives a reasonable share of overhead expenditure of the cost centre or department.

The ICMA, UK defines overhead absorption as “allotment of overhead to cost units”.

Q. DISCUSS THE DIFFERENT TYPES (OR) METHODS FOR THE ABSORPTION OF FACTORY OVERHEAD? (5/10Marks)

TYPES (OR) METHODS FOR THE ABSORPTION OF FACTORY OVERHEAD:

For changing or absorbing to cost units, overhead rates have to be determined on an appropriate basis. This requires computation of an overhead absorption rate. “Overhead absorption rate is the sets at which overhead is charged to cost units, job or products”.

- ❖ **Percentage on direct material cost:**

In this method the cost of direct material used in the manufacture of a product is used as the base in absorption of factory overhead. The overhead rate is calculated on the basis of the following formula.

$$\text{Overhead rate} = \frac{\text{Factory overhead}}{\text{Direct material cost}} \times 100$$

❖ **Percentage on direct wages:**

Under this method the absorption rate is expressed as a percentage of direct wages. The rate calculated as below:

$$\text{Overhead rate} = \frac{\text{Estimated Factory overhead for the budget period}}{\text{Estimated direct labour cost for the normal output}} \times 100$$

❖ **Percentage on prime cost:**

According to this method overhead absorption rate is expressed as a percentage of prime cost. The rate is calculated as follows:

$$\text{Overhead rate} = \frac{\text{Estimated Factory overhead for the budget period}}{\text{Estimated prime cost for the normal output}} \times 100$$

❖ **Unit of production basis:**

The unit of production method is a simple method of charging factory overhead. The unit of production may be one or a dozen or kg or liter or any other municipal measure used for the output. The unit rate of recovery of factory overhead is calculated as follows:

$$\text{Units of production basis} = \frac{\text{Factory overhead}}{\text{Estimated number of units}}$$

❖ **Direct Labour hour cost:**

Labour hour rate is a commonly used method of overhead recovery in manufacturing concerns where labour is the dominant factor of production. In many factories, the time spent by workers on each job is recorded most reliably. If the data relating to overhead are readily available the rate can be calculated as follows:

$$\text{Direct labour hour rate} = \frac{\text{Factory overhead}}{\text{Direct labour hours}} \times 100$$

Q. WHAT IS MENT BY CALCULATION OF MACHINE HOUR RATE?

CALCULATION OF MACHINE HOUR RATE:

The cost of running a machine per hour can be called machine hour rate. A separate rate for each machine or group of machines can be established, which can be related to overhead costs of the production department the actual or pre-determined rate of manufacturing overhead (factory overhead) absorption is computed by dividing the manufacturing cost to be absorbed by the number of hours for which a machine or a group of machines are operated or expected to be operated. Thus

$$\text{Machine hour rate} = \frac{\text{Factory overhead}}{\text{Machine hours during a agiven period}}$$

Q. WHAT ARE THE MERITS AND DEMERITS OF CALCULATING MACHINE HOUR RATE? (5/10 Marks)

MERITS OF CALCULATING MACHINE HOUR RATE :

- It is a scientific and logical method, where the time factor is taken into account.
- We can compare the relative efficiencies and cost of operating different machines.
- The difference between the usefulness of machine work and manual work can be known by the management.
- It reveals the idle time of machine.

DEMERITS OF CALCULATING MACHINE HOUR RATE

- It leads more clerical work in finding out the working hours of machines.
- Expenses which are not proportional to the working hours of machines are not taken into account.

Q. EXPLAIN THE METHODS OF COMPUTATION OF MACHINE HOUR RATE? (5Marks)

METHODS OF COMPUTATION OF MACHINE HOUR RATE:

- ❖ Each time or group of machine is treated as accost centre in order to identify overhead expenses.
- ❖ Machine overheads are two type-Standing charges (fixed), and machine expenses (variable or running).
 1. The standing charges e.g. Rent, Rates, Supervision etc. remaining constant and do not vary with the use of machine. These standing charges are estimated for a given period for every machine. The estimated figures divided by the total working hours of the period will show an hourly rate for standing charges.
 2. The machine expenses e.g. Power, Depreciation, Repairs etc. are variable with the use of machines. These machinery expenses are estimated separately and the divided by the normal working hours to given hourly rate for each item. Normal working hours are calculated by given allowance for idle time, for maintenance for setting up etc.
- ❖ The sum of standing charges and the machine expenses rate will give the machine hour rate.

The following are suitable basis of apportionment of different expenses for calculating of machine hour rate:

S.No	Expenses	Basis of apportionment
1	Factory rent.	Area in sq. meters or sq. feet.
2	Power.	Kilowatt hours (k.w.h.)
3	Indirect material.	Direct material.
4	Indirect wages.	Direct wages.
5	Repairs to plant.	Plant value.
6	Depreciation.	Plant value.
7	Lighting.	Light points/floor area(former preferable)
8	Supervision.	No.of employees.
9	Fire insurance of stock.	Stock value.
10	Fire insurance of capital assets.	Value of capital assets.
11	ESI /PF contribution of employer.	Wages of each department.
12	Labour welfare expenses.	Number of employees.
13	General factory overheads.	Labour hours/ direct wages.

PROBLEMS

PROBLEM NO: 1

Indicate the basis you would adopt for apportionment of the following items of overhead expenses to different department.

- (a) Factory rent (b) Factory lighting (c) Power (d) Depreciation of plant and machinery (e) Insurance of plant and machinery and fire insurance of stock (f) Welfare expenses (g) Material handling charges (h) Indirect material (i) Indirect wages (j) Supervision (k) Repairs to plant (l) Insurance of building (m) Staff recreation

(n) Canteen expenses (o) Creche expenses (p) Employer's contribution to E.S.I (q) Employer's contribution to P.F (r) Stores expenses (s) Sundry expenses.

PROBLEM NO: 2

Kumaresh Ltd., has three production department A, B and C and two service departments D and E. The following figures are extracted from the records of the company.

	Rs.
Rents and rates	500
Indirect wages	1,500
Depreciation of machinery	10,000
General lighting	600
Power	1,500
Sundries	10,000

Following further details are available:

	Total	A	B	C	D	E
Floor space in square feet	10,000	2,000	2,500	3,000	2,000	500
Light points	60	10	15	20	10	5
Direct wages (Rs.)	10,000	3,000	2,000	3,000	1,500	500
H.P of machinery	150	60	30	50	10	-
Value of machinery (Rs.)	2,50,000	60,000	80,000	1,00,000	5,000	5,000

Apportion the cost to various departments on the most equitable basis by preparing a primary departmental distribution summary.

PROBLEM NO: 3

Krishna producing concern is divided into four departments. A, B, C and producing departments and D is a service department. The actual expenses for a period are as follows:

	Rs.
Rents	10,000
Repairs to plant	6,000
Depreciation of plant	4,500
Lighting expenses	1,000
Supervision expenses	15,000
Fire insurance (on stock)	5,000
Power	9,000
Employer's liability for insurance	1,500

The following information is available in respect of the four departments:

	A	B	C	D
Area (sq.feet)	1,500	1,100	900	500
Number of lights	75	11	9	5
Number of employees	200	150	100	50
Total wages (Rs.)	60,000	40,000	30,000	20,000
Value of plant (Rs.)	2,40,000	1,80,000	1,20,000	60,000
Value of stock (Rs.)	1,50,000	90,000	60,000	-

Apportion the costs to the various departments on the most equitable method.

PROBLEM NO: 4

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:

	Rs.
Repairs	2,000
Rents	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 departments:

	Dept. P	Dept. N	Dept. R	Dept. S	Dept. T
Area (sq. feet)	140	120	110	90	40
No. of workers.	25	20	10	10	5
Total wages	10,000	8,000	5,000	5,000	2,000
Value of plant (Rs.)	20,000	18,000	16,000	10,000	6,000
Value of stock (Rs.)	15,000	10,000	5,000	2,000	-

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

PROBLEM NO: 5

International Motors manufacture crankshafts for jeep and trucks. They have furnished the following particulars for the quarter ended 31st March:

	Rs.
Materials	2,98,000
Direct wages	42,000
Store expenses	20,000
Machinery maintenance	4,600
Depreciation	22,300
Staff welfare	12,000
General expenses	30,000
Administrative & selling expenses	27,000

Additional information provides by them:

	Jeep	Truck
1. Production (Nos.)	300	400
2. Material cost ratio per vehicle	1	2
3. Direct labour ratio per vehicle	2	3
4. Machine hour ratio per vehicle	1	2

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

SECONDARY APPORTIONMENT**PROBLEM NO: 6 (Direct reapportionment)**

Calculate the overhead allocable to production departments A and B from the following:

There are two service departments X and Y. X renders service to A and B in the ratio of 3:2 and Y renders service to A and B in the ratio of 9:1. Overhead as per primary overhead distribution is:

A- Rs. 49,800; B-Rs. 29,600; X-Rs. 15,600; Y-Rs. 10,800.

PROBLEM NO: 7

Small company Ltd has three production departments and four service departments. The expenses for these departments as per Primary Distribution Summary were:

Production Department:	Rs.	Rs.
A	30,000	
B	26,000	
C	<u>24,000</u>	80,000
Service Department:		
Stores	4,000	
Time-keeping and accounts	3,000	
Power	1,600	
Canteen	<u>1,000</u>	<u>9,600</u>
Total		<u>89,600</u>

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

	Dept.	Dept.	Dept.
	A	B	C
Horse power of machines	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.

PROBLEM NO: 8

The following data were obtained from the books of Arun Engineering Company for the half year ended 30th sep. prepare an overhead distribution summary and compute the departmental overhead rate for each of the production department assuming that overheads are recovered as a percentage of direct wages.

Particulars	Production Department		Service Department		
	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
No. of workers	200	150	150	50	50
Electricity	Kwb 8,000	6,000	6,000	3,000	3,000
Light points	No 10	15	15	5	5
Asset values	Rs 50,000	30,000	20,000	10,000	10,000
Area occupied	Sq.ft 800	600	600	200	100

The expenses during the period were:

	Rs		
Stores overheads	400	Depreciation	6,000
Motive power	1,500	Repairs and maintenance	1,200
Lighting	200	General overheads	10,000
Labour welfare	3,000	Rent and taxes	600

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

Power	2,400	Fire precaution service	1,200
Rent	4,200	Insurance on assets	1,000
Canteen	3,000	Depreciation (10% of capital value)	
Personnel Dept.	3,000		
Time office	1,000		
Maintenance of building	2,400		

We also have the following data:

	Production Departments			Service Departments	
	A Rs.	B Rs.	C Rs.	X Rs.	Y Rs.
Area (sq. metres)	400	400	300	200	100
K.W. hours	2,000	2,200	800	750	250
No. of workers	90	120	30	40	20
Capital value					
Assets	50,000	60,000	40,000	30,000	20,000

The service of X and Y departments are used by the other department in the following proportion:

	A	B	C	X	Y
X	25%	30%	20%	---	20%
Y	40%	20%	30%	10%	---

Calculate the total overheads of production departments after reapportioning service department overheads.

PROBLEM NO: 13 (Step Method)

A manufacturing company has two production departments X and Y, and three service departments- Time keeping, Stores and Maintenance. The Departmental Distribution Summary showed the following expenses for January.

Production Department:

X:	Rs. 36,000
Y:	Rs. 24,000

Service Departments:

Stores:	Rs. 7,500
Time-Keeping:	Rs. 6,000
Maintenance:	Rs. 4,500

Other information relating to those departments were:

	Production Departments			Service Departments	
	X	Y	Stores	Time -keeping	Maintenance
No. of employees	20	15	10	8	5
No. of stores requisition	24	20	--	--	6
Machine-hours	1,800	1,200	--	--	--

Apportion the costs of the Service Departments to Production Departments X and Y.

PROBLEM NO: 14 (Trial and Error Method)

A company has three production departments A, B and C and two service departments-X and Y. The expenses incurred by them during the month are:

Production depts:	Rs	Service depts:	Rs
A	80,000	X	23,400
B	70,000	Y	30,000
C	50,000		

The Expenses of service departments are apportioned to the production department on the following basis:

	A	B	C	X	Y
Expenses X	20%	40%	30%	---	10%
Expenses Y	40%	20%	20%	20%	---

Show clearly as to how the expenses of X and Y departments would be apportioned to the A, B and C departments.

PROBLEM NO: 15

P.H.Ltd, is a manufacturing company having three production departments A, B and C and two service departments X and Y. The following is the total of overheads as per primary distribution.

	Rs.
A	4,100
B	2,700
C	6,200
X	4,200
Y	5,300

A technical assessment for apportionment of service departments is as under:

	A	B	C	X	Y
X	45%	15%	30%	---	10%
Y	60%	35%	---	5%	---

You are required to prepare secondary distribution summary under trail and error method and arrive at the overhead finally charged to each production department.

PROBLEM NO: 16 (Absorption of Overhead)

The following details pertain to the production department of a factory.

Materials consumed	=	Rs.60,000
Direct wages	=	Rs.40,000
Machine hours	=	50,000
Labour hours worked	=	25,000
Factory overheads relating to the dept.	=	Rs.50,000

Calculate overhead absorption rates under different possible methods from the above data.

PROBLEM NO: 17 (Absorption rates and Ascertainment of Job/Product cost)

The following information relates to the activities of a production departments for a particular period in a factory:

Materials used	=	Rs.72,000
Direct wages	=	Rs.60,000
Hours of machine operation	=	20,000
Labour hours worked	=	24,000
Overheads chargeable to the Department	=	Rs.48,000

On one order carried out in the department during the period, the relevant data were:

Materials used	=	Rs.4,000
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Labour	hours	=	1,650
Direct wages		=	3,300
Machine hours		=	Rs.1,200

Prepare a comparative statement of cost of this order by using the following three methods of recovery of overheads:

- Direct labour hour method
- Direct labour cost rate method
- Machine hour rate method

PROBLEM NO: 18(Under or Over Absorption Overhead)

During the year 31.3.2002 the factory overhead costs of three production departments of an organization are as under

X	Rs.48,950
Y	Rs.89,200
Z	Rs.64,500

The basis of apportionment of overheads is given below:

Dept X :Rs.5 per machine hour for 10,000 hours

Dept Y :75% of direct cost of Rs.1,20,000

Dept Z :Rs.4 per unit for 15,000 units.

Calculate department wise under or over absorption overheads and present the data in a tabular form.

PROBLEM NO: 19 (Machine Hour Rate)

From the following particulars compute the machine hour rate:

Cost of the machine	=	Rs.11,000
Scrap value	=	Rs.680
Repairs for the effective working life	=	Rs.1,500
Standing charges for 4 weekly period	=	Rs.40
Effective working life		10,000 hours.
Power used:		6units per hour at 5paise per unit.
Hours worked in 4 weekly period:		120 hours.

PROBLEM NO: 20

Work out machine hour rate from the following machine whose scrap value is nil:

- Cost of machine Rs.3,60,000
- Freight and Installation Rs.40,000
- Working life : 20 years
- Working hours : 8,000 per year
- Repair charges : 50% of depreciation
- Power 10 units per hour @ 10 paise per unit
- Lubricating oil @ Rs. 2 per day of 8 hours
- Consumable stores Rs.10 per day of 8 hours
- Wages of operator Rs.4 per day

PROBLEM NO: 21

A shop has four new machines, each occupying an equal area of space and costing respectively Rs. 20,000 (A); Rs. 25,000 (B); Rs. 30,000 (C); Rs. 40,000 (D). The following are the year of the machine shop.

	Rs.
Rent	10,000

Rates and water	4,250
Light and heat	3,150
Power: A	5,100
B	5,000
C	12,000
D	14,500
Administrative expenses	9,500
Running expenses and repairs	20,000

Prepare a statement of machine hour rate for each of the machines presuming 45 hours a week and 50% weeks in a year; 80% is the utilization. The machines are expected to last for 10 years, but do not have any scrap value.

UNIT - III

PROCESS COSTING

Q. WHAT IS PROCESS COSTING? WHAT ARE ITS FEATURES OR CHARACTERISTICS? (2/5 MARKS)

MEANING OF PROCESS COSTING:

Process costing is a method of costing. This method refers to costing of distinct process involved, while converting a raw material into finished product. It helps to ascertain the cost of the finished product. It helps to ascertain the cost of the product at each distinct process or operation or stages of production. Here the raw material has to pass through two or more process before completion. This method of costing is applied by industries manufacturing textiles, soaps, biscuits, paints, cements, chemicals, medicines, paper and pulp, oil refining, milk dairy etc. here the raw material passes from one process to another process. Thus the last process gives the finished product. The distinct process is in a sequential order the output of one process becomes the raw material of the next process and so on.

Definition:

According to ICMA London, “process costing is that form of operation costing”, where standardized goods are produced.

CHARACTERISTICS:

- The factory is divided into a number of process cost centres or departments and in each cost centre an account is maintained setting up process cost centres.
- All types of cost direct and indirect relating to the process are recorded for each process.
- The finished of one process is the new material for the next process and this procedure continues until the final product arrives. The product and process are standardized.
- The cost of the previous process is transferred to the subsequent process along with output.
- Total cost of finished final product comprises of all cost incurred in all processes.
- Finished products at the end are homogenous i.e. indistinguishable.
- The cost of normal wastage is added to goods units produced. Apart from this, there occurs abnormal wastages and abnormal gains.
- In certain industries there arise by-product and joint products which require further processing.

Q. EXPLAIN THE ADVANTAGES AND DISADVANTAGES OF PROCESS COSTING (5Marks)

ADVANTAGES OF PROCESS COSTING:

- It helps in the computation of cost of the process as well as the end product at short intervals.
- Average cost of homogeneous product can easily be computed.
- Cost control is made easier as the cost records are kept at the shop floor to assess the efficiency of production.
- It facilitates price quotations as the element of cost are more or less standardized.

- It involves can clerical work than job costing.
- Expenses can be allocated to process easily and costs become accurate.

DISADVANTAGES OF PROCESS COSTING:

- Costs accumulated at the end of the period are only historical costs which are not of much use for managerial control.
- It determining the cost of each process, work-in-progresses usually valued only on estimate basis which leads to inaccurate results.
- When two or more dissimilar products are produced in the same process the related cost is divided among products on the basis of some weight are assigned which often becomes unscientific.
- Average costs are not always accurate. It there is an error in cost determination, the cost per unit in process affects the cost in the next process as well as the cost of work in progress and finished products.

Q. EXPLAIN STAGES IN PROCESS COSTING PROCEDURE. (5Marks)

COSTING PROCEDURE:

The factory or concern is divided into distinct process or operations and a separate account is opened for each process (cost centre). All expenditure of material, labour, direct expenses and overhead are charged to the process concerned.

1. Materials:

Materials required for each process are drawn from store against material requisitions or bills of material and debited to cost. When the materials are issued in bulk, the person-in-charge of the department has to keep the account of materials consumed. When the finished product of one process becomes the raw material of the next process, the account of the receiving process should be debited with the cost of transfer, in addition to the cost of additional material.

2. Labour:

Wages paid to laborers and workmen who are engaged in particular processes are directly allocated to the process. If workers are engaged in a number of processes, the wages paid maybe apportioned on the basis of time – keeping.

3. Direct expenses:

Direct expenses such as depreciation, insurance, electricity, repairs etc., are directly allocated to the respective accounts.

4. Overhead:

Rent, telephone, lighting, gas, water etc., which are some common expenses of one or more processes, may be apportioned to the various processes on suitable basis. These overheads are recovered at predetermined rates or based on direct wages or prime cost.

Q. EXPLAIN THE DIFFERENCE BETWEEN PROCESS COSTING AND JOB COSTING (5Marks)

DIFFERENCE BETWEEN PROCESS COSTING AND JOB COSTING

	PROCESS COST	JOB COST
1.	The production is a continuous flow of stock in anticipation of demand.	Production is executed against specific order from customers.
2.	Since the production is a continuous flow, individual identity is lost.	The different jobs may be independent of each other.
3.	Since the production is a continuous there is always work in progress at the beginning and closing.	Jobs may or may not have opening or closing work in progress.
4.	Costs are accumulated at the end of cost period.	Costs are accumulated for each Job.
5.	Costs are found out at the end of the period.	Costs are found on at the completion on the jobs.

6.	Costs are transferred from one process to another.	Costs are not transferred unless there is surplus production.
7.	Production is a continuous process, through standardized system, managerial control is easy.	Since each unit is different, managerial attention is needed.
8.	Paper work is less	Since every job is costed separately, there is more work.
9.	Since production is of standard products, they are uniform, similarities are there.	Production is on the basis of individual specification. Therefore each job is dissimilar to others.

Q. WRITE SHORT NOTES ON : (A)NORMAL LOSS OR NORMAL WASTAGE (B) ABNORMAL LOSS, (C)ABNORMAL GAIN (D) WASTAGE (E) SCRAP (F) SPOILAGE AND (G) DEFECTIVE (2Marks)

(A) NORMAL LOSS OR NORMAL WASTAGE:

This is called process losses. Because of the nature of raw material, some loss and in inherent and it is unavoidable. This is known as normal wastage or normal loss. The percentage of such losses is anticipated from past experience by the management losses of this type should be absorbed by good unit produced i.e. the cost units is charged to goods units-output. Any value realizable, in the normal loss will be credited to the process account.

(B) ABNORMAL LOSS:

In certain cases, it can be seen that the loss exceeds the predetermined loss. Any loss exceeding the normal loss is called abnormal loss. Abnormal loss should not affect the normal cost of production. It is caused by accidents, sub-standard material, carelessness etc. Therefore abnormal loss is valued jut like good units and transferred to separate account called abnormal los account.

$$\text{Value of abnormal loss} = \frac{\text{Normal cost of normal production}}{\text{Normal output}} \times \text{units of abnormal loss}$$

(C) ABNORMAL GAIN:

When the actual process loss or wastage is less then the determined percentage of normal loss or wastage, the different is known as abnormal gain or effective like abnormal loss, abnormal gain does not affect the cost of normal production. The abnormal loss and credited to abnormal gain account.

$$\text{Value of abnormal gain} = \frac{\text{Normal cost of normal output}}{\text{Normal output}} \times \text{units of abnormal gain}$$

(D) WASTAGE:

According to terminology of cost accounting ICMA, London “wastage is discarded substance having no value”. Charles T. Horngren says, “Wastage is material that is lost, evaporates or strings in a manufacturing process or is a residue that has no measurable recovery value”. Thus, wastage has neither recovery value nor has any use.

(E) SCRAP:

Scrap is the incidental residue from certain type of manufacture usually of small amount and low value recoverable without further process-for instance, during production some raw materials are left over in the form of dust, iron filing, odd pieces of timber, strips of cloth, cutting and pieces of lather etc. A scrap is always visible.

(F) SPOILAGE:

Spoilage is defined as “that portion of raw material which has been spoiled or destroyed in the manufacturing process but which can be used again in manufacture as raw material or sold as second. It is caused by defective production, parts cut to wrong size, chemical mix in wrong proportion etc. The spoiled material cannot be repaired or re-conditional but has to be either re-used as raw material or disposed off by sale.

(G) DEFECTIVE:

Defective are those units of finished products which are not up to the standard. These will be some kind of imperfection in them. Defective arise due to inadequate equipment, inefficient supervision, defective planning, poor workmanship etc.

Q. WHAT DO YOU MEAN BY JOINT PRODUCT COSTING? (2Marks)

MEANING OF JOINT PRODUCT COSTING:

The term joint product is used when two or more products arise simultaneously in the course of processing in such proportion and of such nature that no one can be regarded as the major product.

Q. EXPLAIN THE CHARACTERISTICS/FEATURES OF JOINT PRODUCT COSTING. (5Marks)

CHARACTERISTICS/FEATURES OF JOINT PRODUCT COSTING:

- They are produced from the same basic raw material.
- They are comparative of equal importance.
- They are produced simultaneously from a common process.
- They require further processing after the point of separation.
- No product can be called as a major product

Q. EXPLAIN THE DIFFERENT METHODS OF APPORTIONMENT OF JOINT COSTS. (5/10Marks)

METHODS OF APPORTIONMENT OF JOINT COSTS:

Accounting for joint products implies the assignment of a joint cost of the joint products. The following methods are adopted as regards apportionment of total cost before separation point. They are:

❖ **Average unit cost method:**

In this method it is assumed that the total cost of the process is borne by all units equally. The total process cost of pre-separation is common and inseparable from products and expresses in common units i.e. weight or volume applicable to all product.

❖ **Physical unit's method:**

The joint costs are apportioned on the basis of some physical unit (raw material) i.e., in meters, tones etc. Physical units are the units in which the basic raw materials are measured and are determinable at the point of separation of the joint products. This method cannot be applied when one product is a gas and another product is liquid.

❖ **Survey method:**

This method is adopted after a technical survey of all factors involved in the production and distribution of products. Percentage or points value is assigned to each product to denote its relative importance and common costs are apportioned on the basis of total points.

❖ **Market value method**

In this case, the joint costs are apportionment on the basis of the proportion of market price of the products. Thus products having higher prices are charged with higher portion of the joint costs and products having lesser price get lesser share of the joint costs. The different methods under market value are:

i) At point of separation:

When the market value of the joint product is known at the point of separation the joint cost is apportioned in the proportion of these values. The market value for the purpose may be either the market value per unit or the amount of market value of the entire units of each joint product.

ii) After further processing:

Application of this method is easy as the selling price of each finished product will be readily available, from the sales value of each joint product, the post split off cost of respective products is deducted and on the basis of values obtained, the joint cost is apportioned.

iii) Net realizable value or reverse cost method:

Under this method estimated net profit, direct selling & distribution expenses and post separation costs are deducted from the sales value of each joint product.

Q. WHAT DO YOU MEAN BY-PRODUCT COSTING? (2Marks)

MEANING OF BY-PRODUCT COSTING:

A by-product is a secondary or subsidiary product. Which are emerges as a result of manufacture of the main products. It is the residual material which is incidentally obtained from the production of a major product and has only relatively small value.

Definition:

Koyhler defined by-products as, “a secondary product obtained during the course of manufacture having relatively small importance as compared with that of the chief product or products.

Q. EXPLAIN THE FEATURES OF BY-PRODUCTS. (5Marks)

FEATURES OF BY-PRODUCTS:

- They are produced incidental to the main product.
- Their value is very low compared to that of major product.
- They can be sold immediately after separation.
- They emerge from the same basic raw materials.
- They are produced simultaneously from a common process.

Q. EXPLAIN THE METHODS OF ACCOUNTING FOR BY-PRODUCT. (5/10 Marks)

METHODS OF ACCOUNTING FOR BY-PRODUCT:

By-product can be two types- certain products need further processing after separation. By-products are produced along with main products and the same are comparatively of less value.

I. Non – cost or sales value methods:

❖ Other income method:

The value realized by the sale of by-product is treated as other or miscellaneous income because on negligible value. The stock of by-product is valued at zero value of balance sheet purposes.

❖ Credit sales value of the process account:

Under this method the value of by-product is credited to the process accounting, so that the cost of the main product is reduced. For balance sheet purpose, the unsold stock of by-product carries zero value.

❖ Credit to sale value less selling and distribution:

In certain cases, by-product need selling and distribution expenses and these expenses are deducted from the sale value. The net amount is credited to process account.

❖ Crediting actual cost to the process:

In case the by-products need further processing before sale, the amount is ascertained from sale value. The net amount is credited to process account.

II) Cost methods:

❖ Replacement cost method:

Under this method, the by-products are utilized in the same industry as raw material and valued at the market price; the process account is credited to the value.

❖ Standard cost method:

In this method, the by-products are valued at standard price (pre-determined cost) and credit is given to the process account.

❖ Apportionment on suitable basis:

Where by-products are prominent, they will be treated as joint products and as such joint cost to be apportioned.

PROBLEMS

PROBLEM NO: 1 (No loss; No units)

Srikar & Co., Produces a product through two processes 'J' and 'K'. Prepare the process accounts from the information relating to March 1997.

	Process J	Process K
Materials	45,000	15,000
Labour	60,000	25,000
Chargeable expenses	5,000	10,000

The overheads amounting to Rs. 17,000 are to be apportioned on the basis of labour.

PROBLEM NO: 2 (No losses; Units given)

A Product passes through three processes 'X' 'Y' and 'z' to its completion. During September 1998, 5,000 units of finished product were produced and the following expenses were incurred:

	Process X Rs	Process Y Rs	Process Z Rs
Materials	5,000	10,000	5,000
Labour	25,000	20,000	15,000
Direct expenses	2,500	3,000	5,000

Indirect expenses amounted to Rs. 30,000 which are to be apportioned to the processes on the basis of direct wages. Raw materials worth Rs. 30,000 were issued to process 'X'. Ignore the question of process stocks and prepare the process accounts, showing cost per unit in each process.

PROBLEM NO: 3 (No losses- stock of material given)

Ramsons Ltd. produces a product which goes through three processes A, B and C before it is finished and sent to the godown for distribution. From the following details, ascertain the cost of the product at the end of each stage of production.

	Process A Rs	Process B Rs	Process C Rs
Raw Materials	10,000	---	---
Other direct material	30,000	20,000	10,000
Direct wages	10,000	20,000	30,000
Overheads	10,000	8,000	20,000
Output in units	15,000	14,000	17,000
Opening stock (units from previous process)	---	6,000	5,000
Closing stock (units from previous process)	---	5,000	1,000

PROBLEM NO: 4

From the following figures show the cost of the three process of manufacture. The production of each process is passed on to the next process immediately on completion.

	Process A Rs	Process B Rs	Process C Rs
Wages and Materials	30,400	12,000	29,250
Woks overhead	5,600	5,250	6,000
Production in units	36,000	37,500	48,000
Stock (units from preceding process) 1 st July	---	4,000	16,500
Stock (units from preceding process) 31 st July	---	1,000	5,500

PROBLEM NO: 5(Treatment of By-product and Scrap)

In chemical industry one product has to pass through two processes. The finished product of the first process becomes the raw material of the last process. Find out the unit cost of the finished product of the last process per kg in the basis of the following:

	First Process	Last Process
	Rs	Rs
Raw Materials	1,000 kg. @ Rs. 1.50 per kg.	---
Direct labour	200 men @ Rs. 2.50 per man	300 men @ Rs. 1.50 per man
Work Overheads	50% of Direct Labour	50% of Direct Labour
Finished product	600 kg.	500 kg.
Sale value of By-products	400 kg. @ Re. 1 per kg.	100 kg. @ 25 Paise per kg.

PROBLEM NO: 6 (Normal loss without scrap value)

The cost of production of 40 units consisting of material Rs. 1,500; Labour Rs. 1,300 and Overhead Rs. 164. The normal waste is 5% of output. Show the Process Account.

PROBLEM NO: 7 (Normal loss with scrap value)

The following expenditure incurred for producing articles, called Mini Motors.

	Rs.
Materials (200units)	4,000
Labour	3,000
Indirect expenses	2,000

Normal wastage is 5% of the output. One unit of wastage is sold at Rs. 16.50 each. Prepare Process Account.

PROBLEM NO: 8 (Normal loss and abnormal loss with no scrap value)

Prepare Process Account from the following:

Material issued 1,000 kg. @ Rs.125
Wages Rs. 28,000
Overheads Rs. 8,000
Normal loss 5% of output
Output 900 kgs.

PROBLEM NO: 9 (Normal loss and abnormal loss with scrap value)

In process, 100 units of raw material were introduced at a cost of Rs. 1,000. The other expenditure incurred by the process is Rs.600. of the units introduced, 10% are normally scrapped in the course of manufacture and they possess a scrap value of Rs.7 per unit. The output of Process A was only 75 units. Calculate the value of abnormal loss.

PROBLEM NO: 10 (Normal loss and abnormal gain)

From the following information given to you, prepare process B Account.

2,000 units are transferred to Process B @ Rs. 4 per unit. Other details relating to the process are:

	Rs.
Materials	4,000
Labour	1,000
Overheads	700

The normal loss has been estimated @ 10% of the process input. Units representing normal loss can be sold @ Re. 1.00 per unit. Actual production in the process is 1,900 units. Output of process B transferred to finished stock account.

PROBLEM NO: 11

Make out the necessary account from the following details:

	Process A	Process B
	Rs	Rs
Materials	30,000	3,000
Labour	10,000	12,000
Overheads	7,000	8,600
Input (units)	20,000	17,500
Normal loss	10%	4%
Sales of wastes per unit	Re. 1	Re. 2

There was no opening or closing stock or work-in-progress. Final output from process B was 17,000 units.

JOINT PRODUCTS AND BY-PRODUCTS

PROBLEM NO: 12

From the following information find out the cost of X and Y, the latter being the by-production whose sale a profit of 20% on selling price is obtained:

	Joint expenditure		Separate expenditure	
	Rs	X	Y	
	Rs	Rs	Rs	
Material	9,000	2,000	1,000	
Labour	4,000	800	300	
Expenses	2,000	1,000	400	

Total amount realized by sale of Y was Rs. 3,500.

PROBLEM NO: 13

From the information, find the profit made by each product, apportionment joint-costs on the sale-value basis.

Joint-cost:	Rs.	
Direct material	1,26,000	
Power	25,000	
Petrol, oil, lubricants	5,000	
Labour	7,500	
Other charges	4,100	
Separate-cost:	Product X	Product Y
	Rs.	Rs.
Selling costs	20,000	80,000
Sales	1,52,000	1,68,000

PROBLEM NO: 14

A product passes through two processes X and Y. The output of process X is charged to process Y at a price which includes a profit of 20% at actual cost and the output of process Y is charged to finished stock at a price which includes a profit of 10% on actual cost. The following data are available for the month of July 2010.

	Process X	Process Y
--	------------------	------------------

	Rs.	Rs.
Material (2,500 units)	1,250	1,250
Labour	625	500
Overheads	1,875	750

There was no partly finished work in either process. Out of the finished stock 1,500 units had been sold for Rs. 7,500.

Prepare the Process account and the Finished Stock Account.

PROBLEM NO: 15

A product passes through three processes to completion. These processes are known as X, Y and Z. The output of each process is charged to the next process at a price calculated to give a profit of 20% on the transfer price. The output of process C is charged to finished stock on a similar basis.

There was no partly finished work in any process on December 31, on which data the following information was obtained:

	Process A	Process B	Process C
	Rs.	Rs.	Rs.
Material	4,000	6,000	2,000
Labour	6,000	4,000	8,000
Stock: Dec.31	2,000	4,000	6,000

Stocks in each process were valued at price cost to the process.

There was no stock in hand on January 1st and question of overhead was ignored. Of the goods passed into finished stock, Rs. 4,000 remained in hand on December 31, and the balance has been sold for Rs. 36,000. show Process Accounts and calculate reserve for unrealized profits.

Equivalent Production

Meaning:

This represents the production process of a process in terms of completed units. In other words it means converting the uncompleted production in to equivalent units of completed units. The term equivalent units mean a notional quantity of completed units.

Equivalent units = actual number of units * percentage of work completed.

Methods of Calculation of equivalent production

1. Under this method opening work in progress is stated in equivalent completed units by adding the percentage of work needed to complete the unfinished work of the previous period.
2. under this method units of completed units (unit started + opening stock in units - closing stock)
3. Under this method units of uncompleted input are added to the units of incomplete work in opening stock incomplete closing stock is deducted.

Features & Procedure for evaluation

1. Find out the equivalent production after taking in to consideration the process losses degree of completion,
2. Find out the net process cost according to elements of costs
3. Ascertain cost per unit of equivalent production to the each department separately
4. Evaluate out put finished and transferred and work in progress
5. The following statements are to be prepared
6. Statement of equivalent production
7. Statement of cost
8. Statement of evaluation

Problems:

1. From the following figures show the cost of the three processes of manufacture. The production of each process is passed on to the next till completion:

	Process A	Process B	Process B
Wages and materials	60800	24000	58500
Works on cost	11200	10500	12000
Production (in units)	72000	75000	96000
Stock (units from preceding process 1 st July 1992)	-	8000	33000
Stock (units from preceding process 31 st July 1992)	-	2000	11000

2. 800 units were introduced into a process at a cost of Rs.30000. Cost of labour and overheads amounted to Rs.26000 and Rs.16000 respectively. The normal loss in the process is 10% of the output, which has no recovery value. Show the process account.

3. The following details are extracted from the costing records of an oil mil for the year ended 31st March 2005. Purchase of 5400 tons of coconut-Rs.220000

	Crushing Rs.	Refining Rs.	Finishing Rs.
Cost of labour	2750	1100	1650
Electric power	660	396	264
Sundry material	110	2200	-
Repairs to machinery	308	363	154
Steam	660	495	495
Factory expenses	1452	726	242
Cost of casks – Rs.8,250			

3200 tons of crude oil was produced. 2600 tons of oil was produced by the refining process and 2550 tons of refined oil was finished for delivery.

Coconut sacks sold	Rs.440
1925 tons of coconut residue sold	Rs.12100
Loss in weight in crushing	275 tons
500 tons of products obtained from refining process	Rs.7425

Prepare relevant process accounts.

4. A product passes through processes I, II, III. From the following information prepare the process accounts assuming that there was no opening or closing stocks.

	Process I Rs.	Process II Rs.	Process III Rs.
Materials	1000	1500	500
Labour	5000	8000	6500
Overheads	1050	1188	2009
Actual output (units)	9500	9100	8100
Normal loss	3%	5%	8%

The wastage of process I was sold at 25 paise per unit, that of process II at 50 paise per unit and that of process III at Rs.1 per unit.

Raw materials of 10000 units were introduced into process I in the beginning at a cost of Rs.1 per unit.

5. The product of company passes through three distinct processes to completion. From past experience it is ascertained that loss is incurred in each process as:

Process A – 2%,

Process B – 5%,

Process C – 10%.

The wastage of process A and B is sold at Rs.20 per 100 units and that of Process C at Rs.160 per 100 units. Following are the production results in March 2005.

CONTRACT COSTING:

Contract costing is one of the variations of specific order costing. It is employed to ascertain cost and profit of specific contracts undertaken. A contract is the cost unit. It is similar to job costing but they differ basically in the aspects of size and duration. the method is widely used in construction work. examples are construction of building, roads, ships, plants dams, etc., due to high unit value, each contract is negotiated by the contractor and contractee in detail and usually formal contract deed .the contract price ,method of work certification ,mode of cash payment are specifically included.

Features / Characteristics:

- 1.Higher proportion of direct costs. As most of items of expenses cab be directly identified with the contract, though indirect are treated as direct telephone installed at site power usage
- 2.Low indirect costs
- 3.The only item of indirect cost may office expenses
- 4.Difficulties in cost control. The large scale production and the size of the site may create some major problems of cost control.
- 5.Surplus materials if any will be either credited to the contract account with the cost of material at the end or will be debited to the new contract account.

Differences between the job costing and the contract costing

Job costing	Contract costing
Small in size	big in size
Work is performed in work shop	Work is executed at the site
Less time for the completion	More time for the completion
Selling price is paid full after the job completed	Installments
There is heavy investment need	Moderate investment is sufficient
There are direct and indirect expenses	Direct in nature
Profit entirely taken to profit and loss account	Proportion of the profit is taken to profit and loss account

Types of the contracts

1. Fixed price contract
2. Cost plus contract
3. Fixed price contracts with escalation clause.

Problems:

Contract costing:

1. Write up contract no 303 account in the contract ledger of saravana & co ., from the following details

Direct materials-16200

Wages-10800

Special plant -8000

Stores issued -2880

Loose tools -1500

Tractor expenses -3420

Contract price-40000

The contract was completed in 20 weeks .the special plant was returned subjects to depreciation at 20% on original cost .the value of loose tools and stores returned were rs 1000 and rs 400 respectively. The book value of the tractor used for the contract was rs 19500, and depreciation to the charged to this contract is at 20% per annum on the book value. Provide 7% for administrative expenses on work cost.

2.Kovai construction co ltd., undertook two contracts on 1st April 98,1st July 98. Respectively. Their accounts showed the following position on 31st dec 98.

Particulars	Contract A	Contract B
Contract price	120000	100000
Work certified	80000	64000
Work un certified	2400	3200
Materials	28500	23000
Wages	44000	45000
General expense	1900	1300
Cash received in respect of work certified	60000	48000
Wages accrued	1400	1500
General expenses accrued	500	200
Plant installed	8000	6400
Materials on hand	1400	1520

On the respective dates of the contracts, the plant was installed, depreciation there on being taken at 15% per annum, write up contract ledger and ascertain the profit or loss on each contract and show the relevant items in the company's balance sheet.

UNIT IV

MANAGEMENT ACCOUNTING

Q: WHAT IS MEANT BY MANAGEMENT ACCOUNTING? (2 MARKS)

The term management accounting refers to accounting for the management. Management accounting provides necessary information to assist the management in the creation of policy and in the day-to-day

operations. It enables the management to discharge all its functions. (i.e) Planning, Organisation, staffing, Direction and Control efficiently with the help of accounting information.

Definition

Q: DEFINE MANAGEMENT ACCOUNTING. (2 MARKS)

Robert N. Antony “Management Accounting is concerned with accounting information that is useful to management.”

AACP (Anglo American Council of Productivity) “Management accounting is the presentation of accounting information in such a way as to assist management in the creation of policy and in the day-to-day operations of an undertaking”.

J. Batty, “Management Accounting is the term used to describe the accounting methods, system and techniques which coupled with special knowledge and ability assist management in its task of maximizing profits or minimizing losses.”

Objective

Q. EXPLAIN THE OBJECTIVE OF MANAGEMENT ACCOUNTING. (5 MARKS)

The main objectives of management accounting are:

1. To assist the management in promoting efficiency. Efficiency includes best possible services to the customers, investors and employees.
2. To prepare budgets covering all functions of a business (i.e. production, sales, research and finance).
3. To analyse monetary and non-monetary transactions.
4. To compare the actual performance with plan for identifying deviations and their causes.
5. To interpret financial statements to enable the management to formulate future policies.
6. To submit to the management at frequent intervals operating statements and short-term financial statements.
7. To arrange for the systematic allocation of responsibilities.
8. To provide a suitable organization for discharging the responsibilities.

Nature

Q: STATE THE NATURE (OR) CHARACTERISTICS OF MANAGEMENT ACCOUNTING? (5MARKS)

If we carefully analyse the above definitions, we can clearly identify certain characteristics or leading features of management accounting as a distinct discipline of its own kind. The characteristics are:

1. Information supplier:

Management accounting serves as a financial information supplier to the management for the purpose of decision making. The decisions are to be made by the management. It is just like a map which tells a traveler where he will get to if he travels in one direction or another. The way in which the information is used depends upon the efficiency and caliber of the management.

2. Cause and effect:

Analysing Management accounting serves as a cause and effect analyzer. Financial accounting discloses the results but does not account for its reasons. For example, profit and loss account reveals the amount of profit earned or loss incurred for the year but does not tell the reasons for it. Management accounting and overall profitability are analyzed and interpreted in management accounting.

3. Forecaster:

Management accounting serves as a forecaster. It is because of the fact that it is future and not the past which challenges the management. Management accounting, thus, helps management in its task of planning and forecasting. It provides information to management for future decision-making.

4. Vehicle of efficiency:

Management accounting acts as a vehicle for enhancing the working efficiency of the organization. The efficiency of departments and divisions can be improved by fixing targets for a particular period. The actual performance is compared with that of targets so as to ascertain the deviations. Positive deviations are reviewed. The negative deviations are probed to ascertain the causes. The ways and means to tackle the causes are analysed and targets are achieved. The process for fixing and achieving the targets leads to gradual improvement in overall efficiency.

5. No fixed norms:

In management accounting, no set of rules or standards are to be rightly followed like financial accounting. The required information is provided in a manner as it suits the management. Thus, the format and method of presentation of information will differ from concern to concern depending upon their individual requirements.

6. Decision-making:

Management accounting helps the management in the process of decision-making. It provides required information to the management to base its decisions. It helps the management not only in the formulation of policies but also in evaluation of performances.

7. Subjective orientation:

Management accounting is subjective oriented. It is fundamentally based upon judgment rather than measurement. As pointed out by Smith Richard, "Management decisions rely heavily upon the subjective evidence, judgment rather than measurement in the stock-in-trade management.

8. Techniques and concepts:

Management accounting employs special techniques like standard costing, marginal costing, budgeting control, project appraisal etc., to make accounting data more useful and helpful to the management. Each of these techniques or concepts serves as a useful tool for specific purposes in analysis and interpretation of data, establishing control over operations.

9. Internal use: The information provide by management accounting is purely meant for internal use. Management accounting analyses and interprets the accounting data to suit the informational needs of the management. Basically designed for the internal use of the management, it is of a very little use to external parties.

Scope of Management Accounting

Q. EXPLAIN THE SCOPE OF MANAGEMENT ACCOUNT. (10 MARKS)

The scope or field of management accounting is very wide and broad based and it includes within its fold, a variety of aspects of business operations. The main aim is to help management in its functions of planning, directing and controlling. The following are some of the area of specialization included within the ambit of management accounting.

1. Financial accounting:

Financial accounting provides historical information. It forms the basis for future planning and financial forecasting. A properly designed financial accounting system is a must for securing full control and coordination of business operation.

2. Cost accounting:

Cost accounting provides various techniques of costing like marginal costing, standard costing, operation costing etc., these techniques play an important role in assisting the management in the formulation of policy and the operation of the undertaking.

3. Budgetary Control and Forecasting:

This includes framing of budgets, comparison of actual performance with budgeted performance, computation of variances, finding out their causes and suggesting remedial measures. Both budgetary control and forecasting helps management accounting in its functions of systematic future projections.

4. Inventory control:

It is concerned with control over inventory from the time it is received till its disposal.

5. Reporting:

Reporting includes the preparation of monthly, quarterly, half-yearly income statements and other related reports such as cash flow and funds flow statements. These reports are submitted to the management for evaluation of performance and decision-making.

6. Statistical methods:

Statistical tools like graphs, charts, index number, etc., are used for presentation of information to various departments.

7. Taxation:

It includes preparation of income statement, assessing the effect of tax on capital expenditure proposal and pricing.

8. Methods and Procedures:

They deal with organizational methods for cost reduction, procedures for improving the efficiency of accounting and office operations.

9. Internal Audit:

This refers to the establishment of a suitable internal audit system for internal control.

10. Office services:

They cover a wide range of activities like data, processing, filing, copying, printing, communication etc.

Functions of Management Accounting

Q. EXPLAIN THE FUNCTIONS OF MANAGEMENT ACCOUNT. (5 MARKS)

Functions of management accounting include all activities connected with collecting, processing, interpreting and presenting information to the management. The main functions of management accounting are:

1. Forecasting:

Making short term and long-term forecasts and planning the future operations of the business.

2. Organizing:

Organizing the human and physical resources of the business.

3. Co-ordinating:

Providing different tools of co ordination. Example: Budgeting, Financial reporting, Financial analysis, interpretation etc.

4. Controlling:

Controlling performance by using standard costing, variance analysis and budgetary control.

5. Analysis and Interpretation:

Analyzing and interpreting financial data in a simple and purposeful manner.

6. Communicating:

Communication the results of business activities through prompt and accurate reporting system.

7. Economic appraisal:

Appraising of social and economic forces and government policies and interpreting their effect on business.

**Q: WHAT ARE THE ADVANTAGES AND LIMITATIONS OF MANAGEMENT ACCOUNTING?
(10MARKS)**

Advantages of Management Accounting:

Management accounting is of immense value and utility for the management of any firm and it has been considered as indispensable, particularly in large organizations where the task of management is complex. The following can be listed as the benefits or uses of management accounting.

1. Help in decision making:

Management accounting helps in decision making such as pricing, make or buy, acceptance of additional orders, selection of suitable product mix etc., these important decisions are taken with the help of marginal costing technique.

2. Helps in planning: Planning includes profit planning, preparation of budgets, programmers of capital investment and financing. Management accounting assists in planning through budgetary control, capital budgeting and cost-volume-profit analysis.

3. Helps in organizing:

Management accounting uses various tools and techniques like budgeting, responsibility accounting and standard costing. A sound organizational structure is developed to facilitate the use of these techniques.

4. Facilitates communication:

Management is provided with up-to-date information through periodical reports. These reports assist the management in the evaluation of performance and control.

5. Helps in co-ordinating:

The functional budgets (purchase budget, sales budget, overhead budget etc.) are integrated into one known as master budget. This facilitates clear definition of departmental clear definition of departmental goals and co-ordination of their activities.

6. Evaluation and control of performance:

Management accounting is a convenient tool for evaluation of performance. With the help of ratios and variance analysis, the efficiency of departments can be measured. Management accounting assists the management in the location of weak spots and in taking corrective actions.

7. Interpretation of financial information:

Management accounting presents information in a simple and purposeful manner. This facilitates quick decision making.

8. Economic appraisal:

Management accounting includes appraisal of social and economic forces and government policies. This appraisal helps the management in assessing their impact on the business.

Limitations of management accounting:

1. Based on accounting information:

Management accounting derives information from past financial accounting and cost accounting records. If the past records are not reliable, it will affect the effectiveness of management accounting.

2. Wide scope:

Management accounting has a very wide scope incorporating many disciplines. This results in inaccuracy and other practical difficulties.

3. Costly:

The installation of management accounting system requires a large organization. Hence it is very costly and only big concerns can afford to adopt it.

4. Evolutionary stage:

Management accounting is still in its initial stages. Tools and techniques are not fully developed. This creates doubts about the utility of management accounting.

5. Opposition to change:

Introduction of management accounting system requires a number of changes in the organization structure, rules and regulations. This rearrangement is not generally liked by the people involved.

6. Intuitive decisions:

Management accounting helps in scientific decision making. Yet because of simplicity and personal factors the management has a tendency to derive at decisions by intuition.

7. Not an alternative to management

Management accounting will not replace the management and administration. It is a tool of the management. Decisions are of the management and not of the management accountant.

Distinguish between Management Accounting and Financial Accounting

Q: DISTINGUISH BETWEEN MANAGEMENT ACCOUNTING AND FINANCIAL ACCOUNTING. (5 MARKS)

The following are the main difference between financial accounting and management accounting.

1. Objectives: The main objective of financial accounting is to supply information in the form of profit and loss account and balance sheet to outside parties like shareholders, creditors, government etc. But the objective of management accounting is to provide information for the internal use of management.

2. Performance analysis:

Financial accounting is concerned with the overall performance of the business. On the other hand management accounting is concerned with the departments or divisions. It reports about the performance and profitability of each of them.

3. Date used:

Financial accounting is mainly concerned with the recording of past events whereas management accounting is concerned with future plans and policies.

4. Nature:

Financial accounting is based on measurement while management accounting is based on judgement. Because of this, financial accounting is more objective and management account is more subjective.

5. Accuracy:

Accuracy is an important factor in financial accounting. But approximations are widely used in management accounting. This is because most of the information is related to the future and intended for internal use.

6. Legal Compulsion:

Financial accounting is compulsory for all joint stock companies but management accounting is only optional.

7. Monetary Transactions:

Financial accounting records only those transactions which can be expressed in terms of money. On the other hand, management accounting records not only monetary transactions but also non-monetary events, namely technical changes, government policies etc.

8. Control:

Financial accounting will not reveal whether plans are properly implemented. Management accounting will reveal the deviations of actual performance from plans. It will also indicate the cause for such deviations.

Difference between Management Accounting and Cost Accounting

Q: DISTINGUISH BETWEEN MANAGEMENT ACCOUNTING AND COST ACCOUNTING. (5 MARKS)

1. Objectives:

The objective of cost accounting is the ascertainment and control of costs of products or services. But the objective of management accounting is to help the management in decision making, planning, control etc. This objective is achieved by furnishing relevant accounting information to the management.

2. Scope:

Cost accounting deals primarily with cost data. But management accounting deals with both cost and revenue. It includes financial accounting, cost accounting, budgeting, reporting to management and interpretation of financial data. Thus, the scope of management accounting is wider than that of cost accounting.

3. Data used:

In cost accounting, only those transactions which can be expressed in figures are taken. Only quantitative aspect is recorded in cost accounting. But management accounting uses both quantitative and qualitative information.

4. Nature:

Cost accounting uses both past and present figures. But management accounting is concerned with the projection of figure for future. The policies and plans are prepared for providing future guidelines.

However, cost accounting and management accounting are complementary in nature. Cost accounting furnishes detailed cost information. Management accounting analyses and presents the data in a more meaningful and informative manner. It helps the management to use the cost data effectively.

Installation of Management Accounting System

Q: DISCUSS THE VARIOUS STEPS REQUIRED FOR INSTALLING MANAGEMENT ACCOUNTING SYSTEM. (10 MARKS)

1. Organization manual:

The first step is to prepare an organizational manual. The manual will clearly pin point the duties and responsibilities of each level of management and the horizontal and vertical relationship among the key personnel.

2. Preparation of various forms and reports:

The second step in the installation process is designing the form of various reports. The objective should be to minimize their number and simplify them to avoid 'Bureaucratization'.

3. Requisite staffing:

The staffs required for implementing the system are to be recruited and trained.

4. Classification of accounts:

Financial and cost accounts should be classified, confined and integrated to the extent possible to suit the requirement of management accounting.

5. Setting up of cost centres:

Investment centres, profit centres, cost centres and budget centres are to be clearly set up so that information can be collected and analyzed in relation to each of them.

6. Introducing management accounting techniques:

Various techniques of management accounting are to be introduced, based on the needs of the firm, and practicability.

7. Providing for usage of (or) Techniques':

Everyday new challenges are faced because business is operated under changing economic, political and social environment.

RATIO ANALYSIS

Q. WRITE A SHORT NOTE ON RATIO ANALYSIS.(2 MARKS)

Ratio analysis of business enterprises centers on efforts to derive quantitative measures or guides concerning the expected capacity of the firm to meet its future financial obligations or expectations. Present and past data are used for the purpose and, whatever extrapolations appear necessary, they are made to provide an indication of future performance.

Ratio is simply one number expressed in terms of another; it is an expression of relationship spelt out by dividing one figure into the other.

Q.DEFINE RATIO ANALYSIS. (2 MARKS)

“The relationship between two accounting figures; expressed mathematically”.

Q. EXPLAIN THE NATURE OF RATIOS. (5 MARKS)

Ratios may be expressed in any one or more of the following ways.

1. In Proportion:

In this type of expression, the amounts of two items are expressed in common denominator.

2. In Rate or Time or Coefficient:

A quotient obtained by dividing one item by another is taken as unit of expression.

3. In Percentage:

A quotient obtained by dividing one item by another is multiplied by one hundred to show the relationship in terms of percentage.

Q. EXPLAIN THE STEPS IN RATIOS. (5 MARKS)

1. Section of relevant information:

The first step in ratio analysis is to select relevant information from financial statement and calculate appropriate ratios required for decision under consideration.

2. Comparison of calculated ratios:

In order to assess the relative meanings the ratios calculated are compared with the past ratios and industry ratio.

3. Interpretation and Reporting:

The third step in ratio analysis is to interpret the significance of various ratios, draw inferences and to write a report. The report may recommend specific action in the matter of the decision situation or may present alternatives with comparative merits or it may just state the facts and interpretation.

Q. EXPLAIN THE USES AND SIGNIFICANCE OF RATIO ANALYSIS. (12 MARKS)

1. Helps in financial forecasting and planning:

Planning is looking ahead and the ratios calculated for a number of years work as a guide for the future. Ratios relating to past sales profits and financial position are the base for future trends. Ratio analysis is very helpful in financial forecasting and planning.

2. Helps in decision making:

Financial statements are prepared mainly for decision-making. But the information given in financial statements is not an end in itself and no meaningful conclusion can be drawn from these statements alone. Ratio analysis helps in making decisions from the information given in these financial statements.

3. Helps in communicating:

Different financial ratios communicate the strength and financial standing of the firm to the internal and external parties.

4. Helps in co-ordination:

Ratios even help in co-ordination, which is of utmost importance in effective business management. Better communication of efficiency and weakness of the enterprise helps in better co-ordination in the enterprises.

5. Helps in control:

Ratio analysis even helps in making effective control of business. This helps the management to take corrective action at the right time.

6. Useful in comparison of performance:

A firm would like to compare its performance with that of other firms and of industry in general. Even the progress of the firm from year to year cannot be measured without the help of ratios.

7. Useful for shareholders, creditors, investors, workers and government:

The ratio analysis is also useful to shareholders who know the profitability of the company, to creditors who know solvency of the business, to potential investors in assessing earning potential, to workers for computation of the bonus.

8. Useful in locating the weak spots of the business:

Accounting ratios are of great assistance in locating the weak spots in the business even though the overall performance may be quite good. Management can then pay attention to the weakness and take remedial action.

Q. EXPLAIN THE UTILITY (OR) ADVANTAGES OF RATIO ANALYSIS. (5 MARKS)

1. Useful in financial position analysis:

Accounting ratios reveal the financial position of the concern. It helps the banks, insurance companies.

2. Useful in simplifying accounting figures:

Accounting ratios simplify summarize and systematize the accounting figures in order to make them more understandable and in lucid form. They highlight the inter relationship which exists between various segments of the business as expressed by accounting statements.

3. Useful in assessing the operational efficiency:

Accounting ratios help to have an idea of the working of a concern. The efficiency of the firm becomes evident when analysis is based on accounting ratios.

4. Useful in forecasting purposes:

If accounting ratios are calculated for a number of years, then a trend is established. This trend helps in setting up future plans and forecasting.

5. Useful in comparison of performance:

Comparison can be made between one departments of a firm with another of the same firm in order to evaluate the performance of various departments in the firm. Manager is naturally interested in such comparison in order to know the proper and smooth functioning of such departments.

Q. LIST OUT THE LIMITATIONS OF RATIO ANALYSIS. (5 MARKS)

1. Limited use of a single ratio:

It can be useful only when they are computed in sufficiently large numbers. A single ratio would not be capable to convey anything.

2. False results:

Ratios are based upon the financial statements. In case, financial statements are incorrect or the data upon which ratios are based is incorrect, ratios calculated will also be false and defective.

3. Limited comparability:

The ratio of the one firm cannot always be compared with the performance of an other firm, if they do not adopt uniform accounting policies.

4. Accounting limitations:

Ratio analysis is based on financial statements, which are themselves subject to certain limitations. Therefore, any ratio calculated on the basis of figures given in financial statement also suffers from similar limitations.

5. Price level changes affect ratios:

The comparability of ratios suffers, if the prices of the commodities in two different years are not same. Changes in price affect the cost of production, sales and also the value of assets.

6. Background is over looked:

When an inter firm comparison is made on the basis of ratio analysis and the different substantially in size, age and nature of products, ratio analysis cannot give satisfactory result as the factors are not considered.

7. Ignoring qualitative factors:

It is the quantitative measurement of the performance of the business. It ignores the qualitative aspect of the firm, how so ever important it may be. It shows that ratio is only an one-sided approach to measure the efficiency of the business.

8. Ratio analysis convey's observation:

Conclusions drawn from the ratio analysis are not sure indicators of bad or good management. They merely convey observations, which need further investigations otherwise, wrong conclusions may be drawn. Computation of ratios is not useful they are properly interpreted.

9. Personal bias:

Ratios are only means of financial analysis. Ratios have to be interpreted and different people may interpret the same ratio in different ways. Therefore, there is a tendency to over employ them.

10. Window dressing:

It means manipulation of accounts in a way as to conceal vital facts and present the financial statements in a way to show a better position. Therefore, one has to be careful in making decision from ratios calculated from such financial statements.

Q. ENUMERATE BRIEFLY ABOUT THE INTERPRETATION OF RATIO ANALYSIS.

1. The individual ratio, by itself, may have significance of its own. Thus, if the current ratio persistently falls to, and even goes below, one, it may indicate impending insolvency.
2. Ratios may be interpreted by expanding the analysis and considering a group of several related ratios.
3. The third approach to interpretation of ratios involves making comparisons overtime. The same ratio, or for that matter a group of ratios, is studied over a period of years with the result that significant trends indicating rise, decline or stability are highlighted.
4. The ratio of any given firm may be compared with the ratios of other firms in the same industry such comparison are usually significant as, in most cases, members of the same industry face the same or similar financial PROBLEM NO.s.
5. These comparisons are often facilitated by the use of tables summarizing the ratios of the firms in a particular industry.
6. Any thorough investigation of the financial position of firm will bring into play all these approaches ratios will be scanned for any intrinsic meaning they may possess they will be supplemented by further ratio-analysis and they will be compared with the ratios of other members of the industry in order to determine both the firm's relative position as well as the degree of the conformity of its trend to industry trends.

Q. HOW ACCOUNTING RATIOS ARE CLASSIFIED? (10 MARKS)

Profitability	Earnings	Activity /Turnover Performance	Liquidity Ratio (Shot term Solvency)	Solvency Ratio (Long term Solvency)
1. Gross profit ratio. 2. Net profit ratio. 3. Operating	1. Earnings per share. 2. Price earning ratio 3. Pay out ratio	1. Capital turnover ratio. 2. Fixed assets turnover ratio. 3. Working capital	1. Current ratio. 2. Liquid (or) quick ratio. 3. Absolute liquidity ratio.	1. Debt equity ratio. 2. Fixed charges cover. 3. Fixed

profit ratio. 4. Operating ratio. 5. Expenses ratio. 6. Return on investment. 7. Return on shareholders funds. 8. Return on equity. 9. Return on total assets.	4. Retained earnings ratio 5. Dividend yield ratio 6. Cover for equity dividend 7. Yield ratio.	turnover ratio. 4. Stock turnover ratio. 5. Debtors turnover ratio. 6. Average collection period. 7. Creditors turnover ratio. 8. Average payment period.	4. Ratio of inventory to working capital.	dividend coverage ratio. 4. Fixed assets ratio. 5. Proprietary ratio. 6. Ratio of fixed assets to proprietor's funds. 7. Ratio of current assets to proprietors' funds 8. Ratio of current assets of fixed assets. 9. Reserves to capital ratio. 10. Capital gearing ratio.
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Short Term & Long Term Financial or Solvency Ratio

Q: EXPLAIN BRIEFLY ABOUT THE TERM PROFITABILITY, SOLVENCY, ACTIVITY, LIQUIDITY, EARNINGS RATIO.

I) Liquidity Ratio (Short Term Solvency Ratio):

To measure the short term financial soundness of the business. The ratio assesses the capacity of the company to replay its short term liability. This ratio is also and effective source to ascertain whether the working capital has been effectively utilized.

1. Current Ratio:

It is an indicator of the firm's ability to meet its short term obligations. It judges, whether current assets are sufficient to meet the current liabilities.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

2. Quick (or) Liquid Ratio:

It is also known as the acid test (or) quick assets ratio or the near money ratio. It shows the relationship that exists between the liquid assets and current liabilities.

$$\text{Liquid ratio} = \frac{\text{Quick or liquid assets}}{\text{Current liabilities}}$$

$$\text{Quick (or) liquid assets} = \text{Current assets} - (\text{stock} + \text{prepaid expenses})$$

(or)

$$= \text{Cash in hand} + \text{cash at bank} + \text{bills receivable} + \text{sundry debtors} + \text{marketable securities} + \text{temporary investments}$$

$$\text{Current liabilities} = \text{Sundry creditors} + \text{bills payable} + \text{outstanding expenses} + \text{short term advances} + \text{income tax payable} + \text{dividends payable} + \text{bank overdraft}$$

3. Absolute liquidity ratio (or) cash ratio:

It is also known as cash position ratio or super quick ratio. It establishes the relationship between absolute liquid assets and current liabilities. Absolute liquid assets are cash in hand, bank and readily marketable securities.

$$\text{Absolute liquidity ratio} = \frac{\text{cash in hand} + \text{bank} + \text{marketable securities}}{\text{Current liabilities}}$$

4. Ratio of inventory to working capital:

To ascertain that there is no over stocking, this ratio should be calculated.

$$\text{Ratio of inventory to working capital} = \frac{\text{Inventory}}{\text{working capital}}$$

II. Solvency Ratios (Long Term Solvency Ratio):

It means the ability of the business to repay its outside liabilities. These liabilities are categorized as short term liabilities and long term liabilities. It also measures the relationship between external equities and internal equities.

1. Debt-equity ratio:

To judge the effectiveness of the long term financial policy of the business. It indicates the relative proportion of debt and equity in financing the assets of the business unit. It establishes the relationship between the external equities or the outsiders funds and the internal equities or the shareholders funds.

$$\text{Debt equity ratio} = \frac{\text{Long term debt}}{\text{Shareholders funds}}$$

2. Interest coverage or Debt service or Fixed charges cover:

This ratio is employed to indicate times interest charges that have been earned and how much safety margin is available to the shareholders. It measures debt servicing capacity of the firm in so far as fixed interest on long term loan is concerned.

$$\text{Interest coverage ratio} = \frac{\text{Net profit before interest and tax}}{\text{Interest on fixed (long term) loans or debentures}}$$

3. Fixed dividend coverage ratio:

The preference shareholders are entitled to receive dividend only after meeting of debentures interest and other fixed charges and taxation liability. Dividend coverage ratio seeks to justify the ability of the firm to pay dividend on preference shares at a stated rate.

$$\text{Dividend coverage} = \frac{\text{Net profit after interest and tax but before dividend}}{\text{Preference dividend}}$$

4. Fixed assets ratio:

This ratio is also known as ratio of capital or long term funds to fixed assets. One of the key principles of financial policy is that fixed assets acquisitions should be financed by long term funds only.

It indicates the extent to which the total of fixed assets is financed by long term funds of the firm.

$$\text{Fixed assets ratio} = \frac{\text{Net fixed assets}}{\text{Long term funds}}$$

5. Proprietary ratio:

Proprietor's funds mean the sum of the paid-up equity share capital plus preference share capital plus reserves and surplus, both of capital and revenue nature. It establishes the relationship between the proprietors funds and total tangible assets.

6. Ratio of fixed assets to proprietor's funds:

It establishes the relationship between fixed assets and shareholders funds. The main object of calculating this ratio is to find out the percentage of owners funds invested in fixed assets.

$$\text{Fixed assets to proprietors funds} = \frac{\text{Fixed assets (after depreciation)}}{\text{Shareholders funds}}$$

7. Ratio current assets to proprietor's funds:

It shows the relationship between current assets and shareholders fund. The purpose of this ratio is to calculate the percentage of shareholders' funds invested in current assets.

$$\text{Current assets to proprietors funds} = \frac{\text{Current assets}}{\text{Shareholders funds}}$$

8. Ratio of current assets to fixed assets:

It establishes relationship between fixed assets and current assets.

$$\text{Ratio of fixed assets to current assets} = \frac{\text{Current assets}}{\text{Fixed assets}}$$

9. Reserves to capital ratio:

It establishes relationship between reserves and equity share capital viz.,

$$\text{Reserve to capital ratio} = \frac{\text{Reserves}}{\text{Equity share capital}} * 100$$

Capital Structure of a concern.

10. Capital gearing ratio:

The technique of raising finances for the company by resorting to fixed interest or dividend carrying securities is called "gearing" the capital.

$$\text{Capital gearing ratio} = \frac{\text{Preference share capital} + \text{Long term debt bearing fixed interest}}{\text{Equity share capital} + \text{Reserves} + \text{Surplus}}$$

III) Turnover (OR) Activity / Performance ratio:

Turnover means sales, higher sales means better performance, which really means better efficiency and productivity of the business. Lesser sales mean inactivity of the business, poor performance and lesser productivity. All business activities revolve round the sales.

Various kinds of turnover ratio

1. **Capital turnover ratio:** It establishes the relationship between cost of goods sold and the capital employed. Turnover here refers to the speed or rate with which capital employed is rotated in the process of doing business.

$$\text{Capital turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Capital employed}}$$

2. **Fixed assets turnover ratio:**

This ratio expresses the relationship between cost of goods sold or sales and fixed assets. Fixed assets are generally taken at written down value at the end of the year.

$$\text{Fixed assets turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Fixed assets.}}$$

3. **Working capital turnover ratio:**

This ratio indicates the efficiency or otherwise in the utilization of short term funds in making sales. Working capital means the excess of current assets over the current liabilities.

$$\text{Working capital turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Net working capital}}$$

4. **Stock turnover ratio:**

Business activity depends upon the rate at which stock or inventory is converted into sales. This ratio indicates whether stock has been efficiently used or not. The purpose being to check up whether only the required minimum has been locked up in stocks.

$$\text{Stock turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Average stock}}$$

$$\text{Average stock} = \frac{\text{Opening stock} + \text{Closing stock}}{2}$$

5. Debtors turnover ratio:

It establishes the relationship between net credit sales and average accounts receivable. This ratio is an indication of the number of times debtor turnover on an average in each year.

$$\text{Debtors turnover ratio} = \frac{\text{Net credit sales}}{\text{Average accounts receivable}}$$

Accounts receivable = Trade debtors and Bills receivable

6. Average collection period:

The debtors' turnover ratio is supplemented by another ratio viz., average collection period. The average collection period states unambiguously the number of days average credit sales tied up in the amount owed by the buyers.

$$\text{i) Average collection period} = \frac{\text{Days in a year}}{\text{Debtors turnover}}$$

$$\text{ii) Average collection period} = \frac{\text{Average accounts receivable}}{\text{Credit sales for the year}} * 365 \text{ days}$$

$$\text{iii) Average collection period} = \frac{\text{Accounts receivable}}{\text{Average monthly (or) daily credit sales}}$$

7. Creditors turnover ratio (or) payable turnover ratio:

It indicates the number of times the payable rotate a year. This ratio compares the accounts payable with the total credit purchases. It signifies the credit period enjoyed by the firm in paying creditors.

$$\text{Creditors turnover ratio} = \frac{\text{Net credit purchases}}{\text{Average accounts payable}}$$

Average accounts payable consist of creditors and bills payable.

$$\text{Average account payable} = \frac{(\text{Opening balance of creditors} + \text{B/P}) + (\text{Closing balance of creditors} + \text{B/P})}{2}$$

$$\text{Creditors turnover ratio} = \frac{\text{Total purchases}}{\text{Accounts payable}} = \text{No. of times}$$

8. Average payment period ratio:

It indicates the speed with which the payments for credit purchases are made to creditors.

$$\text{a) Average payment period} = \frac{\text{Months (or days) in a year}}{\text{Creditors turnover}}$$

$$\text{b) Average payment period} = \frac{\text{Average accounts payable}}{\text{Credit purchases in the year}} * \text{Months or days in a year}$$

$$\text{c) Average payment period} = \frac{\text{Average accounts payable}}{\text{Average monthly (or days) credit purchases}}$$

IV). Profitability Ratio:

Profitability reflects the final result of a business operation. Profitability ratios are employed by the management in order to assess how efficiently they carry on business operations. Profitability is the main base for liquidity as well as solvency. The shareholders are interested in profitability for they indicated growth of and also the rate of return on their investments.

1. Gross profit ratio: This ratio establishes the relationship between gross profit on sale and net sales in term s of percentage indicating the percentages of gross profit earned on sales.

$$\text{Gross profit} = \text{Net sales} - \text{Cost of goods sold}$$

$$\text{Gross profit ratio} = \frac{\text{Gross profit}}{\text{Net Sales}} * 100$$

Gross profit, which is sometimes referred to, as “Gross Margin” is the difference between the net sales and cost of goods, sold.

2. Net profit ratio: It establishes the relationship between the amount of net profit or net income and the amount of sales revenue. Net profit or net income is the gross profit less selling, distribution and financial expenses.

$$\text{Net profit} = \text{Gross profit} + \text{Operating and Non-operating income} - \text{Operating and Non-operating expense}$$

Operating income:

Income earned the ordinary life of the business from trading activities.

Non-operating income:

It includes income from non-trading operations such as, refund of tax, compensation received etc.

Operating expenses:

It includes selling, administrative and distribution expenses incurred in the day-to-day affairs of the business.

Non-operating expenses:

These expenses include all financial expenses depreciation, loss on sale of assets, reserves, dividend and interest paid.

$$\text{Net profit ratio} = \frac{\text{Net profit}}{\text{Net Sales}} * 100$$

3. Operating profit ratio.

This ratio measures the relationship between operating profits and sales. It is calculated by deducting the operating expenses that include cost of goods sold, selling, general and distributive expenses relating to the business from the operating revenues.

4. Operating ratio.

This ratio takes into account the aggregate of manufacturing cost of goods sold and other operating expenses on the one hand and net sales revenue on the other. Deducting the sales return from the gross sales revenue arrives at net sales revenue.

$$\text{Operating ratio} = \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Net Sales}} * 100$$

5. Expenses ratio.

These are also known as supporting ratios to operating ratio. In order to determine the scrutinizes the operating efficiency of the business every expenditure had to be matched with sales. The business should calculate every expenses ratio individually. So that actual increase or decrease in the ration of all the expenses may be known. Theses ratios are calculated by dividing the sales into each individual operating expense.

i) Raw materials used to sales:

$$\text{Direct material cost to sales} = \frac{\text{Direct material cost}}{\text{Net sales}} * 100$$

ii) Ratio of labour to sales:

$$\text{Direct labour cost to sales} = \frac{\text{Direct labour cost}}{\text{Net sales}} * 100$$

iii) **Ratio of factory expenses to sales:**

$$\text{Factory expenses to sales} = \frac{\text{Factory expenses}}{\text{Net sales}} * 100$$

iv) **Ratio of office and administration expenses to sales:**

$$\text{Office \& administration expenses to sales} = \frac{\text{Office and administration expenses}}{\text{Net sales}} * 100$$

v) **Ratio of selling & distribution expenses to sales:**

$$\text{Selling \& distribution expenses to sales} = \frac{\text{Selling \& distribution expenses}}{\text{Net sales}} * 100$$

6. OVERALL PROFITABILITY RATIO.

i) Return on investment

The basic objective of making investments in any business is to obtain satisfactory return on capital invested. The overall performance and the most important, therefore, can be judged by working out a ratio between profit earned and capital employed formulation for calculation of return on capital employed is as follows:

$$\frac{\text{Operating profit}}{\text{Capital employed}} * 100$$

ii) Capital employed

The term “capital employed” refers to the total investments made in a business and can be defined in a number of ways.

iii) Gross capital employed:

It consists of the total assets of a business.

$$\text{Gross capital employed} = \text{Fixed assets} + \text{Current assets.}$$

iv) Net capital employed:

It consists of total assets of the business less its current liabilities.

$$\text{Net capital employed} = \text{Fixed assets} + \text{current Assets} - \text{current liabilities (or)}$$

$$\text{Net capital employed} = \text{Fixed assets} + \text{working capital.}$$

(or)

$$\text{Net capital employed} = \text{Issued share capital} + \text{capital reserves} + \text{revenue reserves} + \text{debentures and long term loans} - \text{fictitious assets.}$$

V) Proprietor’s net capital employed:

It means shareholders funds

$$\text{Proprietor’s net capital employed} = \text{Fixed assets} + \text{current assets} - \text{outside liabilities}$$

VI) **Operating profit:** As regards definitions of “operating profit”, the business profit before interest and taxation should be taken.

7. Return on shareholder’s fund: This ratio indicates how effectively the owner’s funds have been deployed by a firm. This ratio established the profitability from the shareholders point of view.

$$\text{Return on shareholders funds} = \frac{\text{Net profit (after interest \& tax)}}{\text{Shareholders fund}} * 100$$

8. Return on equity: It is also known as return on net worth or return on proprietor’s fund. The preference shareholders get the dividend on their holdings at a fixed rate and before dividend to equity share holders, the real risk remains with the equity shareholders.

$$\text{Return on equity} = \frac{\text{Net profit after tax \& preference dividend}}{\text{Equity capital}}$$

9. Return on total assets:

It is also known as profit to assets ratio. It establishes the relationship between net profits and assets.

$$\text{Return on total assets} = \frac{\text{Net profit after taxes and interest}}{\text{Total assets}} * 100$$

V) Earnings Ratio:

a) Earning per share:

This ratio measures the return per share receivable by equity or ordinary shareholders. Equity shareholders are virtually the owners of the company.

$$\text{Earning per share (E.P.S)} = \frac{\text{Net profit}}{\text{No. of equity shares}} * 100$$

Dividend payable to them is ascertained after deducting operating and non-operating expenses and even the payable to debenture holders and dividend to preference shareholders.

b) Price-earning ratio:

It indicates the number of items the earning per share is covered by its market price.

$$\text{Price - Earning ratio} = \frac{\text{Market price per equity share}}{\text{Earning per equity share}}$$

Sundry Ratio (Yield Ratio and Payout Ratio)

c) Dividend yield ratio:

It refers to the percentage or ratio of dividend paid per share to the market price per share.

$$\text{Dividend yield ratio} = \frac{\text{Dividend per share}}{\text{Market value per share}}$$

$$\text{Dividend per share} = \frac{\text{Dividend paid to shareholders}}{\text{No. of shares}}$$

d) Pay-out ratio:

It measures the relationship between the earnings belonging to equity shareholders and the dividend paid to them. This reveals how much dividend is to be paid out of the earnings after taxes and preference dividend to equity shareholders on per share basis or on percentage of earnings.

$$\text{Payout ratio} = \frac{\text{Equity dividend}}{\text{Net profit after tax and preference dividend}} * 100$$

(or)

$$\frac{\text{Dividend per equity share}}{\text{Earnings per equity share}} * 100$$

e) Retained earnings ratio:

The reverse of the payout ratio is the ratio of retained earnings.

$$\text{Retained earnings ratio} = \frac{\text{Retained earnings}}{\text{Net profit after tax and pre. dividend}} * 100$$

f) **Cover for equity dividend:** This ratio refers to the number of times the dividend is covered by the amount of profit available for equity shareholders.

$$\text{Equity dividend cover} = \frac{\text{Net profit after tax - preference dividend}}{\text{Equity dividend}}$$

Ratio analysis

PROBLEM NO. NO: 1

You are given the following information:

Particulars	Rs.	Particulars	Rs.
Cash	18,000	Creditors	50,000
Debtors	1,42,000	Outstanding expenses	15,000
Closing stock	1,80,000	Tax payable	75,000
Bills payable	27,000		

Calculate (a) Current ratio (b) Liquidity ratio (c) Absolute liquidity ratio

PROBLEM NO. NO: 2

From the following Balance Sheet, calculate (a) Current ratio (b) Liquidity ratio (c) Debt-Equity ratio (d) Proprietary ratio.

Balance Sheet			
Liabilities	Rs.	Assets	Rs.
Share capital	5,00,000	Fixed assets	14,00,000
Reserves	3,00,000	Stock	5,00,000
6% Debentures	11,00,000	Debtors	2,00,000
Bank overdraft	1,00,000	Cash	1,00,000
Creditors	2,00,000		
	22,00,000		22,00,000

PROBLEM NO. NO: 3

The Balance of Remember Ltd as on 31.12.2000 is as under:

Balance Sheet			
Liabilities	Rs.	Assets	Rs.
Equity capital	2,00,000	Fixed assets	3,60,000
9% Preference share capital	1,00,000	Stock	50,000
8% Debentures	1,00,000	Debtors	1,10,000
Profit & Loss A/c	40,000	Bank	6,000
Creditors	90,000	Bills receivable	4,000
	5,30,000		5,30,000

Find out: (a) Debt equity ratio; (b) Current ratio and (c) Liquidity ratio

PROBLEM NO. NO: 4

Calculate ratio (a) Quick Ratio and (b) Current ratio and (c) proprietary ratio from the data given below:

Balance Sheet			
Liabilities	Rs.	Assets	Rs.
Equity share capital	10,00,000	Goodwill	5,00,000
6% preference share capital	5,00,000	Plant	6,00,000
General reserve	1,00,000	Land & Buildings	7,00,000
Profit and Loss A/c	4,00,000	Furniture	1,00,000
Tax provision	1,76,000	Stock	6,00,000
Bills payable	1,24,000	Bills receivable	30,000
Bank overdraft	20,000	Bank balance	2,00,000
Creditors	80,000	Sundry debtors	1,50,000
12% Debentures	5,00,000	Marketable securities	20,000
	29,00,000		29,00,000

PROBLEM NO. NO: 5

From the following summarized profit and loss account calculate (a) **Gross profit ratio**; (b) **Net profit ratio**; (c) **Operating ratio**; (d) **Operating profit ratio**:

Particulars	Rs.	Particulars	Rs.
To Opening stock	9,950	By Sales	85,000
To Purchases	54,525	By Closing stock	14,900
To Sundry expenses	1,425		
To Gross profit	34,000		
	99,900		99,900
To Operating expenses:		By Gross profit	34,000
Administrative expenses	15,000	By non-operating income:	
Selling & distribution expenses	3,000	Interest (bank)	300
Financial	1,500	Profit on sale of shares	600
To Non-operating expenses			
Loss on sale of plant and machinery	400		
To Net profit	15,000		
	34,900		34,900

PROBLEM NO. NO: 6

Mani manufacturing company has drawn up the following profit & loss account for the year ended 31st March 2013.

Particulars	Rs.	Particulars	Rs.
To Opening stock	26,000	By Sales	1,64,000
To Purchases	80,000	By Closing stock	34,000
To Wages	24,000		
To Manufacturing expenses	16,000		
To Gross profit	52,000		
	1,98,000		1,98,000
To Administrative expenses	22,800	By Gross profit	52,000
To Selling & distribution expenses	4,000	By Compensation for	
To General expenses	1,200	acquisition of land	4,800
To Value of furniture lost by fire	800		
To Net profit	28,000		
	56,800		56,800

You are required to find out the following ratios:

(a) **Operating ratio**; (b) **Ratio of operating net profit**; (c) **Gross profit ratio**; (d) **Selling and distribution expenses ratio**; (e) **Administration expenses ratio**.

PROBLEM NO. NO: 7

The following figures relate to Mala Traders Ltd., for the year ended 31st March 2015.

Trading and profit and loss account				
Particulars	Rs.	Particulars	Rs.	Rs.
To Opening stock	75,000	By Sales	5,20,000	
To Purchases	3,25,000	Less: Returns	20,000	5,00,000
To Gross profit	2,00,000	By Closing stock		1,00,000
	6,00,000			6,00,000
To Operating expenses:		By Gross profit		2,00,000
Administration	40,000	By Non-operating		
Selling & distribution	25,000	income:		

To Non-operating expenses:		Dividend	9,000	-
Loss on sale of assets	5,000	Profit on sale of shares	11,000	20,000
To Net profit	1,50,000			
	2,20,000			2,20,000
Balance sheet as on 31st March 2015				
Liabilities	Rs.	Assets	Rs.	
2,000 Equity share of Rs.100 each	2,00,000	Land & building	1,50,000	
Reserve	90,000	Plant & machinery	80,000	
Current liabilities	1,50,000	Stock	1,00,000	
Profit & loss A/c	60,000	Debtors	1,40,000	
		Cash and bank	30,000	
	5,00,000		5,00,000	

Calculate: (1) Gross profit ratio; (2) Operating ratio; (3) Operating profit ratio; (4) Net profit ratio; (5) Expenses ratio; (6) Stock turnover ratio; (7) Return on total resources; (8) Turnover of fixed assets; (9) Turnover to total assets.

PROBLEM NO. NO: 8

Following is the profit and loss A/c of a company for the year ending 31-12-2010.

Particulars	Rs.	Particulars	Rs.
To Opening stock	1,00,000	By Sales	5,60,000
To Purchases	3,50,000	By Closing stock	1,00,000
To wages	9,000		
To Gross profit	2,01,000		
	6,60,000		6,60,000
To Administrative expenses	20,000	By Gross profit	2,01,000
To Selling & distribution expenses	89,000	By interest on investments (outside business)	10,000
To Non-operating expenses	30,000	By Profit on sale of investments	8,000
To Net profit	80,000		
	2,19,000		2,19,000

Calculate: (a) Gross profit ratio; (b) Net profit ratio; (c) Operating ratio; (d) Operating profit ratio.

PROBLEM NO. NO: 9

Calculate ratio (a) Working capital (b) Net Capital Employed (c) Current Ratio (d) Acid Test Ratio (e) Debt – Equity Ratio (f) Fixed Assets Ratio

Liabilities	Rs.	Assets	Rs.
Equity share capital	25,000	Fixed Assets	30,000
Preference share capital	5,000	Current Assets: Stores	2,000
Reserves and surplus	4,000	Sundry debtors	1,000
Debentures	8,000	Cash	500
Bank loan	4,000	Bank	2,500
Sundry creditors	1,000	Preliminary expenses	8,000
Proposed dividends	1,000	Brokerage on shares	2,000
Provision for taxation	2,000	Stock	4,000
	50,000		50,000

PROBLEM NO. NO: 10

The following is the balance sheet of a company as on 31st March.

Balance sheet as on 31st March			
Liabilities	Rs.	Assets	Rs.
Share capital	2,00,000	Land & building	1,40,000
Profit & loss account	30,000	Plant & machinery	3,50,000
General reserve	40,000	Stock	2,00,000
12% Debentures	4,20,000	Sundry debtors	1,00,000
Sundry creditors	1,00,000	Bills receivable	10,000
Bills payable	50,000	Cash at bank	40,000
	8,40,000		8,40,000

Calculate: (1) Current ratio; (2) Quick ratio; (3) Inventory to working capital; (4) Debt to equity ratio; (5) Proprietary ratio; (6) Capital gearing ratio; (7) Current assets to fixed assets.

PROBLEM NO. NO: 11

Following is the balance sheet of Sunshine Ltd., for the year ending December 31, 1988:

Balance sheet			
Liabilities	Rs.	Assets	Rs.
Equity share capital	5,00,000	Land & building	3,50,000
5% Debentures	2,00,000	Plant and machinery	2,50,000
Bank loan	1,50,000	Cash in hand	25,000
Sundry creditors	75,000	Cash at bank	55,000
Bills payable	50,000	Sundry debtors	85,000
Outstanding expenses	5,000	Bills receivables	1,05,000
		Stock	1,00,000
		Prepaid expenses	10,000
	9,80,000		9,80,000

From the information given above, calculate: (a) Current ratio; (b) Acid-test ratio; (c) Absolute liquid ratio.

PROBLEM NO. NO: 12

The following is the trading account of Mr. Muruganathan. Calculate stock turnover ratio.

Trading Account			
To Opening stock	15,920	By Sales	78,000
To Purchases	39,000	By Closing stock	14,400
To Carriage	1,000		
To Gross profit	36,480		
	92,400		92,400

PROBLEM NO. NO: 13

Girija & Co., sells goods on cash as well as on credit basis. The following particulars are extracted from the books of accounts for the calendar year 1999. Calculate the average collection period.

Gross sales	1,00,000	Bills receivable on 31-12-99	2,000
Cash sales (included in above)	20,000	Provision for doubtful debts on 31-12-99	1,000
Sales return	7,000	Total creditors on 31-12-99	10,000
Total debtors as on 31-12-99	9,000		

PROBLEM NO. NO: 14

Calculate debtors' collection period from the following details:

Particular	2004	2005
Total sales	5,80,000	6,90,000
Cash sales	80,000	90,000
Debtors	85,000	92,000
Bills receivable	5,000	8,000
Provision for bad debts	6,000	8,000

PROBLEM NO. NO: 15

A trader purchases goods both on cash as well as on credit terms. The following particulars are obtained from the books. Calculate average payment period.

Total purchases	5,81,000	Creditors at the end	1,05,000
Cash purchases	30,000	Bills payable at the end	60,000
Purchase returns	51,000	Reserve for discount on creditors	8,000

PROBLEM NO. NO: 16

Calculate: (1) Creditors turnover ratio, and (2) Average payment period. Take 360 days in a year.

Particular	1988	1987
Annual credit purchases	6,80,000	7,50,000
Creditors on January 1	80,000	60,000
Creditors on December 31	60,000	90,000

PROBLEM NO. NO: 17

You are required to calculate the following: (a) **Working capital turnover;** (b) **Fixed assets turnover;** (c) **Capital turnover.** The information available is as under: Capital employed: Rs.4,00,000; Current assets: Rs.2,00,000; Current liabilities: Rs.40,000; Net fixed assets: Rs.2,50,000; Sales: Rs.5,00,000; Cost of sales: Rs.4,00,000.

PROBLEM NO. NO: 18

From the following information calculate: 1) **Return on capital employed,** 2) **Return on shareholders' funds,** 3) **Return on total assets.** Profit before tax is Rs.1,20,000. Tax rate is 40%.

Balance sheet			
Liabilities	Rs.	Assets	Rs.
Share capital	1,00,000	Fixed assets	8,00,000
Reserves	2,00,000	Current assets	2,00,000
10% Debentures	6,00,000		
Creditors	1,00,000		

	10,00,000		10,00,000
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PROBLEM NO. NO: 19

Calculate the earning per share (EPS) from the following data.

Net profit before tax Rs.50,000; Tax rate 50%; 10% Preference share capital (Rs.10 each) Rs.50,000; Equity share capital (Rs.10 each) Rs.50,000.

PROBLEM NO. NO: 20

Compute the pay out ratio and retained earning ratio from the following data:

Net profit	Rs.10,000	Provision for tax	Rs.5,000
Number of equity shares	3,000	Preference dividend	Rs.2,000
Dividend per equity share	40 paise		

PROBLEM NO. NO: 21

The capital of Sai Co., Ltd., is as follows: 9% Preference shares of Rs.10 each Rs.3,00,000; Equity share of Rs.10 each Rs.8,00,000. The accountant has ascertained the following information:

Profit after tax at 60%	2,70,000	Reserve	77,000
Depreciation	60,000	Market price per equity share	40
Equity dividend paid	20%		

Calculate:

1. Dividend yield on equity shares;
2. Cover for preference dividends;
3. Earnings per share;
4. The price earnings ratio;
5. Dividend pay out ratio;
6. Net cash inflow;
7. Book value per share.

PROBLEM NO. NO: 22

Compute the pay out ratio and retained earning ratio from the following data:

Net profit	Rs.5,000	Provision for tax	Rs.2,500
Number of equity shares	1,500	Preference dividend	Rs.1,000
Dividend per equity share	40 paise		

PROBLEM NO. NO: 23

Calculate the value of opening stock and closing stock.

Opening debtors	60,000	Closing debtors	90,000
Opening bills receivable	10,000	Closing bills receivable	20,000

Credit allowed to debtors 1 month; Gross profit 20% on cost; Stock turnover ratio 10 times; opening stock was Rs.10,000 more than closing stock.

PROBLEM NO. NO: 24

Find out the value of creditors from the following:

Sales	Rs.50,000	Opening stock	Rs.5,000
Gross profit on sales	10%	Closing stock	Rs.10,000
Creditors velocity	73 days	Bills payable	Rs.3,000

PROBLEM NO.: 25

From the following details determine the value of debtors:

Total sales	5,00,000
Cash sales	2,00,000
Debtors velocity	30 days
Bills receivable	5,000

MARGINAL COSTING

Q: WHAT DO YOU MEAN BY MARGINAL COST? (2 MARKS)

Marginal cost is the additional cost of producing an additional unit of a product. It is the amount by which total cost increase when one extra unit is produced or the amount of cost, which can be avoided by producing one unit less.

Q: DEFINE MARGINAL COST. (2MARKS)

Marginal cost is defined by ICMA, London as “the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit. In practice, this is measured by the total variable costs attributable to one unit”.

Q: WHAT ARE THE FEATURES OF MARGINAL COST? (2 MARKS)

1. It is usually expressed in terms of one unit.
2. It varies proportionate to variation in output.
3. It is charged to operation, processes or products.
4. It is the total of prime cost-plus variable overhead of one unit.

Q: WHAT DO YOU MEAN BY MARGINAL COSTING? (2 MARKS)

Marginal costing is one of the most useful techniques available to the management. It guides the management in pricing, decision making and assessment of profitability. It reveals the inter-relationship between cost, volume of sale and profit.

Q: DEFINE MARGINAL COSTING. (2 MARKS)

Marginal costing is defined by ICMA as “the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed cost and variable cost”.

In the words of J Bally, Marginal costing is “a technique of cost accounting which pays special attention to the behaviour of costs with changes in the volume of output”.

Q: EXPLAIN THE FEATURES OF MARGINAL COSTING. (5/10 MARKS)

1. Marginal costing is a technique of working of costing which is used in conjunction with other methods of costing.
2. Fixed and variable costs are kept separate at every stage. Semi variable costs are also separated in the fixed and variable.
3. As fixed costs are period costs, they are excluded from product cost or cost of production or cost of sales. Only variable costs are considered as the cost of the product.
4. When evaluation of finished goods and work-in-progress are taken into account, they will be only variable cost.

5. A fixed cost is period costs, they are charged to profit and loss account during the period in which they are incurred.
6. They are not carried forward to the next year's income.
7. Marginal income or marginal contribution is known as the income or profit.
8. The difference between contributions is known as the income or profit.
9. Fixed cost remains constant irrespective of level of activity.
10. Sales price and variable cost per unit remain the same.
11. Cost volume profit relationship is fully employed to reveal the state of profitability at various level of activity.

Q: EXPLAIN THE ASSUMPTION OF MARGINAL COSTING. (5/10 MARKS)

The technique of marginal costing is based on the following assumptions.

1. All elements of cost can be divided into fixed and variable.
2. The selling price per unit remains unchanged at all levels of activity.
3. Variable cost / unit remains constant irrespective of level of output and fluctuates directly in proportion to changes in the volume of output.

Q: EXPLAIN THE ADVANTAGES AND LIMITATION OF MARGINAL COSTING.

Marginal costing is an important technique of managerial decision-making. It is a tool for cost control and profit planning. Marginal costing technique commands the following advantages:

1. It is simple to understand and can be combined with standard costing.
2. It gives a clear understanding of the relationship between cost, selling price and volume of output.
3. It brings out clearly the 'contribution' of the each product to the profit, which helps in better decision-making.
4. It helps in working out the maximum overall profit that can be earned.
5. By not charging fixed overhead to cost of production, the effect of varying charges per unit is avoided.
6. It prevents the illogical carry forward in stock valuation of some proportion of current year's fixed overheads.
7. It eliminates large balances left in overhead control accounts.
8. It helps in taking a number of managerial decisions, e.g. closing down of unprofitable activities, 'make or buy' decisions, etc.
9. It enables effective cost control through flexible budgeting by dividing costs into fixed and variable component.

Disadvantages of Marginal Cost

1. This technique is useful only for short term analysis, it has little use for long-term analysis.
2. The separation of costs into fixed and variable is difficult and sometimes gives misleading results.
3. Normal costing systems also apply overheads under normal operating volume. Hence, no advantage is gained by marginal costing.
4. Application of variable overhead depends on estimates and not on actual, as there may be under or over recovery
5. Volume variance in standard costing also discloses the effect of fluctuations in volume on fixed overhead.
6. Control affected by means of budgetary control is also acceptable by many. To know the net profit, fixed overhead, is a valuable item.
7. In actual practice, the sales price, fixed cost and variable cost per unit may vary.

8. The income tax authorities do not recognize the marginal cost for inventory valuation.
9. Insurance claim for loss or damage of stock based on marginal costing valuation will be unfavorable to business.

Absorption Costing

Meaning

Q: WHAT IS 'ABSORPTION COSTING'? (2 MARKS)

Absorption costing, also known as total costing or historical costing or full costing, is a costing technique in which all manufacturing costs, variable and fixed, are treated as cost of production and are used in determining the cost of goods produced and inventory valuation. All manufacturing costs are fully absorbed into finished goods.

Q: DEFINE 'ABSORPTION COSTING'. (2MARKS)

Absorption costing is defined by ICMA, England as "the practice of charging all costs, both fixed and variable to operation, processes or products". This definition explains why absorption costing is also called fully costing. The full cost includes prime cost, factory overhead, administration overhead, and selling and distribution overhead.

Q: WHAT ARE THE ADVANTAGES AND LIMITATION OF ABSORPTION COSTING? (5 MARKS)

Advantage of absorption costing

1. It suitably recognizes the importance of fixed manufacturing cost in product cost determination and framing a suitable pricing policy.
2. It will show correct profit calculation in case of sales in future as compared to variable cost.
3. It helps to conform to accrual and matching concepts, which requires matching cost with revenue for a particular period.
4. It avoids the separation of costs into fixed and variable elements, which cannot be done easily and accurately.
5. It discloses inefficient utilization of production resources by indicating under absorption (or) over absorption of factory overhead.
6. It helps to make the managers more responsible for the costs and services provided to their centers / departments due to correct allocation and apportionment of fixed factory overhead.
7. It helps to calculate the gross profit and net profit separately in income statement.

Limitation of absorption costing

1. Difficulty in cost comparison:

By inclusion of fixed cost under the total cost method, cost / unit varies with change in the level of output. Increase in production leads to decrease in cost / unit & decrease in production leads to increase in cost / unit. This makes cost comparison and cost control difficult.

2. Not helpful for managerial decision:

The total cost technique is not very helpful in taking managerial decision such as selection of best product mix, make or buy decision etc. In such cases marginal cost is suitable.

3. Cost control difficult:

Cost comparison is difficult because of the influence of fixed cost as unit cost.

Q: STATE THE DIFFERENCE BETWEEN ABSORPTION COSTING & MARGINAL COSTING. (5 MARKS)

Absorption costing	Marginal costing
1. All costs-fixed and variable are charged to product.	1. Only variable cost are charged to products; fixed costs are transferred to profit & loss account.
2. Profit = Sales – Cost of goods sold.	2. Contribution = Sales – variable cost. Profit = Contribution – fixed cost.
3. It does not reveal the cost volume profit relationship.	3. Cost volume profit relationship is an important part of marginal cost.
4. Closing inventories are valued at full cost. Absorption costing reveals more profits since the inclusion of fixed cost in inventories.	4. Closing inventories are valued at variable cost. Marginal cost reveals less profit, when compared to absorption cost.
5. Costs are included in the products. This leads to over or under absorption.	5. Fixed costs are not included in the product; so it will not lead to the problem of under absorption.

CONTRIBUTION

Q: WHAT DO YOU UNDERSTAND BY CONTRIBUTION? (2MARKS)

Contribution is the different between sales and variable cost or marginal cost of sales. Contribution enables to meet fixed cost and add to the profit. Contribution is also known as gross margin. Fixed costs are covered by contribution; and the balance amount is an addition to the net profit.

Q: WHAT IS ITS SIGNIFICANCE (OR) USES (OR) ADVANTAGES OF CONTRIBUTION? (2/5 MARKS)

The concept of contribution is helpful to the management in the following ways:

- It helps the management in the fixation of selling price.
- It helps management in the selecting the most profitable product mix.
- It helps in choosing from among alternative methods of production; the method, which gives highest contribution.
- It helps in deciding whether to purchase or manufacture a product (or) a component.
- It assists in determining the Break Even Point.
- It helps in taking a decision as regards to adding a new product in the market.

Break Even Analysis for Profit Planning and Control

Q: WHAT DO YOU UNDERSTAND BY THE TERM “BREAK-EVEN ANALYSIS”?

Break even analysis is a method of cost volume profit analysis widely used in practice. Break even analysis is used in two senses – in narrow sense and in broad sense. In narrow sense, it refers to a technique of determining that level of operation where total revenues equal the total expenses i.e., the point of no profit no loss. In this broad sense, break even analysis refers to the study of relationship of cost volume and profit at different level of activities.

Q: ENUMERATE THE MERITS AND DEMERITS. (2/5 MARKS)

Advantages

1. Total cost, variable cost and fixed cost can be determined.
2. Break even output or sales value can be determined.
3. Cost, volume and profit relationship can be studied, and they are very useful to the managerial decision making.
4. Inter-firm comparison is possible.
5. It is useful for forecasting plans and profits.
6. The best products mix can be selected.
7. Total profit can be calculated.
8. Profitability of different level of activity, various products of profit, i.e., plans can be known.
9. It is helpful for cost control.

Limitation

1. Exact and accurate classification of cost into fixed and variable is not possible. Fixed costs vary beyond a concern level or output. Variable cost per unit is constant and it varies in proportion to the volume.
2. Constant selling price is not true.
3. Detailed information cannot be known from the chart. To know all the information about fixed cost, variable cost and selling price, a number of charts must be drawn.
4. No importance is given to opening and closing stock.
5. Various product mixes on profits cannot be studied as the study is concerned with only one sales mix or product mix.
6. Cost, volume and profit relation can be known; capital amount, market aspects, effects of government policy etc., which are important for decision making cannot be considered from break even chart.
7. If the business condition changes during a period the breakeven chart becomes out of date as it assume no change in business condition.

Q: EXPLAIN THE ASSUMPTION OF BREAK-EVEN ANALYSIS. (5MARKS)

1. Fixed cost will remain constant with the change in output.
2. Prices of variable cost factors viz., wage rates, price of materials, services etc. will remain unchanged.
3. Semi variable costs can be bifurcated into variable and fixed elements.
4. Product specifications and methods of manufacturing and selling will not undergo a change.
5. Operating efficiency will not increase or decrease.
6. There will be no change in pricing policy due to change in volume, competition etc.
7. All the units produced during a period will be sold and as such there will be no opening or closing stock.

Q: WRITE SHORT NOTES ON (1) FIXED COST, (2) VARIABLE COST, (3) MARGIN OF SAFETY, (4) ANGLE OF INCIDENCE, (5) PROFIT VOLUME RATIO AND (6) BREAK-EVEN POINT.

(2 MARKS)

Fixed cost:

Fixed cost are those costs, which do not change with changes in the volume of level of activity within the limits of plant capacity. It depends upon the passage of time and does not vary directly with the volume of output. Hence, even if there is no production for a particular period, the usual amount of fixed expenses will be incurred. Fixed cost is also known as period cost or stable or stand by cost.

Variable cost:

The term variable cost is defined by ICWA, England "A cost which, in the aggregate tends to vary in direct proportion to changes in the volume of output or turnover". The term such as variable cost, marginal

cost, production cost etc., “are synonymously used by cost accounts to mean the same this”. Though marginal cost and variable cost are used to mean the same, marginal cost is expressed for one unit of output which as the term variable cost is used for the aggregate amount of variable expenditure for the entire production.

Profit volume ratio: (PV Ratio)

Profit volume ratio, which is popularly known as PV ratio, explains the relationship of contribution to sale another name for this is contribution sales ratio or marginal income ratio or reliable profit ratio. The ratio expressed as a percentage, indicates the relative profitability of different product.

$$\text{Profit volume ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100$$

Margin of safety:

Margin of safety is the excess of sales over break even sales. It is the margin or range at which the concern is safe from the point of view of profit. The length of margin and safety measures the degree of profitability of an organization. The higher the margin of safety, the more is the profitability of the concern. A low margin indicates low profitability. Therefore, management strives to widen the gap between sales and break even sales.

$$\text{Margin of safety} = \text{Present sales} - \text{Break even sales (or)} \frac{\text{Profit}}{\text{Profit Volume ratio}}$$

Angle of incidence:

Angle of incidence is an angle formed at break even point at which the sales line intersects the total cost line. This angle indicates the rate at which the profits are being made large angle of incidence indicates high rate of profit and a small angle indicates a low rate of profit. A large angle of incidence with a high margin of safety indicates the most favourable position of a business.

Break even point:

If we divide the term into three words, then it does not require further explanation. Break – divide, even – equal, Point – Place or position.

Break Even point refers to the point where total cost is equal to total revenue. It is a point of no profit, no loss. This is also a minimum point of production where total costs are recovered. If sales go up beyond the Break-even point, the organization makes a profit. If they come down, loss is increase.

$$(1) \text{ Break Even Point (in units)} = \frac{\text{Fixed expenses}}{\text{Contribution per unit}} \times 100$$

$$(2) \text{ Break Even Point (in Rs.)} = \frac{\text{Fixed expenses}}{\text{Contribution}} \times 100$$

Q: DISCUSS THE PRACTICAL APPLICATIONS OF MARGINAL COSTING TECHNIQUES IN DIFFERENT SITUATION. (10 MARKS)

The management tackles many problems which are faced in the practical business. “All the introduction of marginal cost principles does is to give the management a fresh, and perhaps a refreshing, insight into the progress of their business”. Now, we explain the application of the techniques of marginal cost in certain important spheres: Marginal cost helps the management in decision making in respect of the following vital areas:

Cost control:

The two types of cost – variable and fixed – are controllable and not-controllable respectively. The

variable cost is controlled by production department and the fixed cost is controlled by the management.

Fixation of selling price:

Product pricing is a very important function of management. One of the purposes of cost accounting is the ascertainment of cost for fixation of selling price.

Closure of a department (or) discounting a product:

Marginal cost technique shows the contribution of each product to fixed cost and profit. If a department or a product contributes the least amount, then the department can be closed or its production can be discontinued. It means the product which gives a higher amount of contribution may be chosen and the rest should be discontinued.

Selection of a profitable product mix:

In a multi-product concern, a problem is faced by the management as to which product mix or sales mix will give the maximum profit. The product mix which gives the maximum profit must be selected.

Profit planning:

Profit planning is a plan for future operation or planning budget to attain the given objective or to attain the maximum profit. The volume of sale required to maintain a desired profit can be known from the formula:

$$\text{Desired profit} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{Profit volume ratio}}$$

Decision to make or buy:

A firm may make some product, parts or tools or sometimes it may buy the same from outside. The management must decide which is more profitable to the firm.

Decision to accept a bulk order or foreign market order:

Larger scale purchases may demand products at less than the market price. A decision has to be taken now whether to accept the order or to reject it.

Introduction of a new product:

A producing firm may add additional products with the availability facility. The new product is sold in the market at a reasonable price, in order to sell it large quantities.

Choice of technique:

Every management wishes to manufacture the products at a most economical way. For this, the managerial costing is a good guide as to the products at different stages of production.

Evaluation of performance:

Marginal cost helps the management in the measuring the performance efficiencies of a department or a product line or sales division. The department or the product or division which gives the highest profit volume ratio will be the most profitable one (or) that it having the highest performance efficiency.

Decision making:

Price must not be lesser than the total cost under normal condition. Marginal cost acts as a price fixer and a high margin will contribute to the fixed cost and profit.

Maintaining a desired level of profit:

An industry has to cut prices of its products firm time to time on account of competition government, regulation and other compelling reasons. Marginal costing techniques are ascertained how many units have to be sold to maintain the same level of profit.

Level of activity planning:

Where different levels of production and / or selling activities are being considered and the management has to decide the optimum level of activity, the marginal costing techniques helps the management.

Alternative method of production:

Marginal costing techniques are also used in comparing the alternative method of manufacture i.e., machine work (or) hard work, whether one machine is to be employed instead of another etc.

Introduction of new product or product line:

The technique to assess the profitability of line extension product is the incremental contribution estimates.

Q: EXPLAIN PROFIT PLANNING AND CONTROL FOR BREAK EVEN ANALYSIS (COST VOLUME PROFIT). (2 MARKS)

The cost volume profit analysis has three variables viz., cost, volume and profit. In cost volume profit analysis an attempt is made to measure variation of cost and profit with volume. Profit as a variable is the reflection of a number of internal and external conditions which exert influence on sales revenue and costs.

The cost volume profit analysis helps or assists the management in profit planning. In order to increase the profit, a concern must increase the output. When the output is a maximum, within the installed capacity, it adds to the contribution. In the words of Meiser, “The most significant single factor in profit planning of average business in the relationship between the volume of business, cost and profit”. Thereby, cost volume profit analysis is the relationship among cost, volume and profit. When volume of output is increase, unit cost of production decrease and vice versa; because the fixed cost remains unaffected. When volume of output is increase, the fixed cost per unit is decrease. Therefore, profit will be more, when sales price remains constant. Generally, costs may not change in direct proportion to the volume. Thus, a small change in the volume will affect the profit.

Problems

PROBLEM: 1

From the following, calculate the amount of contribution and profit. Sales Rs.10,00,000; Variable cost Rs.5,00,000; Fixed cost Rs.2,00,000.

PROBLEM: 2

Determine the amount of fixed cost from the following. Sales Rs.8,00,000; Variable cost Rs.4,00,000; Profit Rs.3,00,000.

PROBLEM: 3

Determine the amount of variable cost from the following. Sales Rs.5,00,000; Fixed cost Rs.2,00,000; Profit Rs.1,00,000.

PROBLEM: 4

From the following information, calculate the break even point in sales value and in units. Total output 15,000 units; Selling price p.u. Rs.15; Variable cost p.u. Rs.9; Fixed cost Rs.25,000.

PROBLEM: 5

The following information relating to a company is given to you. Sales Rs.4,00,000; Fixed cost Rs.1,80,000; Variable cost Rs.2,50,000. Ascertain how much the value of sales must be increased for the company to break-even.

PROBLEM: 6

Calculate the Break even point from the following particulars. Fixed expenses Rs.1,50,000; Variable cost per unit Rs.10; Selling price per unit Rs.15.

PROBLEM: 7

Given: Fixed cost Rs.8,000; Break even sales (in units) 4,000; Sales 7000 units; Selling price per unit Rs.10. Calculate (a) Variable cost, (b) Profit.

PROBLEM: 8

The statement of cost of a cycle is as follows:

Material	200	Variable expenses	25	Profit	125
Labour	100	Fixed expenses	75	Selling price	525

The numbers of cycles made and sold are 10,000 units. Find out: (i) Break even point, (ii) How many cycles must be produced and sold if the selling price is reduced by Rs.25 and the same profit is maintained.

PROBLEM: 9

From the following data, calculate Break-even point expressed in terms of units and also the new B.E.P if selling price is reduced by 10%.

Fixed expenses: Depreciation – Rs.1,00,000; Salaries – Rs.1,00,000.

Variable expenses: Material – Rs.3 per unit; Labour – Rs.2 per unit; Selling price – Rs.10 per unit.

PROBLEM: 10

From the following data calculate

Numbers of units to be sold to earn a profit of Rs.1,20,000.

Sales to earn a profit of Rs.1,20,000.

Selling price per unit Rs.40; Variable selling cost per unit Rs.3;

Variable manufacturing cost per unit Rs.22; Fixed factory overhead Rs.1,60,000; Fixed selling cost Rs.20,000.

PROBLEM: 11

From the following information, calculate

(a) Break-even point;

(b) Number of units that must be sold to earn a profit of Rs.60,000, per year;

(c) Number of units that must be sold to earn a net income of 10% on sales.

Sales price – Rs.20 per unit; Variable cost – Rs.14 per unit; Fixed cost – Rs.79,200.

PROBLEM: 12

From the following information relating to Palani Bros. Ltd., you are required to find out:

- (a) Profit volume ratio;
- (b) Break even point;
- (c) Profit;
- (d) Margin of safety;
- (e) Volume of sales to earn profit of Rs.6,000.

Total fixed costs Rs.4,500; Total variable cost Rs.7,500; Total sales Rs.15,000.

PROBLEM: 13

From the following data calculate: (a) Profit volume ratio; (b) Variable cost and (c) Profit.

Sales Rs.80,000; Fixed expenses Rs.15,000; Break even point 50,000.

PROBLEM: 14

An analysis of Tiptop manufacturing Co., Ltd., led to the following information:

Cost element	Variable cost (% of sales)	Fixed cost
Direct material	32.8	--
Direct labour	28.4	--
Factory overheads	12.6	1,89,900
Distribution overheads	4.1	58,400
Administrative overheads	1.1	66,700

Budgeted sales are Rs.18,50,000. You are required to determine

The break-even sales volume

The profit at the budgeted sales volume

The profit, if actual sales (a) drop by 10%, (b) increase by 5% from budgeted sales.

PROBLEM: 15

Calculate profit volume ratio form the following:

Sales Rs.5,00,000; Variable cost Rs.3,00,000; Fixed assets Rs.1,00,000.

PROBLEM: 16

Sales during a period is Rs.8,00,000. Its profit volume ratio is 50% and profit is Rs.2,00,000. Find out contribution and also fixed cost.

PROBLEM: 17

The following relate to a particular period. Sales Rs.4,00,000; Variable cost – Direct material Rs.1,00,000; Direct labour Rs.60,000; Variable overheads Rs.40,000; Fixed cost Rs.50,000.

- (i) Calculate profit volume ratio;
- (ii) Sales to earn a profit of Rs.2,50,000 and
- (iii) Profit at a sale of Rs.10,00,000.

PROBLEM: 18

During a particular period 1,000 units are produced and sold at Rs.150. Variable cost per unit is Rs.70 and fixed cost Rs.25,000 for the period. Calculate:

- (i) Profit volume ratio;
- (ii) Profit at a sale of 3,000 units;
- (iii) Number of units to be sold to earn a profit of Rs.2,50,000;
- (iv) What will be new profit volume ratio, if selling price is reduced by Rs.25;
- (v) Calculate the number of units to be sold to earn a profit of Rs.75,000 at the reduced selling price.

PROBLEM: 19

The sales turnover and profits during two years were as follows:

Year	Sales	Profit
1987	1,50,000	20,000
1988	1,70,000	25,000

You are required to calculate: (i) Profit volume ratio; (ii) Break even point; (iii) The sales required to earn a profit of Rs.40,000; (iv) The profit made when sales are Rs.2,50,000; (v) Margin of safety at a profit of Rs.50,000; (v) Variable costs of the two periods.

PROBLEM: 20

From the following particulars, you are required to calculate: (i) Profit volume ratio; (ii) Break even points; (iii) Profit when sales volume is Rs.2,00,000; (iv) Sales required to get a profit of Rs.30,000.

Year	Sales	Total cost
1986	1,62,000	1,50,000
1987	1,92,000	1,70,000

PROBLEM: 21

From the particulars given below, calculate:

- (i) Break-even point;
- (ii) Profit made when sales are Rs.12,000;
- (iii) Sales required to earn a profit of Rs.5,000.

Period	Sales	Profit/Loss
I	10,000	- 500
II	14,000	1,500

PROBLEM: 22

The profit volume ratio of a firm dealing in precision instrument is 50% and the margin of safety is 40%. You are required to work out the B.E.P. and the net profit if sales volume is Rs.50,00,000.

PROBLEM: 23

From the following data calculate: (i) P.V. ratio; (ii) Profit when sales are Rs.20,000; (iii) New break-even point if selling price is reduced by 20%: Fixed expenses Rs.4,000; Break-even sales – Rs.10,000.

PROBLEM: 24

Assuming that the cost structure and selling prices remain the same in period I and II find out:

- (i) P.V. ratio;
- (ii) B.E. sales;
- (iii) Profit when sales are Rs.1,00,000;
- (iv) Sales required to earn a profit of Rs.20,000;
- (v) Margin of safety in 2nd period.

Period	Sales	Profit
I	1,20,000	9,000
II	1,40,000	13,000

PROBLEM: 25

SV Ltd., a multi-product company, furnishes you the following data relating to the year 1999:

Particulars	First half of the year	Second half of the year
Sales	45,000	50,000
Total cost	40,000	43,000

Assuming that there is no change in prices and variable costs and that the fixed expenses are incurred equally in the two half year periods calculate for the year 1999:

- (i) The profit volume ratio;
- (ii) Fixed expenses;
- (iii) Break-even sales;
- (iv) Percentage of margin of safety.

PROBLEM: 26

The following are obtained from the records of a factory. Sales (5,000 units @Rs.25 each) Rs.1,25,000; Variable cost Rs.60,000; Fixed cost Rs.40,000.

Calculate: (i) Profit volume ratio;

(ii) Break even sales;

(iii) Margin of safety;

(iv) If it is proposed to reduce the selling price by 25% what extra units should be sold to obtain the same amount of profit?

PROBLEM: 27

A manufacturing company's director budgeted the following data for the coming year. Sales 1,00,000 units for Rs.3,00,000; Variable cost Rs.1,20,000; Fixed cost Rs.1,50,000.

(a) Find out the profit volume ratio, Break-even point and Margin of safety;

(b) Evaluate the effect of:

(i) 10% increase in physical sales volume;

(ii) 10% decrease in physical sales volume;

(iii) 5% increase in variable cost;

(iv) 5% decrease in variable cost;

(v) 10% increase in fixed cost;

(vi) 10% decrease in fixed cost;

(vii) Decrease of Rs.15,000 in variable cost and increase of Rs.45,000 in fixed cost.

Fixation of selling price:

PROBLEM: 28

Profit volume ratio is 60%. Marginal cost is Rs.50. What is the selling price per unit.

Make or buy decision:

PROBLEM: 29

The management of a company finds that while the cost of making a components part is Rs.10, the same is available in the market at Rs.9 with an assurance of continuous supply. Give a suggestion whether to make or buy this part. Give also your views in case the supplier reduces the price from Rs.9 to Rs.8. The cost information is as follows: Material Rs.3.50; Direct labour Rs.4.00; Other variable expenses Rs.1.00 and fixed expenses Rs.1.50.

Accepting additional order:

PROBLEM: 30

A company producing 40,000 units of product X working at 80% capacity receives an order from a foreign dealer for 10,000 units at Rs.50 per unit although the local price is Rs.90 per unit.

Particulars	Rs.
Material	20
Labour: Skilled (fixed)	10
Unskilled labour	10
Variable Overhead	10
Fixed Overhead	20
Total	70

Advise the management whether to accept the order or not.

What will be your advice if the order has come from the local merchant?

If there is temporary fall in demand what will be minimum price to be charged?

Maintaining the desired level of profit:

PROBLEM: 31

The Reliable battery company furnishes you the following information:

Particulars	First half	Second half
Sales	8,10,000	10,28,000
Profit earned	21,800	64,800

From the above you are required to compute the following assuming that the fixed cost remains the same in both the periods. (i) The profit volume ratio; (ii) Fixed expenses; (iii) The amount of profit or loss where sales are Rs.6,48,000; (iv) The amount of sales required to earn a profit of Rs.1,08,000.

Key factor:

PROBLEM: 32

From the following data, which product would you recommend to be manufactured in a factory, time being the key factor?

Particulars	Per unit of Product A	Per unit of Product B
Direct material	24	14
Direct labour @ Rs.1 per hour	2	3
Variable overhead @ Rs.2 per hour	4	6
Selling price	100	110
Standard time to produce	2 hours	3 hours

Alternative methods of production:

PROBLEM: 33

Product X can be produced either by machine A or machine B; Machine A can produce 100 units of X per hour and machine B 150 units per hour. Total machine hours available during the year are 2,500. Taking into account the following data determine the profitable method of manufacture:

Particulars	Per unit of X	
	Machine A(Rs.)	Machine B(Rs.)
Marginal cost	5	6
Selling price	9	9
Fixed cost	2	2

Alternative course of action:

PROBLEM: 34

The cost per unit of the three products, A, B & C of a company are given below:

Particulars	A	B	C
Direct materials	20	16	18
Direct labour	12	14	12

Variable overhead	8	10	6
Fixed expenses	6	6	4
	46	46	40
Profit	18	14	12
Selling price	64	60	52
No. of units produced	10,000	5,000	8,000

Production arrangements are such that if one product is given up the production of the others can be raised by 50%. The director's purpose that C should be given up because the contribution from that product is the lowest.

Selection of suitable product mix:

PROBLEM: 35

Following information has been made available from the cost records of United Automobiles Ltd., manufacturing spare parts:

Direct materials: A	Rs.8 per unit	Variable overheads	150% of direct wages
B	Rs.6 per unit	Fixed overheads	Rs.750
Direct wages: A	Rs.24 hours at 25 paise / hour	Selling price: A	Rs.25
B	Rs.16 hours at 25 paise / hour	B	Rs.20

The directors want to be acquainted with the desirability of adopting any one of the following alternative sales mixes in the budget for the next period. (a) 250 units of X and 250 units of Y; (b) 400 units of Y only; (c) 400 units of X and 100 units of Y; (d) 150 units of X and 350 units of Y.

Determining optimum level:

PROBLEM: 36

A factory engaged in manufacturing plastic buckets is working at 40% capacity and produces 10,000 buckets per annum. The present cost break-up for bucket is as under: Material – Rs.10; Labour – Rs.3; Overheads – Rs.5 (60% fixed). The selling price is Rs.20 per bucket. If it is decided to work the factory at 50% capacity, the selling price falls by 3%. At 90% capacity the selling price falls by 5% accompanied by a similar fall in the price of material. You are required to calculate the profit at 50% and 90% capacities and also calculate the break-even point for the same capacity productions.

Evaluation of performance:

PROBLEM: 37

The management of a company considers that product Y, one of its three main lines, is not as profitable as the other two with the result that no particular efforts are being made to push its sales. The selling price and cost of the three products are:

Product	Selling price	Direct material	Direct labour		
			Dept. A	Dept. B	Dept. C
X	68	10	8	2	2
Y	58	6	2	8	2
Z	64	8	2	2	8

Overhead rates for each department per rupee of direct labour are as follows:

Particulars	Dept. A	Dept. B	Dept. C
Variable overhead	1.20	0.40	1.00
Fixed overhead	1.20	2.00	1.40
Total	2.40	2.40	2.40

What advice would you give to the management about the profitability of product Y? Give reasons.

Reduction in selling price:

PROBLEM: 38

The following data relate to a manufacturing company:

Plant capacity	4,00,000 units p.a.	Actuals for the year 2000 where:	
Present utilization	40%	Selling price	Rs.50 per unit
		Material cost	Rs.20 per unit
		Variable manufacturing costs	Rs.15 per unit
		Fixed cost	27 lakhs

In order to improve capacity utilization the following proposals are considered: (i) Reduce selling price by 10%; (ii) Spend additionally Rs.3 lakhs on sales promotion. How many units should be sold to earn a profit of Rs.5 lakhs per year.

UNIT-V

BUDGET AND BUDGETARY CONTROL

Q: WHAT IS MEANT BY BUDGET? (2 MARKS)

The word 'budget' is derived from a French word 'Bougette' representing leather pouch into which funds are appropriated to meet the anticipated expenses. The word 'budget' therefore refers in the business

enterprise, to a plan in the form of quantitative and financial statement of the firm about the work to be done by the executives and their officials.

Q: DEFINE THE TERM BUDGET. (2 MARKS)

ICMA defines a budget as “A financial and / or quantitative statement, prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective”.

Q: WHAT ARE THE ESSENTIAL FEATURES OF BUDGET? (2/5 MARKS)

1. A budget is a financial statement but it can be a statement of quantities also with or without monetary data:
2. Budget is prepared for a particular period and it is prepared in advances.
3. Budget is a detailed plan of the policy to be pursued during the period for which the budget is prepared.
4. The function of the budget is to attain a specific objective.

BUDGETING

Q: WHAT IS BUDGETING? (2MARKS)

Budgeting refers to the whole process of designing, implementing and operating budgets. It involves a detailed study of business environment clearly grasping the management objectives, the available resources of the enterprise and capacity of the enterprise.

Q: DEFINE BUDGETING. (2MARKS)

Budgetary control starts with budgeting and ends with control. Budgeting is defined as:

William J.Batty “Budgeting is a kind of future tense accounting in which the problems of future are met on paper before than transactions actually occur”.

Shlilinglow, “ Budgeting is the preparation of comprehensive operating and financial plans for specific intervals of time”.

Q: EXPLAIN ITS CHARACTERISTICS OF GOOD BUDGETING. (2/5 MARKS)

1. A good budgeting system should involve persons at different levels while preparing the budget.
2. Authority and responsibility should be properly fixed.
3. The target of the budgets should be realistic.
4. The system should get the whole-hearted cooperation of the top management.
5. Employees should be imparted budget education.
6. A proper reporting system should be introduced and the actual results should be promptly reported, so that performance appraisal is undertaken.
7. A good system of accounting is essential to make the budgeting successful.

BUDGETARY CONTROL

Q: WHAT IS CONTROL? (2 MARKS)

Control may be defined as “Company operating results with the plans, and taking corrective action when results deviate from the plans”. Control is a mechanism according to which something or some one is guided to follow the predetermined course.

Control requires two things; first that there is a clear-cut & specific plan according to which any work is to proceed. Secondly, that it is possible to measure the results of operations with a view to detecting deviations only then action can be taken to prevent or correct deviations.

Q: WHAT IS BUDGETARY CONTROL? (2MARKS)

Budgetary control is the process of preparation of budgets for various activities and comparing the budgeted figures for arriving at deviations if any, which are to be eliminated in future. Thus budget is a means

and budgetary control is the end result budgetary control is a continuous process which helps in planning and coordination. It also provides a method of control.

Q: DEFINE THE TERM BUDGETING CONTROL. (2 MARKS)

According to Brown & Howard “Budgetary control is a system of coordinating costs which includes the preparation of budgets. Coordinating the work of departments and establishing responsibilities, comparing the actual performance with the budgeted and acting upon results to achieve maximum profitability”.

ICMA defines budgetary control as “the establishment of budgets, relating the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results either to secure by individual action the objectives of that policy or to provide a basis for its revision”.

Q: WHAT ARE THE OBJECTIVES OF BUDGETARY CONTROL? (5/10 MARKS)

Following are the main objectives of a budgetary control system:

1. To plan and control the income and expenditure of manufacturing and trading operations.
2. To predetermine the capital expenditure of a business
3. To co-ordinate the activities of the business in such a manner that each is a part of the total.
4. To establish divisional and sub-divisional responsibility, thus decentralizing it.
5. To prevent waste, reduce expenses and operate most efficiently the various departments so as to attain the maximum profitability.
6. To plan and control expenditure on research and development.
7. To arrange for the financing of the operations so that adequate working capital will be available as required.
8. To act as a means of communication.

Q: EXPLAIN THE IMPORTANCE (OR) ADVANTAGES, AND DISADVANTAGES OF BUDGETARY CONTROL? (5/10 MARKS)

1. It helps the management in planning and formulation of policies and there by enables them to think ahead.
2. It co-ordinates the activities of various departments and functions of the business.
3. It defines the objectives and policies of the undertakings as a whole.
4. It enhances production efficiency, eliminates waste and control the costs.
5. It helps in maximizing the profit through optimum and best utilization of the available resources.
6. It set out plan of action and targets to be achieved by departments as well as by individuals, so that everyone knows for what he is responsible and how should he do it; this develops team spirit.
7. It motivates executives to attain the given goals.
8. It ensures the availability of sufficient working capital and diverts capital expenditure into the most profitable directions.
9. It helps in identifying the deviations form the plans, thus pinpointing the centers of weakness and inefficiencies, thus, enabling the management to apply the principle of ‘management by Exception’(MBE).
10. It also helps in proper delegation of authority.
11. It can provide suitable basis for establishing incentive systems and internal audit.
12. A well established budgetary control system can go a long way in the successful installation of the system of standard costing.

Limitations of budgetary control

Although budgetary control is immensely valuable but a budget is not a cure for all the ills of an organisation. Budgetary control system suffers from certain limitations and those using the system should be fully aware of them. The main limitations are as follows:

1. As the budget is always based on estimates, any error in estimates may lead to far-reaching effects.
2. It is not easy to install a system of budgetary control in small industries owing to expenditure involved.
3. The success of budgetary control largely depends on the willing co-operation or team work of all concerned; if there is no co-operation, the whole system will collapse.
4. Budgeting is only a tool of management but it cannot replace management.
5. Budgets often remain static and independent of the new techniques that may have been used in a number of operating costs. As a result, they may get boiled down to periodic reports.
6. The installation of budgeting system, generally, takes several years as it has to be tried, improved and discarded depending upon the changing circumstances.

Q: EXPLAIN THE ESSENTIAL OF SUCCESSFUL BUDGETARY CONTROL? (5 MARKS)

A budget is both a plan as well as control tool. A business budget is a plan covering all phases of operations for the definite period in future. It is a formal expression of policies, plans, objectives and goals laid down in advance by the top management for the concern as a whole and for every sub-division thereof. For an effective system of budgetary control, certain pre-requisites must be present. These essential are:

1. The budgetary control system should have full support of top management.
2. There should be well-planned organizational set-up, with responsibility and authority clearly demarcated.
3. The accounting system should provide accurate and timely information.
4. Variation should be reported promptly and clearly to the appropriate level of management
5. Budgets have no meaning unless they lead to control action as a consequence of feed back provided.
6. Staff should be strongly and properly motivated towards the system.
7. The budget should lay down the targets which are realistic and attainable.
8. Budgets should actually aim as a coordinating device rather than control device.
9. The budgets should be flexible enough to permit the adjustments in the light of changed operational circumstances.

Q: EXPLAIN THE DIFFERENT TYPES OR CLASSIFICATIONS OF BUDGETARY CONTROL (OR) EXPLAIN THE TYPES OF PREPARATION OF BUDGETS. (10 MARKS)

1. Classification according to time:

Long term Budget

The budgets are prepared to depict long term planning of the business. The period of long term budgets varies between five to ten years. Long term budgets are prepared for some sectors of the concern such as capital expenditures, research and development, long term finance etc., the long term budget planning is done by the top level management.

Short term Budget

These budgets are generally for one or two years and are in form of monetary terms. The consumer goods industries like sugar, cotton, textiles etc., use short term budgets.

Current Budgets

The period of current budgets is generally of months and weeks. The budgets are related to the current activities of the business. Current budget is a budget which is established for use over a short period of time and is related to current conditions.

2. Classification according to flexibility:

Fixed Budget

A fixed budget, sometime known as static budget is one which remains unchanged irrespective of changes in volume of output or level of activity. This budget is drawn for one level of activity and some set of conditions, on the assumption that the forecast of a business activity will prove correct. It does not takes into consideration any change in expenditure arising out of change in the level of activity.

ICMA London defines a fixed budget as, “A budget designed to remain unchanged irrespective of the level of activity actually attained.

Production Budget

It is a budget prepared by the production manager, showing the forecast of output. The objective is to determine the quantity of production for a budgeted period. It is in quantity of units to be produced during the budget period. It is based on the sales budget.

★ Cost of production budget:

Cost of production budget is divided into material cost budget, labour cost budget and overhead cost budget, because cost of production include3s material, labour, and overhead. Therefore separate budgets are required each item.

Purchase or Raw Material Budget

To carry out the production satisfactorily regular supply of material during the budget period is ensured by preparing a budget. In this, the decision regarding the quantity of material as shown at different time during that period is followed. The material budgets help proper planning of purchase. It shows the estimated quantities as well as the cost of raw material, required for production as per production budget.

★ Labour budgets:

It is a part of the production budget. The budget is prepared by the personnel department and it shows an estimate of the requirements of labour to meet the production target, on the basis of previous records and budgeted production. This budget gives detailed information relating to the number of workers, sales of wages and cost of labour hours to be employed.

★ Work overhead budgets:

It sets out the estimated costs of indirect material, indirect labour and indirect factory expenses, during the budget period in order to achieve the target. This is classified into fixed, variable and semi variable.

★ Administrative overhead budgets:

This budget covers the expenditure of administrative, office and management salaries. It is prepared with the help of past experience and expected change in future. The administrative cost of each budget centre is drawn separately and incorporated in administration cost budget.

★ Selling and distribution overhead budget:

This budget relates to selling and distribution of production for the budget period and based on sales budget. It is generally prepared territory wise by the sales manager of each territory. The costs are divided into fixed, variable and semi variable; and estimated is taken on the basis of past records.

★ Capital expenditure :

This budget shows the estimated expenditure on fixed assets land, building etc. It is a long term budget. The capital expenditure budget is necessitated on account of replacement of old machine increased demand of products etc.

Sales Budget

Generally sales factor becomes a key-factor in the majority of cases, and therefore, it is the starting point. This is the most important budget, as it is usually the most difficult to forecast. It is prepared by sales managers. In the preparation, the sales manager should consider the following points:

1. Analysis of the sales of the previous year
2. Salesman’s assessment
3. General trade condition
4. Availability of raw material.
5. Availability of funds
6. Plant capacity
7. Seasonal fluctuation
8. Restrictions imposed by the government

9. Competition and consumer's preference

10. Efficiency of advertising.

Cash Budget

This budget represents the amount of cash receipts and payments, and a balance during the budgeted period. It is prepared after all the functional budget are prepared by the chief accountant either monthly or weekly giving the following hints.

1. It ensures sufficient cash or business requirement.
2. It proposes arrangements to be made overdraft to meet any shortage of cash.
3. It reveals the surplus amount, and the effect of the seasonal fluctuation on cash position.

The objective of cash budget is the proper coordination of total working capital, sales, investment and credit.

Master budget:

A master budget is the summary budget for entire enterprise and embodies the summarized figures for various activities. This is also known as summary budget or finalized profit plan. This budget includes the budgeted position of the net profit & loss as well as balance sheet. Master budget is prepared by the committees and becomes a target for the company.

Flexible Budget

Flexible budget is one which is prepared in such a manner as the facilitate determination of the budgeted cost for any level of activity. It is also known as 'variable budget' or 'sliding scale budget'.

ICMA London defines a flexible budget as, "a budget designed to change in accordance with the level of activity actually attained".

Q: BRIEFLY DISCUSS THE STEPS IN THE INSTALLATION OF A SYSTEM OF BUDGETARY CONTROL. (10 MARKS)

1. Organization chart:

These must be an organizational chart to show the authority and responsibility of each executive of the firm. This will enable him to know his relationship with other executives. The budget director derives power from the chief executive, helps in coordination and drawing up all budgets and suggests changes, if necessary. The sales manager, production manager, purchase manager, personal manager and accountant will prepare their budgets.

2. Budget centre:

For the purpose of effective budgetary control budgets centres are defined. A budget centre may be a department, or a section of the undertaking. Separate budgets are prepared for each department and the departmental head is responsible for carrying out budgets. Departmental heads should have effective control over the execution of the budget, to prevent unfavourable variation.

3. Budget:

In small firms the chief accountant prepares the budgets and coordinates various activities. In big concerns a committee is appointed for this task.

4. Budget manual:

It is a document which sets out the responsibilities of persons engaged in the routine work. Budget manual lays down the objectives of the organization, responsibilities of all executive and the procedure to be followed for budgetary control. Duties, authorities, powers of each official of the different department are clearly defined so as to avoid conflicts among personnel.

5. Budget period:

This is the period or time for which the budget is prepared and remains in operations. Generally budgets are prepared for one year. Industries with huge capital expenditure require long-term budgeting, whereas seasonal industries may adopt short period budgets.

6. Budget committee:

A budget committee is a permanent standing committee consisting all the departmental heads as members and usually general manager as the chairman.

The budget committee is an advisory committee and is entrusted with the following duties.

1. To formulate a general programme for budgeting.
2. To coordinate departmental budgets resolving any conflict between them.
3. To receive and discuss departmental budget estimates and make recommendations.
4. To revise budgets if conditions warrant.
5. To consider changes in budget policies and procedures.
6. To study variation of actual performance from budget and make appropriate suggestion.

7. Budget officer:

This chief executive of the organization appoints some person as the budget office. The budget officer is empowered to scrutinize the budget prepared by different functional heads and make changes in them if the situation so demands.

8. Key factor:

Key factor is also known as limiting factor of governing factor which means this is the factor the extent of whose influence must first be assessed in order to ensure that the functional budgets are seasonally capable of fulfillment. The key factor may be shortage of raw material, non-availability of labour, limited sales restriction etc. First locate the key factor before preparing a budget as it influences other budgets.

Q: EXPLAIN THE DIFFERENCE BETWEEN FIXED AND FLEXIBLE BUDGETS. (5 MARKS)

Fixed Budget	Flexible Budget
1. A fixed budget remains the same irrespective of the level of output	1. A flexible budget will vary in accordance with the level of output.
2. A fixed budget assumes that conditions will remain constant.	2. This budget is changed if level of activity varies.
3. If fixed budgets, costs are not classified according to their nature	3. The costs are classified into fixed, variable and semi-variable.
4. Under changed circumstances cost cannot be ascertained	4. Cost can be easily ascertained under different levels of activities which helps in fixing prices
5. If the level of activity changes, the budgeted and actual results cannot be compared because of change in basis.	5. The budgets are re-drafted as per changed volume & comparison between budgeted and actual figures will be possible.

Q: WHAT IS ZERO BASE BUDGET? (2MARKS)

The purpose of management control is to ensure better performance and better utilization of scarce resources. Traditional budgeting fails to achieve this objective of management effectively. Zero base budget provides a solution towards this end.

Q: DEFINE ZERO BASE BUDGETS. (2MARKS)

Peter A.Pyhrh has defined zero base budget as “an operating, planning and budgeting process which requires each manager to justify his entire budget request in detail from scratch (hence zero base) and shifts the burden of proof to each manager to justify why we should spend any money at all”.

Q: EXPLAIN THE PROCESS IN PREPARING THE ZERO BASE BUDGET? (2MARKS)

1. Specification of decision units:

A decision unit should be identified in terms of functional responsibility centres or cost centres. The decision making centre may be a segment of an organization or a project for which separate budgets are to be prepared and decisions are made regarding the amount to be spent and quantum and quality of work to be done.

2. Development of decision packages:

Formulation of decision packages is a set of documents which identify and describe activities of the unit in such a way the management can evaluate and rank them against other competing for resources and decide whether to approve (or) disapprove.

3. Prioritization of activities:

Zero base budgets is the ranking of proposed alternatives included in decision package for various decision units or of various decision package for the same decision unit. The ranking of the decision package begins at the level of the decision units by the operational manager on the basis of organizational needs and other related activities.

4. Allotment of funds:

The resource of the organization are allocated to various decisions units keeping in mind the alternative selected and approved as a result by ranking process.

Q: EXPLAIN THE MERITS AND DEMERITS OF ZERO BASE BUDGETS. (2/5 MARKS)

Zero base budgeting offers the following advantages:

1. It represents a move towards allocation of resources by need and benefit and thus results in more efficient allocation of resources.
2. It is a planning tool used in management which helps in identification of wasteful and obsolescent items of expenditure.
3. It adds psychological impetus to employees to avoid wasteful expenditure.
4. It leads to increased staff involvement which may lead to improved motivation and greater interest in the job.
5. It allows for quick budgets adjustment during the year, if there is any shortfall of income. It provides flexibility in budget.
6. It is useful especially for service departments where it can be difficult to identify output.

The following are the important limitations of Zero base budgeting:

1. It is very time consuming and a large amount of additional paper work is involved.
2. It expects a high degree managerial skill because it demands a clear understanding by the organisation as a system.
3. Its application is limited; it cannot directly be applied to direct materials, direct labour and overheads associated with production function.

Problems

PROBLEM: 1 (Production budget)

You are required to prepare a production budget for the half year ending June 2000 from the following information:

Product	Budgeted sales quantity (units)	Actual stock on 31.12.99 (units)	Desired stock on 30.06.2000 (units)
S	20,000	4,000	5,000
T	50,000	6,000	10,000

PROBLEM: 2

Suresh Ltd., plans to sell 1,10,000 units of a certain product line in the first fiscal quarter, 1,20,000 units in the second quarter, 1,30,000 units in the third quarter and 1,50,000 units in the fourth quarter and 1,40,000 units in the first quarter of the following year.

At the beginning of the first quarter of the current year, there are 14,000 units of product in stock. At the end of each quarter, the company plans to have an inventory equal to one-fifth of the sales for the next fiscal quarter. How many units must be manufactured in each quarter of the current year?

PROBLEM: 3

From the following particulars presented by K.G.R. Ltd., prepare a production budget of the year 2002.

Product	Estimated opening stock on 1.4.99 (units)	Desired closing stock on 31.3.2000 (units)	Estimated sales during the year (units)
A	20,000	22,000	50,000
B	25,000	24,000	60,000
C	15,000	20,000	75,000
D	25,000	25,000	90,000

PROBLEM: 4

Prepare a production budget for three months ending March 31, 1999 for a factory producing four products, on the basis of the following information:

Product	Estimated opening stock on 1.1.99 (units)	Desired closing stock on 31.3.1999 (units)	Estimated sales during the year (units)
A	2,000	5,000	10,000
B	3,000	4,000	15,000
C	4,000	3,000	13,000
D	5,000	2,000	12,000

PROBLEM: 5

From the following data, prepare a production budget for Bajaj Ltd.,

Product	Stock for the budgeted period		Requirements to fulfill sales programme	Normal loss in production
	As on 1 st January	As on 30 th June		
R	8,000	10,000	60,000 units	4%
S	9,000	8,000	50,000 units	2%
T	12,000	14,000	80,000 units	6%

PROBLEM: 6 (Production budget & Production cost budget)

Your company manufactures two products X and Y. A forecast about the number of units to be paid in the first seven months of the year is given below.

Months	Product X	Product Y	Months	Product X	Product Y
Jan	10,000	28,000	May	24,000	16,000
Feb	12,000	28,000	June	24,000	16,000

Mar	16,000	24,000	July	20,000	18,000
April	20,000	20,000			

It is anticipated that

1. There will be no work-in-progress at the end of any month
2. Finished units equal to half the sales for the next month will be in stock at the end of each month (including the previous December).

Budgeted production and production costs for the whole year are as follows:

Particulars	Product X	Product Y
Production (units)	2,20,000	2,40,000
Per unit: Direct material	Rs.12.50	Rs.19.00
Direct labour	Rs.4.50	Rs.7.00
Total factory overhead for each type of products	Rs.6,60,000	Rs.9,60,000

Prepare for the six months ending 30th June, a production budget for each month and summarized production cost budget.

PROBLEM: 7 (Purchase budget)

Martin Ltd., plans to sell for the next year 50,000 units of a particular product. Two kinds of raw materials A and B are required for manufacturing the product.

Each unit of the product requires 2 units of A and 3 units of B. The estimated opening balances at the commencement of the next year are: Finished product – 8,000 units; Raw material A – 12,000 units; B – 15,000 units.

The desirable closing balances at the end of next year are:

Finished product – 6,000 units;

Raw material A – 13,000 units; B – 16,000 units.

Draw up a quantitative chart showing the material budget for the next year.

PROBLEM: 8

Kalai & Co., uses two materials X and Y to produce a product. For the year 2000, they have planned to sell 2,000 units of the product. Production department informs that after providing for normal loss, etc., 5 kgs per unit of material X and 2 kgs per unit of material Y are needed for the product. The store incharge, after a study of his records and orders placed to the vendors, provides the following details:

Particulars	Finished product (units)	Material X Kgs	Material Y Kgs
Estimated stock on 1-1-2000	400	1,800	700
Materials on order 1-1-2000	--	2,000	500
Desired stock on 31-12-2000	600	2,200	800
Estimated materials on order on 31-12-2000	--	1,800	600
Estimated average purchase price during 2000	--	Rs.8 per Kg	Rs.15 per Kg

You are required to prepare a purchase budget for the materials, clearly showing the total cost of estimated purchases.

PROBLEM: 9

Two kinds of materials M and N are required for manufacturing the product. Each of the products requires 2 kgs of material M and 3 kgs of material N. **The estimated opening balances as on 1st Jan. 1988:**

1. Finished product: 5,000 units; Material M – 6,000 kgs; Material N – 7,500 kgs.
2. Estimated sales during 1988 – 25,000 units.
3. The desirable closing balances as on 31-12-1988:
4. Finished product: 7,000 units; Material M – 6,500 Kgs; Material N – 8,000 Kgs.
5. From the above particulars draw up a quantitative chart shows materials purchase budget for the year 1988.

PROBLEM: 10

The sales director of a manufacturing company reports that next year he expects to sell 50,000 units of a certain product. The production manager consults his store keeper and casts his figures as given as follows:

Two kinds of raw materials A and B are required for manufacturing the product.

1. Each unit of the product required 2 units of A and 3 units of B.
2. The estimated opening balances at the commencement of the next year are:
3. Finished product – 10,000 units; A – 12,000 units; B – 15,000 units.
4. The desirable closing balances at the end of next year are:
5. Finished product – 14,000 units; A – 13,000 units; B – 16,000 units.
6. Prepare production budget and material purchase budget for the next year.

PROBLEM: 11

Draw material procurement budget (Quantitative) from the following information: Estimated sales of a product 40,000 units. Each unit of the product requires 3 units of material A and 5 units of material B.

Product	Opening balance	Closing balance
Finished product	5,000 units	7,000 units
A	12,000 units	15,000 units
B	20,000 units	25,000 units
Materials on order:		
A	7,000 units	8,000 units
B	11,000 units	10,000 units

PROBLEM: 12 (Sales budget)

Parker Ltd., manufactures two brands of pen Hero & Zero. The sales department of the company has three departments in different areas of the country. The sales budget for the year ending 31st December 1999 were:

	Hero	Zero
Department I	3,00,000	4,00,000
Department II	5,62,500	6,00,000
Department III	1,80,000	20,000

Sales price are Rs.3 and Rs.1.20 in all departments. It is estimated that by forced sales promotion the sale of 'Zero' in department I will increase by 1,75,000. It is also expected that by increasing production and arranging extensive advertisement, department III will be enabled to increase the sale of 'Zero' by 50,000. It

is recognized that the estimated sales by department II represent an unsatisfactory target. It is agreed to increase both estimated by 20%. Prepare a sales budget for the year 2000.

PROBLEM: 13

Karthikeyan Bros. sells two products R&S which are manufactured in one plant. During the year 1989 it plans to sell the following quantities of each product.

Product	I Quarter (units)	II Quarter (units)	III Quarter (units)	IV Quarter (units)
R	90,000	2,50,000	3,00,000	80,000
S	80,000	75,000	60,000	90,000

Each of these two products is sold on a seasonal basis. Karthikeyan Bros. plans to sell product ‘R’ throughout the year at a price of Rs.10 p.u. and product ‘S’ at a price of Rs.20 p.u. A study of the past experience reveals that Karthikeyan Bros. has lost 3% of its billed revenue each year because of returns (constituting 2% of loss revenue) and allowances & bad debts (1% loss). Prepare a sales budget incorporating the above information.

PROBLEM: 14

Quick Products Ltd., sells two products X and Y in two divisions North and South. The following were the budgeted and actual sales for the year 1999.

Products	Budget				Actual			
	North		South		North		South	
	Units	Rs. Per unit	Units	Rs. Per unit	Units	Rs. Per unit	Units	Rs. Per unit
X	500	180	300	180	600	180	400	180
Y	300	430	200	430	200	430	150	430

For the year 2000, the board of directors has approved the proposal of sales department to increase the price of ‘X’ to Rs.200 and decrease the price of ‘Y’ to 400.

The sales estimates from the divisional managers were as follows:

North: ‘X’ 800 units ‘Y’ 500 units, **South:** ‘X’600 units ‘Y’ 300 units.

An intensive advertising campaign proposed by advertising consultants is expected to result in additional sales of 20% of each product in each division over the estimated sales.

Prepare the sales budget for the year 2000 and present it together with the budgeted and actual sales for 1999.

PROBLEM: 15

Gopi & Co., Ltd., produces two products, Alpha and Beta. There are two sales divisions, North and South. Budgeted sales for the year ended 31st December 1998 were as follows:

Products	Budget				Actual			
	North		South		North		South	
	Units	Rs. Per unit	Units	Rs. Per unit	Units	Rs. Per unit	Units	Rs. Per unit

Alpha	25,000	10	24,000	10	25,000	10	28,000	10
Beta	15,000	5	30,000	5	33,000	5	18,000	5

On the basis of assessments of the salesmen the following are the observations of sales division for the year ending 31st December, 1999.

North zone: Alpha budgeted increase of 40% on 1998 budget; Beta budgeted increase of 10% on 1998 budget.

South zone: Alpha budgeted increase of 12% on 1998 budget; Beta budgeted increase of 15% on 1998 budget.

It was further decided that because of the increased sales campaign in North an additional sale of 5,000 units of product will result.

PROBLEM: 16

Reliance Ltd., manufactures two products X and Y and sells them through two divisions East and West. For the purpose of submission of sales budget to the budget committee the following information has been made available:

Products	Budget				Actual			
	East		West		East		West	
	Units	Rs. Per unit	Units	Rs. Per unit	Units	Rs. Per unit	Units	Rs. Per unit
X	400	9	600	9	500	9	700	9
Y	300	21	500	21	200	21	400	21

Adequate market studies reveal that product X is popular but underpriced. It is observed that if price of X is increased by Rs.1 it will find a ready market. On the other hand, Y is over-priced to customers and market could absorb more if sales price of Y be reduced by Rs.1. The management has agreed to give effect to the above price changes. From the information based on these price changes and reports from salesmen, the following estimates have been prepared by divisional managers: percentage increase in sales over current budget is:

Product	East	West
X	+10%	+5%
Y	+20%	+10%

With the help of an intensive advertisement campaign, the following additional sales above the estimated sales of divisional managers are possible:

Product	East	West
X	60	70
Y	40	50

You are required to prepare budget for sales incorporating the above estimates and also show the budgeted and actual sales for the current year.

PROBLEM: 17

Mala Ltd., sells two products A and B which are produced in its special products division. Sales for the year 2000 were planned as follows:

Product	I Quarter (units)	II Quarter (units)	III Quarter (units)	IV Quarter (units)
A	10,000	12,000	13,000	15,000
B	5,000	4,500	4,000	3,800

The selling prices were Rs.20 per unit and Rs.50 per unit respectively for A and B. Average sales returns are 5% of sales and the discounts and bad debts amount to 4% of the total sales.

PROBLEM: 18 (Cash budget)

From the particulars given below prepare a cash budget for the month June 1999:

- ❖ Expected sales: April – Rs.2,00,000; May – Rs.2,20,000; June – Rs.1,90,000. Credit allowed to customers is two months and 50% of the sales of every month is on cash basis.
- ❖ Estimated purchases: May – Rs.1,20,000; June – Rs.1,10,000. 40% of the purchase of every month is on cash basis and the balance is payable next month. Rs.2,000 is payable as rent every month.
- ❖ Time lag in payment of overhead is ½ month. Overhead: for May Rs.12,000; for June Rs.11,000.
- ❖ Depreciation for the year is Rs.12,000.
- ❖ Interest receivable on investment during June and December Rs.3,000 each.
- ❖ Tax payable during April Rs.10,000.
- ❖ Estimated cash balance as on 1-6-1999 is Rs.42,500.

PROBLEM: 19

BPL Ltd., wishes to arrange overdraft facilities with its bankers during the period April to June 2000 when it will be manufacturing mostly for stock. Prepare a cash budget for the above period from the following data, indicating the extent of the bank facilities the company will require at the end of each month:

Months	Credit sales	Purchases	Wages
February	1,80,000	1,24,800	12,000
March	1,92,000	1,44,000	14,000
April	1,08,000	2,43,000	11,000
May	1,74,000	2,46,000	10,000
June	1,26,000	2,68,000	15,000

50% of credit sales are realized in the month following the sales and the remaining 50% in the second month following. Creditors are paid in the month following the month of purchase. Cash at bank on 1-4-2000 (estimated) Rs.25,000.

PROBLEM: 20

Summarized below are the income and expenditure forecasts of Gemini Ltd., for the months of March to August, 2000:

Months	Sales (Credit)	Purchase (Credit)	Wages	Manufacturing exp.	Office exp.	Selling exp.
March	60,000	36,000	9,000	4,000	2,000	4,000
April	62,000	38,000	8,000	3,000	1,500	5,000

May	64,000	33,000	10,000	4,500	2,500	4,500
June	58,000	35,000	8,500	3,500	2,000	3,500
July	56,000	39,000	9,500	4,000	1,000	4,500
August	60,000	34,000	8,000	3,000	1,500	4,500

You are given the following further information:

1. Plant costing Rs.16,000 is due for delivery in July payable 10% on delivery and the balance after three months.
2. Advance tax of Rs.8,000 is payable in March and June each.
3. Period of credit allowed (i) by suppliers 2 months and (ii) to customers 1 month.
4. Lag in payment of manufacturing expenses $\frac{1}{2}$ months.
5. Lag in payment of all other expenses 1 month.

You are required to prepare a cash budget for three months starting on 1st May, 2000 when there was a cash balance of Rs.8,000.

PROBLEM: 21

From the following forecast information, prepare cash budget for the month April, May and June 1997.

Months	Sales (Rs.)	Purchase (Rs.)	Wages	Other exp.
Feb	90,000	66,000	4,000	6,000
March	80,000	60,000	4,000	6,000
April	96,000	88,000	6,000	7,000
May	1,00,000	60,000	5,000	8,000
June	1,20,000	70,000	6,000	7,200

Additional information:

1. Customers are allowed a credit period of one month.
2. Creditors allow a time-lag of two months for making payment.
3. Wages of a month are paid in the next month
4. Other expenses of a month are paid in the first week of the next month.
5. A machinery is to be bought for cash in may for Rs.32,000.
6. Balance of cash on 1st April 1997 is Rs.8,000.
7. All purchases and sales are on credit terms.

PROBLEM: 22

From the following forecasts of income and expenditure prepare a cash budget from the three months commencing 1st June when Bank balance was Rs.1,00,000.

Months	Sales	Purchases	Wages	Factory expenses	Adm. & Selling exp.
April	80,000	41,000	5,600	3,900	10,000
May	76,500	40,000	5,400	4,200	14,000
June	78,500	38,500	5,400	5,100	15,000
July	90,000	37,00	4,800	5,100	17,000
August	95,500	35,000	4,700	6,000	13,000

Additional information:

1. Assume that 50% are cash sales.
2. There is a two-month credit period allowed to customers and received from suppliers.
3. A sales commission of 5% on sales and due to two months after sales is payable in addition to selling expenses.
4. Plant valued at Rs.65,000 will be purchased and paid for in August.
5. The dividend of Rs.15,000 for the last financial year will be paid in July.
6. Income tax (advance) is to be paid on June Rs.10,000. Lag in payment of wages $\frac{1}{4}$ month.
7. Dividends from investments amounting to Rs.1,000 are expected on 1st July.
8. Share call money for Rs.30,000 is due from shareholders (including a premium of Rs.5,000 also) on 1st August.

PROBLEM: 23 (Flexible budget)

Draw up a flexible budget for production at 75% and 100% capacity on the basis of the following data for a 50% activity.

Particulars	Per unit
Materials	100
Labour	50
Variable expenses (direct)	10
Administrative expenses (50% fixed)	40,000
Selling and distribution expenses (60% fixed)	50,000
Present production (50% activity)	1,000 units

PROBLEM: 24

The cost of an article at a capacity level of 10,000 units is given under A below. For a variation in capacity above or below this level, the individual expenses vary as indicated in B below:

Particulars	A	B
Material cost	50,000	(100% varying)
Labour cost	30,000	(100% varying)
Power	3,000	(80% varying)
Repairs and maintenance	3,500	(80% varying)
Stores	2,000	(100% varying)
Inspection	800	(25% varying)
Depreciation	10,000	(100% varying)
Administration overheads	3,600	(25% varying)
Selling overheads	4,500	(50% varying)
	1,07,400	

Cost per unit Rs.10.74. Find out the unit cost of the product under each individual expenses at production level of 8,000 units and 12,000 units.

PROBLEM: 25

Kumar products produce and sell a product for which total capacity of 2,000 units exists. The following expenses are for the production of 1,000 units of the product, which is sold at Rs.130 per units.

Particulars	Per unit Rs.
Direct materials	20
Direct wages	30
Administration overhead (constant)	20
Selling expenses (50% fixed)	10
Distribution expenses (25% fixed)	20
	100

You are required to prepare a flexible budget for the production and sales of 1,200 units, 1,600 units and 2,000 units, showing clearly the marginal (variable) cost and total cost at each level.

PROBLEM: 26

The expenses for the production of 500 units in a factory are given as follows:

Particulars	Per unit
Materials	80
Labour	60
Variable expenses (factory)	15
Fixed factory overhead (5,000)	10
Administrative expenses (20% variable)	10
Selling and distribution expenses (50% fixed)	10
Total per unit cost	185

You are required to prepare a flexible budget for 600 units.

PROBLEM: 27

Draw up a flexible budget for overhead expenses on the basis of the following data and determine the overhead rates at 70%, 80% and 90% plant:

Particulars	At 80% capacity
Variable overheads: Indirect labour	12,000
Stores including spares	4,000
Semi-variable overheads: Power (30% fixed, 70% variable)	20,000
Repairs and maintenance (60% fixed, 40% variable)	2,000
Fixed overheads:	
Depreciation	11,000
Insurance	3,000
Salaries	10,000
Total overhead	62,000
Estimated direct labour hours	1,24,000 (HRs.)

PROBLEM: 28

The following data are available in a manufacturing company for the year 1998:

Particulars	Rs. (lakhs)	Particulars	Rs. (Lakhs)	Particulars	Rs. (Lakhs)
Fixed expenses:		Semi variable expenses:		Variable expenses:	
Wages and salaries	9.5	(At 50% of capacity)		(At 50% of capacity)	
Rent and taxes	6.6	Maintenance and repair	3.5	Materials	21.7
Depreciation	7.4	Indirect labour	7.9	Labour	20.4
Administration exp.	6.5	Sales depart. Salaries	3.8	Other expenses	7.9
		Administration exp.	2.8		

Assume that the fixed expenses remain constant for all levels of production; Semi-variable expenses remain constant between 45% and 65% of capacity increasing by 10% between 65% and 80% capacity and by 20% between 80% and 100% capacity.

Sales at various levels are	Rs. Lakhs	Sales at various levels are	Rs. Lakhs
50% capacity	100	90% capacity	180
60% capacity	120	100% capacity	200
75% capacity	150		

PROBLEM: 29

The expenses for budgeted production of 10,000 units in a factory are furnished below:

Particulars	Per unit
Material	70
Labour	25
Variable overheads	20
Fixed overheads (Rs. 1,00,000)	10
Variable expenses (Direct)	5
Selling expenses (10% Fixed)	13
Distribution expenses (20% Fixed)	7
Administration expenses	5
Total cost per unit	155

Prepare a budget for production of: (a) 8,000 units, (b) 6,000 units and (c) Indicate cost per unit at both the levels. Assume that administration expenses are fixed for all levels of production.

PROBLEM: 30 (Master budget)

A Glass Manufacturing company requires you to calculate and present the budget for the next year from the following information:

Sales: Toughened Glass	Rs. 3,00,000
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Bent toughened glass	Rs.5,00,000
Direct material cost	60% of sales
Direct wages	20 workers @ Rs.50 per month
Factory overhead:	
Indirect labour: Work manager	Rs.500 per month
Foremen	Rs.400 per month
Stores and spares	2 ½% on sales
Depreciation on machinery	Rs.12,600
Light and power	Rs.5,000
Other sundries	10% on direct wages
Administration selling and distribution	Rs.14,000 per year
Repairs and maintenance	Rs.8,000

STANDARD COSTING

Standard costing is a technique which uses standard for costs and revenues for the purpose of control through variance analysis. Here, standards are performance expectations. Standard costing aims at eliminating waste and increasing efficiency in operation through setting up standards for production costs and production performance. In short, standard costing is a control device and not a separate method of product costing. It can be used with any method of product costing, job costing or process costing.

Standard Cost is defined by I.C.M.A. as, "The standard cost is a predetermined cost which is calculated from management standard of efficient operation and relevant necessary expenditure."

Standard Costing: Standard Costing is defined by I.C.M.A. Terminology as, "The preparation and use of standard costs, their comparison with actual costs and the analysis of variances to their causes and points of incidence".

Advantages of Standard Costing:

- 1. Proper Planning:** It helps to apply the principle of "Management by exception". That is, the management need not worry over those activities which proceed in tandem plans. It is only on the issues of exceptions that they have to concentrate.
- 2. Efficient Cost Control:** Standard Costing is a tool for the management to gain reduction in the cost and control over it. Under this technique, differences are analyzed and responsibilities are determined.
- 3. Motivational Factor:** Labour efficiency is promoted and they are destined to be cost conscious. Standards provide incentives and motivation to work with greater effort. This increases efficiency and productivity.
- 4. Comparison of Forecasting and Outcome:** A target of efficiency is set for the employees and the cost consciousness is stimulated. Since the process of standard costing allow an appraisal to be made of personnel, machines and method of working, current inefficiencies come to the notice and get eliminated.
- 5. Inventory Control:** Standard costing facilitates inventory control and simplifies inventory valuations. This ensures uniform pricing of stocks in the form of raw materials, work-in-progress and finished goods.
- 6. Economical System:** Standard costing system is economical system from the viewpoint that it does not require detailed records. It also does not require a big staff. It results in the reduction in paper work in accounting and needs very few records. Thus, there is saving of time as well as money.

- 7. Helpful in Budgeting:** Budgets are prepared on the basis of standard costing. Standards which are set up in respect of materials, labour and overheads, are helpful in preparing various budgets. For example, flexible budget, sales budget, etc.
- 8. Helps Formulate Policies:** This technique is a valuable aid to the management in determining prices and formulating production policies. Standard costing equips cost estimates while planning the production of new products.
- 9. Helps Distinguish Activities:** Standard costing helps in distinguishing between skilled and unskilled activities. So, the skilled worker only gives pays attention to improving the activities of the unskilled workers.
- 10. Eliminates Wastage:** Through fixing standard, certain waste such as material wastage, idle time, lost machine hours, etc. are reduced.

Limitations of Standard Costing:

- 1. Costly System:** Because the Standard Costing requires highly skillful and competent personnel, it becomes a costly system too. For the same experts are paid high remuneration.
- 2. Difficulties in Fixation of Standard:** It is always difficult to determine precise standard costs in a given situation which will coincide with actual cost when operations are over. Standard cost are determined partly by the past experience and partly by the cost projections based on advanced statistical techniques. Thus, uncertainties revolve around standards.
- 3. Constraint for Service Industry:** Standard costing is applied for planning and controlling manufacturing costs. Thus, it cannot be applied in a service industry.
- 4. Consistency of Standard:** because the standards of marginal costing fluctuate and vary time to time, it is difficult to always sustain and continue the same standards.
- 5. Unsuitable for Non-standardized Products:** Standard costing is expensive and unsuitable for job manufacturing industries as they manufacture non-standardized products such as catering, tailoring, printing, etc.
- 6. Relatively Fixed Standards:** A business may not be able to keep standards up-to-date. In other words, a business may not revise standards to keep pace with the frequent changes in manufacturing conditions. Firms may avoid revising standards as it is a costly affair.
- 7. Difficulties for Small Industries:** Establishment of standards and their implementation involve initial high costs. Standards have to be revised and new standards be fixed involving larger costs. Thus, small firms find it expensive to operate standard costing system. This system is not fit for each type of industries.
- 8. Discouragement for Workers:** Sometimes the employees and workers are discouraged when the standards are fixed at a high level. The unreal high standards may adverse by effect the morale of workers rather than working as an incentive for better efficiency.
- 9. Inaccurate Diverse Results:** Inaccurate and unreliable standards cause misleading results and thus may not enjoy the confidence of the users of this system.

Objectives of Standard Costing:

- 1.** To institute a control mechanism on all the elements of costs that affect production and sales
- 2.** To measure different t operational efficiencies and check the wastages
- 3.** To improve the delegation of authority and generate a sense of responsibility among the employees
- 4.** To develop a cost consciousness in the employees
- 5.** To presume the production costs, sales and profit
- 6.** To avail the benefits of 'Management by exception.'
- 7.** To bring about a vivid progressive vision and sagacious decision making at each managerial level.

Preliminaries of Establishment of Standard Cost System:

The following four points are usually considered for setting up a standard cost system in a business:

- 1) Setting up cost center
- 2) Classification of Accounts
- 3) Types of Standards
- 4) Settings the Standards.

1) Setting up Cost Center: Introducing Standard Cost System is requiring first of all to establish cost centers with their well-designed ambit of work. In the process there should be no ambiguity about the responsibility of each cost center so that their responsibility may be identified.

A cost center is a location; people or item of equipment's for cost may be ascertained and used for the purpose of cost control.

2) Classification of Accounts: Accounts are classified in order to assist collection and analysis. To use the system of standard costing effectively, all accounts have to be classified on the basis of their functions, items of revenue nature, assets and liabilities, etc. Codes are given for each item and each account along with elements of cost with this end in view, codes may be used. A code is a symbolic representation of any particular item of information.

For example,

Direct Material	01-19
Direct Labour	20-29
Direct Expense	30-39
Indirect Expense	40-49
Indirect Labour	50-59
Indirect Expense	60-69

3) Types of Standards: Basically, there are two types of standard:

- (a) Current Standard
- (b) Basic Standard

(a) Current Standard: It is established for the use over a diminutive period of time and is related to current circumstances. Such a standard remains in operation for a limited period and belongs to the current conditions. These standards are revised at regular intervals. Current standard is of three types like (1) Ideal standards, (2) Expected standards, and (3) Normal standards.

(1) Ideal standards: This is a hypothetical standard which is rather not practicable to attain. This ideal is clearly unrealistic and unattainable. It presupposes that the performance of men, materials and machines is perfect and thus makes no allowance for the loss of time, accident, wastage of materials and any other type of waste of materials and any other type of waste or loss. Such standards have the advantage of establishing a goal which, however, is not always attainable in practice. As such it is having a little practical value.

The standard which can be attained under the most favorable condition possible.

(2) Expected or practical standards: Such standards are likely to be expected or utilized in the future period. Such standards are based on expected performance after making a reasonable allowance for unavoidable losses and other inevitable lapses from perfect efficiency. So, it is most generally used standard and is best suited for cost control. This standard can be anticipated as well as attained in future in sync with the specified budget.

(3) Normal standards: It is also known as 'Past Performance Standard' because it is based on the average performance in the past. It should be attainable and it provides a challenge to the staff. The aim of such a standard is to eliminate the variations in the cost which arise out of trade cycle.

The average standard can be anticipated as well as attained in a future period of time. Preferably, it should be long enough to cover one trade cycle.

(B) Basic standards: This is a standard which is established for use unaltered for an indefinite time. It is similar to an index number against which all results are measured. Variances from basic standards show trends of deviations of the actual cost. However, basic standards are of no practical utility from the point of view of cost control and cost ascertainment. This standard is set on a long-term basis and seldom revised.

It is an underlying standard from which current standard can be developed.

4) Setting the Standard: The process of setting standard is a valuable activity in itself. The success of standard costing system depends on the reliability, accuracy and acceptance of the standards. If standards have been properly set and maintained, they are a sound basis for determining cost for various purposes. While setting the standards, the following points should be taken into consideration: duration of use of standard, reasonable standard of performance, level of activity. For the given units' standard sets for the following items are (i) direct material cost, (ii) direct wage cost, (iii) direct expense, (iv) factory variable overhead cost, (v) selling and distribution variable cost, (vi) selling price and sales margin.

- **Standards for Material:** It includes (1) Determination of standard quantity of material required, and (2) Determination of standard price per unit of material.
- **Material Quantities:** After establishing the standard quality of material, it is more important and necessary to establish the standard regarding quantity of each material. Generally, quantities are expressed in terms of kilograms, feet, units and so forth.
- **Standards for Labour:** This standard is determined with regard to the current rate of pay and any anticipated variations. It should be fixed for each grade of labour and for each operation involved. The standard hours are fixed for all categories of labour i.e., for skilled and unskilled labour. In these standards, number of hours and workers are established.
- **Material Prices:** This is a forecast of the average prices of material during the future period. This standard is quite difficult to establish because prices are regulated more by the external factors than by the company management. While setting standard prices, the past experiences, existing prices and anticipations should closely examine. Price of material in the past, current prices and fluctuating trends are the base for determining standard of price.
- **Setting for Overheads:** Setting standard for overheads is more complex than the development of material and labour standards. It is estimated for variable overheads and fixed overheads.
 - **Variable Overheads:** It may be recalled that variable overhead has been defined as a cost which tends to vary directly with the volume of output. It is assumed that the overhead rate per unit is invariable, irrespective of the quantity produced, so it is necessary to calculate only a standard cost per unit or per hour.
 - **Fixed Overheads:** Fixed overhead tends to be unaffected by variations in the volume of output. Therefore, it is required to determine total fixed overhead for the period and budgeted production in units.
- **Standard Hour:** Production is usually articulated in physical units such as tons, pounds, gallons, numbers, kilograms, liters, etc. When a company is manufacturing different types of products, it is almost impossible to increase the production, which cannot be expressed in the same unit. Standard hour means a hypothetical hour, which represents the amount of work that should be performed in one hour under standard conditions.

Distinguish:

(1) Standard Cost v/s. Estimated cost:

No.	Standard Cost	Estimated Cost
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1.	Standard cost aims at what the cost should be	Estimated cost is an assessment of will be
2.	Standard costs are planned cost which is determined on a scientific basis after taking into account certain level efficiency	It is based on the average of past figures, taking into consideration anticipated charges in future
3.	It lays emphasis on cost control, on setting the target against which actual performance is measured and if need be, corrective measures are sought	Estimated costs are used by the undertakings for fixing the selling price of the product

(2) Standard Cost v/s. Budgetary Cost:

No.	Standard Cost	Budgetary Cost
1.	Standard costing is intensive in application as it calls for a detail analysis variance	Budgetary control is extensive in nature and the intensity of analysis tends to match less than that in standard costing
2.	Standard cost represents realistic yardsticks and, therefore, more useful for controlling and reducing cost	Budgets usually represent an upper limit on spending without considering the effectiveness of the expenditure in terms of output
3.	Standard cost is a projection of cost account	Budget is a projection of financial accounts
4.	Standard cost are developed mainly for the manufacturing function and sometimes also for marketing and administration	Budgets are compiled for different functions of the business such as sales, purchase, cash, production, etc.
5.	Standard costs are usually established after considering such vital matters as production capacity, methods employed and other factors which require attention when determining an acceptable level of efficiency	Budgets may be based on previous year's costs without any attention being paid to efficiency

Types of Variances:

Initially, standards for all elements of costs should be set and then the actual cost should be compared with the standard costs to obtain the variances. Some deviations are found when actual performances are recorded and compared with the standard set. These deviations are known as variances.

" A variance is the difference between a standard cost and the comparable actual cost incurred during a period"

- C.I.M.A. London

Variances are classified on the basis of:

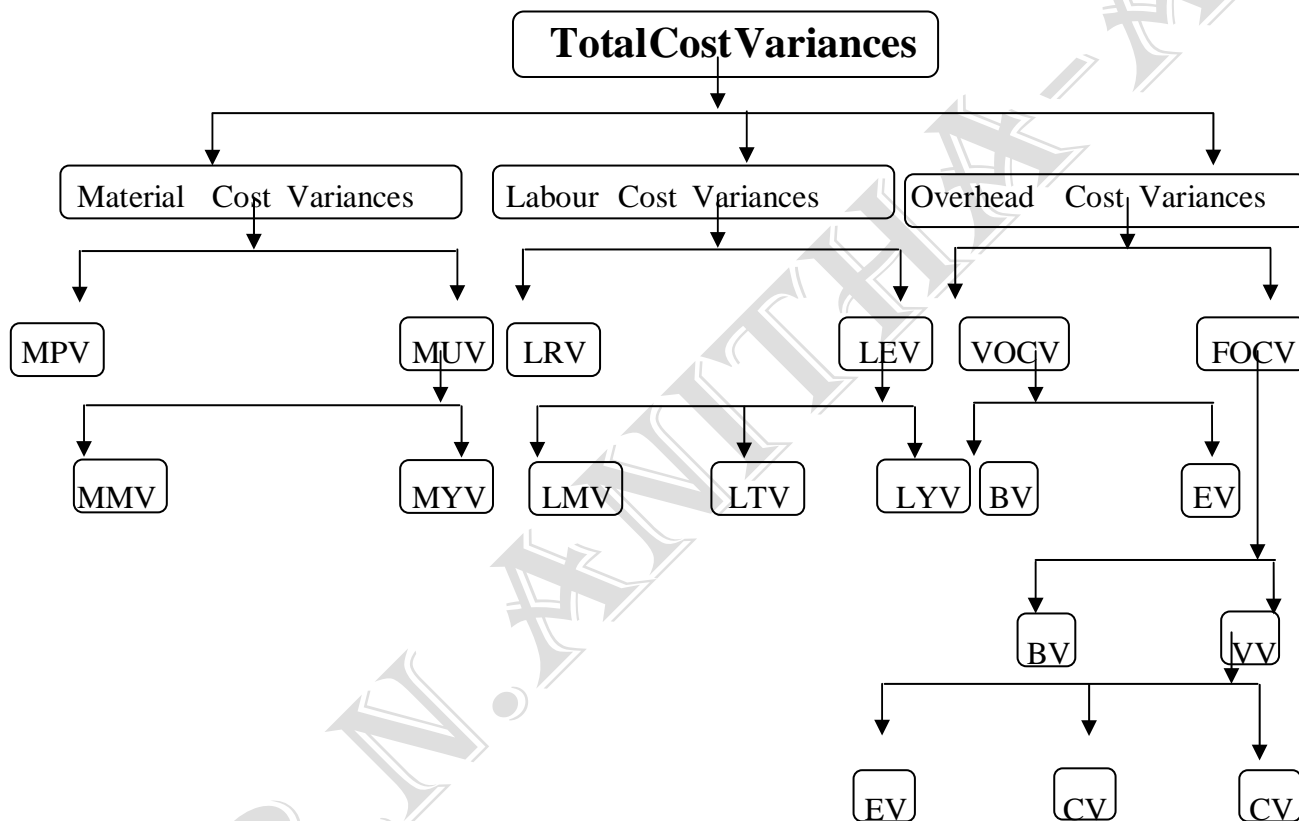
- 1) On the basis of control
- 2) On the basis of profitability
- 3) On the basis of elements of cost

(1) **On the basis of control:** On the basis of control, variance may be classified as controllable variance and uncontrollable variance.

(2) **On the basis of profitability:** With regard to the profitability or effect, variance may be classified into two: (i) favourable variance and (ii) unfavourable variance. These are also known as credit and debit variance or negative and positive variances.

(3) **On the basis of elements of cost:** Though different types of variances can be calculated; their use may not be much useful. Variance calculated on the basis of different elements of cost. They are as follows:

Total Cost Variance is a difference between the standard cost value of the output achieved in a period and the total cost incurred.



Material Variances (MV): These variances include Material Cost Variances, Material Price Variances, Material Usage Variances, Material Mix Variances and Material Yield Variances.

(1) Material Cost Variances (MCV): It is the difference between the standard cost of material specified for the output achieved and the actual cost of direct materials used.

$$\text{Material cost variance} = (AQ \times AP) - (SQ \times SP)$$

Where AQ = Actual quantity

AP = Actual price

SQ = Standard quantity for the actual output

SP = Standard price

(2) Material Price Variances (MPV): It is that portion of the material cost variance which is due to the difference between the standard price specified and the actual price paid.

$$\text{Materials price variance} = (\text{Actual Price} - \text{Standard Price}) \times \text{Actual Quantity}$$

Where, Price = Rate

(3) Material Usage Variances (MUV): Material usage variance is a part of Direct Material Cost Variance. MUV is determined by difference found between the standard quantity and the use of actual quantity. Later, the difference found is multiplied by the standard price.

Materials quantity variance = (Actual Quantity – Standard Quantity) x Standard Price

(4) Material Mix Variances (MMV): It is that portion of direct material usage variance which is the difference between the actual quantities of elements used in a mixture at a standard price and the total quantity of elements used at the weighted average price per unit of element as shown by the standard cost sheet.

Materials mix variance = (Actual mix – Revised standard mix of actual input) x Standard price

Revised standard mix or proportion is calculated as follows:

Standard mix of a particular material / Total standard quantity x Actual input

Note: When the actual weight of quantity and the standard weight of quantity differ from each other, this formula is used to find new quantity.

(5) Material Yield Variances (MYV): This is "that portion of the direct materials usage variances which is due to the difference between standard yield specified and the actual yield obtained.

Yield Variance = (Actual yield – Standard Yield specified) x Standard cost per unit

Yield, in such a case, is known as sub-usage variance (or revised usage variance) which can be computed by using the following formula:

Sub-usage or revised usage variance = (Revised Standard Proportion of Actual Input – Standard quantity) x Standard Cost per unit of input

Labour Variances (LV):

Labour variances occur because of the difference in actual rates and standard rates of labour and the variation in actual time taken by labours and the standard time allotted to them for doing a job. These variances include Labour Cost Variances, Labour Rate Variances, Labour Time or Efficiency Variances, Labour Idle Time Variances, Labour Mix Variances.

(1) Labour Cost Variances (LCV): This is the difference between the standard direct labour cost and the actual direct labour cost incurred for the production achieved.

Labour cost variance = (AH x AR) – (SH x SR)

Where:

AH = Actual hours

AR = Actual rate

SH = Standard hours

SR = Standard rate

(2) Labour Rate Variances (LRV): This is that portion of the labour cost variance which is due to the difference between the standard rate specified and the actual rate paid.

Labour rate variance = (Actual rate – Standard rate) x Actual hours

(3) Labour Time (Efficiency) Variances: (LTV/LEV): It is defined as the difference between the standard hours (Time) for the actual production achieved and the hours actually worked, valued at the standard labour rate.

Labour efficiency variance = (Actual hours – Standard hours for the actual output) x Std. rate per hour.

(4) Idle Time Variance (ITV): ITV comes up because of idle time of workers on account of abnormal causes. The wages paid for the time during which the workers remained idle due to causes like strikes, breakdown on plant, etc. are treated as idle time variances.

$$\text{Idle Time Variance} = \text{Idle Time} \times \text{Standard Rate} \\ \text{IT} \times \text{SR}$$

(5) Labour Mix Variance / Gang Composition Variance (LMV): It occurs only when more than one grade of workers is employed and the composition of actual grade of workers differs from those specified.

$$\text{Labour mix variance} = (\text{Actual labour mix} - \text{Revised standard labour mix in terms of actual total hours}) \times \text{Standard rate per hour}$$

Overhead Variances (OV):

Overhead is the aggregate of indirect materials, indirect labour and indirect expenses. Analysis of overhead variances is different from that of direct material and direct labour variances by two reasons.

(1) It is difficult to establish Standard overhead rate for fixed overhead because changes in the volume of output will affect the standard overhead rate even if there is no change in the amount of fixed overhead cost.

(2) For computing overhead variances, there are quite a few terminological options and methods. The overhead variances include fixed overhead variances and variable overhead variances. Moreover, further analysis of overhead variances is also possible according as the available source information. It is significant to know at the beginning that the overhead variance is not anything but under or overabsorption of the overhead.

(a) Variable Overhead Cost Variance (VCOV): VCOV is the difference between the standard variable overhead cost for production and the actual variable cost incurred during the period.

$$\text{VCOV} = (\text{Std. hours for actual Output} \times \text{Std. variable overhead rate}) - \text{Actual overhead cost} \\ \text{Absorbed V. O.} - \text{Actual V. O.}$$

(1) Variable Overhead Expenditure Variance (VOEV): VOEV is known as spending variance or 'Budget Variance'. This variance arises due to the difference between standard variable overhead allowed and actual variable overhead incurred.

$$\text{VCOV} = (\text{Std. Variable Overhead Rate} \times \text{Actual Hours}) - \text{Actual overhead cost} \\ \text{Standard V. O.} - \text{Actual V. O.}$$

(2) Variable Overhead Efficiency Variance (VOEV): VOEV can occur due to the difference between standard hours allowed for actual output and actual hours.

$$\text{VOEV} = (\text{Std. Variable for actual output} - \text{Actual hours}) \times \text{Std. Variable overhead rate} \\ \text{Absorbed V. O.} - \text{Standard V. O.}$$

Check V. O. Expenditure Variance + V. O. Efficiency Variance

(b) Fixed Overhead Cost Variances (FOCV): FOCV is the difference between standard fixed overhead cost for actual output and actual fixed overhead.

$$\text{FOCV} = (\text{Std. hours for actual output} \times \text{Std. F. O. Rate}) - \text{Actual F. O.} \\ (\text{Absorbed Overhead} - \text{Actual Overhead})$$

(1) Fixed Overhead Expenditure Variances (FOEV): This is known as spending variance or Budget Variance. It arises due to the difference between budgeted fixed overhead and actual fixed overhead.

$$\text{FOEV} = \text{Budgeted Fixed Overhead} - \text{Actual Fixed Overhead}$$

(2) Fixed Overhead Volume Variances (FOVV): It is known as that portion of overhead variance which arises due to the difference between standard cost of overhead absorbed by actual production and the standard allowance for that output.

$$\text{FOVV} = (\text{Std. Time for Actual Output} - \text{Budgeted Time}) \times \text{Std. Rate}$$

Absorbed Overhead - Budgeted Overhead

(i) Efficiency Variances (EV): It classifies that portion of volume variance which reflects the increased or reduced output arising from efficiency above or below the standard which is expected.

$$EV = \frac{(\text{Std. Time for Actual Output} - \text{Actual Time}) \times \text{Std. Rate}}{\text{Absorbed Fixed Overhead} - \text{Standard Fixed Overhead}}$$

(ii) Capacity Variances (CV): It classifies that portion of the volume variance which is caused by functioning at higher or lower capacity usage than the standard. It is affected by the factors like strikes, power failure, over demand etc.

$$CV = \frac{(\text{Actual Time Worked} - \text{Budgeted Time}) \times \text{Std. Rate}}{\text{Std. Fixed Overhead} - \text{Budgeted Overhead}}$$

Note: Actual Time = Actual Hours

(iii) Calendar Variances (CV): It classifies that portion of the volume variance which is caused by the difference between the number of working days in the budget period and the number of actual working days in the period to which the budget is applied.

This variance arises only in exceptional circumstances because normal holidays are taken into account while laying down the standard.

$$CV = \frac{(\text{Actual No. of Working Days} - \text{Std. No. of Working Days}) \times \text{Std. Rate per Day}}{(\text{Revised Budgeted Time} - \text{Budgeted Time}) \times \text{Std. Rate per Time}}$$

Problem 1.

A manufacturing concern which had adopted standard costing furnishes the following information.

Standard :

Material for 70 kgs. Finished products	
100 kgs.	
Price Of Material	Rs. 1 Per Kg.

Actual :

Output	2,10,000 kgs.
Materials used	2,80,000 kgs.
Cost of materials	Rs.2,52,000

Calculate :

- Material usage variance
- Material price variance
- Material cost variance

Problem 2.

From the following particulars calculate:

- Total materials cost variance; 2. Material price variance; and 3. Material usage variance.

	<i>Standard</i>		<i>Actual</i>	
	<i>Materials</i>	<i>Units</i>	<i>Price (Rs.)</i>	<i>Units</i>
	<i>Price (Rs.)</i>			
A	1,010	1.0	1080	1.2
B	410	1.5	380	1.8
C	350	2.0	380	1.9

Problem 3

Given that the cost standards for material consumption are 40 kgs. At rs. 10 per kg., compute the variances when actuals are :

- (a) 48 kgs. At rs. 10 per kg.
- (b) 40 kgs. At rs. 12 per kg.
- (c) 48 kgs. At rs. 12 per kg.
- (d) 36 kgs. At rs. 10 per kg.

Problem 4

100 workers are working in a factory at a standard wage of rs. 4.80 per hour. During a month there are four weeks of 40 hours each. The standard performance is set at 360 units per hour. The following is the summary of the wages paid during the month:

- (e) 91 workers were paid @ rs. 4.80 per hour
- (f) 5 workers were paid @ rs. 5.00 per hour
- (g) The remaining were paid @ rs. 4.60 per hour
- (h) Power failure stopped production for 2 hours actual production 57,960 units. Calculate labour variances.

Problem 5

The standard cost for a product is:

Time 10 hours per unit, cost rs. 5 Per hour.

The actual performance was:

Production	1,000 units
Hours taken:	
Production	10,400 hours
Idle time	400 hours

Total time	10,800 hours

Payment mode, rs. 56,160 @ Rs. 5.20 Per hour

Calculate (a) labour rate variance, (b) labour efficiency variance, (C) idle time variance, (d) labour cost variance.