Biyani's Think Tank

Concept based notes

COST AND MANAGEMENT ACCOUNTING

(BBA 3rd Year)

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Syllabus as per University of Rajasthan

Unit 1

(a) Introduction to Cost Accounting: Meaning and definition, scope and use of cost accounting, cost centre, cost centre, cost accounting and financial accounting, cost concepts, classification of costs.

(b) Elements of Cost: Material, labour and expenses, direct Material cost-Meaning, Purchase and stones routine, methods of Pricing Material issues, wastage, scrap spoilage and defectives, Inventory Control techniques, direct labour cost-Meaning, Remuneration methods, labour-turnover, treatments of idle time, overtime premium, Employees welfare costs and fringe benefits.

Unit 2

Overheads: Introduction, direct expenses, steps in accounting of overheads, classification of overheads, techniques for separation of fixed and variable costs, allocation and in proportion of overheads, absorption of overheads-methods of overheads, absorption, over absorption and under absorption of overheads. Costing methods: Output costing.

Unit 3

(a) Management Accounting: Meaning, Nature, Scope of Management Accounting, Tools and Techniques of Management Accounting, Functions of Management Accountant, Installation of Management Accounting System, Limitations of Management Accounting.

(b)Application of Marginal Costing in Decision Making. Fixation of Selling Price, Make or Buy Decision. Dropping a line or product, Retain or Replace, own or lease, Selling in Foreign Market.

Unit 4

Cost Control Techniques: (a) Budgeting: Introduction, Comprehensive / Master Budget, Fixed and Flexible Budget. Cash Budget, Functional Budgets

(b)Standard Costing: Introduction, Cost Variance Analysis: Material Variance and Labour Variance.

Unit 5

(a)Responsibility Accounting, (b) Activity Based Costing.

Chapter 1 - Introduction of Cost Accounting

Q.1) Explain them eaning of Cost, Costing, Cost accounting and Cost Accountancy?
Ans – **Cost** refers to any expense or sacrifice made to develop a product or service.

Costing is a process for determining the cost. It may be called a technique for ascertaining the cost of production of any product or service in the business organization.

Cost Accounting is the next step to costing. Cost accounting involves analyzing relevant costing data, interpreting it, and presenting various management problems to management. The scope of cost accounting consists of preparing various budgets for an organization, determining standard costs based on technical estimates, finding and comparing with actual costs, ascertaining the reasons by variance analysis, etc.

Cost Accountancyis over and above costing and cost accounting. It envisages the application of costing and cost accounting in a business setup. Cost Accountancy facilitates management with cost control initiatives, ascertainment of profitability, and informed decision-making. It also includes determining the selling price for the products, division, and unit-wise profitability.

Q.2) Explain the Scope of Cost accounting?

Ans - Cost accounting is being widely applied by the production units to modify the process and maximise the profit. Following are the various scope of the cost accounting:

- Cost Analysis: Cost accounting determines the deviation of the actual cost as compared to the planned expense, along with the reason for such variation.
- Cost Audit: To verify the cost sheets and ensure the efficient application of cost accounting principles in the industries, cost audits are done.
- Cost Report: Cost reports are prepared from the data acquired through cost accounting to be analysed by the management for strategic decision making.
- Cost Ascertainment: To determine the price of a product or service, it is essential to know the total cost involved in generating that product or service.
- Cost System: It provides for time to time monitoring and evaluation of the cost incurred in the production of goods and services to generate cost reports for the management.
- Cost Comparison: It examines the other alternative product line or activities and the cost involved in it, to seek a better opportunity for generating high revenue.
- Cost Contol: Sometimes, the actual cost of a product or service becomes higher than its standard cost. To eliminate the difference and control the actual cost, cost accounting is required.
- Cost Computation: When the company is engaged in the production of bulk units of a particular product or commodity, the actual per-unit cost is derived through cost accounting.
- Cost Reduction: It acts as a tool in the hands of management to find out if there is any scope of reducing the standard cost involved in the production of goods and services. Its

purpose is to obtain additional gain.

Q.3) What are the Objectives of Cost Accounting?

Cost accounting aims at eliminating the loopholes in the production process and ensures manufacturing of goods at the lowest possible cost. Objectives of Cost accountingas such:

- Control and Reduce Cost: Cost accounting continuously focuses on managing the cost of production per unit to improve profitability without compromising with the quality of the product.
- Determine Selling Price: It provides the total cost incurred in the product or service, which is the base for fixing an appropriate selling price.
- Assist Management in Decision Making: The reports and cost sheets generated based on cost accounting back the managerial decisions of the organization.
- Ascertain Closing Inventory: It determines the closing inventory value at the end of the financial year.
- Ensure Profit from Each Activity: Cost accounting reviews the cost and takes corrective actions at each level to ensure profitability from all business activities.
- Budgeting: It generates the estimated cost of products or services to assist in budget planning, implementation and control.
- Setting Performance Standards: It provides a standard cost of goods or services to sets a level for the future course of action.
- Business Expansion: It estimates the cost of production at different stages, based on this analysis, the management can plan for expansion of the business.
- Minimizing Wastage: Cost control and reduction so attained helps in reducing the wastage during the manufacturing process.
- Improves Efficiency: Cost accounting assures cost management, profit appreciation and less wastage which ultimately enhances the overall production and manufacturing process of products.

Q.4) What are Limitations of Cost Accounting?

Cost accounting is a complex stream of accounting. It requires a lot of analysis and calculations to give accurate results. To know more about the limitations or objections about cost accounting:

- It is based on estimation: as cost accounting relies heavily on predetermined data, it is not reliable.
- No uniform procedure in cost accounting: as there is no uniform procedure, with the same information different results may be arrived by different cost accounts.
- Large number of conventions and estimate: There are number of conventions and estimates in preparing cost records such as materials are issued on an average (or) standard price, overheads are charged on percentage basis, Therefore, the profits arrived from the cost records are not true.
- Formalities are more: Many formalities are to be observed to obtain the benefit of cost accounting. Therefore, it is not applicable to small and medium firms.
- Expensive: Cost accounting is expensive and requires reconciliation with financial

records.

- It is unnecessary: Cost accounting is of recent origin and an enterprise can survive even without cost accounting.
- Secondary data: Cost accounting depends on financial statements for a lot of information. Any errors or short comings in that information creep into cost accounts also

Q.5) Explain Cost Centre?

Ans - It is a location, person or item of equipment for which costmay be ascertained and used for the purpose of cost control. It is a convenient unit of the organisation for which cost may be ascertained. The main purpose of ascertainment of cost is to control the cost and fill up the responsibility of the person who is in charge of the cost centre.

Q.6) What are similarities & difference between cost accounting& financial accounting?

Ans- Cost accounts and financial accounts are usually kept independently in organizations. In some respects, these accounts are similar, but they differ in others. The **similarities** can be summarized as follows:

(i) Both cost accounts and financial accounts are maintained using the double entry system of accounting.

(ii) Recording of transactions, both under the cost accounting system and financial accounting system, is made on the basis of common vouchers, invoices, and documents.

(iii) Both cost accounts and financial accounts disclose the profit or loss of the business.

(iv) Both cost accounts and financial accounts involve the process of matching the costs and revenues of the related activity for the current period.

(v) Both accounting systems keep records of direct costs and indirect costs.

(vi) Both accounting systems enable the business to compare and reconcile trading results.

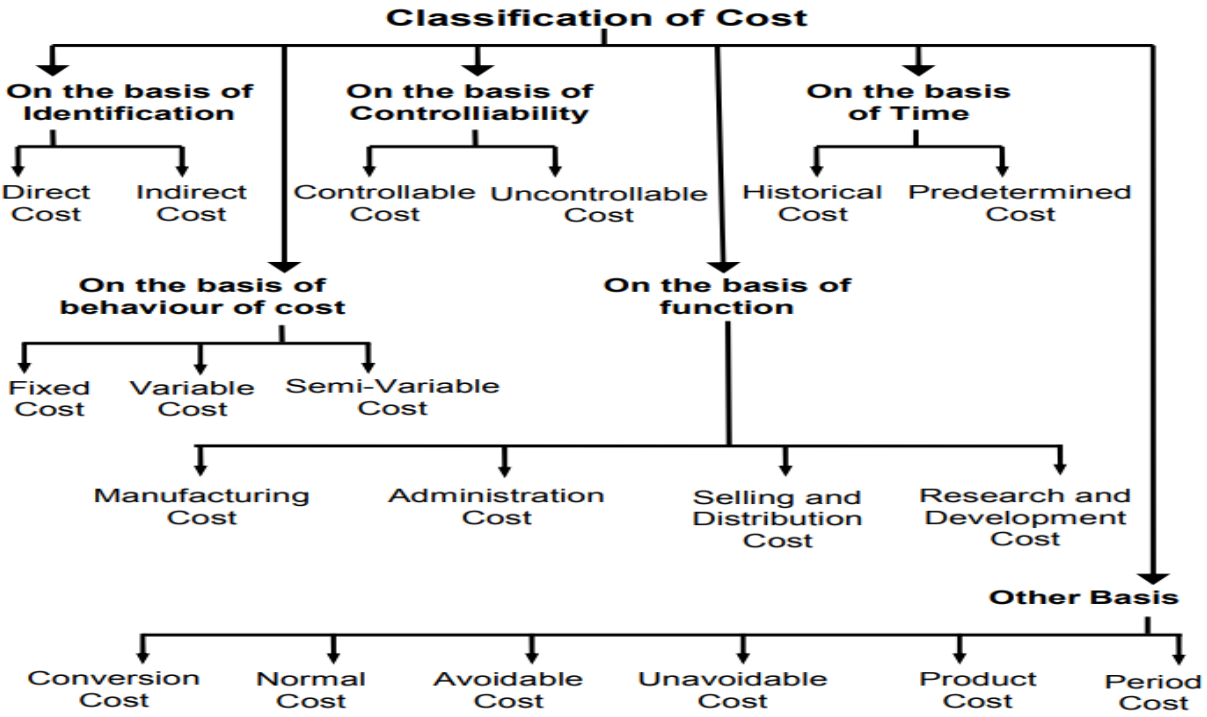
(vii) Both accounting systems assist managers in deciding on business policy and making managerial decisions.

Although both cost accounts and financial accounts are prepared based on common principles and well-known vouchers and documents, they **differ** from each other on the following points:

Basis	Cost accounting	Financial accounting
Meaning	Cost accounting is an accounting system, through which an organization keeps the track of various costs incurred in the business in production activities.	Financial accounting is an accounting system that includethe records of financial information about the business to show the correct financial position of the company at a particular date.
Information type	Records the information related to material, labor and overhead, which are used in the production process.	Records the information which are in monetary terms.

Users	Information provided by the cost accounting is used only by the internal management of the organization likedirectors, managers, supervisors etc.	Users of information provided by the financial accounting are internal and external parties like creditors, shareholders, customers etc.
Valuation of stock	At cost	Cost or net realizable value, whichever is less.
Mandatory	No, except for manufacturing firms it is mandatory.	Yes for all firms.
Time of reporting	Details provided by cost accounting are frequently prepared and reported to the management.	Financial statements are reported at the end of the accounting period, which is normally 1 year.
Profit analysis	Generally, the profit is analyzed for a particular product, job, batch or process.	Income, expenditure and profit are analyzed together for a particular period of the whole entity.
Purpose	Reducing and controlling costs.	Keeping complete record of the financial transactions.
Forecasting	Forecasting is possible through budgeting techniques.	Forecasting is not at all possible.

Chapter 2–Classification of Cost



Q1) Explain the following terms

1. Direct Costs: These are the costs which are incurred for and conveniently identified with a particular cost unit process or department. These are the expenditures which can be directly allocated to a particular job, product or an activity. E.g. Cost of Raw Material used, wages paid to labourers etc.

2. Indirect Costs: These are general costs and are incurred for the benefit of a number of cost units, processes or departments. These costs can not be conveniently identified with a particular cost unit or cost centre. Example : Depreciation of Machinery, Insurance, Lighting, Power, Rent of Building, Managerial Salaries, etc.

3 Fixed Costs: It is that portion of the total cost which remainconstant irrespective of output upto the capacity limit. It is the cost which does not very with the change in the volume of activity in the short run. These costs are not affected by temporary fluctuation in the activity of an enterprise. These are also known as period costs as it is concerned with period. Rent of premises, tax and insurance, staff salaries, are the examples of fixed cost.

4 Variable Cost: It is that cost which directly very with the volume of activity. In other words, it is a cost which changes according to the changes in the volume of output. It tends to very in direct proportion to output. It means when the volume of output increases, total variable cost also increases when the volume of output decreases, total variable cost also decreases. But the variable cost per unit remains same. Direct material, Direct Labour, Direct Expenses are the examples of variable costs.

5 Semi-Variable Cost: This is also referred as semi-fixed costs. These costs include both a fixed and a variable component. i.e. These are partly fixed and partly variable. They remain

constant upto a certain level and registers change afterwards. These costs vary in some degree with volume but not in direct or same proportion. Such costs are fixed only in relation to specified constant condition.

6 Controllable Cost: These are the costs which can not be influenced or controlled by the concerned cost centre or responsibility centre. These costs may be directly regulated at a given level of management authority.

7 Uncontrollable Cost: These are the costs, which can not be influenced or controlled by the action of a specific member of an enterprise. For eg.it is very difficult to control costs like factory rent, managerial salaries etc.

8 Manufacturing Costs: It is the cost of all items involved in the manufacturing of a product or service. It includes all direct costs and all indirect costs related to the production. It includes cost of direct materials, direct labour, direct expenses, and overhead expenses related to production.

9 Administration Cost: These are costs incurred for general management of an organisation. It is the cost which is incurred for formulating the policy, directing the organisation of controlling the operations. These are in the nature of indirect costs and are also termed as administrative overhead.

10 Selling and Distribution Costs: Selling costs are the indirect costs relating to selling of products or services. They include all indirect cost in sales management for the organisation. Selling costs include all expenses relating to regular sales and sales
promotion activities

11 Research &Development Cost: Research &development costs are incurred to discover new ideas,processes, products by experiment. It includes the cost of the process which begins with the implementation of the decision to produce or improved product.

12 Historical Costs: These are the costs which are ascertainedafter these have been incurred. Historical costs are then nothing but actual costs. They represent the costs of actual operational performance. These costs are not available until after the completion of manufacturing operations.

13 Pre determined Costs: These are the future costs which are ascertained in advance of production on the basis of a specification of all the factors affecting cost and cost data. Predetermined costs are future costs determined in advance on the basis of standards or estimates. These costs are extensively used for the purpose of planning and control.

14 Normal Cost: Normal cost may be defined as a cost which is normally incurred on expected lines at a given level of output, in the condition in which that level of output in normally attained. This cost is a part of production.

15 Abnormal Cost: Abnormal cost is that cost which is not normally incurred at a given level of output, in the condition in which that level of output is normally attained. Such cost is over and above the normal cost and is not treated as a part of the cost of production.

16 Avoidable Cost: The cost which can be avoided under the present conditions is an avoidable cost. These are the costs which under given conditions of performance efficiency should not have been incurred. They are logically associated with some activity and situation and are ascertained by the difference of actual cost with the happening of the situation and the normal cost. Eg.when spoilage occurs in manufacturing in excess of normal limit, the resulting cost of spoilage is avoidable cost.

17 Unavoidable Cost: The cost which can not be avoidable under the present condition is an unavoidable cost. They are inescapable costs which are essentially to be incurred within the limits or norms provided for. It is the cost that must be incurred under a programme of business restriction.

Practical Problems:

Q.1 From the following particulars, prepare a cost statement showing components of Total cost and the Profit for the year ended 31st December, 1995:

	Rs.
Stock of finished goods 1 January, 2005	5,000
Stock of raw materials 1 January, 2005	45,000
Purchase of raw materials	4,50,000
Carriage inwards	5,000
Wages	1,80,000
Works Manager's salary	25,000
Factory employees salary	75,000
Factory rent, Taxes and Insurance	9,000
Power expenses	12,000
Other production expenses	45,000
General expenses	35,000
Sales for the year	9,00,000
Stock of finished goods, 31st December, 2005	20,000
Stock of raw materials, 31st December, 2005	40,000

Solution

Particular	Amount	Amount
Opening Stock of Raw Material	45,000	
Add: Purchase of Raw Material	4,50,000	
Add: Carriage inward	5,000	
	5,00,000	
Less: Closing of Raw Material	40,000	
Prime Cost		4,60,000
Add: Factory Overhead:		
Works Managers salary	25,000	
Factory employee salary	75,000	
Factory rent, taxes and insurance	9,000	
Power expenses	12,000	
Factory rent, taxes and insurance	9,000	
Other production expenses	45,000	1,66,000

Works Cost		8,06,000
Add: Office Overhead :		
General expenses		35,000
Cost of Production		8,41,000
Add: Opening stock of finished goods		5,000
		8,46,000
Less: Closing Stock of finished goods		20,000
Cost of goods sold		8,26,000
Profit		74,000
Sales		9,00,000

Q.2 The cost of sale of Production 'A' is made up as follows:

Material used in manufacturing	55,500
Material used in packing material	10,000
Material used in selling the product	1,500
Material used in the factory	750
Material used in the office	1,250
Labour required in the production	10,000
Labour required for supervision of the management for factory	2,000
Expenses-direct-factory	5,000
Expenses-indirect-factory	1,000
Expense-factory	1,250
Depreciation-office building and equipment	750
Depreciation-factory	1,750
Selling	3,500
Freight on material	5,000
Advertising	1,250

Assuming that all products manufactured are sold, what should be the selling price to obtain a profit of 25% on selling price ?

Solution: **Statement of Cost**

Direct Material : Material used in manufacturing		**55,000**	
Material used in packing material		**10,000**	
Freight on material		**5,000**	
			70,000
Direct Labour : Labour required on producing			**10,000**
Direct Expenses: Expenses direct factory			**5,000**
Prime Cost			**85,000**
Add: Factory overheads			
Indirect material : material used in factory		**750**	
Indirect labour : labour required for supervision of the Management		**2,000**	
Indirect expenses : Expenses –indirect-factory	1,000		
Depreciation-factory	1,750	**2750**	**5,500**
Factory or Works cost			**90,500**
Add: Office and Administrative overhead:			
Indirect material : Material used in office		**1,250**	
Indirect expenses : Expenses- office	1,250		
Deprecation	750	**2,000**	**3,250**
Total Cost of Production			**93,750**
Add: Selling and distribution overheads:			

Indirect material: Material used in selling the Product		**1,500**	
Indirect expenses: Selling	3,500		
Advertising	1,250	**4,750**	**6,250**
Cost of Sales			**1,00,000**
Profit			**33,333**
Sales			**1,33,333**

Chapter -3 Material Cost

Material Control is a management function that is concerned with the storage, handling, and use of materials to minimize waste and improve inventory accuracy. This process can be beneficial for companies to reduce costs and improve organization and productivity.

Objectives of Materials Control:

The following are the main objectives of materials control:

(a) To enable uninterrupted production:

The main object of material control is to ensure smooth and unrestricted production. Production stoppages and production delays cause substantial loss to a concern.

(b) To ensure requisite quality of materials:

The quality of finished products depends mainly on the quality of raw materials used. If quality of the raw materials is not up to desired standards, the end product will not be of desired quality which affects the sale of the product in the market resulting in loss of profits as well as goodwill of the concern. It is of vital importance to exercise strict control and supervision over the purchases, storage and handling of materials.

(c) To minimize wastage:

The loss of material may occur on account of rust, dust, dirt or moisture, bad and careless handling of materials, poor packing and many other reasons. The causes responsible for such losses must be brought to light and utmost efforts should be made to minimise the wastage of raw materials. This is possible only by introducing an efficient materials control system.

(d) To fix responsibility:

A proper system of materials control also aims at fixing responsibility of operating units and individuals connected with the purchase, storage and handling of materials.

(e) To provide information:

Another objective of materials control is to provide accurate information regarding material cost and inventory whenever needed by management.

Necessity and importance of material control:

In a productive undertaking the need of materials control arises on account of the following reasons:

1. For keeping the stock of raw materials within limits in the stores i.e., to avoid overstocking and under stocking of raw materials, materials control is significant.
2. It ensures proper storage of materials. For the proper preservation and safety of materials, adequate storage facilities are to be provided. With the help of proper storing of materials, quantity of materials as and when required can be issued to various jobs.
3. For knowing proper cost of production, control over materials is indispensable.
4. Certain techniques and methods are developed under the system of materials control thereby ensuring optimum utilization of materials.
5. In order to undertake continuous checking of materials, the necessity of a proper system of materials control cannot be ignored.
6. A well managed system of materials control ensures the availability of different kinds of materials without delay.

As already pointed out while explaining the scope of material management that it includes purchases of materials, storekeeping and inventory control etc.

Techniques of Material Control:

1. **Re-order Level**
2. **Minimum Stock Level**
3. **Maximum Stock Level**
4. **Average Stock Level**
5. **Danger Stock Level**
6. **Economic Order Quantity**
7. **ABC Analysis**
8. **Just in Time (JIT) System**
9. **Bin Card**

Explain the followings:

1. **Re-order Level=** Re-order level in respect of a material is the limit or level to which as soon as the stock of that material reaches, the store-keeper is required to prepare and send the requisition for purchase of fresh stock.

Formula:

Re-order Level= (Maximum consumption Rate×Maximum Re-order Period)

2. **Minimum Stock Level=** Minimum stock level of no item in the store is found in quantity less than its minimum stock level. This level is also known as the Safety Stock or Emergency stock of the material because it is reserved for use in emergency only.

   Formula:

   Minimum Stock Level= Re-order Level-(Normal consumption Rate×Normal Re-order Period)

3. **Maximum Stock Level=**Maximum stock level for an item of material is that limit above which its quantity in balance in the store is not allowed to rise normally.

   Formula:

   Maximum Stock Level=(Re-order Level +Re-order Quantity) –(Minimum Consumption Rate×Minimum Re-order Period)

4. **Average Stock Level=**Average stock level is obtained by adding the minimum and maximum stores level and dividing the sum by two.

   Formula:

   Average Stock Level=(Minimum Stock Level + Maximum Stock Level)÷2

5. **Danger Stock Level=**It is a stock level which is generally fixed below the minimum stock level.

   Formula:

   Danger Stock Level=(Minimum time for emergency supply×Minimum rate of consumption)

6. **Economic Order Quantity=** That purchasing large quantity of material at a time increase the carrying cost and purchasing small lots of material again and again increase the purchasing expenses therefore purchase order should be placed for so much quantity that the sum of these two kinds of expenditure is the minimum. Thus quantity known as 'Economic Order Quantity'**.**

   Formula:

   EOQ= $\sqrt{\frac{2CO}{UI}}$

   C= yearly consumption of the material I units
   O= Cost of placing an order
   U= Cost per unit
   I= Percentage of carrying cost on Average Inventory

7. ABC Analysis= This is an important plan of material control . According to this plan all the items stored in the house are classified into three groups – viz, A,B,C. This is also known as 'Always Better Control Technique.

Classification of Inventory

Category	Qty. % of store	Value % of store	Control Required
A	10% to 15%	50% to 70%	Strict control system

			under the supervision of top management.
B	25% to 30%	25% to 30%	Continuous watch over inventory under supervision of middle management.
C	60% to 65%	10% to 15%	General control by lower management

8. **Just in Time (JIT) System**= The term just in time system means that inventories whether of raw material , work in process, or finished goods are received in time. JIT is a form of inventory management that requires working closely with suppliers so that raw materials arrive as production is scheduled to begin, but no sooner. The goal is to have the minimum amount of inventory on hand to meet demand.
9. **Bin Card:** Bin card Bin card is the record maintained under the perpetual inventory system by the stores department and shows the quantities of materials received, issued and balance in hand after each receipt and issue. It is also known as stock card or bin tag. ... It records only quantity of materials not the value Bin card is the statement of all the receipts and issue of the stock from the store department. It is also called stock card or bin tag. It is the responsibility of the store keeper to write every in and out of stock from the store. The physical stock count and the stock quantity reported according to the bin card should be equal; otherwise internal audit department will have the right to investigate the matter with management.

Methods of Stores Ledger

1. **First In First Out (FIFO) Method**
2. **Last In First Out (LIFO) Method**
3. **Average Price Method**
   (a) Simple Average Method (b) Weighted Average Method
4. **Standard Price Method**
5. **Highest Price In First Out (HIFO) Method**

Practical Problems:

1. **Calculate the following from the informative given below:**
   (i) Re-Order Quantity (ii) Re order Level
   (iii)Maximum Stock Level (iv) Minimum Stock Level
   (v)Average Stock Level

   Information:
   (i) Total cost of purchase Rs. 40 per order
   (ii) Purchase during the year 10,000 units
   (iii) Purchase Price Rs. 100 per unit
   (iv) Storage cost 5% of Average Inventory
   (v) Re-Order Period (Lead Time): Average 20 days , Maximum 30 days, Minimum 12 days
   (vi) Consumption: Average 30 units per day, Maximum 40 units per day and Minimum 20 units per day.

Solution:

(i) Re-order quantity (**EOQ**)=$\sqrt{\frac{2CO}{UI}}$

$=\sqrt{\frac{2\times10,000\times40}{100\times5\%}}$ =400 Units

(ii) Re-order Level= (Maximum usage × Maximum Re-order period)
(40×30)= 1,200 Units

(iii) Maximum Stock Level= (Re-order Level + Re-order Qty.)-(Minimum Usage× Minimum Re-order Period)

(1,200+400)-(20×12)=1,360

(iv) Minimum Stock Level=Re-order Level-(Normal Usage ×Normal Re-order Period)
1,200-(30×20)=600

(v) Average Stock Level= (Minimum stock Level +Maximum stock Level)÷2
(600+1,360)÷2= 980 Units

Q.2 JP. Ltd manufacture of a special product , follo the policy of EOQ(Economic order qty.) for one of its components . The company details are as follows:

Ordering cost	Rs. 100 per order
Inventory carrying cost	10% of purchase price
Purchase price per component	Rs.200

Total cost of inventory and ordering per annum

The company has been offered a discount of 2% on the price of the component provided the lot size is 2,000 components at a time.

You are required to :

(i) Compute the EOQ

(ii) Advise whether the qty. discount offer can be accepted.
(Assume that the inventory carrying cost does not vary according to discount policy)

(iii) Would you advice differ if the company is offered 5% discount on a single order.

Solution:

(a) Computation of EOQ

Basic calculation;

Purchase price per component	Rs. 200
Cost of an order	Rs.100

Annual cost of carrying one unit of inventory is (UI) 10% of cost or Rs. 20

Total cost of (carrying) inventory and ordering per annum Rs. 4,000

Let the total annual usage C

In order to compute EOQ by using the above data we require the figure of total annual usage of inventory. This can be done through the following equation :

Total cost= 2C×O×UI

4,000= 2C×100×20 =4,000C

4,000 C= 1,60,00,000 or C=4,000

Thus, annual consumption is 4,000 units

(vi) Now EOQ= $\sqrt{\frac{2CO}{UI}}$

$=\sqrt{\frac{2\times4,000\times100}{20}}$ =200 Units

(b)**Discount Offer**

When order size is 2,000, the no. of orders =2

If a discount of 2% on the price of the component is available and an order in the lot size of 2,000 component is given, the total cost shall be :

Ordering Cost (2×100)	Rs. 200
Add : Storage Cost (1,000× 20)	Rs. 20,000
	Rs. 20,200
Less : Savings on account of discount (4,000×200×2\100)	Rs. 16,000
Net Cost	Rs. 4,200

Since the net cost of Rs. 4,200 is higher than the present cost of Rs. 4,000, this ~~offer should not~~ be accepted.

If a discount of 5% on the price of the component is offered and a single order of 4,000 components is placed, the total cost shall be :

Ordering cost (1×100)	Rs. 100
Add: Storage cost (2,000×20)	Rs.40,000

	Rs.40,100
Less :Savings on account of discount (5%×4,000×200)	Rs.40,000
Net Cost	Rs. 100

Chapter- 4 Labour Control

Labour cost refers to the amount of money paid to the people who are engaged in the production of goods. In manufacturing businesses, often management will break down labour cost into direct cost and indirect cost.

The nature of labour whether it is direct or indirect depends upon the contribution of labour towards production. If they are directly engaged in production activities, the labour is termed as direct labour and if indirectly engaged then indirect labour.

Labour cost includes various types of expenses incurred on workers. These may be monetary payments made to workers directly such as basic wages, dearness allowance, bonus etc., deferred monetary benefits such as employer's contribution to provident fund, gratuity, pension, etc., and fringe benefits such as employer's contribution to Employees' State Insurance scheme, subsidised food, subsidised housing, leave travel concession, medical and holiday home facilities, libraries and Other Welfare measures. In relation to the job or the product, labour cost may be direct or indirect.

Labour Cost Control – Introduction

Employees of any organization, as its precious wealth and backbone, play an important role in its developmental and productive activities. The development and progress of the organization, to a greater extent, are influenced by the effective and systematic utilization of available human resources. In the same analogy, if this resource is not utilized properly, it is sure that its manufacturing and marketing activities are bound to be retarded.

Labour cost is another important element of total cost of any organization and it works out to 40 to 60% of total cost in most of the corporate undertakings. By keeping these labour costs at the minimum level, it is possible to lower the total labour cost, conversion cost, production cost and the cost of sales which enables the company to offer its products to the customers at a comparatively lower prices which in turn ensures higher demand for the products.

As a result, the company is in a position to earn a higher amount of profit. On the other hand, if the labour costs are not controlled properly, it will have an adverse impact on both the cost economies and profit.

Minimization of labour cost through control does not necessarily mean paying less to the employees. It means obtaining maximum work from the employees by providing them all the facilities – both monetary and non-monetary.

Because, an employee who is satisfied with his employer's remuneration, work environment, fringe benefits, etc., is able to devote his full attention to the overall welfare of the company.

This analysis clearly brings the point to the fore that systematic utilization of the labour force is a necessity. The companies must, therefore, try to accomplish this objective by proper planning and implementation of its policies, programmes, etc., starting from recruitment.

Factors for Labour Cost Control –

1. Production Planning:

The production is to be planned in a way as to have the maximum and rational utilization of labour. The product and process engineering, programming, routing and direction constitute the production planning.

2. Setting up of Standards:

Standards are set up with the help of work study, time study and motion study, for production operations. The standard cost of labour so set is compared to the actual labour cost and the reasons for variations, if any, are studied minutely.

3. Use of Labour Budgets: FactorLabour budget is prepared on the basis of production budget. The number and type of workers needed for the production are provided for along with the cost of labour in the labour budget. This budget is a plan for labour cost and is prepared on the basis of the past data considering the future prospects.

4. Study of the Effectiveness of Wage-Policy:

The point for study and control of cost is how far the remuneration paid on the basis of incentive plan matches with increased production.

5. Labour Performance Reports:

The labour utilization and labour efficiency reports received periodically from the departments are helpful in the managerial control on labour and exercise labour cost control.

Labour Cost Control – Important Departments:

The following are the important departments for control over labour costs:

1. Personal Department

This department is basically concerned with the selection of workers, placing them after necessary training to the jobs for which they are suitable.

2. Engineering Department

This department is mainly concerned with preparing the plans Job specification, job analysis, time and motion studies, safe working conditions and supervision of the production process.

3. Time Keeping Department

This department is concerned with recording of workers attendance and calculation of wages for the purpose of analysis and apportionment of labour cost.

4. Payroll Department

The responsibility of the payroll department is calculation of wages payable to employees. The functions performed by payroll department includes maintenance of wage record of each worker, verifying the time shown by the time card, calculate the amount payable to each worker, compute the deductions required for tax purposes, provident fund etc., and to send payrolls to cash department for payment of wages and cost accounting department for making entries.

5. Cost Accounting Department

This department is concerned with the accounting of all labour costs. In other words it accumulates and classifies all the cost data relating to labour and prepares the cost reports for the use of management in order to exercise necessary control.

Normal and Overtime wages: Normal working hours for the workers in a factory are fixed. These working hours are fixed everyday or for a week. If a workers works. For more than the normal working hours on any day or during any week, it is known as overtime work. The wages of overtime work is paid at double rate of the normal rate. According to the article 59 (1) of the Indian Factories Act, if a worker works for more than 9 hours in a day or more than 48 hours in a week, he is entitled to get wages at double of the normal rates for the overtime calculated on the basis of any one of the two alternatives more beneficial to him.

What is idle time?

Idle time is the amount of time spent waiting to use viable equipment or the non productive time of employees, due to lack of demand or unforeseen work stoppage. If you don't have a piece of equipment scheduled to run or an asset is up and available, but not being used, that's considered idle time. For example, a discrete manufacturing floor where you make numerous different types of products might have certain assets sit idle while you perform processes that don't use them.

Labour Turnover:

Labour turnover denotes the percentage change in the labour force of an organisation. The ratio of the replaced workers to the total number of workers is the Labour Turnover Ratio. High percentage of labour turnover denotes that labour is not stable. A high turnover is a costly affair and must be avoided.

1. Separation Method:

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

Note: This method does not take into consideration the fact of surplus labour.

2. Replacement Method:

$$\text{Labour Turnover} = \frac{\text{Number of workers replaced during a period}}{\text{Average number of workers during a period}} \times 100$$

Note: This method takes into account the surplus labour.

3. Flux Method:

$$\text{Labour Turnover} = \frac{\text{Number of separations} + \text{Number of Additions}}{\text{Average number of employees during a period}} \times 100$$

Practical Problem:

Q.1 Calculate the normal wages and overtime wages payable to a workman from the following data:

Days	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Hours Worked	8	10	9	11	9	6

Normal working hours are 8 hours per day and normal rate is Rs. 50 per hour. Overtime rates are upto 9 hours in a day at single rate and over 9 hours in a day at double rate or upto 48 hours in a week single rate and over 48 hours at double rate whichever is more beneficial to the workman.

Solution:

Normal Wages and Overtime wages

(According to first alternative)

Days	Hours	Normal Hours	Overtime Hours		Normal wages Rs.	Overtime wages Rs.	Total wages Rs.
			Single rate @ Rs.50 per hr.	Double rate@ Rs.100 per hr.			
Monday	**8**	**8**			**400**		**400**
Tuesday	**10**	**8**	**1**	**1**	**400**	**150**	**550**
Wednesday	**9**	**8**	**1**		**400**	**50**	**450**
Thursday	**11**	**8**	**1**	**2**	**400**	**250**	**650**
Friday	**9**	**8**	**1**		**400**	**50**	**450**
Saturday	**6**	**6**			**300**		**300**
Total	**53**	**46**	**4**	**3**	**2,300**	**500**	**2,800**

Calculation of normal wages and overtime wages : According to second alternative:

Normal wages for 48 hours @ Rs. 50 per hour	**=**	**2,400**
Overtime wages for 5 hours(53-48) @Rs.100 per hour	**=**	**500**
		2,900

The second alternative is more beneficial to the worker according to which total wages of the worker is Rs.2,900.

Q.2 From the following particulars supplied by the personnel department of a company calculate the labour turnover by applying (a) separation method (b) replacement method © flux method

Total number of employees at the beginning 900

Total number of employees at the end 1100

Number of employees left 10

Number of employees discharged 40

Number of employees recruited 150, of these 25 workers were recruited in the vacancies of those leaving , while the rest were engaged for an expansion scheme.

Solution:

(a) Separation method = No. of separation/Average no. of workers x100 Average no. of workers = 900+1100/2 = 1000 = 10+40/1000x100 = 5%

(b) Replacement method = No. of replacements/Average no. of workers x100 = 25/1000x100 = 2.5%

(c) Flux method = No. of separations + No. of replacements / Average no. of workers x 100
= 50+25/1000x100 = 7.5%

A good wage system has the following features:

1. The system should be fair both to the employer and the employee. It should be based upon scientific time and motion study to ensure a standard output to the employer and a fair amount of wages to the workers.

2. The worker should be assured of a guaranteed minimum wage at satisfactory level irrespective of the work done by him.

3. Workers should be paid according to their merits. Efficient workers should be able to earn more wages as compared to the inefficient workers.

4. Skilled workers should be paid more as compared to the unskilled workers. Skilled workers are to be compensated for the efforts put in by them to acquire the skill.

5. The system should ensure equal pay for equal work.

6. The system should be flexible to allow necessary changes which may arise.

7. The system should be such as to minimise labour turnover, absenteeism and late attendance.

8. The system should not violate any local or national trade union's agreements

9. The system should keep in view the wage rate in the same area or industry.

10. In order to protect the real wages from erosion, the level of money wages should be adjusted to price changes. Workers should be paid dearness or dear food allowance over and above the basic pay to take account of an increase in prices. Thus, a system of wage payment should keep in view the price changes.

11. The system should be correlated to the capacity of the organisation to pay.

12. The method should be simple and capable of being understood by the workers.

13. The workers and unions of workers should be adequately informed about the procedures used to establish wage rates, so that there may be no cause of suspicion in the minds of workers.

Method of Remuneration:

Methods of Remuneration can be broadly classified into:

(1) Time Rate Wages System

(2) Piece Rate Wages System

(1) **Time Rate System:** Time Rate Wages System is otherwise called as Time Work, Day Work, Day Wages and Day Rate. It is the oldest method of remuneration. The time rate system is that system of wage payment in which the workers are paid on the basis of time spent by them in the factory. Under this system, the workers and employees are paid wages on the basis of the time they have worked rather than the volume of output they have produced. The wage rate is fixed on hourly, daily weekly, fortnightly or monthly on the basis of the nature of work. The time is the prevalent rate of the industry or area. The rate may either be a fixed one or there may be a progressive scale of pay that starts at minimum and rises up to a maximum, in various stages by way of increments.

This time rate system calculation is based on the working hours of the employee, that is the amount of time spent on the work along with the amount of work delivered within the specific period of time.

Formula: Wages= Total hours worked X Wages rate per hour.

Advantages of the Time Rate System:

1. Simple formulation: The calculation and nature of the time rate system are very easy and simple to understand. It is one of the methods that can be understood by all the employers of the company. Its measurement and the calculation of this wage system provide the actual picture about the overall time rate system. Therefore, as it is mentioned earlier, it is easy and simple to understand and formulate in the company.

2. Easy access: This time rate system is very easy to access and that is because of its brief and clear detailed information. The details collected and maintained through this time rate system are very economical. In other words, it is one of the simple methods of understanding the total wages of the employees of the company. It makes records maintenance, affordable and clear. Therefore, it is one of the economic methods of calculating wages under time rate systems.

3. Production quality: As per the information provided by different sources of the production unit, the company performs better with these time rate systems. Eventually, the production quality will increase and the employer monitors all the production units without any mistakes.

4. Fixed wage: Even when it comes to a salary expense calculation, the company earns better profits because of its fixed rate of price. The time rate systems incorporate fixed-wage systems because of which the company using it confirms a fixed rate of price per day. And this fixed rate per price helps to increase the profits of the company as its only a small amount of profit returns.

5. Improves equality among employees: Because of the time rate system, the employees of the company may feel equal within themselves. Most of the time several companies face a certain kind of union problems and if the company incorporates these time rate system policy, then the

possibility of inequality issue will be considerably less among the employees of the company. Therefore, all the employees of the company experience equality among them.

Disadvantages of Time Rate Systems:

1. It ignores efficiency: As per the formulation of this time rate system, the actual focus of this time rate system is on the part of the production where the employee works according to the specific number of time and production. Most importantly the work delivered by the employees will be based on their total daily production output. And it is obvious that it completely ignores the efficiency of its employees, because of which deserving employee feels unappreciated for their work.

2. Loss of skilled workers: As explained above, the company works according to the specific production rate and it totally ignores the efficiency of its employees and because of that, the employees of the company decide to leave the company. This is one of the disadvantages of this time rate system. Therefore, the company suffers a loss of their skilled workers because of the time rate system methods of wage calculations.

3. Inefficiency: The workers and the employees of the company eventually understand that the company expects a certain level of production from them not the quality of work from them. This kind of ignorance creates inefficiency among the employees of the company. Therefore, all the employees of the company decide to work as per their specific production expectation and they try to not bring efficiency in their work because their efficiency will not reward them for their excellent work delivery.

(3) Piece Rate Wages System: This is that system of wage payment in which the workers are paid on the basis of the units of output produced. This system does not consider the time spent by the workers. Piece rate system is the method of remunerating the workers according to the number of unit produced or job completed. It is also known as payment by result or output. Piece rate system pays wages at a fixed piece rate for each unit of output produced.

Formula:

Total Wages Earned= Total units of outputs produced x Wage rate per unit of output.

Advantages: 1. Wages linked to efforts: Under piece wage system, wages are linked to the output of a worker. The higher the output, higher will be the wages. Workers will try to put in more and more effort for increasing output because their wages will go up.

2. Increase in production: Production goes up when wages are paid according to piece rate system. Workers will feel encouraged to increase output because their wages will also increase. This system is fair to both employees and employers. Efficient workers will try to exert maximum in order to raise their production and hence wages.

3. Better utilization of equipment/machines: The machines and other equipment's are put to maximum utilization. Workers may not like to keep the machines idle. The use of machines will also be systematic because any breakdown in these may affect the workers adversely. Thus, better machine utilization will give better output.

4. Distinction between Efficient and Inefficient: As in time wages system, efficient and in efficient workers are not given equal treatment in the piece wage system. Efficient workers will get more because of their better results. Inefficient workers on the other hand will get less because of low production. This method provides sufficient encouragement to efficient workers or showing better results.

5. Less supervision required: Since payments are on the basis of output, workers will not waste time. They will continue to work irrespective of supervision. There may be more and more voluntary efforts on the part of workers and need for supervision is reduced to a minimum.

6. Effective cost control: The increase in output will result in reduction of overhead expenses per unit. Some of the overhead expenses being fixed, increase in production will reduce expenses per unit. Reduction in cost may benefit consumers in the form of decrease in product price.

7. Better planning and control: The certainty in achieving production targets will improve planning and control. When management is sure of certain quantity of production, then it can plan other things with more confidence, it will also ensure better control over production because targets may be regularly reviewed from time to time. Thus, better planning and control is possible.

Limitations:

1. No guarantee or minimum wage: There is a direct relationship between output and wages. If a worker does not ensure certain productions, then wages may also be uncertain. Any type of interruption in work may reduce earnings of workers. So workers are not sure about getting minimum wages. So this system does not provide guarantee of minimum wages.

2. Poor quality of goods/products: The workers will bother more about the number of units otherwise more supervisors are appointed to keep watch on quality of products being produced.

3. Not suitable for beginners: The beginners will not be able to produce more goods because of less experience. They will earn much low wages as compared to experienced workers because their rate of production will be low. Thus, this system is not suitable for beginners.

4. Deterioration in health: Workers may try to work more than their capacity. This may adversely affect their health. They may try to work even when they are not keeping good health, since wages are linked with production.

5. Cause of dissatisfaction: There may be difference in earning of various workers. Some may earn less and others may earn more. Those who get low wages feel so jealous of others who earn more and this becomes a cause of dissatisfaction among slow workers. Thus, this system can see dissatisfaction among workers.

Types Bonus Schemes:

There are two types of Bonus Schemes: (A) Individual Bonus Scheme

(B) Group Bonus Scheme

(A) Individual Bonus Scheme: Under individual incentive plan, individual employee is paid incentive on the basis of individual performance or output. The employers are liable to pay incentives to those employees who are producing more than the standard output. Individual incentive plans can be either time based or production based. In case of time based incentive plans, a standard time is determined for doing a job and this standard time served as a basis for giving incentive. A worker is considered as efficient, if he completes his job in less than standard time. The worker is awarded for his efficiency by giving incentive under some incentive plans.

Some of the time based incentive plans are:

I. Halsey Incentive Plan.

II. II. Rowan Incentive Plan.

III. III. Emerson Efficiency Plan.

Some of the production based incentive plans are:

I. Taylor's differential piece rate system.

II. II. Merrick's multiple piece rate plan.

III. III. Gantt's task and bonus wage plan.

I. Halsey Incentive Plan: In this method a standard time is fixed for the completion of the job. A minimum base-wage is guaranteed to every worker. If a worker completes his job in just the standard time, he will not be given any incentive. If a worker performs his job in less than standard time, he is given incentive. The incentive will be equal to 50% of the time saved by the worker.

$$\textbf{Bonus} = \frac{\textbf{Time Saved} \times \textbf{Rate per hour}}{1} \times \textbf{Percentage of Bonus}$$

Advantages:

a. It is simple.

b. Each worker is guaranteed a minimum wage.

c. This is beneficial to efficient worker.

d. Causes no harm to new worker, trainee, or slow worker.

e. Management shares benefits of over-achievement by workers.

Disadvantages:

a. Workers get only a percentage of return on their over-achievement.

b. The quality of production may suffer as workers may do work in hurry,

c. There may be difficulties in setting standard time for different jobs.

II. Rowan Plan: This plan is quite similar to Halsey plan. It differs only in terms of calculation of incentive for time saved. The worker gets the guaranteed minimum wages. The incentive for completing the job in time lesser than standard time is paid on the basis of a ratio, which is time saved over standard time per unit standard time.

$$\textbf{Bonus Hours} = \textbf{Time Saved} \times \frac{\textbf{Time Saved}}{\textbf{Standard Time}}$$

$$\textbf{Bonus} = \textbf{Bonus Hours} \times \textbf{Wages Rate per hour}$$

Advantages:

a. This system checks over-speeding and overstrain by worker.

b. Each worker is guaranteed a minimum wage.

c. Efficiency is rewarded.

Disadvantages:

a. The workers find it difficult to understand.

b. Discourages workers to over-achieve.

c. Workers may not like sharing of profit for over-achievement

III. Emerson's Efficiency Plan: In this plan, a minimum wage is guaranteed to every worker on time basis and incentive is given on the basis of efficiency. Efficiency is determined by the ratio of time taken to standard time. Payment of bonus/incentive is related to efficiency of the workers. Incentive will be given to those workers who attains more than 2/3 rd i.e. 66.67% of efficiency. No incentive will be given at 66.67% efficiency. At 100% efficiency incentive is 20% of the hourly rate. For efficiency exceeding 100%, 1% incentive/bonus is paid for every 1% increase in efficiency.

Advantages:

a. Minimum wages are guaranteed.

b. It is simple to understand.

Disadvantages: i. Incentive after attaining standard is very low

I. **Taylor's Differential Piece Rate System**: This system was introduced by Taylor, the father of scientific management. The main characteristics of this system are that two rates of wage one lower and one higher are fixed. A lower rate for those workers who are not able to attain the standard output within the standard time; and a higher rate for those who are in a position to produce the standard output within or less than the standard time.

II. **Merrick's Multiple Piece Rate Plan:** To overcome the limitations of Taylor's differential piece rate system, Merrick suggested a modified plan in which, three-piece rates are applied for workers with different levels of performance.

a. Workers producing less than 83% of the standard output are paid at basic rate.

b. Workers producing between 83% and 100% of standard output will be paid 110% of basic piece rate.

c. Those producing more than 100% of the standard output will be paid 120% of basic piece rate.

III. Gantt's Task and Bonus Plan: This plan is based on careful study of a job. The main feature of this plan is that it combines time rate, piece rate and bonus. A standard time is fixed for doing a particular job. Worker's actual performance is compared with the standard time and his efficiency is determined. If a worker does not complete the job within standard time i.e. he takes more time than the standard time (efficiency below 100%), he will not receive any bonus but he is given wages for the time taken by him. If a worker completes the job within standard time (100% efficiency), he is given wages for the standard time and bonus of 20% of wages earned. If the worker completes the job in less than the standard time (i.e. efficiency more than 100%), wages are paid according to piece rate.

Type II - Group Incentive Plans: A group incentive plan scheme is designed to promote effective teamwork, as the bonus is dependent on the performance and output of the team as a whole. Under group incentive plan, each employee is paid incentive on the basis of collective performance of his group to which he belongs. Within the group, each employee gets an equal share of the incentive.

I. **Priestman's Plan:** In this plan workers are not considered individually but collectively. This system considers the productivity of all workers as a whole. Bonus is paid in proportion in excess of standard

output per week. If in a year, the output increases either above the standard output or the output of the previous year, the wages are increased in the same ratio.

II. **Scanlon's Plan:** A Scanlon plan is a type of gain sharing plan that pays a bonus to employees when they improve their performance or productivity by a certain amount as measured against a previously established standard. A typical Scanlon plan includes an employee suggestion program, a committee system, and a formula-based bonus system. A Scanlon plan focuses attention on the variables over which the organization and its employees have some control.

Practical Problem:

Time and Piece wages In a factory, guaranteed wages are paid @ Rs. 2 per hour and the payment is made on a weekly basis for a week of 48 hours. By time and motion study it is estimated that manufacture of a product requires 25 minutes. To this, personal and contingency allowance of 20% is to be added. During one week Mr.D produced 110 articles. Calculate his wages under (a) Time rate (b) Piece rate with guaranteed weekly wages.

Solution:

(a) Time rate = Hours worked x Rate per hour = 48 hours x Rs.2 = Rs.96

(b) Piece rate = No. of units produced x Rate per unit

Time taken per unit = 25 minutes

Add: allowance 20/100x25minutes = 5 minutes

Standard time = 30 minutes

For 30 minutes units produced = 1

For 60 minutes units produced = 2 (60/30x1)

For 2 units rate = Rs.2

For 1 unit rate = Rs.2/2 = Re.1

For production of 110 units rate = 110 units X Re.1 = Rs.110

Problem:

A worker is paid Re. 1 per hour for completing a work within 8 hours. If he completes his work within 6 hours, calculate his wages for 6 hours and 8 hours under Halsey plan when the rate of premium is 50%

Solution:

Earnings = Hours worked x Rate per hour + (50% of Time saved x Rate per hour)

Time saved = Time allowed – Time taken = 8 hours – 6 hours = 2 hours

For 6 hours = 6 hours x Rs.1 + (50/100 x 2 hours xRs.1) = 6+(1x1) = Rs.7

For 8 hours = 8 hours x Rs.1 +(50/100x 0 x Rs.1) = 8 + 0 = Rs.8

Chapter-5 Overhead

- Overheads are business costs that are related to the day-to-day running of the business. Unlike operating expenses, overheads cannot be traced to a specific cost unit or business activity. Instead, they support the overall revenue-generating activities of the business. Overhead costs are important in determining how much a company must charge for its products or services in order to generate a profit.

Types of Overheads

There are three main types of overhead that businesses incur. The overhead expenses vary depending on the nature of the business and the industry it operates in.

1. Fixed overheads

Fixed overheads are costs that remain constant every month and do not change with changes in business activity levels. Examples of fixed overheads include salaries, rent, property taxes, depreciation of assets, and government licenses.

2. Variable overheads

Variable overheads are expenses that vary with business activity levels, and they can increase or decrease with different levels of business activity. During high levels of business activity, the expenses will increase, but with reduced business activities, the overheads will substantially decline or even be eliminated.

Examples of variable overheads include shipping costs, office supplies, advertising and marketing costs, consultancy service charges, legal expenses, as well as maintenance and repair of equipment.

3.Semi-variable overheads

Semi-variable overheads possess some of the characteristics of both fixed and variable costs. A business may incur such costs at any time, even though the exact cost will fluctuate depending on the business activity level. A semi-variable overhead may come with a base rate that the company must pay at any activity level, plus a variable cost that is determined by the level of usage.

Examples of semi-variable overheads include sales commissions, vehicle usage, and some utilities such as power and water costs that have a fixed charge plus an additional cost based on the usage.

Methods for Allocation and apportionment of Overhead:

When items of cost are identifiable directly with some products or departments such costs are charged to cost centers. This process is known as cost allocation. It is the charging of discrete, identifiable items of cost to cost centres or cost units. It is complete distribution of an item of overhead to the departments or products on logical or equitable basis is called allocation. Where a cost can be clearly identified with a cost centre or cost unit, then it can be allocated to that particular cost centre or unit. Allocation is the process by which cost items are charged directly to a cost unit or cost centre. Cost allocation calls for two basic factors :

-Concerned department/product should have caused the cost to be incurred.

- Exact amount of cost should be computable.

(1) Service or use Method: A production department which receives maximum services from service departments should be charged with the largest share of the overheads. Accordingly, the overheads of service departments are charged to the production departments.

(**2) Survey Method:** This method is used where a suitable base is difficult to find or it would be too costly to select a method which is considered suitable. For example, the postage cost could be apportioned on a survey of postage used during a year.

(3) Basis of Ability to Pay: A large share of service department's overhead costs should be assigned to those producing departments whose product contributes the most to the income of the business firm. However the practical difficulty in this method is that, it is difficult to decide the most paying department and hence difficult to operate.

Methods of Absorbed Overhead

There are a total of seven methods of overhead absorption, which are as follows:

1.Percentage of Direct Material Cost Method

According to the material cost method, we calculate the rate of overhead on the basis of past actual direct material and past actual overheads.

following is the formula

= Actual Overhead Cost / Direct Material Cost X 100

2. Percentage of Direct Labour Cost Method

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

following is the formula

= Actual Overhead Cost / Direct Labour Cost X 100

(3) Percentage of Prime Cost Method

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

Following is the formula of overhead rate

= Budgeted Overhead Expenses / Anticipated Prime Cost × 100

(4) Direct Labour Hour Method

Under this method of overhead absorption, we calculate the total direct labour hours by using our accounting information. We also see the total cost of overhead in these labour hours. After dividing this overhead cost with direct labour hours, we can easily calculate the rate of overhead. On this rate, we can absorb the estimated amount of overhead in any unit or units of production.

Following is the formula

= Overhead Cost / Direct labour Hours

5.Machine Hour Rate Method

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

Following is the formula of calculating the machine hour rate

= Total Overhead Cost / Total Machine Hours

Computation of Machine Hour Rate:
Before calculating the actual machine hour rate, at first we are to departmentalise all expenses. It must be remembered that under the circumstances each machine or a group of similar machines should be treated as a cost centres where expenses are apportioned on some equitable basis.

Then machine hour rate is obtained by dividing the total overhead for the machine cost centre by the anticipated machine hours. Care must be taken to compute anticipated machine hours, only normal idle time (for repairs and maintenance etc.) is considered but abnormal idle time must be excluded.

The expenses/overhead of a machine must be divided into:

(i) **Fixed or Standing charges:** Rent and Rates, Lighting, Insurance, Supervision, Indirect labour (excluding machine expenses) etc.

(ii) **Variable or Machine expenses**: Including as expenses Depreciation, Repair and Maintenance, Power.

Problems:

Q 1. The department X of a certain factory desires to quote the selling price of 5,000 units. The details of cost of 1,000 units are as follows:

Material cost Rs. 3,000, Labour cost Rs. 5,000
Factory overhead: fixed Rs.2,000, Variable Rs. 500
Administrative Overhead: Fixed Rs.1,000, variable Rs. 200
Selling and distribution overhead: Fixed Rs. 300, Variable Rs. 250
It is desire to charge 20% profit on cost. Ascertain the selling price.

Solution: **Statement of Cost and Selling Price**

Particular	**Rs.**	**Rs.**
Material Cost (Rs.3 × 5,000)		15,000
Labour Cost (Rs.5× 5,000)		25,000
Factory Overhead:	2,000	
Fixed	2,500	4,500
Variable (Rs.0.50 × 5,000)		
Administrative Overhead:	1,000	
Fixed		
Variable (Rs.0.50 × 5,000)	1,000	2,000
Selling and Distribution Overhead:		
Fixed	300	
Variable (Rs.0.25× 5,000)		
	1,250	1,550
Total Cost		48,050
Add: Profit		9,610
Selling Price		57,660

Q.2 The manufacturing cost of 5,000 units of the commodity comprises as follows:

Material Rs. 20,000, Wages Rs. 25,000, Chargeable expenses Rs. 400, Fixed overhead Rs. 16,000, Variable overhead Rs. 4,000.
For manufacturing every 1,000 extra units of the commodity the cost increase as follows:
(a) Material Proportionately; (b) Wages 10% less than Proportionately;
(c) Chargeable expenses Proportionately; (d) Fixed overhead Rs. 200 Extra;
(e)Variable overhead 25% less than Proportionately
You are required to calculate the estimated cost of manufacturing 8,000 units of the commodity.

Solution: Statement showing the estimated cost of manufacturing 8,000 units

Particulars	**5,000 units**	**3,000 units**	**8,000 units**
	Rs.	**Rs.**	**Rs.**
Material	**20,000**	**12,000**	**32,000**
Wages	**25,000**	**13,500**	**38,500**
Chargeable expenses	**400**	**240**	**640**
Fixed overhead	**16,000**	**600**	**16,600**
Variable overhead	**4,000**	**1,800**	**5,800**
Estimated Cost	**65,400**	**28,140**	**93,540**

Q.3 The following figures are taken from the accounts of a manufacturing concern for the month of July,2010:

Indirect material : Production departments-X Rs.9,500, Y Rs.12,000, Z Rs.2,000, Service department maintenance Rs.15,000, Stores Rs.4,000.

Indirect wages: X Rs.9,000, Y Rs.11,000, Z Rs.3,000, Service department maintenance Rs.10,000, Stores Rs.6,500.

Other expense (Total): Power and light Rs.60,000, Rent and Rates Rs.28,000, Insurance on Assets Rs.10,000, Meal charges Rs. 30,000, Depreciation at 6% on capital value of assets per annum.

Departmental Data

Items	**Production Deptt. X**	**Production Deptt. Y**	**Production Deptt. Z**	**Service Deptt. maintenance**	**Service Deptt. Stores**
Area (sq.ft.)	4,000	4,000	3,000	2,000	1,000
Capital value of Assets (Rs.)	10,00,000	12,00,000	8,00,000	6,00,000	4,00,000
Kilowatt Hours.	2,000	2,200	800	750	250
Number of Employees	180	240	60	80	40

Service rendered by Maintenance department to Production department.

X-50% Y-30% Z-20%

Service rendered by Stores department to Production department:

X-40% Y-40% Z-20%

From the above data prepare a departmental distribution summary.

Solution:

Departmental distribution summary

Items	**Basis of Apportionment**	**Total**	**Production Deptt. X**	**Production Deptt. Y**	**Production Deptt. Z**	**service Deptt. Mainte-nance**	**service Deptt. Stores**

Indirect material	Allocation	42,500	9,500	12,000	2,000	15,000	4,000
Indirect wages	Allocation	39,500	9,000	11,000	3,000	10,000	6,500
Power & light	kilowatt hrs.	60,000	20,000	22,000	8,000	7,500	2,500
Depreciation	value of Assets	20,000	5,000	6,000	4,000	3,000	2,000
Insurance	value of Assets	10,000	2,500	3,000	2,000	1,500	1,000
Rent & Rates	Area	28,000	8,000	8,000	6,000	4,000	2,000
Meal Charges	No. of Employees	30,000	9,000	12,000	3,000	4,000	2,000
		2,30,000	63,000	74,000	28,000	45,000	20,000
Maintenance Department		-	22,500	13,500	9,000		
Stores Deptt.			8,000	8,000	4,000		
Total Overhead		2,30,000	93,500	95,500	41,000		

Question:4 Calculate Machine Hour Rate from the following particulars:

Cost of Machine Rs. 20,000
Estimated Life 15,000 hours
Estimated Scrap Value Rs. 20,000
Estimated Working hours per annum 2,000
Estimated hours required for maintenance etc. 200
Setting up time 5% to be treated as productive time
Power per hours 20 units @ 7 paise per unit.
No power is consumed during maintenance and setting up time.
Cost of Repairs and maintenance per annum Rs. 1,500
Wages per operator per month Rs. 1,50
Chemical required for operating the machine Rs. 100 (per month)
Overhead chargeable to the machine per month Rs. 200
Insurance premium (per annum) 1% of the cost of machine .

Solution: Computation of Machine Hour Rate

Running hours (2,000-200=1,800)

Item of Expenditure	Amount . Rs.	Rate per Hour
Standing charges: (per annum)		
Overhead (Rs. 200× 12)	2,400	
Insurance (1% of Rs. 2000)	200	

Wages of operator (2×Rs. 150× 12/4)	900	
Total	3,500	1.94
Hourly Rate of Standing Charges (Rs. 3,500÷1,800)		1.30
Machine Expenses :		0.83
Depreciation (2000-500 ÷ 15,000)		1.33
Repairs (1,500 ÷ 1,800)		0.67
Power (20×1,710×0.7÷1800)		6.07
Chemicals (100×12÷1,800)		
Machine Hour Rate		

Question:5 A machine shop contains four newly purchased machines, each occupying equal amount of space and costing respectively: A Rs. 20,000; B Rs. 25,000; C Rs. 30,000; D Rs. 40,000. The following expenses are per annum of the machine shop:
Rent Rs. 10,000; Rates and water Rs. 4,250; Light and heat Rs. 3,110; Administration expenses Rs. 9,500; Works expenses Rs. 20,000; Power: Machine A Rs. 5,100; Machine B Rs. 5,000; Machine C Rs. 12,100; Machine D Rs. 14,100.
Calculate machine hour rate for each machine assuming 45 hours a week, 50 weeks per year, 80% utilization and the life of the machines being 10 years without any scrap value.

Solution: **Computation of Machine Hour Rate**

(Machine working hours : 1,800 for each machines)

Particulars	**Machine A**	**Machine B**	**Machine C**	**Machine D**
Standing Charges:	**Rs.**	**Rs.**	**Rs.**	**Rs.**
Rent	2,500.00	2,500.00	2,500.00	2,500.00
Rates and Water	1,062.50	1,062.50	1,062.50	1,062.50
Light and Heat	777.50	777.50	777.50	777.50
Administration Exp.	2,375.00	2,375.00	2,375.00	2,375.00
Works Exp.	5,000.00	5,000.00	5,000.00	5,000.00
Total Expenses	11,715.00	11,715.00	11,715.00	11,715.00
Rate per hour	6.51	6.51	6.51	6.51
Machine Expenses:				
Depreciation per hour	1.11	1.39	1.67	2.22
Power per hour	2.83	2.78	6.67	7.78
Machine Hour Rate	10.45	10.68	14.85	16.51

Working note:

(i) Total working hours of the machine per year have been calculated as follows:

Machine runs in a week = 45 Hours

No. of weeks in a year = 50

Machine works in a year = (45× 50)= 2,250 Hours

Again, only 80% of the machine time is useful

Net working hours of the machine = (2,250×80÷100) hours = 1,800 hours.

(ii) Depreciation rate per hour is calculated as given below :

		A	B	C	D
Cost of machine	=	Rs. 20,000	Rs. 25,000	Rs. 30,000	Rs. 40,000
Life of the machine	=	10 year	10 year	10 year	10 year
Depreciation per year	=	Rs. 2,000	Rs. 2,500	Rs. 3,000	Rs. 4,000
Rate of Depreciation per hour	=	Rs.1.11	Rs.1.39	Rs.1.67	Rs.2.22

(iii) To find the expenses on power per hour for each machine, the annual expenditure has been divided by 1,800 hours.

Chapter- 6 Output Costing Method

Unit or output costing is that method of costing in which cost are ascertained per unit of a single product in a continuous manufacturing activity. Per unit cost is calculated by dividing total production cost by number of units produced. This method is also known as single costing. This method is known as 'single costing' as industries adopting this method manufacture, in most cases, a single variety of product.

single costing is a method of costing under which there is the costing of a single product which is produced by a continuous manufacturing activity. Though under this method of costing a single variety of product is manufactured, it may vary in respect of size, grade, colour, etc. The example of industries which make use of this method of costing are – brick, sugar, cloth, coal, cement, fisheries, food canning, quarries, plantation industries, etc.

Features of Output Costing:

The important features of output costing are:

(1) Output costing is the method of costing adopted in concerns where there is a production of single product or a few grades of the same product differing only in size, shape or quality by continuous process of manufacture. The units of production or output are identical and the costs of units are physical and natural.

(2) Under this method, the cost per unit of output, say, per ton, per barrel, per kilogram, per metre, per quintal, per bag, etc. is ascertained. The cost per unit of output is ascertained by dividing the total cost incurred on a product during a given period of time by output produced during the period.

Where the products manufactured are of different grades, first, the costs of products are ascertained grade-wise, and then the total cost of each grade of the product is divided by the number of units of that grade so as to ascertain the cost per unit of each grade of the product.

(3) Equality of cost is an important feature of this method. That is, under this method, cost units, which are identical, will have identical cost.

(4) Under this method, the cost of product is ascertained at the end of the accounting period.

(5) Under this method, the cost information relating to a product may be presented in the form of either cost sheet or production account.

(6) This method is the simplest method of all the methods of costing; in the sense that the cost collection and the cost ascertainment are quite simple.

(7) The cost per unit of output, determined under single. Costing enables the management to make real comparison between different periods and between different firms within the same industry, as the unit of output is a common factor between different periods and between different firms within the same industry.

Objectives of Output Costing:

Output costing has the certain objectives. they are:

(1) To ascertain the total cost of the output as well as the cost per unit of output.

(2) To ascertain the profit or loss on production.

(3) To analyze the expenditure by nature, classify them into element of cost and know the extent to which each element of cost contributes to the total cost.

(4) To facilitate comparison of the cost of one period with the cost of another period to know the efficiency or otherwise of the production.

(5) To facilitate the preparation of tender or quotation.

(6) To control the cost of the product through comparative study of the costs of any two periods or through the comparison of the actual costs with the pre-determined standard cost.

Use of Unit Costing Method

When unit costing method is adopted, statement of cost or cost sheet is prepared for determination of the total cost and the per unit cost of the units produced during a certain period. Cost sheet is a statement showing the production during a certain period, total cost of version items under various heads and the cost per unit.

The following industries which are related per unit cost are as follows:

S.No.		
1.	Pens, Pencils	Dozen, Gross
2	Petrol / Diesel Industry	Per litre
3	Printing Industry	Per thousand impressions
4	Cement Industry	Per tonnes / Per bag

5	Road Transport	Passenger kilometres
6	Coal Mining	Per tonnes
7	Bricks Industry	Per 1,000 bricks
8	Sugar Industry	Per Qtl.
9	Textile Industry	Per meter
10	Paper Industry	Per rim
11	Milk Industry	Per litre
12	Liquor Production	Per bottle

Methods of Ascertaining Unit Cost:
Three types of format are as follows:
1. Cost Sheet Meaning
2.Statement of Cost
3. Production Account

Statement of Detailed Cost or Cost Sheet

Output.....units

Particular		Total Cost Rs.	Cost Per Unit Rs.
Direct material consumed:			
Opening stock of material	.....		
Add: Purchase	.....		
Carriage inward	.....		
custom duty and Octori	.....		
Dock Charges	.....		
Freight Inward	.....		
Primary Packing Material	.....		
Less: Closing Stock of Material	.....		
Raw Material Consumed		.....	
Direct Wages		.....	
Royalty Other Direct Expenses\Chargeable Expenses		.....	
Prime Cost		.....	
Add : Factory Overhead :			
Factory Rent, Rate and Insurance	**.....**		
Factory Lighting	.....		
Factory Supervision	.....		
Drawing Office Salaries	.....		
Motive Power	.....		
Fuel & Oil, Grease, Water	**.....**		
Welfare Expenses	.....		

Depreciation of Plant and Machinery	.....		
Depreciation of Factory Building	**.....**		
Repair and Maintenance of Factory	.....		
Indirect Wages	.....		
Technical Director Fees	.....		
Haulage	.....		
Loose Tools Write off	.....		
Material Storage Expenses	.....		
Material Handling Charges	.....		
Works Manager Salary	.....		
Supervisor and Storekeeper Salary	.....	.....	
Add: Opening Work in Progress		.....	
Less: Closing Work in Progress		.....	
Factory Cost/Work Cost		.....	
Add: Office Overhead :			
Office Rent, Rates and Taxes	.....		
Staff Salaries	.....		
Office Lighting	.....		
Printing and Stationery	.....		
Office Conveyance	.....		
Depreciation of Office Building and Furniture	.....		
Office Repairs	.....		
General Charges	.....		
Legal Expenses	.....		
Audit Fees	.....		
Bank Charges	.....		
Directors Fees	.....	.....	
Cost of Production		.....	
Add: Opening Stock of Finished Stock		.....	
		.....	
Less: Closing Stock of Finished Stock		.....	
Cost of Finished Goods Sold		.....	
Add: Selling Overhead:			
Advertisement Expenses	.....		
Market Research Expenses	.....		
Commission on Sales	.....		
Salesman salaries	.....		
Showroom Expenses	.....		
Bad debts	.....		
Sample and Gifts	.....	.....	
		.....	
Add: Distribution Overhead:			
Counting House Salaries	.....		
Service Expenses	.....		
Packing Expenses	.....		
Loading and Carriage Charges on Sales	.....		
Rent of Warehouse	.....		
Insurance and Lighting of Warehouse	.....		
Expenses of Delivery Vans	.....		
Salaries of Packing Department	.....		

Cost of Catalogues	.....		
Cost of Tenders	.....		
Branch Expenses	.....		
Collection Charges	.....		
Total Cost or Cost of Sales		.....	
Profit		.....	
Sales		.....	

Treatment of Scrap or Wastage:
In the process of production of commodities, some units or a certain proportion of the whole production is obtained as wastage or scrap. If any amount is received from the sale of such wastage or scrap, it is known as scrap value. In the statement of cost or cost sheet, this scrap value should be subtracted from the factory overhead or from factory cost. Sometimes when the units produced are tested, some of the units are found defective, which are separated and removed from the lot, if any, received from the sale of such defective units is also subtracted from the factory overhead or factory cost. If the loss due to the scrap or defective units is abnormal then the amount of this abnormal loss is not subtracted from the factory overheads, but it is transferred directly to the profit and loss account.

Production Account:

When the data related with the cost of production of some commodity are presented in the form of an account, it is known as 'Production Account'. It is also known as 'Output Account' or 'Manufacturing Account'. Production Account may be defined as an account giving the costs of production cost, sales and profit made during a particular period and the information can be presented in the form of 'T' shaped account. Difference between the amounts on two sides gives the profit or loss.

Difference Between Production Account and Cost Sheet:

	Production Account	Cost Sheet
Purpose	Provides the overall cost of production of a certain period	Provides the cost of production of a single unit of a product
Information	Total production, Total cost of production, Total direct materials, Total direct labor, Total overhead costs, Total prime cost, Total production cost, Total factory cost, Total cost of goods sold, Sales, Gross profit, Gross margin	Unit cost, Total cost, Cost of direct materials, Cost of direct labor, Overheads, Gross profit, Gross margin, Variable costs, Fixed costs
Uses	To determine the overall cost of production, financial performance analysis, decision making, cost control, profit and loss analysis	To determine the cost of a single unit of a product, pricing decision-making, budgeting, cost control
Preparation	Prepared periodically (e.g monthly, quarterly) during the production process	Prepared after the production is complete
Focus	On overall production	On individual product
Level of detail	Summary information on the cost of production of all products	Detailed information on the cost of individual products

Time frame	Covers the cost of production over a specified period of time	Covers the cost of production of one unit of a product

Practical Problems:

Q.1 The cost of a manufacturing company give the following information:
Closing Stock: Raw material Rs. 50,300, Finished Goods Rs. 29,300, Work in Progress Rs. 16,000.
Opening Stock: Raw material Rs. 48,000, Finished Goods Rs. 32,400, Work in Progress Rs. 16,440.
Purchase of Raw Material Rs.41,600, Sale of Finished Goods Rs.1,25,600, Office Expenses Rs.4,300, Selling and distribution expenses Rs.8,000, Direct Wages Rs. 32,000, Work expenses Rs.18,000.
Work in progress has been valued at prime cost. Prepare a statement of cost and show:
(a) The cost of Raw material consumed
(b) The cost of production
(c) The production cost of goods sold
(d) The gross profit on goods sold
(e) The net profit

Solution:

Statement of Cost and Profit for the year.....

Particular	Rs.	Rs.
Opening stock of raw material	48,000	
Add: Purchase of raw material	41,600	
	89,600	
Less: Closing stock of raw material	50,300	
Material Consumed		39,300
Add: Direct wages		32,000
		71,300
Add: Opening stock of Work in progress		16,440
		87,740
Less: Closing stock of Work in progress		16,000
Prime Cost		71,740
Add: Work expenses		18,000
Works Cost		89,740
Add: Office expenses		4,300
Cost of Production		94,040
Add: Opening stock of finished goods		32,400
Less: Closing stock of finished goods		1,26,440 29,300
Production Cost of Goods Sold		97,140
Gross Profit on Goods Sold		28,460
Sale of Finished Goods		1,25,600
Gross Profit on Goods Sold		28,460
Less: Selling and Distribution expenses		8,000
Net Profit		20,460

Q.2 The following particulars are obtained from the records of Pritam Bros. for the year 2009-10. Cost of material Rs. 1,50,000; Direct wages Rs.1,25,000; Factory overhead Rs.75,000; Administrative overhead Rs.84,000; Selling overhead Rs.56,000; Distribution overhead Rs.35,000; Profit Rs.1,05,000.

A work order has to be executed in 2010-11 which will need raw material worth Rs.4,000 and wages Rs.2,500. It is expected that rate of factory overhead would go up by 20% and that of selling overhead by 12.5% while the rate of distribution overhead is expected to go down by 10% . Administration overhead will remain constant. At what price the product be sold so as to earn a profit of 15% on selling price. Factory overhead is based on direct wages and the remaining overhead on factory cost.

Solution:

Statement of Cost for the year, 200-10

		Rs.
Cost of material		1,50,000
Direct wages		1,25,000
	Prime Cost	2,75,000
Factory overhead		75,000
	Factory Cost	**3,50,000**
Administrative overhead		**84,000**
	Cost of Production	**4,34,000**
Selling overhead		**56,000**
Distribution overhead		**35,000**
	Total Cost of Sales	**5,25,000**
Profit 20% on Cost Price		**1,05,000**
	Sales	**6,30,000**

(1) Percentage of factory overhead to direct wages : 75,000÷ 1,25,000×100= 60%
(2) Percentage of Administrative overhead to Factory Cost 84,000÷3,50,000×100= 24%
(3) Percentage of Selling overhead to Factory Cost 56,000÷3,50,000×100=16%
(4) Percentage of Distribution overhead to Factory Cost 35,000÷3,50,000×100=10%

Statement Showing Cost

Of the work order during the year, 2010-11

	Rs.	Rs.
Cost of Material		4,000
Direct Wages		2,500
Prime Cost		6,500
Factory overhead (60% of Direct wages)	1,500	
Add: Increase 20%	300	1,800
Factory Cost		8,300
Administrative overhead (24% of factory cost)		1,992
Cost of Production		10,292
Selling overhead (16% of factory cost)	1,328	
Add: Increase 12.5%	166	1,494
		11,796
Distribution overhead (10 % of factory cost)	830	
Less: Decrease 10%	83	747
Total Cost		12,533
Profit: 15% on sales Rs.(15÷85×12,533)		2,212
Estimated Selling Price		14,745

Q.3 The fancy toys co. are manufacturers of two types of toys A and B. The manufacturing cost for the year ended 31 March, 2013 were:

Direct Material	2,00,000
Direct Wages	1,12,000
Production Overhead	48,000
	3,60,000

There was no work in progress at the beginning or at the end of the year. It is ascertained that: (i) Direct Material per toy for type A costs twice as much as direct material in type B.
(ii)The direct wages per day for type B were 60% of those for type A.
(iii)Production overhead was 30 paise, the same per toy of A and B type.
(iv)Administration overhead for each grade was 200% of direct labour.
(v)Selling Expenses was 25 paisa per toy for each type of toy.
(vi)Production during the year was :
Type A : 40,000 toys of which 36,000 were sold.
Type B : 1,20,000 toys of which 1,00,000 were sold.
(vii)Selling price were Rs. 7 per toy for type A Rs. 5 per toy for type B.
Prepare a statement showing the total cost per toy for each type of toy and the profit made on each type of toy.

Solution:

Statement of Cost and Profit

For the year ended 31 March, 2013

Particular	Type A Production -40,000 Toys		Type B Production -1,20,000 Toys	
	Per Toy Rs.	Total Rs.	Per Toy Rs.	Total Rs.
Direct Material	2.00	80,000	1.00	1,20,000
Direct Wages Production	1.00	40,000	0.60	72,000
Overhead Administrative Overhead	0.30	12,000	0.30	36,000
	2.00	80,000	1.20	1,44,000
Cost of Production	5.30	2,12,000	3.10	3,72,000
Less: Cost of Closing Stock		21,200		62,000
Cost of Goods Sold	5.30	1,90,800	3.10	3,10,000
Selling Expenses	0.25	9,000	0.25	25,000
Cost of Sales	5.55	1,99,800	3.35	3,35,000
Profit	1.45	52,200	1.65	1,65,000
Sales	7.00	2,52,000	5.00	5,00,000

Q.4 Following information has been extracted from the records of Jai Industries producing one hundred product which relates to the year ended 31 March, 2017.

Direct wages incurred	1,00,000
Convertible material	60,000
Fixed Overhead	30,000
Variable Overhead	20,000

It is expected that during the year 2017-18.
(i) Output will raised by employing 50% more workers.
(ii) Overall efficiency will fall by 10% because of new workers.

(iii) Material price will decrease by 5%.
(iv) Variable Overheads will vary with the number of workers.
(v) Fixed expenses will increase by 20%.

Ascertain the selling price of the output for the year 2017-18 assuming that there will be opening and closing stock of any type to earn a profit 16.67% on selling price.

Solution:

Statement of Selling Price for the year 2017-18

Particulars	Details Rs.	Total Rs.
Material Cost (present)	6 0,000	
Add: 35% increase in output	21,000	
	81,000	
Less: 5% decrease in price	4,050	76,950
Direct wages cost (present)	1,00,000	
Add: 50% increase in direct wages on account of additional employment of workers	50,000	1,50,000
Prime Cost		2,26,950
Fixed Overhead (present)	30,000	
Add: 20% increase	6,000	36,000
Variable overhead (present)	20,000	
Add: 50% increase	10,000	30,000
Total Cost of Output		2,92,950
Add: Profit 16.67% on selling price or 20% on cost		58,590
Selling Price		3,51,540

Working note:

(i) Increase of 35% in output has been calculated as follows:

The present output be	100 units
Add: Increase in output due to employment of new workers	50 units
	150 units
Less: 10% fall in efficiency because of new workers	15 units
Net output	135 units

Thus, output will be 135 units instead of 100 units, so an increase of 35% is expected.

(ii) 50% increase in the variable overhead is calculated on the basis of the number of workers.
(iii) Total cost of output expected in the year 2017-18 is Rs. 2,92,950 when selling price Rs.3,91,540 in the year 2017-18.

Q.5 The following particulars of Hind Cotton Mills Ltd. for half year ended 30 September, 2013 are given:

Opening stock of Yarn at cost (60,000 lbs.)	60,000

Opening stock of Cloth at cost (60,000 lbs.)	1,80,000
Wages-Spinning	60,000
Store-Spinning	40,000
Fuel-Spinning	20,000
Yarn sales (2,00,000lbs.)	80,000
Stock at the end at cost: Yarn (2,00,000lbs.)	82,000
Cloth (2,05,000lbs.)	3,00,000
Cotton purchase (10,40,000 lbs.)	5,20,000
Wages- Weaving	80,000
Stores- Weaving	20,000
Sale of waste of Yarn (2,11,000 lbs.)	58,000
Cloth sales (4,20,000 lbs.)	6,00,000

Stores consumed increased the weight of production by 4,000 lbs. for the spinning stores and 1,20,000 lbs. for weaving stores.

Prepare two separate production account showing:(a) Gross profit (b) Total qty. produced (c) Total cost of production and (d) Cost of production per lbs.

Solution:

Yarn Production Account

Particulars	Qty. lbs.	Amount	Particulars	Qty. lbs.	Amount
To cotton purchase	10,40,000	5,20,000	By sale of waste	2,11,000	58,000
To wages spinning	_	60,000	By cost of Production		
To stores spinning	4,000	40,000	(@70 paisa per lbs.)	8,33,000	5,82,000
To fuel spinning	_	20,000			
	10,44,000	6,40,000		10,44,000	6,40,000
			By sale of Yarn	2,00,000	80,000
To opening stock	60,000	60,000	By transfer to cloth	4,93,000	3,54,430
To cost of Production	8,33,000	5,82,000	Production		
			By closing stock	2,00,000	82,000
			By Gross loss		1,25,570
	8,93,000	6,42,000		8,93,000	6,42,000

Note:

Amount transfer to cloth production department is calculated as follows:

Opening stock + Production =	Total stock
(60,000) + (8,33,000) =	8,93,000 lbs.
Less: Sales and closing stock	
(2,00,000) +(2,00,000)=	4,00,000 lbs.
Transfer to cloth production department	4,93,000 lbs.

Cost of 8,93,000 lbs. is Rs. 6,42,000

So cost of 4,93,000 lbs. will be 6,42,000÷8,93,000×4,93,000 = 3,54,430

Cloth Production Account

Particulars			Qty. lbs.	Amount	Particulars		Qty. lbs.	Amount
To Yarn	4,93,000	3,54,430	By loss in weight		1,08,000	_		
Production	_	1,20,000	By cost of		5,05,000	5,74,430		
To wages weaving	1,20,000	80,000	Production					
To stores weaving	_	20,000						
To fuel weaving								
	6,13,000	5,74,430			6,13,000	5,74,430		
	1,20,000	1,80,000			4,20,000	6,00,000		

To opening stock To Cost of Production To Gross Profit	5,05,000 _ 6,25,000	5,74,430 1,45,570 9,00,000	By Sales By Closing stock	2,05,000 6,25,000	3,00,000 9,00,000

Working note:

Weight of input and weight of loss during processing is calculated as under:

Weight of cloth sold + Closing stock	
(4,20,000) + (2,05,000)	6,25,000 lbs.
Less: Opening stock	1,20,000 lbs.
	5,05,000 lbs.
Total weight (input)	6,13,000 lbs.
Less: Weight of Production during the period	5,05,000 lbs.
Loss in Weight	1,08,000 lbs.

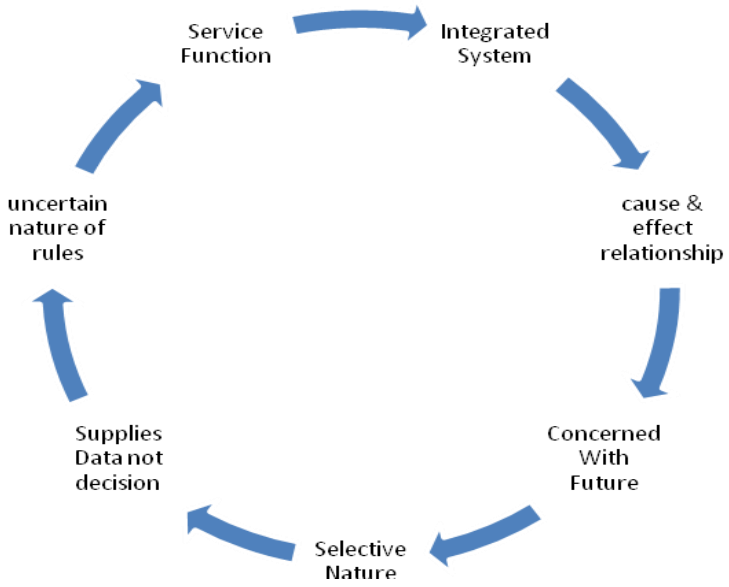
Chapter 7 - Management Accounting: An Introduction

Q.1) Explainthemeaningof"ManagementAccounting"?StateitsmaincharacteristicsandNature.

Ans –Management accounting is as systematic approach to planning and control functions of management. It generates information for establishing plans &controls and provide information for a systems of setting standards plans or targets and reporting variances between plans and actual performance for corrective actions. In this way that part of accounting system which facilities the Management process of decision making is called Management Accounting.

Management Accounting includes every accounting technique which may beusefultomanagementindischargingitsfunctionPlanningOrganizingdirectingcoordinating communicating&controllingthusManagementAccountingistheaccountingServicestomanagement isofaccountingofmanagementpointofviewthatwhyiscalledManagementorientedaccounting or Accounting for Management.

Nature Or Characteristics of management Accounting



Q.2)Distinguish between the Financial Accounting & the Management accounting or Comparison between Financial Accounting & Management Accounting?

Ans -

Basis	Financial Accounting	Management Accounting
Nature	Concerned with the Historical Records	Its deals in projection of data
Accounting Principles	Governed by generally accepted accounting principles & conventions	Not bound to follow such accounting principles & conventions
Subject Matter	Prepared for the business whole.	Prepared for the each unit/department/division.
Period	Usually for a period of 12Months	Regular Intervals
Compulsion	Compulsory or Statutory	Voluntary Basis
Reporting	Provides information regarding the financial soundness & earning capacity of the firm	Provides information to the management for efficient operation of business.
Scope	Not vast	More wide
Publication Audit	Financial Statement like profit & Loss and balance Sheet are published for the use of general public. They are audited by CA	The publication and audit of management accounting reports is neither feasible nor mandatory.

Objective	Financial accounting is recording business transaction in as systematic way & assess the business result and financial position of a concern	Is to provide necessary information to the management for the efficient execution of its function

Q.3)What are the tools and techniques used in management Accounting?

Ans - Management Accountant applies many of the financial and cost accounting systems, as techniques, to assist the management. Management accounting is concerned with accounting information that is useful to management. Management accounting, like accounting, as an accounting service to management through its .various functions, has to employ several tools, techniques, and methods. Now one technique can satisfy managerial needs. These are placed here in brief to have some idea about those.

- Financial Planning - A business requires finance. Financial planning involves determining both long-term and short-term financing objectives of the firm. Every firm has to decide on the sources of raising funds.
- Budgetary Control - There are a number of the device which help in controlling. The most widely used device for management control is "Budget."Budgetary control is a system that resorts to budget as a means of planning and controlling and coordinating different types of activities, like the production and distribution of goods and services as designed.
- Marginal Costing - Marginal costing is helpful for the measurement of profitability of different lines of production. This technique helps in identifying the nature of costs like marginal costs (variable) and fixed costs.
- Historical Cost Accounting - The statement of actual costs after they have been incurred is called Historical cost accounting. Historical cost accounting is a system of accounting that records all transactions at costs incurred as soon as they take place or on a date immediately after their occurrence.
- Decision Accounting - One of the most important functions of top management is to make decisions. Decision making involves a choice from several alternatives. The decision is taken after studying the alternative data in terms of costs, prices, and profits furnished by management accounting and exercising the best choice after considering other non-financial factors. The objective is to maximize profit through the use of the best alternative method.
- Standard Costing - Standard costing is an important tool of cost control, which is one of the main objectives of management accounting. Standard costing techniques compare the standard costs of materials, labor, and expenses incidental to production, which is predetermined, with the actual costs that have occurred in the course of carrying out production.
- Revaluation Accounting - This is an important tool for management accounting.

Revaluation or Replacement accounting revere to the maintenance of capital in real terms. This term is used to denote the methods employed for overcoming the problems connect with fixed asset replacement in a period of rising prices.

- Control Accounting - It is not a separate accounting system. It consists of techniques of standard costing, budgetary control, control reports and statement, internal check, internal audit, and reports.It is in this field that the management has scope to display ingenuity in the' analysis, interpretation, and presentation of information at all levels of management.
- Statistical Techniques - There is a large number of statistical and graphical techniques that are used in management accounting. Some common examples are the master chart, chart of sales and earnings, investment chart, etc.
- Ratio Accounting - Ratio accounting signifies the technique and methodology of analysis and interpretation of financial statements using accounting ratios derived from such statements.

Q.4) Describe Limitation and disadvantages of management accounting.

- **Ans–Limitation and disadvantages of management accounting are as follow:-**
- **Based on Financial and Cost Records - Both financial and cost accounting information are used in the management accounting system. The accuracy and validity of management account is largely based on the accuracy if financial and cost records maintained. These records determine the Strength and weakness of management accounting.**
- Personal Bias - The analysis and interpretation of financial statements are fully depending upon the capability of the analyst and interpreter. Hence, personal prejudices and bias of an individual can affect the objectivity and effectiveness of the conclusions and recommendations.
- Lack of Knowledge and Understanding of the Related Subjects - Financial accounting, cost accounting, statistics, economics, psychology and sociology are the related subjects of management accounting. The organization can derive more benefits of management accounting if the management accountant has thorough knowledge over related subjects. If not so, the success of management accounting system is questionable.
- Provides only Data - Under management accounting system, many alternatives are developed to solve a problem and submitted before the management. Out of the many alternatives available, the management can select any one of alternatives or even discard all of them. Hence, management accounting can only provide data and not prescribe any course of action.
- Preference to Intuitive Decision Making - Scientific decisions can be taken with the help of using management accounting techniques. But, majority of the management accountant and top level executives prefer their past experience and intuition in making business decisions. The reason is that an intuitive decision

making is very simple and easy.

- Management Accounting is only a Tool - The management accountant is using the management accounting system as a tool to give advice and facilitate the management for decision making. The actual decisions, their implementation and follow up action are the prerogative of the management.
- Continuity and Participation - The decisions are taken by the management. Their implementation is vested in the hands of management accountant. The continuous efforts of management accountant and full participation of all levels of management are necessary for successful operation of management accounting system.

Q.5) What are the objectives of Management accounting?

Ans - The nature/characteristics of management accounting may be summarized as under:

- Management accounting is a technique of selective nature. It does not use the whole data provided by financial records. It selects and picks up only that information form different financial records (such as profit and loss account or balance sheet), which are relevant and useful to the management to arrive at important decisions on different aspects of the business.
- Management accounting is concerned with the future. It collects and analyses data to plan the future. The primary function of management is to decide bout the future course of action. Management accounting, with the help of different techniques, formats the future course of action.
- Management Accounting makes available useful information which helps the management in planning and decision-making. It can only provide information but cannot proscribe. It is up to management to what extent it. It can make use of the information depending upon its efficiency and wisdom.
- Management accounting studies the relation between causes and effects. Financial accounting does and analyses the causes responsible for profits or losses. Management accounting attempts to study the cause-and-effect relationship by analyzing the different variables affecting the profits and profitability of the business.
- Management accounting is no bound by the rules of financial accounting. Financial accounting procedures are designed based on GAAPs.

Q.6) What are the function of Management accounting?

Ans - Management accounting helps in the performance of each of these functions in the following ways:

- Provides data - Management accounting serves as a vital source of data for management planning. The accounts and documents are a repository of a vast quantity of data about the past progress of the enterprise, which is a must for making forecasts for the future.
- Modifies data - Management accounting modifies the available accounting data

rearranging in such a way that it becomes useful for management.For example, purchase figures for different months may be classified to know total purchases made during each period product-wise, supplier-wise, and territory-wise.

- Communication - Management accounting is an important medium of communication. Different levels of management (top, middle, and lower) need different types of information.
- Analyses and interprets data - The accounting data is analyzed meaningfully for effective planning and decision-making. For this purpose, the data is presented in a comparative form, Ratios are calculated, and likely trends are projected.
- Serves as a means of communicating - Management accounting provides a means of communicating management plans upward, downward, and outward through the organization.
- Facilitates control - Management accounting helps in translating given objectives and strategy into specified goals for attainment t by a specified time and secures the effective accomplishment of these goals efficiently. All this is made possible through budgetary control and standard costing, which is an integral part of management accounting.
- Uses also qualitative information - Management accounting does not restrict itself to financial data for helping the management in decision making but also uses such information that may be capable of being measured in monetary terms. Such information may be collected from special surveys, statistical compilations, engineering records, etc.
- Decision-Making - Management accounting furnishes accounting data and statistical information required for the decision-making process, which vitally affects the survival and the success of the business.

Q.7) What are the objectives of Management accounting?
Ans - The fundamental objective of management accounting provides information to the managers for use in planning, controlling operations, and decision making.Main purpose and objectives of management accounting may be summarized as under:

- Uses of Information - The primary functions of management are the uses of information. It presents accounting information in a form that enables the management, investors, and creditors to analyze the financial statements.
- Planning and Policy Formulation - Planning is deciding in advance what is to be done. It helps the management of ineffective planning. It provides costing and statistical data to be utilized in setting goals and formulating future policies.
- Decision Making - All management work is accomplished by decision making. Decision making is defined as the selection of a course of action from among alternatives. It helps the management in decision-making. It uses accounting data to solve various management problems. Management accounting techniques like cost-volume-profit analysis, standard costing, budgetary control, capital budgeting, funds

flow analysis, etc. Assist the management in arriving at the correct decision.

- Motivating - Motivation means individuals need, desires, and concepts that cause him or her to act in a particular manner. Delegation serves as a motivation device because it increases the job satisfaction of employees and encourages them to look forward.
- Controlling - Management accounting helps management in controlling the performance of the organization. Actual performance is compared with operating plans, standards, and budgets, and deviations are reported to the management so that corrective measures may be taken.
- Coordinating Operations - It helps the management in controlling the performance of the organization. Actual performance is compared with operating plans, standards, and budgets, and deviations are reported to the management so that corrective measures may be taken.
- Reporting - One of the primary objectives of management accounting is to keep the management fully informed about the latest positions of the concern. The facilitates management to take proper and timely decisions.

Q.8) What are the Limitations of Management Accounting?
Ans - Though management accounting in helpful too to the management as it provides information for planning, controlling, and decision making. But it suffers from all the limitations of a new discipline. Some of the limitations of management accounting follow:

- Management Accounting is only a tool - Management accounting should never be considered as an alternative or substitute for management. The tools and techniques of management accounting provide only information and not decisions.
- Evolutionary' Stage - Management accounting is still in its initial stage. Management accounting is only in a developmental stage that has not reached the final stage.
- Limitations of Basic Records - Management accounting is mainly concerned with the rearrangement or modification of data. It derives its information from financing accounting, cost accounting, and other records.
- Lack of knowledge - The use of management accounting requires knowledge of several related subjects. Deficiency in knowledge in related subjects like accounting principles statistics, economics, principles of management, etc. will limit the use of management accounting.
- Persistent Efforts - The conclusions and decisions drawn by the management accountant are not executed automatically. Thus, there is a need for continuous and coordinated efforts of each management level to execute these decisions.
- Intensive Decision - Decision making based on management accounting that provides scientific analysis of various situations will be a time-consuming one.
- Costly Installation - It is very costly. The installation of a management accounting system needs a very elaborate organization and numerous rules and regulations. This results in heavy investment, which only bill concerns can afford.

- Personal Bias - The interpretation of financial information depends on the capacity of an interpreter as one has to make a personal judgment, personal prejudices and bias affect the objectivity of decisions.
- Resistance - The installation of management accounting involves a basic change in an organizational setup.
- Provides Only Data - The main function of management accounting is to provide data and not decisions. It can only inform, not prescribe.

Q.9) What are the Scope of Management Accounting?

Ans - The scope of management accounting is so wide broad-based that it includes within its fold an analysis of all the aspects of modern accounting, which emphasis the common denominator of the functions of both management and accounting the making of an effective decision based on appropriate information.

- Financial Accounting - Financial accounting is the general accounting which accounting relates to the recording of business transactions in the books of prime entry, posting them into respective ledger accounts, balancing them preparing a trial balance. Hence management accounting can not obtain full control and coordination of operations without a well designed financial accounting system.
- Cost Accounting - Costing is a branch of accounting. Accounting for current, standard and prospective costs; analysis and communication of cost data at all levels of management with the organization. It is the process and technique of ascertaining cost. Planning, decision-making, and control are the basic managerial functions.
- Budgeting Forecasting - Budgeting means expressing the plans, policies, and goals of the enterprise for a definite period in the future. Assembly and consolidation of budget; assistance to management personnel in translating operating plans into financial budgets; reporting and analysis of budget variances.
- Data Processing - Recording accounting data, performing repetitive operations with these data, and preparing reports to form recoded data.
- Internal Auditing - Review and appraisal of accounting procedures and records to ascertain their reliability, conformity to prescribed practices, and adequacy to protect against loss of assets by fraud, waste, and other causes.
- Tax Reporting - This necessitates the computation of income by the Income Tax Act, preparing return statements and making payment of taxes when due Income statements are prepared, and tax liabilities are calculated. The management is informed about the tax burden from the central Government, State Government, and Local Authorities. This includes the computation of taxable income as per tax law, filing of returns, etc.
- Financial Analysis - Interpretation of accounting reports, analysis in financial terms of proposed projects, plans, and procedures; assistance to the management in interpretation and evaluation of financial data of all types.
- Inventory Control - It includes control over inventory from the time it is acquired until

its final disposal.

- Revaluation Accounting - This is concerned with ensuring that capital is maintained intact in real terms, and profit is calculated with this fact in mind.

Chapter – 8 Application of Marginal Costing Technique

Several decisions can be taken with the help of marginal costing, such as decisions about determination of selling price, about continuing or stopping the production of a certain product, about stopping and continuing a certain department, etc. Besides these marginal costing plays an important role in taking decisions in several other specific problems also. The role of marginal costing in deciding the following problems has been described here :

Decisions to:

(1) Make or Buy
(2) Own or Lease Asset
(3) Retain or Replace Assets
(4) Capturing foreign Market
(5) Selection of Profitable Product Mix
(6) Selection of Equipment
(7) Accept or Reject
(8) Sell or Process
(9) Reduce or Maintain Price
(10) Introduce or Drop Product
(11) Others:
  (i) Estimation of Optimum Product Size
  (ii) Price Quotation of Tender
  (iii) Pricing of Product or Decision
  (iv) Temporary Shut Down Business Activities

These Problems have been discussed in detail as follows:

1.Make or Buy: Sometimes a manufacturer has to decide as to whether a certain component or spare part should be manufactured in the factory (having unused installed capacity) or bought from the market. In taking such a 'make or buy' decision, the marginal cost of the component or spare part should be compared with the market price. If the marginal cost is lower than the market price, the component or spare part should be manufactured in the factory itself.

However, the manufacturer must take into consideration any increase in fixed costs or any limiting factor which may arise if the production is undertaken in the factory. If the purchase price is lower than the marginal cost and provided regular supply and proper quality of the component are guaranteed by outside supplier, it should be purchased from outside supplier.

2. Own or Lease Asset: A company engaged in manufacturing and rendering services requires many types of fixed assets for operating its business, such as land, building, plant, machinery etc. The company have two alternatives-either to own the asset, or to get in on hire on lease . If the company has to choose from such alternatives and following points should be considered before taking any decision as capital, nature of the asset, knowledge of the lease condition, and comparative cost.

(3) Retain or Replace Asset: Business organizations use physical assets in the form of machines and equipment to produce goods and services. After a particular period of service, there might be a need for the

replacement of the existing assets and therefore, the firms must constantly monitor the performance of the assets so as to decide whether they should be continued in service or they should be replaced with new assets. Replacement study is carried out to make economic decision to retain or replace an existing asset. If the decision is to replace, the study is complete. However, if the decision is to retain, the cost estimates and decision will be reconsidered each year to ensure that the decision to retain.

(4) Capturing Foreign Market: Capturing foreign markets is a comprehensive guide that has been written to empower business leaders who are looking to grow their footprint globally. This book is loaded with tested principles and insights covering topics such as: practical ways to roll out international growth strategies that work, the best approach to use for different sized businesses and financial and risk management. Special commentary and application notes have been added that highlight the applicability of the principles to small businesses and start-ups. After reading the book, you as a business leader will have a firm grip on how your business could approach your international growth with a focus on minimizing risk and enhancing the returns. There are many illustrations and case studies in every chapter which are designed to give you as a business leader insight into how to build your business globally. Whether you represent a merchandise or services business, you can tap into lucrative foreign markets and see a significant growth in your bottom line. Capturing a foreign market is not so much a matter of if it can be done, but more a product of what would need to be in place in order for a new market to become a significant revenue generator for your business.

(5) Selection of Profitable Product Mix: A concern would produce and sell only those products which offer maximum profit. This is based on the assumption that it is possible to produce any quantity without any difficulty and sell likewise. However, an actual practice, this seems to be unrealistic as several constraints come in the way of manufacturing as well as selling.

Such constraints that come in the way of management's efforts to produce and selling unlimited quantities are called 'key factors' or 'limiting factors'. The limiting factors may be materials, labour, plant capacity, or demand. Management must ascertain the extent of the influence of the key factor for ensuring maximisation of profit.

Normally, when contribution and key factors are known, the relative profitability of different products or processes can be measured with the help of the following formula –

$$\text{Profitability} = \frac{\text{Contribution}}{\text{Key Factor}}$$

(**6) Selection of Equipments:** The equipment selection process is considered in the early stage of the design process since the equipment selection process decides the quality, cost, and reliability, which are important for customer satisfaction. Due to the availability of large numbers of equipment, the selection of suitable equipment for certain operation/product becomes much difficult. The selection process is not so easy a task because the equipment features are many and vary from one manufacturer to another, and the features are also being increased constantly. Since the quality, cost, and reliability of a product are decided by proper equipment selection, the equipment selection process becomes more and more important.

(7) Accept –or-Reject Decisions: The decision to accept or reject special orders is based entirely on differential cost and the contribution margin approach. Marginal and differential costing reflects this fall in unit cost by treating marginal cost as constant per unit, and fixed cost by treating marginal costs as constant per unit and fixed cost in total only. Some qualitative factors need to be considered in deciding whether to accept or reject special sales orders. These are the impact on future earnings of temporarily cutting the selling price, the reliability of cost estimates associated with the order, the effect on current and future capacity in terms of expansion etc.

(8) Sell- or –Process Decision: The "sell or process further" decision, often encountered in managerial accounting and finance, pertains to the decision a company must make regarding partially finished products. Essentially, a company must determine whether it is more profitable to sell a product at a particular intermediate stage or to process it further and then sell the finished product.

This decision is especially relevant in industries where products can be sold at multiple stages of the production process. The key to the decision lies in comparing the additional revenues generated from further processing to the additional costs associated with that further processing.

(9) Reduce-or-maintain Price Decision: Marginal cost of a product represents the minimum price for that product and any sale below the marginal cost would entail a cash loss. The price for the product should be fixed at a level which not only covers the marginal cost but also makes a reasonable contribution towards the common fund to cover fixed overheads. The fixation of such a price for a product would be easier if its marginal cost and overall profitability of the concern is known.

(10) Introduce or Drop Product Decision: A decision whether or not to continue an old product line or department, or to start a new one is called an add-or-drop decision. An add-or-drop decision must be based only on relevant information. Relevant information includes the revenues and costs which are directly related to a product line or department. Examples of relevant information are sales revenue, direct costs, variable overhead and direct fixed overhead. Such decision must not be based on irrelevant information such as allocated fixed overhead because allocated fixed overhead will not be eliminated if the product line or department is dropped.

Practical Problems:

Q.1 A company purchases a particular article from the market an sells it. The particulars for the year 2010 are as follows:

Variable cost Rs.22,400; Fixed cost Rs.7,200; Working capital Rs.16,000; Sales Rs.32,000.

The company seeks you're your advice whether it will be more profitable to make itinternally. Give your advice taking into account the following details:

Sales Rs.32,000; Variable cost Rs.20,480; Fixed cost Rs.8,000; Additional capital Rs.2,000 at 15% interest.

Solution:

Statement of Cost and Profit

Particular	Buy	Make
Sales	32,000	32,000
Less: Variable Cost	22,400	20,480
Contribution	9,600	11,520
Less: Additional interest cost	–	300
Less: Fixed Cost	9,600 7,200	11,220 8,000
Net Profit	2,400	3,220
P/v Ratio	30%	35.06%
B.E.P	24,000	22,472

Advice: If the article is made internally in the company, contribution will be Rs. 1,620 more, Profit volume ratio will increase by 5.06% and break even point will be lowered by Rs. (24,000-22,472)= Rs. 1,528. Therefore, it would be more profitable to make the article in the company.

Q. 2 A factory producing metal components has a four years old plant which cost Rs. 40,00,000 and which is estimated to have a total life of 10 years. Its residual value is approximately Rs.5,00,000. Its average output is 12 units per minute and runs for 3,000 hours per annum. A proposal is submitted to replace the old plant with a new and much improved plant which will cost Rs. 1,00,00,000. It is estimated that this new plant will have a life more than six years and a residual value of approximately Rs. 10,00,000. If the new plant is purchased the existing plant would give an output of 24 units per minute and would run for 3,000 hours per annum. Detailed annual cost are as follows:

	Present Plant Rs.	New Plant Rs
Operators wages	3,00,000	4,00,000
Power cost	6,00,000	9,00,000
Repair and Maintenance	3,00,000	5,00,000
Tools (consumable)	9,00,000	12,00,000
Apportionment of general factory fixed cost	4,00,000	6,00,000

From the above information prepare a comparative cost statement to show marginal costs and total cost per dozen of units for each plant. Advice the management for acceptance of the proposal.

Solution: Statement of Annual Marginal Cost and Total Cost

Particulars	**Present plant Rs.**	**New plant Rs.**
Operators wages	3,00,000	4,00,000
Power cost	6,00,000	9,00,000
Repair and Maintenance	3,00,000	5,00,000
Tools and Consumption	9,00,000	12,00,000
Marginal Cost (a)	21,00,000	30,00,000
Depreciation	3,50,000	15,00,000
General factory cost (apportioned)	4,00,000	6,00,000
Total Fixed Cost (b)	7,50,000	21,00,000
Total Cost (a + b)	28,50,000	51,00,000
Annual Production dozen in units	1,80,000	3,60,000
Marginal Cost per dozen units	11.67	8.33
Total cost per dozen units	15.83	14.17

Advice: Marginal cost and Total cost per dozen units of new plant is less than existing plant. Hence, the proposal of replacing old plant by new plant should be accepted.

Working Note:

(i) Interest on capital is ignored.

(ii) There will be a loss of Rs. 11,00,000 on sale of plant. The loss should be recouped from profit and loss account or reserve, otherwise. This loss is recouped from savings which are generated through the use of new plant and this loss amount will be equally distributed in the life of new pant.

(iii) Calculation of depreciation:
Existing Plant= (40,00,000-5,00,000)÷10 = Rs. 3,50,000 New Plant = (1,00,00,000-10,00,0000)÷6 = Rs. 15,00,000

(iv) Units Produced :
Existing Plant= (3,000×60×12)÷12 = Rs.1,80,000
New Plant= (3,000×60×24)÷12 = Rs.3,60,000

Q.3 The following data are given to you about a company:

Material Rs. 48 000; wages Rs. 96,000; Fixed cost Rs. 48000; Variable overheads Rs. 24000; selling price Rs. 20 per unit; output and sales: 12000 units.

The company has received an offer from the foreign market to sale 5,000 additional units at Rs. 16 each. If the company accepts this order, it will be able to save 40 paise per unit in the material cost on all the units produced. However, fixed cost will increase to Rs. 60,000 and labour efficiency will reduce by 2% suggest whether the offer should be accepted.

Solution:

Statement of Marginal Cost and Profitability

Particulars	Present Position	After accepting the order
Output and sales in units	12,000	17,000
	Rs.	**Rs.**
Sales (Home Market) @ RS. 20 per unit	2,40,000	2,40,000
Sales (Foreign Market)) @ RS.16 per unit	_	80,000
Total Sale (S)	2,40,000	3,20,000
Variable Costs:		
Material (17,000× Rs.3.60)= Rs. 61,200	48,000	61,200
Wages (17,000× Rs.8) = Rs.1,36,000 (Rs. 1,36,000×100÷98)= 1,38,776	96,000	1,38,776
Overhead (17,000×Rs.2)=Rs.34,000	24,000	34,000
Total Marginal Cost (v)	1,68,000	2,33,976
Contribution (S-V)	72,000	86,024
Less: Fixed Cost	48,000	60,000
Net Profit	24,000	26,024

Advice: If foreign order is accepted, profit will increase from Rs. 24,000 to Rs. 26,024. Therefore, the order should be accepted.

Q.4 The director of Sachin Ltd. Have submitted the following information regarding its two products X and Y.

	Product X Rs.	Product Y Rs.
Direct material per unit	400	360
Direct wages Re. 1 per hour per unit	120	80
Selling price per unit	800	600
Variable overheads per hour	1	1

Total foxed overheads are Rs. 64.000 per annum.

You are asked which of the following products mix adopted for sales.

(a) 200 units of X and 400 units of Y.
(b) 300 units of X and 300 units of Y.
(c) 400 units of X and 200 units of Y.

Solution:

Statement of Marginal Cost

Particulars	Product X	Product Y
	Rs.	**Rs.**
Sales per unit (S)	800	600
Material cost per unit	400	360
Wages cost per unit	120	80
Variable overheads per unit	120	80
Total variable cost per unit (V)	640	520
Contribution per unit (S-V)	160	80

Calculation of contribution and profit for different sales mix:

(a) When 200 units of X and 400 units of Y are sold:

Contribution X: 200×Rs.160	32,000
Y: 400×Rs. 80	32,000
Total Contribution	64,000

(b) When 300 units of X and 300 units of Y are sold:

Contribution X: 300×Rs.160	48,000
Y: 300×Rs. 80	24,000
Total Contribution	72,000

(c) When 400 units of X and 200 units of Y are sold:

Contribution X: 400×Rs.160	64,000
Y: 200×Rs. 80	16,000
Total Contribution	80,000

Advice: It is clear from the above analytical statement that if 400 units of Product X and 200 units of Product Y are sold then company receives maximum contribution because fixed cots remains same in all the situations and, the fixed cost has no any effect on the contribution.

Q.5 The following particulars are obtained from the records of a factory manufacturing products A and B:

	Product A (Per Unit) Rs.	Product B (Per Unit) Rs.
Selling price	100	200
Material Cost @ Rs.10 per kg.	20	50
Wages Rs.3 per hour	30	60
Variable overhead	10	20

Total fixed cost Rs.5,000. State which product is better to be produced and why in the following cases:

(a) If total sales in units is key factor,
(b) If total sales in value is key factor,
(c) If raw material is in short supply,
(d) If labour hour is the limiting factor,
(e) If raw material available is 2,000 kg. and maximum sales of each product is 500 units.

Solution:

Marginal Cost Statement

	Product A		**Product B**	
	Rs.	**Rs.**	**Rs.**	**Rs.**
Sales		100		200
Less:				
Material	20		50	
Wages	30		60	
Variable	10	60	20	130
Contribution (per unit)		40		70
P\ V Ratio=(C\S×100)		40%		35%
Contribution per kg. of material (Contribution ÷ Units of material)		20		14
Contribution per labour				

hour (Contribution ÷ Labours hours)		4		3.5

Advice:

(a) If sales units is the limiting factor then it will be most beneficial to produce product B on the basis of contribution per unit.

(b) If sales price is the limiting factor then it will be profitable to produce product A because the profit volume ratio of product A is higher.

(c) If supply of raw material is the limiting factor then it will be profitable to produce product A because the per unit contribution on raw material is maximum in product A.

(d) If labour hours is the limiting factor then it will be more profitable to produce product A because contribution per labour hour in case of product A is higher than in product B.

(e) In this situation, availability of raw material and the sales units both are the limiting factors. Product A should be produced in maximum quantity when raw material is available in limited quantity because per unit contribution on raw material is higher in product A. Hence 500 units of product A will be produced. Hence raw material utilized in product A will be (500 × 2 kg) =1,000 kg. and the balance of raw material will be used for production of 200 units of product B (10,000÷50)=200 units. Hence, the production of 500 units of product A and 200 units of product B will be most profitable.

Q.6 A manufacturer has to decide as to which one of the following alternatives should be adopted in manufacturing a new product to be introduced:

(x) To buy a new machine, annual depreciation of which would be Rs. 5000 an investment of Rs. 50000 is necessary on which interest @ 10% per annum has to be paid, or

(y) To modify an existing machine, which is not being used for the product under manufacturer. The investment for modification would be Rs. 8000 @ 10% interest per annum and annual depreciation after modification would be Rs. 4000, or

(z) To hire a machine for Rs.11000 per annum.

It will take 1000 machine hours to manufacturer the product. The variable cost of labour would be Rs. 15 per labour hour and other operating cost would be Rs. 5 per labour hour.

Tabulate the results of each alternative and give your recommendation as to which alternative be used for the purpose.

Solution:

Comparative Cost Statement of Different Alternatives

Particulars	**Alternatives**		
	X (Rs.)	**Y (Rs.)**	**Z (Rs.)**
Additional capital needed	50,000	8,000	Nil

	5,000	4,000	Nil
Depreciation charges	5,000	800	Nil
Interest on capital 10%	_	_	11,000
Hire charges			
	10,000	4,800	11,000
Relevant Cost	15,000	15,000	15,000
Labour cost @ Rs.15 per hour	5,000	5,000	5,000
Operating cost @ Rs. 5 per hour			
	30,000	24,800	31,000
Total Cost			

Advise: It is clear from the above analysis that the alternative 'y' is most economical because its related cost is Rs.4,800; which is less than other alternatives. If decision is to be taken on the basis of total cost, then also 'y' is the best alternative of all the alternatives. Hence, this alternative should be used for new production, but it should be considered that the production quality and the size of the product from the repaired machine should be equivalent to new machine. The repaired machine should be atleast used for two or three years in future, if it is not so, it is useless to repair an old machine.

Chapter – 9 Budgeting

Budget: A budget is the monetary or/and quantitative expansion of business plans and policies to be pursued in the future period of time. The term budgeting is used for preparing budgets and other procedures for planning, co-ordination and control of business enterprise.

According **to I.C.W.A., London** "A budget is 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". In the words of Crown and Howard, "A budget is a pre-determined statement of management policy during a given period which provides a standard for comparison with the results actually achieved."

Budgeting

Budgeting: Budgeting is the complete process of designing, implementing and operating budgets. This also provides process/steps of collection and comparison of data, by which deviations from the plan, either favorable or adverse, can be measured. This analysis is helpful in performance analysis, cost estimation, minimizing wastage and better utilisation of resources of the organisation.

Nature of budget

The nature of a budget refers to its characteristics, purpose, and components. A budget is a financial plan that outlines an organization's or individual's expected income and expenses over a specific period, typically a year. It is an essential tool for managing finances and making informed decisions about spending and saving.

Here are some key aspects that describe the nature of a budget:

1. **Planning Tool**: A budget is primarily a planning tool that helps individuals, businesses, or governments anticipate their financial inflows and outflows. It sets specific financial goals and allocates resources accordingly.
2. **Time Frame**: Budgets are typically created for a specific time period, most commonly for a fiscal year. However, they can also be developed for shorter or longer durations depending on the need.
3. **Revenue and Income**: The budget outlines the sources of income or revenue that an entity expects to receive during the defined period. This includes salaries, sales revenue, investment income, grants, or any other inflow of money.
4. **Expenses**: Budgets categorize and estimate the planned expenses, which can include various categories like personnel costs, operating expenses, debt payments, capital expenditures, and more. Expenses are usually broken down into fixed and variable costs.
5. **Financial Control**: Budgets act as a control mechanism to compare actual financial performance against the planned budget. This comparison helps identify any deviations, enabling corrective actions to be taken if necessary.

6. **Resource Allocation**: Budgets allocate resources to different departments or areas within an organization based on their priorities and expected outcomes. This helps in ensuring that resources are utilized efficiently and in line with strategic objectives.
7. **Forecasting**: While budgets are based on estimates and assumptions, they involve forecasting future financial conditions, business performance, and economic trends.
8. **Flexibility**: Budgets can be flexible or rigid, depending on the nature of the organization and its financial situation. Some budgets may allow for adjustments throughout the year, while others are fixed and unchangeable.
9. **Goal Setting**: Budgets serve as a framework for setting financial goals and objectives. By defining specific targets, organizations can work towards achieving their desired outcomes.
10. **Decision-making**: Budgets aid in decision-making processes by providing a clear financial picture. They help prioritize projects, investments, and expenditures based on available resources.

Overall, the nature of a budget is multifaceted, encompassing planning, financial management, and control. Its importance lies in its ability to guide financial activities and ensure fiscal discipline to achieve long-term financial stability and success.

Nature of budgeting

The nature of budgeting encompasses the fundamental characteristics and principles that underlie the budgeting process. Budgeting is a financial planning and control tool used by individuals, businesses, governments, and organizations to manage their finances effectively. Here are the key aspects that describe the nature of budgeting:

1. **Planning and Forecasting**: Budgeting is primarily a planning process that involves projecting future income and expenses based on historical data, current trends, and expected changes in the economic environment. It helps entities anticipate their financial needs and allocate resources accordingly.
2. **Financial Discipline**: Budgeting encourages financial discipline by setting financial targets and constraints. It requires individuals or organizations to adhere to the planned budget and control spending within the predetermined limits.
3. **Goal-Oriented**: Budgets are designed to align with specific financial and strategic objectives. They establish measurable targets for revenue generation, cost containment, profit margins, and other key performance indicators.
4. **Resource Allocation**: Budgeting involves allocating financial resources to various activities, projects, departments, or functions based on their importance and expected contributions to the overall objectives
5. **Performance Evaluation**: Budgets serve as a benchmark for evaluating performance. By comparing actual financial results with the budgeted figures, entities can assess their performance, identify variances, and make informed decisions.
6. **Decision Support**: Budgets provide valuable information for decision-making processes. They help prioritize projects, investments, and resource utilization, enabling informed choices to achieve the best possible outcomes.
7. **Flexibility and Adaptability**: While budgets are often created for a fixed time frame, they should be flexible enough to accommodate changes in circumstances, priorities, or economic conditions. Regular reviews and adjustments are necessary to maintain relevance and effectiveness.
8. **Communication and Coordination**: Budgeting facilitates communication and coordination among different departments or stakeholders within an organization. It ensures everyone is aware of financial goals and fosters collaboration in achieving them.
9. **Control Mechanism**: Budgeting acts as a control mechanism by comparing actual financial results with the budgeted figures. Variances are analyzed, and appropriate actions are taken to correct deviations and achieve financial targets.
10. **Long-Term Planning**: In addition to short-term planning, budgeting often involves long-term financial planning and investment decisions, ensuring sustainability and growth over an extended period.
11. **Accountability and Responsibility**: Budgets assign financial accountability to different individuals or departments, making them responsible for managing and controlling their allocated resources effectively.
12. **Cyclical Process**: Budgeting is typically an ongoing and cyclical process, involving the creation, execution, monitoring, and revision of budgets at regular intervals.

    Overall, the nature of budgeting revolves around prudent financial management, goal-setting, decision-making, and control. It provides a structured framework for managing finances, guiding operations, and achieving financial stability and success for individuals and organizations alike.

Objectives of budgets

The objectives of budgets refer to the specific goals and purposes that organizations or individuals aim to achieve through the budgeting process. Budgets serve as powerful financial tools with multiple objectives, all contributing to effective financial management and overall success. Some common objectives of budgets include:

1. **Financial Planning**: One of the primary objectives of budgets is to plan for future financial activities. Budgets help set financial goals, anticipate income and expenses, and determine how resources will be allocated to achieve desired outcomes.
2. **Resource Allocation**: Budgets allocate financial resources to different departments, projects, or activities based on their priorities and expected contributions to the overall objectives. This ensures that resources are used efficiently and effectively.
3. **Goal Setting**: Budgets establish specific and measurable financial targets, such as revenue targets, cost reduction goals, profit margins, or return on investment (ROI) objectives. These goals provide a clear direction for the organization's financial activities.
4. **Performance Evaluation**: Budgets serve as benchmarks for evaluating performance. By comparing actual financial results with the budgeted figures, organizations can assess their performance and identify areas for improvement.
5. **Expense Control**: Budgets help control spending by setting limits on various expenses. This promotes financial discipline and prevents unnecessary or wasteful expenditures.
6. **Cash Flow Management**: Budgets facilitate effective cash flow management by estimating when and how much money will be coming in and going out. This allows organizations to plan for any potential cash flow gaps and make necessary adjustments.
7. **Decision Support**: Budgets provide critical information for decision-making processes. They help prioritize projects, investments, and resource utilization based on their financial impact and alignment with strategic goals.
8. **Risk Management**: Budgets assist in identifying potential financial risks and uncertainties. By having a clear financial plan, organizations can better prepare for unexpected events and mitigate risks.
9. **Motivation and Accountability**: Budgets can serve as motivational tools for individuals and departments. They create a sense of ownership and accountability for managing and achieving financial targets.
10. **Long-Term Sustainability**: Budgets often include long-term financial planning, ensuring that organizations maintain financial stability and sustainability over extended periods.
11. **Communication and Coordination**: Budgets facilitate communication and coordination among different departments and stakeholders. Everyone is aware of financial goals, and this fosters collaboration in achieving them.
12. **Compliance and Governance**: Budgets help ensure compliance with financial regulations and governance principles. They provide a framework for financial reporting and transparency.

By addressing these various objectives, budgets play a crucial role in guiding financial activities, enabling effective decision-making, and ultimately contributing to the success and growth of organizations and individuals.

Objectives of budgeting

The objectives of budgeting refer to the specific goals and purposes that individuals, businesses, and organizations aim to achieve through the budgeting process. Budgets serve as crucial financial tools to guide planning, resource allocation, and performance evaluation. The main objectives of budgeting include:

1. **Financial Planning**: Budgeting is primarily used for financial planning, where individuals or organizations set specific targets for income and expenses over a defined period.
2. **Goal Setting**: Budgets establish clear financial goals and objectives, helping to focus efforts and resources on achieving these targets.
3. **Resource Allocation**: Budgets allocate financial resources to different departments, projects, or activities based on their importance and alignment with strategic objectives.
4. **Expense Control**: Budgets set limits on various expenses, promoting financial discipline and preventing overspending.
5. **Performance Evaluation**: By comparing actual financial results with the budgeted figures, organizations can assess their performance and identify areas for improvement.
6. **Decision Support**: Budgets provide essential financial information for decision-making processes. They assist in evaluating the financial impact of various choices and alternatives.

7. **Cash Flow Management**: Budgeting helps manage cash flow effectively by forecasting inflows and outflows, allowing for better planning and resource utilization.
8. **Motivation and Accountability**: Budgets create a sense of ownership and accountability for managing and achieving financial targets. Individuals and departments are motivated to work towards meeting the budgeted goals.
9. **Risk Identification and Mitigation**: Budgeting helps identify potential financial risks and uncertainties, allowing organizations to take necessary precautions and develop contingency plans.
10. **Long-Term Planning**: Budgets often include long-term financial planning, promoting financial sustainability and ensuring that long-range objectives are considered.
11. **Communication and Coordination**: Budgets facilitate communication and coordination among different departments and stakeholders. Everyone is aware of financial goals, fostering collaboration in achieving them.
12. **Benchmarking**: Budgets act as benchmarks against which actual performance is measured, providing insights into areas where improvements are needed.
13. **Strategic Alignment**: Budgets help align financial activities with the overall strategic objectives of the organization, ensuring that financial resources support the broader mission.
14. **Compliance and Transparency**: Budgeting supports financial compliance and transparency by providing a structured approach to financial planning and reporting.
15. **Improved Financial Control**: By tracking actual performance against the budget, organizations can exercise better financial control, making adjustments when necessary to stay on course.
16. **Resource Optimization**: Budgets help optimize the use of available resources, avoiding wasteful spending and ensuring efficient resource utilization.
17. **Crisis Preparedness**: Having a budget in place enables organizations to be better prepared for financial crises or unexpected events, as they have a clearer picture of their financial situation.
18. **Performance Measurement and Feedback**: Budgets provide a basis for evaluating the effectiveness of financial decisions and strategies. Feedback from budget performance informs future planning and adjustments.

Overall, the objectives of budgeting are multifaceted, and they contribute to effective financial management, informed decision-making, and the overall success and sustainability of individuals, businesses, and organizations.

Advantages of budget

Budgets offer numerous advantages for individuals, businesses, and organizations. These advantages help enhance financial management, decision-making, and overall performance. Some of the key advantages of budgeting include:

1. **Financial Planning**: Budgets provide a structured framework for financial planning, enabling individuals and organizations to set specific goals, anticipate income, and allocate resources effectively.
2. **Goal Setting and Focus**: Budgets establish clear financial goals and objectives, helping to align efforts and resources towards achieving those targets. This focus improves the likelihood of success.
3. **Resource Allocation**: Budgets allocate resources based on priorities, ensuring that funds are distributed to areas or projects that contribute the most to the organization's overall objectives.
4. **Expense Control**: Budgets help control spending by setting limits on various expenses. This promotes financial discipline and prevents overspending.
5. **Performance Evaluation**: By comparing actual financial results with the budgeted figures, organizations can assess their performance and identify areas that need improvement.
6. **Decision Support**: Budgets provide essential financial information for decision-making processes. They assist in evaluating the financial impact of various choices and alternatives.
7. **Cash Flow Management**: Budgets aid in managing cash flow effectively by forecasting inflows and outflows, allowing organizations to plan for and avoid potential cash flow problems.
8. **Motivation and Accountability**: Budgets create a sense of ownership and accountability for managing and achieving financial targets. Individuals and departments are motivated to work towards meeting the budgeted goals.
9. **Risk Identification and Mitigation**: Budgeting helps identify potential financial risks and uncertainties, allowing organizations to take necessary precautions and develop contingency plans.
10. **Long-Term Planning**: Budgets often involve long-term financial planning, promoting financial sustainability and ensuring that long-range objectives are considered.

11. **Communication and Coordination**: Budgets facilitate communication and coordination among different departments and stakeholders. Everyone is aware of financial goals, fostering collaboration in achieving them.
12. **Performance Measurement and Feedback**: Budgets provide a basis for evaluating the effectiveness of financial decisions and strategies. Feedback from budget performance informs future planning and adjustments.
13. **Strategic Alignment**: Budgets help align financial activities with the overall strategic objectives of the organization, ensuring that financial resources support the broader mission.
14. **Compliance and Transparency**: Budgeting supports financial compliance and transparency by providing a structured approach to financial planning and reporting.
15. **Improved Financial Control**: By tracking actual performance against the budget, organizations can exercise better financial control, making adjustments when necessary to stay on course.

In summary, budgeting offers a wide range of advantages that promote effective financial management, strategic decision-making, and overall organizational success. By providing a roadmap for financial activities and resource allocation, budgets play a vital role in guiding the growth and sustainability of individuals and businesses alike.

Limitations of budget

Despite the numerous advantages, budgets also have certain limitations and challenges that can impact their effectiveness and relevance. Some of the key limitations of budgets include:

1. **Rigid Nature**: Traditional budgets are often based on fixed assumptions and historical data, making them inflexible to adapt to rapidly changing economic conditions or unforeseen events.
2. **Time and Resources**: Creating and managing budgets can be time-consuming and resource-intensive, especially for complex organizations or projects.
3. **Uncertain Predictions**: Budgets rely on assumptions and forecasts, which may not always accurately predict future financial conditions or market trends.
4. **Inaccuracies:** Budgets can be subject to errors or biases during the planning phase, leading to inaccurate projections and outcomes.
5. **Lack of Flexibility**: Some budgets may lack the ability to accommodate changes in priorities or reallocate resources when needed, hindering agility and responsiveness.
6. **Motivational Challenges**: Budgets based on unrealistic targets or inadequate resources may demotivate employees and departments, leading to a focus on meeting budget numbers rather than achieving strategic objectives.
7. **Incentive Misalignment**: When individual performance evaluations are tied solely to budget compliance, it may encourage budget padding or neglecting long-term goals.
8. **Short-Term Focus**: Budgets often focus on short-term results, potentially neglecting important long-term investments or strategic initiatives.
9. **Zero-Based Budgeting Complexity**: While zero-based budgeting offers benefits in cost control, the process can be complex and time-consuming to implement.
10. **Budgetary Slack**: Managers may intentionally set lower revenue targets and higher expense estimates than they expect to achieve, creating budgetary slack to increase the likelihood of meeting budget goals.
11. **Competition for Resources**: In organizations with multiple departments, there might be competition for limited resources, leading to conflicts and suboptimal resource allocation.
12. **Lack of Collaboration**: In some cases, the budgeting process may not involve all relevant stakeholders, leading to a lack of buy-in and commitment from those responsible for budget execution.
13. **Focus on Quantifiable Measures Only**: Budgets often emphasize easily quantifiable financial measures, potentially overlooking non-financial aspects that are also critical to an organization's success.
14. **Budget Variance Interpretation**: Significant variances between actual and budgeted figures may require thorough analysis to determine whether they result from operational inefficiencies or external factors.
15. **Neglecting External Factors**: Budgets may not fully account for external factors beyond the organization's control, such as changes in market conditions, industry trends, or government policies.

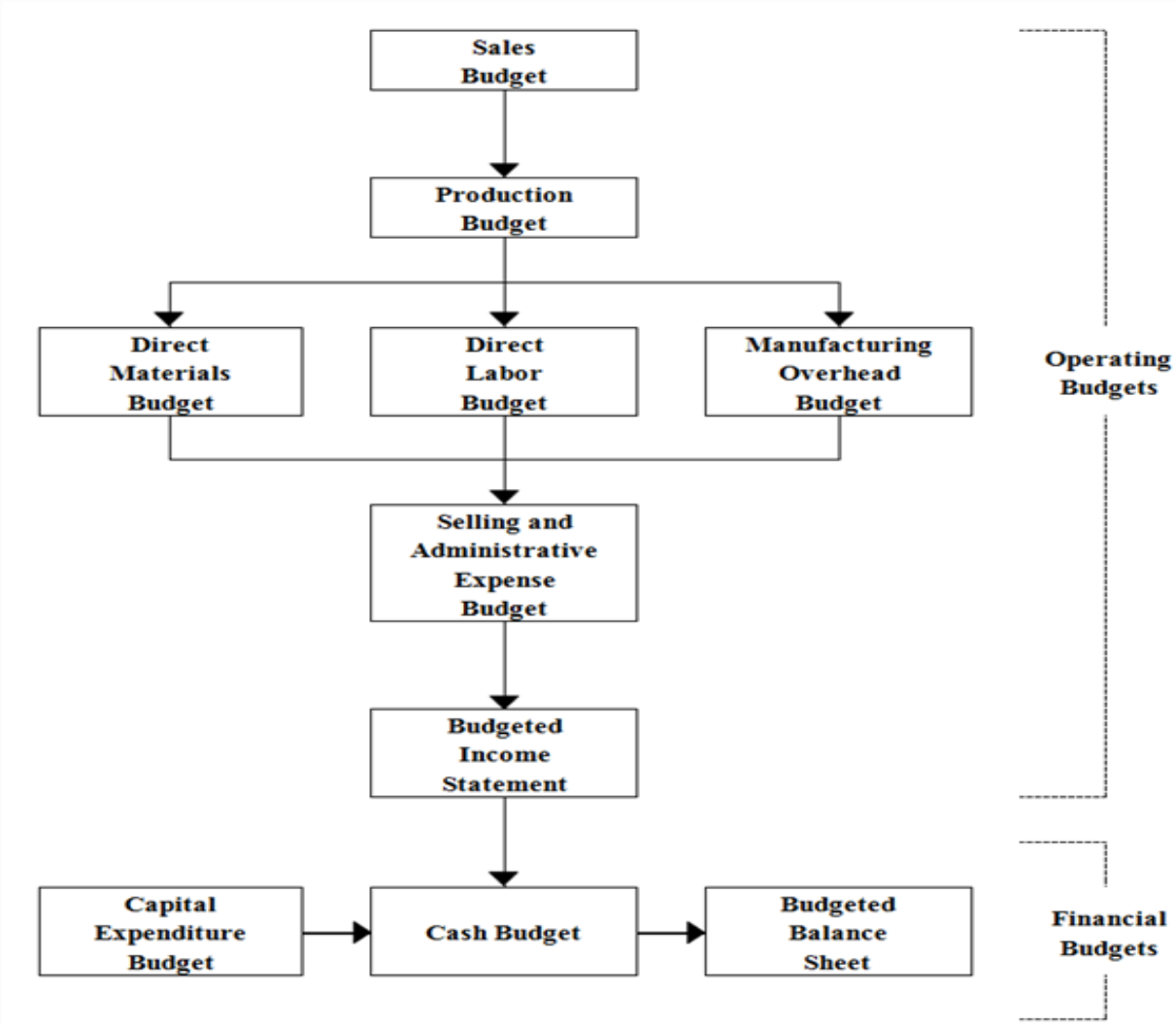
To address these limitations, organizations can adopt flexible budgeting approaches, use rolling budgets, and incorporate continuous planning and forecasting techniques. Emphasizing a more collaborative and inclusive budgeting process can also enhance the relevance and ownership of budgets among employees and stakeholders.

Budget coordination as a tool of management.

Ans. Budget coordination is a management technique that involves aligning and integrating various budgets

within an organization to achieve overall organizational objectives efficiently and effectively. It ensures that individual departmental or functional budgets are harmonized and synchronized with the broader organizational goals. Budget coordination serves as a tool for management by facilitating collaboration, communication, and resource allocation across different departments or units. Here's how budget coordination functions as a tool of management:

1. **Alignment with Strategic Goals:** Budget coordination ensures that the budgetary goals of individual departments or units are in line with the overarching strategic goals of the organization. This alignment helps direct efforts toward achieving the organization's long-term vision.



2.**Resource Allocation:** Different departments or units within an organization require resources to carry out their activities. Budget coordination helps allocate resources in a way that supports the highest-priority initiatives and minimizes resource conflicts.

3.**Optimal Utilization:** Budget coordination prevents overallocation or underutilization of resources by distributing them strategically across departments. It prevents resource wastage and ensures that resources are put to the best possible use.

4**.Reduced Duplication:** In organizations with multiple departments or units, there's a risk of duplication of efforts and resources. Budget coordination helps identify areas where duplication might occur and facilitates a more efficient use of resources.

5**.Communication:** Budget coordination encourages open communication and information sharing among departments. It helps create a common understanding of each department's goals, challenges, and resource requirements.

6.**Prioritization:** Budget coordination helps prioritize projects, initiatives, and activities based on their contribution to the organization's overall objectives. It ensures that resources are allocated to high-priority areas.
7.**Conflict Resolution:** Conflicts over resource allocation or goals can arise between departments. Budget coordination provides a structured framework for resolving conflicts and finding mutually beneficial solutions.
8.**Collaboration:** Budget coordination promotes collaboration and synergy among departments. Departments are more likely to work together when they understand how their efforts contribute to the organization's success.
9.**Performance Evaluation:** Coordinated budgets enable performance evaluation on a broader scale. By comparing actual results with coordinated budget targets, management can assess how well the organization as a whole is progressing toward its goals.
10.**Adaptability:** As circumstances change, budgets may need adjustments. Budget coordination allows for a coordinated response to changes that affect multiple departments or the organization as a whole.
11.**Strategic Decision-Making:** Budget coordination provides a holistic view of the organization's financial resources and activities. This aids management in making strategic decisions that consider the interdependencies between departments.
12.**Efficiency and Effectiveness:** By eliminating redundant efforts and optimizing resource allocation, budget coordination enhances the overall efficiency and effectiveness of the organization.
13**.Performance Measurement:** Coordinated budgets facilitate consistent performance measurement across departments. This helps identify areas of success and areas that require improvement.
14.**Cultural Alignment:** Budget coordination can help align departmental cultures with the organization's values and goals. This alignment contributes to aunified organizational culture.
15.**Risk Management:** Budget coordination helps identify potential risks that affect the organization as a whole. This allows management to take proactive measures to mitigate these risks.
In essence, budget coordination is a valuable tool that enables management to oversee the financial activities of an organization in a comprehensive and strategic manner. It fosters collaboration, maximizes resource utilization, and ensures that all departments work together to achieve common goals.

Types of Budgets:

Budgets on the Basis of Time are as follows:-
(1**) Long term Budget:** Generally it is prepared for more than 5 yr. It is related to fixed investment like extension, development, re-org & research for the enlargement of economic activities, who make enables the management to arrange the required capital well in time reducing cost of capital and to maintain the speed of operation activities in business without any obstacles.
(2) **Short Term Budget:** It is generally prepared for the period of 1 yr. Main objective of this budget is to maintain the existing speed of operating cycle continuously and regularly. The capital required for a yr. is known as working capital, find the sources of it and arrange them.
(3) **Very short term (Current Budget):** It is prepared for very short period, like monthly, quarterly or half-yearly object is to achieve the goal of short- term Budget. It is detail list of work related to production & supply which are to be carried out during the year. It is useful only for big business houses not for small business

Budgets on the basis of Flexibility.

Budgets on the basis of Flexibility are as follows:-
(1) Fixed Budget (Static): In this objective and target are fixed. It is feasible to prepare only when estimation regarding production and sales can be made accurately and there is perfect certainty in the business activities and environment. In following condition this is suitable:-

- Business is not seasonal.
- No impact of external factors.
- Product demand is certain
- No Need of special labour or Materials

Merits	Demerits

a) Simple to prepare b) Less time consuming c) Advantage of economy. d) Easy to control e) Easy to follow-up f) Easy to forecast	a) Other factors do not constant. b) Impact of other on production c) Very difficult to change. d) Accurate estimate not possible. e) Not feasible.

(2) Flexible Budget: It is prepared for various capacity. It shows the volume of sales, cost and profit or loss which is possible at various level of production capacity. It also adjust the change which is essential due to change in business condition international external factors or busi circumstances main object to know the impact on profit at actual level of production capacity.

different method of preparing flexible Budget

The different method of preparing flexible Budget are as follow:

(1) Multi Activity Method:

- Cost divided into fixed, variable semi-variable.
- Each production activity level is shown in separate column.
- Enable the management to select the level of activity that provide max. profit.

Flexible Budget
(Normal Level of Activity: 80%)
Period ending.....

Particulars	Capacity		
	50%	80%	100%
1. Prime Cost :			
Direct Material	.....	.....	.....
Direct Labour	.....	.....	.....
Direct Expenses (if any)	.....	.....	.....
2. Variable Overheads :			
Maintenance and Repairs	.....	.....	.....
Indirect Labour	.....	.....	.....
Indirect Material	.....	.....	.....
3. Marginal Cost (1+2)	……	…….	……
4. Sales	….		
5. Contribution (4-3)	…..		
6. Fixed Cost :			
Production	…..	…..	…..
Administration	…….	……	…….
Selling & Distribution	…	……	…….
7. Profit/Loss (5-6)	….	…..	……

(2) Formula Method: (Budget Cost allowance method)

a) Fixed and variable cost at normal level is used.
b) Determine per unit variable cost by dividing total variable cost by output volume.
c) Multiply any level of output quantity with per unit variable cost & adding fixed cost to find total cost.

Profit margin can also be found when sales is given.

(3) Graphic Method:

a) Fixed, Variable, Total cost at OY-axis production unit at OX-axis.
b) Classify the production cost
c) Plot all cost on graph.

Differentiate between Fixed & Flexible Budget.

Basis	Fixed Budget	Flexible Budget
Nature	This budget remains unchanged and is the same without considering any change in business activity.	This budget is changed in the light of changed level of activity.
Assumption	This budget is prepared with the assumption that level of activity will remain unchanged.	This budget is prepared at various levels of activity.
Cost Classification	Costs are not classified according to their nature or behaviour.	Costs are classified according to their nature i.e. fixed, variable and semi-variable.
Comparison	When actual output is different, the comparison between actual and budgeted performance is not possible.	Comparison is made as actual figures are compared with the same budgeted level.
Forecast	Forecast of the results is difficult.	Forecast is easy as budget is pre- pared for various levels of activity.
Determination of Costs	It is difficult to determine the cost when actual level of performance differs from bugeted level.	Costs at various levels of activity can easily be determined.

According to C.I.M.A. – The Master Budget is the summary budget incorporating its component functional budget.
According to Traditional Approach: P&L A/c and Balance Sheet both are known as Master Budget that is prepared on the basis of financial statement of the previous year and future estimates.
According to Modern Approach: Master Budget all the functional bd in a summarised form. It include all the key figure related to org.

Master Budget

Period Normal Capacity Budgeted Capacity

	ProductA Rs.	*ProductB* Rs.	*Total* Rs.
Sales			
Less: Cost of Sales			
Direct Material			
Direct Labour			
Factory Overheads			
Add: Opening Stock			
Less: Closing Stock			
Gross Profit			
Administrative Cost			
Selling & Distribution Cost			
Net Profit			

Assets:			
Fixed Assets (Net)			
Total Capital Employed Ratios:			
Profit/Capital			
Employed			
Sales/Capital Employed			
Profit/Turnover			
Current Ratio			
Liquidity Ratio			
Appropriations from Profit Dividends			
Reserves Taxes			
Balance of Profit or Loss			

Practical Problems:

Q.1 Sachin Ltd. Submits the following data for the year ending 31 March, 2019:

Fixed Expenses	**(Rs. In lakh)**
Wages and salaries	8.4
Rent ,Rates and Taxes	5.6
Depreciation etc.	7.0
Sundry Administrative Expenses	8.9
Semi Variable Expenses at 50% capacity	
Repair and Maintenance	2.5
Indirect Labour	9.9
Salaries of Sales Deptt.	2.9
Sundry Administrative Expenses	2.6
Variable Expenses at 50% Capacity	
Direct Material	24.0
Direct Wages	25.6
Other Expenses	3.8

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 20% between 80% and 100% of capacity. Sales at various levels are:

50% capacity Rs.100 lakh 75% capacity Rs.150 lakh
60% capacity Rs.120 lakh 90% capacity Rs.180 lakh

Prepare a flexible budget for the year and forecast profit at 60%, 75% and 90% capacity.

Solution: Flexible Budget for the year ended 31st March, 2019. (Rs. In lakh)

Elements of Cost	Level of Activity			
	50%	60%	70%	90%
	Rs.	Rs.	Rs.	Rs.
A. Fixed Expenses:				
Wages & Salaries	8.40	8.40	8.40	8.40
Rent, Rates and Taxes	5.60	5.60	5.60	5.60
Depreciation	7.00	7.00	7.00	7.00
Administrative Expenses	8.90	8.90	8.90	8.90
	29.90	29.90	29.90	29.90
B. Semi Variables:				
Repair and Maintenance	2.50	2.50	2.75	3.00
Indirect Labour	9.90	9.90	10.89	11.88
. Salaries of Sales Deptt.	2.90	2.90	3.19	3.48
Sundry Administrative Expenses	2.60	2.60	2.86	3.12

	17.90	17.90	19.69	21.48
C. Variable Expenses:				
	24.00	28.80	36.00	43.20
Material	25.60	30.72	38.40	46.08
Labour	3.80	4.56	5.70	6.84
Other Expenses				
	53.40	64.08	80.10	96.12
	101.20	111.88	129.69	147.50
Total Cost of Production (A+B+C)	(1.20)	8.12	20.31	32.50
Profit or Loss (B/F)				
	100.00	120.00	150.00	180.00
Sales (Given)				

Q.2 Subodh school has a total of 300 students consisting of 5 sections with 60 students per sections. The school plans a picnic around the city during the weekend to places such as the zoo, the amusement park the planetarium etc. A private transport operator has come forward to lease out the buses for taking the students. Each bus will have a maximum capacity of 50 excluding 4 seats reserved for the Teachers accompanying the students. The school will employ four teachers for each bus playing them and allowance of Rs. 250 per teacher. It will also lease out the required number of buses. the following are the other cost estimates:

	Cost per Student
Breakfast	Rs.25
Lunch	Rs.50
Tea	Rs.15
Entrance fee at zoo	Rs.10

Rent Rs. 3,250 per bus
Special permit fee Rs. 250 per bus
Block entrance fee at the planetarium Rs. 2,500
Prizes to students for games Rs. 2,500
No costs are incurred in respect of the accompanying teachers expect the allowance of Rs. 250 per teacher.

Prepare a flexible budget estimating the total cost for the levels of 6o,120, 180, 240 and 300 students and showing each item of cost separately. Also compare the average cost for student at these levels.

Solution:

Items	**Levels of Students**				
	60	**120**	**180**	**240**	**300**
	Rs.	Rs.	Rs.	Rs.	Rs.
A. Variable Costs:					
Breakfast @ Rs.25	1,500	3,000	4,500	6,000	7,500
Lunch @ Rs.50	3,000	6,000	9,000	12,000	15,000
Tea @ Rs.15	900	1,800	2,700	3,600	4,500
Entrance fee at zoo @ Rs.10	600	1,200	1,800	2,400	3,000
	6,000	12,000	18,000	24,000	30,000
B. Semi Variable Costs:					
Bus Rent	6,500	9,750	13,000	16,250	19,500
Special Permit Fee	500	750	1,000	1,250	1,500
Allowance for Teachers	2,000	3,000	4,000	5,000	6,000
	9,000	13,500	18,000	22,500	27,000
C. Fixed Costs:					
Block Entrance fee	2,500	2,500	2,500	2,500	2,500
Prizes to Students	2,500	2,500	2,500	2,500	2,500
	5,000	5,000	5,000	5,000	5,000

D. Total Cost (A+B+C):	20,000	30,500	41,000	51,500	62,000
Cost Per Student	333	254	228	215	207

Q.3 Radha Limited produces two types of fans, Deluxe and Janta. From the following information, prepare it's production budget for the year 2019:

		I Quarter	II Quarter	III Quarter	IV Quarter
Sales	Deluxe	2,000	1,500	1,000	500
	Janta	10,000	8,000	6,000	2,000
Budgeted Closing stock for 2019	Deluxe	500	400	200	500
	Janta	2,000	1,500	1,000	2,000
Opening stock for 2019	Deluxe	500			
	Janta	2,000			

Solution: **Production Budget** (for the year 2019)

(Production in Units)

Particular	I Quarter		II Quarter		III Quarter		IV Quarter	
	Deluxe	Janta	Deluxe	Janta	Deluxe	Janta	Deluxe	Janta
Sales	2,000	10,000	1,500	8,000	1,000	6,000	500	2,000
Add: Closing Stock	500	2,000	400	1,500	200	1,000	500	2,000
	2,500	12,000	1,900	9,500	1,200	7,000	1,000	4,000
Less: Opening Stock	500	2,000	500	2,000	400	1,500	200	1,000
Estimates of Production	2,000	10,000	1,400	7,500	800	5,500	800	3,000

Q.4 A Glass manufacturing company requires you to calculate and present the budget for the next year from the following information:

Sales : Toughened glasses	Rs.30,00,000
Bent toughened glasses	Rs.50,00,000
Direct material cost	60% of sales
Direct Wages	20 workers @ 1,500 p.m.
Factory Overheads & Indirect Labour :	
Works Manager	Rs. 5,000 per month
Foreman	Rs. 4,000 per month
Stores and spares	2.5% on sales
Depreciation on Machinery	Rs. 1,26,000
Light and Power	Rs.50,000
Repairs and Maintenance	Rs. 80,000
Others Sundries	10% on direct wages
Admn. Selling and Distribution Exps.	Rs. 1,40,000 per year

Solution:

Master Budget or the period ending……

Particulars	Rs.	Rs.
Sales (as per sales budget):		
Toughened glasses….. Nos. @		30,00,000
Bent toughened glasses….. Nos. @		50,00,000
		80,00,000
Less: Cost of Sales		
Direct Material: (60% of sales)	48,00,000	
Direct Wages (20 × 1,500 × 12)	3,60,000	

	Prime Cost	51,60,000	
Factory Overheads:(Variables)	**Rs.**		
Stores and spares (2.5% on sales)	2,00,000		
Light and Power	50,000		
Repairs and Maintenance	80,000	3,30,000	
Fixed:			
Works Manager's Salary	60,000		
Foreman's Salary	48,000		
Depreciation on Machinery	1,26,000		
Others Sundries	36,000	2,70,000	
	Works Cost		57,60,000
	Gross Profit (A-B)		22,40,000
Less: Admn. Selling and Distribution Exps.			1,40,000
	Net Profit		21,00,000

Q.5 Estimates cash requirements of Gold Coin Apple Juice Co. for June, 2019 on the basis of the following data :

(a) Sales : February, 2019 Rs. 25,000
March, 2019 Rs. 20,000
April to June, 2019 Rs.30,000 per month
Roughly half the sales are for cash, 90% of Credit Sales are collected in the month following the sales and the balance one month after.

(b) Apples are always bought for cash to avail of the cash discount of 5%. The purchase budget for the second quarter (April-June) was 15,000 baskets per month at Rs. 1 per basket.

(c) Wages and Salaries for second quarter were budgeted at Rs. 5,000 per month.

(d) Manufacturing and other expenses budgeted for the quarter are: Cash Expenses Rs. 4,500; Depreciation Rs.7,500; Selling Expenses Rs. 3,000; Administrative Expenses (in April and May Only) Rs. 2,000.

Solution: **Cash Budget for the quarter ending June, 2019**

Particulars	April	May	June
	Rs.	**Rs.**	**Rs.**
Cash Receipts :			
Balance b/d	**-**	2,500	9,250
Cash Sales (1/2 of sales)	15,000	15,000	15,000
Cash collected from Debtors	10,250	14,500	15,000
Total	25,250	32,000	39,250
Cash Disbursements:			
Cash Purchases (Less: Cash Discount)	14,250	14,250	14,250
Wages and Salaries	5,000	5,000	5,000
Cash Expenses	1,500	1,500	1,500
Selling Expenses	1,000	1,000	1,000
Administration Expenses	1,000	1,000	**-s**

Chapter- 10 Standard Costing

Standard costing is a management accounting technique used by businesses to plan, control, and analyze their costs and performance. It involves establishing predetermined standards for various cost components (such as materials, labor, and overhead) and then comparing the actual costs incurred with these predetermined standards. The purpose of standard costing is to provide a benchmark for evaluating performance, identifying variances, and making informed decisions to improve efficiency and profitability.

Advantages of standard costing include:

1. Cost Control: Standard costing helps in controlling costs by providing a clear benchmark against which actual costs can be compared. When actual costs deviate from the standards, it alerts management to potential issues and allows for corrective action.

2. Performance Evaluation: It enables businesses to assess the performance of different departments, products, or processes by analyzing the variances between actual and standard costs. This information can be used to reward high-performing individuals or units and address underperforming ones.

3. Budgeting and Planning: Standard costing is a useful tool for budgeting and forecasting. It helps in setting realistic cost expectations and can serve as a basis for creating budgets and financial plans.

4. Decision-Making: When variances occur, standard costing provides valuable insights into the causes of these variances. This information can guide decision-making, such as whether to adjust production processes, negotiate with suppliers, or revise pricing strategies

5. Cost Estimation: Standard costing can aid in estimating costs for new products or projects by using the predetermined standards as a starting point. This can be especially helpful in pricing decisions and contract negotiations.

6. Continuous Improvement: By regularly analyzing variances and identifying areas where actual performance deviates from the standards, businesses can implement continuous improvement initiatives to reduce costs and enhance efficiency.

7. Accountability: Standard costing promotes accountability among employees and managers. When deviations occur, it becomes easier to pinpoint responsibility and take corrective action.

8. Performance Benchmarking: Companies can compare their performance to industry benchmarks or competitors using standard costing data, which can help identify areas where they are lagging behind or excelling.

9. Cost Transparency: Standard costing provides a transparent view of cost structures, allowing management to understand the composition of costs in various activities or products. This transparency can lead to better cost management.

10. Incentive Alignment: In some cases, standard costing can be linked to incentive systems, providing employees with financial incentives to meet or exceed cost targets.

It's important to note that while standard costing offers several advantages, it also has limitations and may not be suitable for all types of businesses or industries. Factors such as rapidly changing environments, unique or custom products, and highly variable production processes may make standard costing less effective. Companies should carefully consider their specific circumstances and needs when implementing standard

costing systems.

Limitation of Standard Costing:

1. Lack of Flexibility: Standard costing relies on predetermined standards for costs, which may not always reflect changing economic conditions or fluctuations in resource prices. It can be inflexible when dealing with unexpected variations.

2. Complexity in Setting Standards: Setting accurate and realistic standards can be a complex and time-consuming process. It requires continuous monitoring and adjustments to reflect changes in production methods, materials, and other factors.

3. Ignores External Factors: Standard costing often overlooks external factors such as market conditions, competition, and changes in customer demand. These external factors can significantly affect costs and profits.

4. Variance Analysis Can Be Misleading: Standard costing relies heavily on variance analysis to identify cost differences between actual and standard costs. However, variance analysis can be misleading if variances are not thoroughly investigated or if they are not properly categorized.

5. Inefficient in Complex and Customized Production: Standard costing is most effective in industries with standardized, repetitive production processes. In more complex and customized production environments, it may not provide accurate cost information.

6. May Encourage Suboptimal Behavior: In some cases, employees may focus too much on meeting or beating the standards, even if it means sacrificing quality or other important aspects of production. This can lead to suboptimal decisions and outcomes.

7. Ignores Non-Financial Metrics: Standard costing primarily focuses on financial metrics and cost-related variances. It may not provide a complete picture of overall performance, especially in areas like quality, customer satisfaction, and employee morale.

8. Overhead Allocation Challenges: Allocating overhead costs to products or activities can be challenging in standard costing, as there are different methods available (e.g., direct labor hours, machine hours). Choosing the wrong allocation method can result in inaccurate cost assignments.

9. Maintenance Costs: Maintaining an up-to-date system of standard costing can be expensive and time-consuming. This includes continuously updating standards, monitoring actual costs, and conducting variance analysis.

10. Not Suitable for Rapidly Changing Environments: In industries where conditions change rapidly, such as technology or fashion, standard costing may not be suitable because standards may quickly become outdated.

11. Inaccurate Costing for Low-Volume or Unique Products: For products with low production volumes or unique characteristics, standard costing may not provide an accurate representation of costs, as it relies on averages and predetermined norms.

12. Behavioral Issues: There can be behavioral issues associated with standard costing. Employees might resist changes in standards, leading to resistance and disputes within the organization.

Difference between Standard Cost and Estimated Cost:

Purpose	Standard Cost	Estimated Cost
Definition	Standard cost represents the expected cost of producing a product or providing a service based on predetermined benchmarks or norms. These benchmarks are typically established in advance and are used for cost control and performance evaluation.	Estimated cost, on the other hand, is an approximation of the cost for a specific project, product, or service, often based on a detailed analysis of current and anticipated expenses. Estimated costs can be used for budgeting, pricing, and decision-making.
Purpose	The primary purpose of standard cost is to provide a basis for cost control and performance measurement. It allows a company to compare actual costs with the predefined standards to identify cost variances and take corrective actions.	Estimated cost is used for various planning and decision-making purposes, such as budgeting, project evaluation, setting selling prices, and assessing the feasibility of business endeavors. It serves as a basis for future financial planning.
Timeframe	Standard costs are usually established in advance and remain relatively constant over a specific period (e.g., a fiscal year). They are intended to provide a stable reference point for comparison with actual costs.	Estimated costs are developed on a case-by-case basis and can change as new information becomes available. They are often based on current market conditions and specific project or product details.
Flexibility	Standard costs are generally inflexible and do not change frequently. They serve as a benchmark for a predefined period and are adjusted only when there are significant changes in production processes or material costs.	Estimated costs are more flexible and can be adjusted as the project or situation evolves. They are dynamic and responsive to changing circumstances and new information.
Use in Decision-Making	Standard costs are primarily used for performance evaluation and control after production or operations have taken place. They are retrospective in nature.	Estimated costs are used for decision-making before a project or operation starts. They help in determining whether a project is financially viable or if a product can be profitably produced.
Comparison with Actual Costs	Standard costs are compared with actual costs to calculate and analyze variances. These variances help in identifying areas where actual costs deviate from the standards.	Estimated costs are not typically compared with actual costs, as they are used for planning and budgeting rather than performance evaluation.

Differentiate between Budgetary Control and Standard Costing:

Basis For Comparison	Standard Costing	Budgetary Control
Meaning	The costing method in which evaluation of performance and activity is done by making a comparison between actual and standard costs, is Standard Costing.	Budgetary Control is the system in which budgets are prepared and continuous comparisons are made between the actual and budgeted figures to achieve the desired result.
Basis	Determined on the basis of data related to production.	Budgets are prepared on the basis of management's plans.

Range	It is limited to cost details.	It includes cost and financial data
Concept	Unit Concept	Total Concept
Scope	Narrow	Wide
Reporting of Variances	Yes	No
Effect of temporary changes in conditions	The short term changes will not influence the standard costs.	The short term changes will be shown in the budgeted costs
Comparison	Actual costs and standard cost of actual output	Actual figures and budgeted figures

Classification of Variances: When standard cost is compared with the actual cost generally a difference is found between the to this differences is known as variances.
Variances can be classified on the following basis:

1. **Functional basis:** On the functional basis variances can be divided into classes variances related to cost factor and variances related to cells variances related to cost can again be classified on the basis of different elements of cost with material labour and overheads.
2. **Measurement basis:** On measurement basis variances can be classified as absolute variances and relative variances difference between the standard cost and actual cost in terms of money is known as absolute variance but if this differences is expressed as a percentage of the standard cost it is known as relative variances.
3. Result basis: On the result basis variances are classified as favorable and adverse variances. If the actual cost is less than the standard cost the difference is known as favorable variances and if the actual cost is more than the standard cost the differences is known as adverse variances favorable variances is also known as positive variances and adverse variances as negative variances.
4. Controllability basis: Variances can also be classified on the basis of controllability if the nature of variances is such that these can be controlled these are included in the controllable variances. On the contrary, the variances which cannot be controlled are known as uncontrollable variances.

Analysis of variances can be understood are as following.

Material Variances

- Material cost variances (MCV) = (SQ x SP) – (AQ x AP)

- Material price variables (MPV) = (SP-AP) x AQ
- Material usage variance (MUV) = (SQ – AQ) x SP
- Material Mix variables (MMV)
  (a) When total quantity of materials actually used is equal to the total standard quantity, formula will be: (SQM- AQM)× SP
  (b) When total quantity of materials actually used is not equal to the total standard quantity, formula will be:(RSQ-AQ)×SP
- Material yield variances (MYV) = (Ay – Sy) x SC
- Material Sub-usage variance (MSUV) = (SQ – RSQ) x SP

SQ = If total standard output quantity and total actual output quantity are different then new SQ will be calculated.

SQ= Standard qty. for particular material ÷Total standard output qty. × Total actual output qty.

RSQ = (Revised Standard Quantity) == If total standard input quantity and total actual input quantity are different then RSQ will be calculated.

RSQ= Standard qty. for particular material ÷Total standard input qty. × Total actual input qty.

SY = Standard yield for actual input mixture it can be find when AI ≠ SI

SY = Standard output ÷ Total standard input quantity ×Total actual input quantity
SC = Standard cost can always be found out as
SC = Total Standard Cost of standard mix ÷Standard Output
TSC = Total Standard Cost
TSO = Total Standard output (given)
SP = Standard price (given)
AQ = Actual quantity consumed (given)
AP = Actual price (given)
AY= Actual yield/output (given)
Verification
MCV = MUV + MPV
MUV = MMV + MYV
MYV = MSUV
MCV = MPV + MMV + MYV
MCV = MPV + MMV + MSUV

A. Labour Variance
- Labour Cost Variance (LCV) = (SH X SR) – (AH x AR)
- Labour efficiency variance (LEV) = (SH-NAH) X SR
- Labour Idle time variance (LIDV) = (IT x SR) (Negative always)
- Labour Rate variance (LRV) = (SR-AR) X AH
- Labour Mix variance (LMV)
  (a) When the totals of standard labour mix and actual labour mix are same ,then formula will be: (Standard time mix – Actual time mix)× **SR**
  (b) When the totals of standard labour mix and actual labour mix are different ,then formula will be: (Revised Standard time mix – Actual time mix)× **SR**

  Labour Yield variance (LYV) = (Ay – Sy) X SC

- Labour sub-efficiency variance (LSEV) = (SH – RSH) X SP

SH = Standard hour AH = Actual hour
SR = Standard Rate AR = Actual Rate
NAH = Net actual hour (Actual hour – Idle hour)
At every place when Idle hour is not given AH is used in place of NAH.
RSH = (Revised Standard hour)
= Standard time of particular labour ÷ Total standard time of all the labour × Total actual time
SY= Standard yield or Standard output
=Standard yield from standard mix ÷ Total standard time × Total actual time
AY = Actual yield or Actual output
SC = Standard cost
=Standard cost of standard mix ÷ Standard yield from standard mix
TSH = Total Standard hour
TNAH = Total Net Actual Hour
SH = Find When AO ≠ SO SH = AO/SO X SH (given)
RSH = Find when TNAH ≠ TSH RSH = TNAH / TSH x SH (given)
Sy = Find when TNAH ≠ TSH Sy = TNAH/TSH x SO (given)
SC = always find TSC/TSO
IT = Idle time

Practical Problems:

Q.1 In manufacturing a commodity the standard quantity of material was fixed at 10 kg. and standard price was fixed at Rs. 2 per kg., the actual quantity consumed came to be 12 kg. and the actual price paid was Rs. 1.90per kg.

You are required to calculate-

(a) Material Cost Variance;

(b) Material Price Variance;

(c) Material Usage Variance

Solution:

(a) Material Cost Variance = TSC-TAC
= (SQ x SP) - (AQ x AP)
= (10x2) - (12x1.90)
= 20 -22.8 or Rs.2.80 (A)

(b) Material Price Variance = (SP-AP) × AQ
= 12(2-1.90) × 12 or Rs.1.20(F)

(c) Material usage Variance = SP(SQ-AQ)
= 2(10-12)or Rs.4(A)

Verification:

MCV = MPV +MUV

Rs.2.80(A) = Rs.1.20(F)+Rs.4(A)

Q.2 The Standard metal Co. Ltd. Manufacture a single product, The standard mix of which is as follows:

Material X 60% at Rs.20

Material Y 40% at Rs.10

Normal loss in production is 20% of input. Due to shortage of material X, the standard mix was charged. Actual results for March, 1996 were as follows:

Material X - 105 kgs. at Rs.20 per kg.

Material Y- 95 kgs at Rs. 9 per kg.

Input 200 kgs.

Loss: 35 kgs.

165 kgs.

Calculate Material Variances.

Material Price Variance (MPV)= (SP-AP)AQ

Material X: = (20-20)×105= 0

Material Y : = (10-9)×95 = 95 (F) **= Rs. 95 (F)**

Material Usage Variance (MUV)=(SQ-AQ)×SP

Material X :(123.75-105) × 20 = Rs.375 (F)

Material Y: (82.5-95) ×10 = Rs. 125 (A) **= Rs. 250(F)**

SQ = Standard quantity of material for Actual output:

X = 60/ 80 × 165 =123.75kg**. ;** **Y** = 40 / 80 ×165 = 82.5 kg.

Material Mix Variance (MMV): (SQM-AQM)×SP

Material X : (120-105) ×20 = Rs.300 (F)

Material Y : (80-95) × 10 = Rs.150 (A) **= Rs.150 (F)**

Material Yield Variance (MYV): (AY-SY) ×SR

(MYV)=(165-160) ×20**= Rs.100 (F)**

SR = (120 ×20) + (80 ×10) ÷ 160= Rs.20 per kg.

Q.3 Find out the following material variances:
(i) Material cost variances; (ii) Material price variance;
(iii) Material usage variance; (iv) Material mix variance; (v) Material yield variance.
The information is as follows:

Standard Mix

Material X	120 kg. @ Rs. 5	= Rs. 600
Material Y	80 kg. @ Rs. 10	= Rs. 800
Input	200 kg.	Rs. 1,400
Loss.30%	60 kg.	
Output	140 kg.	

Actual Mix

Material X	112 kg. @ Rs. 5	= Rs. 560
Material Y	88 kg. @ Rs. 10	= Rs. 880
Input	200 kg.	Rs. 1,440
Loss.25%	50 kg.	
Output	150 kg.	

Solution:

(i) MCV = Total Standard Cost - Total Actual Cost or TSC-TAC,
MCV= Rs. 1,500- Rs. 1,440= Rs.60 (F)

Here, TSC means total standard cost of actual output, calculate as follows:

Per unit Standard Cost = Rs. 1,400 / 140= Rs.10

Standard Cost of Actual Output (150 kg.)= 150 kg.× Rs.10=Rs. 1,500

(ii) MPV = (SP-AP) ×AQ

For Material X = (5-5) ×112 = Nil
For Material Y= (10-10) ×88= Nil] **= Nil**

(iii) MUV = (SQ-AQ) ×SP

For Material X = (128.58-112) ×Rs.5 = Rs. 82.90 (F)
For Material Y= (85.71-88) ×Rs. 10 = Rs.22.90 (A)] **= Rs.60 (F)**

As given in the question, there is difference in standard quantity 140 kg. and actual output 150 kg. Therefore, SQ has been calculated for actual output as follows:

SQ = Actual output × $\frac{\text{Standard Qty. of particular material}}{\text{Total std. output of all the material}}$

SQ for Material X =150 × $\frac{120}{140}$ **=128.58 kg.**

SQ for Material Y =150 × $\frac{80}{140}$ **=85.71 kg.**

(iv) MMV = (SQM-AQM) × SP

For Material X = (120-112) ×Rs.5 = Rs.40 (F)
For Material Y= (80-88) ×Rs. 10 = Rs. 80 (A)] **=Rs. 40(A)**

MYV = (AY-SY) × SR
(150-140) × Rs.10= Rs.100 (F)

Q.4 Standard hours for manufacturing two products X and Y are 15 hours per unit and 20 hours per unit respectively. Both products require identical kind of labour and the standard wages rate per hour is Rs. 5. In the year 2019, 10,000 units of X and 15000 units of Y were manufactured. The total of labour hours actually paid were Rs.4,50,500 and the actual wages bill came to Rs. 23,00,000. This Included 12,000 hours paid for @ Rs. 7 per hour, 9,400 hours paid for @ rupees 7.50 per hour,the balance having been paid at Rs.5 per hour.200 labour hours were lost on account of machine breakdown and power failure. You are required to compute labour variances.

Solution:

(i) Labour Cost Variances= Total standard labour cost –Total Actual labour cost
Rs.22,50,000 - Rs.23,00,000 = Rs.50,000(A)

Calculation of Total Standard Labour Cost

(ii) Labour Rate Variance = (Standard Rate per hour – Actual Rate per hour) × Actual Time

For 12,000 labour hours = (Rs.5 – Rs.7) × 12000 hours = 24,000 (A)

For 9,400 labour hours = (Rs.5 – Rs.7.50) × 9,400 hours = 23,500 (A)
For remaining 4,29,100 labour hours = (Rs.5 – Rs.5) × 4,29,000 hours = Nil

47,500 (A)

(iii) Labour Efficiency Variance = (Standard time – Actual time) × Standard Rate per hour

= (4,50,000 – 4,50,300) × Rs.5 =Rs.1,500 (A)

Standard time is calculated as follows:

For Product X = 10,000 units × 15 hours = 1,50,000 hours

For Product Y = 15,000 units × 20 hours = 3,00,000 hours

Total Standard Time 4,50,000 hours

Actual time has been calculated as follows:

Actual time= 4,50,500 – 200 hours (loss) = 4,50,300 hours.

(iv) Labour Idle Time Variance = Abnormal Idle Time × Standard Rate per hour

200 hours × Rs. 5 = Rs.1,000 (A)

Q.5 The standard time and rate for manufacture of product 'X' are given below:

Standard hours per unit	15 hours
Standard rate	Rs. 2 per hour

The actual data and related information are as under:

Actual Production	1,000 units
Actual hours paid	15,400 hours
Actual rate	Rs.1.90 per hour
Labour hours lost on account of power failure	100 hours

Calculate: (i) Labour Cost Variance; (ii) Labour Efficiency Variance;
(iii) Labour Rate Variance; (iv) Labour Idle Time Variance.

Solution:

Standard hours for 1,000 units = 15 hours. × 1,000= 15,000 hours

(a) Labour Cost Variance = (Total standard labour cost – Total actual labour cost)
=(15,000 × Rs. 2) – (15,400 ×Rs. 1.90)=Rs.740 (F)

(b) Labour Rate Variance = (Standard Rate – Actual Rate) ×Actual Time
=(Rs. 2 – Rs. 1.90) ×15,400=Rs.1,540 (F)

(c) Labour Efficiency Variance = (Standard Time – Actual Time) × Standard Rate
= (15,000 – 15,300) × Rs.2=Rs.600 (A)

(d) Labour Idle Time Variance = Idle hours × Standard Rate
= 100 × Rs. 2= Rs.200 (A)

Q.6 In a factory 100 workers are engaged and the average rate of wages is Rs. 0.50 per hour. Standard working hour per week are 40 and the standard performance is 10 units per hour. During a week in February, wages paid for:
50 workers@ Rs. 0.50 per hour, 10 workers @ Rs. 0.70 per hour and 40 workers @ Rs.0.40 per hour. Actual output was 380 units in this week. The factory did not work for 5 hours due to break down of machinery. Calculate: (i) Labour cost variance (ii) labour rate variance
(iii) labour efficiency variance (iv) labour idle time variance.

Solution:

(a) Labour Cost Variance= Total standard labour cost – Total actual labour cost
= Rs.1,900 – Rs. 1,920= Rs.20 (A)

Here, Total standard labour cost has been calculated as follows:
Total standard time = 100 workers ×40 hours per week= 4,000
Hours in which 400 units are estimated to be produced.
Total standard time for Actual output= 4,000 hours ×380/400=3,800 hours.
Total standard labour cost= 3,800 hours × Rs.0.50= Rs. 1,900

Now, Total Actual labour cost has been calculated as follows:
50 workers @ Rs. 0.50= Rs.25 × 40 hours per week = Rs.1,000
10 workers @ Rs. 0.70= Rs.7 × 40 hours per week = Rs.280
40 workers @ Rs. 0.40= Rs.16 × 40 hours per week= Rs.640
Rs.1,920

(b) Labour Rate Variance= (Standard Rate – Actual Rate) × Actual Time
For 50 workers=(Rs.0.50 – Rs.0.50) × 2000= Rs. Nil
For 10 workers=(Rs.0.50 – Rs.0.70) × 400= Rs. 80 (A)
For 40 workers=(Rs.0.50 – Rs.0.40) × 1,600= Rs. 160 (F)
Rs. 80 (F)

(c) Labour Efficiency Variance= (Standard Time – Actual Time) × Standard Rate
=(3,800 – 3,500) × Rs. 0.50= Rs.150 (F)

(d) Labour Idle Time Variance= Idle hours × Standard Rate
=500 hours× Rs.0.50= Rs.250 (A)

Q.7 Given the following particulars compute the labour variance:

Labour	Standard			Actual		
	No. of persons	Rate	Hours Worked	No. of persons	Rate	Hours Worked
Grade I	100	Rs. 3.00	100	80	Rs. 2.50	120
Grade II	50	Rs. 5.00	100	60	Rs. 5.00	120
Grade III	40	Rs. 10.00	100	50	Rs. 8.00	120

Standard Production: 200 units ; and Actual Production 190 units.

(a) Labour cost variance= Total Standard labour cost – Total Actual labour cost
Here, Total Standard labour cost and Total Actual labour cost have been calculated as follows:

Total Standard Labour Cost
Grade I 100 × 100 × Rs.3 =30,000
Grade II 50 × 100 × Rs.5 =25,000
Grade III 40 × 100 × Rs.10 =40,000
Rs. 95,000

Total Actual Labour Cost
Grade I 80 × 120 × Rs.2.50=24,000
Grade II 60 × 120 × Rs.5.00=36,000
Grade III 50 × 120 × Rs.8.00=48,000
Rs. 1,08,000

Total standard labour cost for actual output = Rs.95,000 ×190/200= Rs.90,250
New, Labour Cost Variance= Rs.90,250 - Rs.1,08,000= Rs.17,750(A)

(b) Labour Rate Variance= (Standard Rate – Actual Rate) × Actual Time
For Grade I =(Rs.3 – Rs. 2.50) ×9,600=Rs. 4,800 (F)
For Grade II =(Rs.5 – Rs. 5) ×7,200=Rs. Nil

For Grade III =(Rs.10 – Rs.8) 6,000=Rs. 12,000 (F)

Rs. 16,800 (F)

Actual Time has been Calculated as follows:

No. of workers ×hours worked

Grade I 80 × 120 = 9,600 hours.

Grade II 60 × 120 =7,200 hours.

Grade III 50 × 120 =6,000 hours.

(c) Labour Efficiency Variance= (Standard Time – Actual Time) × Standard Rate

For Grade I = (Rs.9,500 – Rs.9,600) ×Rs.3=Rs. 300 (A)

For Grade II =(Rs.4,750 – Rs.7,200) ×Rs.5=Rs. 12,250 (A)

For Grade III =(Rs.3,800 – Rs.6,000) ×Rs.10=Rs. 22,000 (A)

Rs. 34,550(A)

Here, standard time for actual output has been calculated as follows:

Grade I = 100 × 100 ×190/200= 9,500 hours

Grade II = 50 × 100 ×190/200= 4,750 hours

Grade III = 40 × 100 ×190/200= 3,800 hours

(d) Labour Mix Variance = (Revised Standard Time – Actual Time) × Standard Rate

For Grade I = (Rs.12,000 – Rs.9,600) ×Rs.3=Rs. 7,200 (F)

For Grade II =(Rs.6,000 – Rs.7,200) ×Rs.5 = Rs. 6,000(A)

For Grade III =(Rs.4,800 – Rs.6,000) ×Rs.10=Rs. 12,000 (A)

Rs. 10.800 (A)

Total Standard Hours= 10,000+5,000+4,000=19,000 hours.

Total Actual Hours = 9,600+7,200+6,000 =22,800 hours.

Now Revised Standard Time:

Grade I 22,800 ×10,000/19,000=12,000 hours.

Grade II 22,800 ×5,000/19,000=6,000 hours.

Grade III 22,800 ×4,000/19,000=4,800 hours.

(e) Labour Yield Variance =(Actual Yield – Standard Yield) ×Standard Rate Per Unit

(190 – 240) × Rs.475= Rs.23,750

Here, Standard Yield = Total Actual Time × Standard Output/Total Standard Time

22,800 × 200/19,000= 240 units

Standard Rate Per Unit = 95,000/200 = Rs. 475

Q.8 The Standard cost of material for 100 kgs. Of chemical D is as follows:

Chemical A- 30 kgs. @ Rs.4 per kg.

Chemical B- 40 kgs. @ Rs.5 per kg.

Chemical C- 80 kgs. @ Rs.6 per kg.

Actual cost of 500 kgs. Of chemical D is as follows:

Chemical A- 140 kgs. at a cost of Rs. 490

Chemical B- 200 kgs. at a cost of Rs. 1,060

. Chemical C- 440 kgs. . at a cost of Rs.2,860

Find Material Variances for 100 kgs. production of chemical D.

Solution:

Chemical	Standard			Actual		
	Quantity	**Price**	**Amount**	**Quantity**	**Price**	**Amount**
Chemical A	30	4.00	120	28	3.50	98.00
Chemical B	40	5.00	200	40	5.30	212.00
Chemical C	80	6.00	480	88	6.50	572.00
	150	-	800.00	156	-	882.00
Less: Loss	50			56		
	100			100		

(a) **MCV=** TSC –TAC = Rs.800 – Rs.882 = Rs.82 (F)

(b) **MPV** = (SP –AP)×AQ

=For chemical A =(4.00 – 3.50) × 28= Rs. 14(F)
=For chemical B =(5.00 – 5.30) × 40= Rs. 12(A) = 42 (A)
=For chemical C =(6.00 – 6.50) × 88= Rs. 44(A)

(c) **MUV=**(SQ –AQ) ×SP

=For chemical A =(30 – 28) × 4= Rs. 8(F)
=For chemical B =(40 – 40) × 5= Rs. Nil = 40 (A)
=For chemical C =(80 – 88) × 6= Rs. 48(A)

(d) **MSUV= (SQ – RSQ) × SP**

=For chemical A =(30 – 31.2) × 4= Rs. 4.80(A)
=For chemical B =(40 – 41.6) × 5= Rs.8.00 (A) = 32 (A)
=For chemical C =(80 – 83.2) × 6= Rs. 19.20(A)

(e) **MMV= (RSQ –AQ) × SP**

=For chemical A =(31.2 – 28) × 4= Rs. 12.80(F)
=For chemical B =(41.6 – 40) × 5= Rs. 8.00 (F) = 8 (A)
=For chemical C =(83.2 – 88) × 6= Rs. 28.80(A)

(f) **MYV = (AY – SY) × SC per unit**

(100 -104) × Rs. 8 = Rs. 32 (A)

SY= Standard output /Standard Input × Actual Input
= 100/150 × 156= 104

SC per unit = Standard cost / Standard output
800/ 100 = Rs. 8 per unit

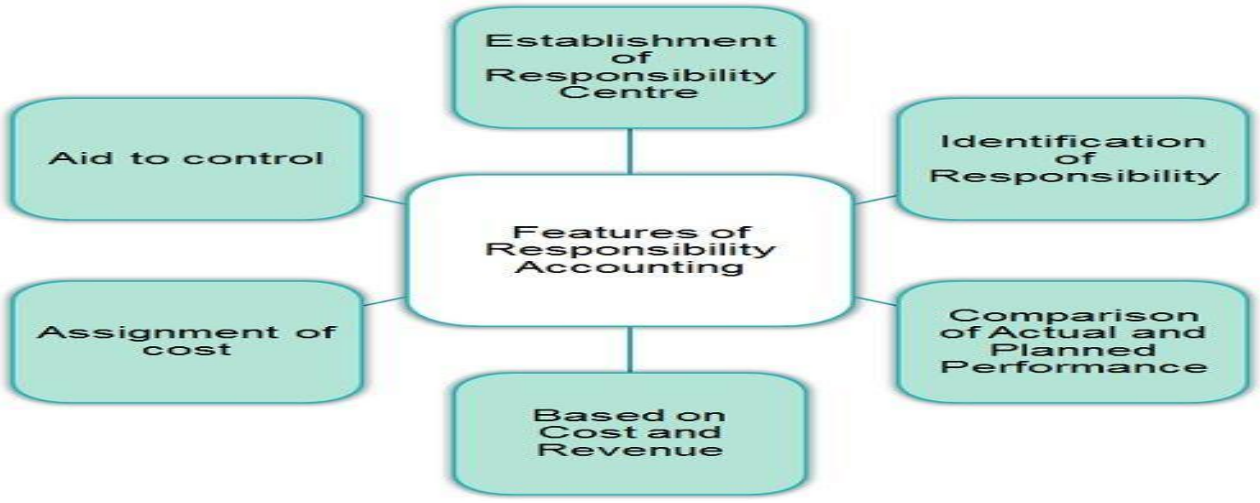
Chapter -11 Responsibility Accounting

Responsibility Accounting is management accounting where all the company's management, budgeting, and internal accounting are held responsible. The primary objective of responsibility accounting is to hold responsible all the concerned departments of any particular function.
In this type of accounting system, responsibility is assigned on the basis of the knowledge and skills of the individuals. The basic motive of responsibility accounting is to decrease the overall cost and increase the overall profit. If the motives do not get fulfilled, the concerned people are held accountable and answerable. Accountability is clearly defined under responsibility accounting, so concerned people work more carefully as they are made answerable to their seniors, management, and board of directors.

The responsibility accounting system makes the following important assumptions:

(1) The areas of responsibility are defined for which managers should be held responsible.
(2) Managers are only charged with the items and responsibility over which they can exercise a significant degree of direct control.
(3) Managers should actively participate in establishing the goals or budgets against which their performance is measured.
(4) Goals defined for each area of responsibility should be attainable with efficient and effective performance.
(5) Control (performance) reports should contain significant information related to each area of responsibility.
(6) Responsibility centre managers should try to accomplish the budgets and objectives established for their respective areas of responsibility.

Features of Responsibility Accounting:



- **Establishment of Responsibility Centre**: Responsibility Accounting stresses on setting up responsibility centers. For this purpose, an organization is subdivided on the basis of a specific area of activity. All the costs are classified and allocated as per these centers.
- **Identification of Responsibility**: On setting up responsibility centers, these are assigned to various heads who are specialized in the concerned area of activity. The responsibility with regard to these centers is clearly defined.
- **Comparison of Actual and Planned Performance**: The aim of responsibility accounting is to compare the actual and planned performance of each center. This way variations can be corrected by taking the right measures. With the help of this system performance of the division can be measured. Also, the performance report is submitted to the top management by the manager of the center.
- **Based on Cost and Revenue**: Responsibility Accounting takes into account information relating to the inputs and outputs. Here inputs refer to the costs, i.e. resources consumed be it material or labor hours, and output implies the revenues earned. Both are expressed in monetary terms.
- **Assignment of cost**: Based on controllability costs are classified, so as to control them. In the same manner, determination of the responsibility of the respective manager takes place as per controllable and non-controllable costs. Only those costs which are controllable in nature are assigned, so as to hold liable the concerned person. Controllable costs are the costs that can be controlled by the person in charge. Whereas uncontrollable costs are the costs that are not under the control of management.
- **Aid to control**: Performance reports submitted by various center heads acts as an aid to control the operations and costs.

Objectives of Responsibility Accounting
The various objectives of responsibility accounting is to:

1. Ascertain the contribution of the responsibility center
2. Provide a basis for evaluating the quality of a manager's performance.
3. Motivate the divisional manager to operate the center effectively.
4. Establish accountability.

Process
The process of responsibility accounting involves the following steps:

- First of all, division of organization into different responsibility centers takes place. And one manager is appointed for each center, who is in charge of the center.
- After that targets or budgets are set for each center. These targets are set after consulting with the manager of the concerned center. This is to ensure that all the

required information about the department is available. Also, the manager knows what is expected of him. This ensures the clarity of goals. In this way, the determination of authority and responsibility takes place.

- Then, the managers are charged with the items and responsibilities so that they can get aware of their span of control.
- Goals set for various centers need to be attained with effective performance.
- After that, communication of actual performance to the managers of the center takes place. In case of any discrepancy between actual and standard performance, the variances are communicated to top management. Also, the name of managers who are responsible for the concerned centers is also conveyed. This helps in fixing responsibility.
- Preparation of performance report to each center to indicate the variances and items that need attention.

Utility and Advantages of Responsibility Accounting:

- Responsibility accounting encourages management to understand the company's structure and identify and address issues.
- It increases the alertness and attentiveness of managers as they are responsible for explaining any discrepancies.
- It enables the comparison of set targets with actual results.
- It promotes efficiency among employees as their performance is regularly evaluated.
- It assists management in planning future expenses and revenues.
- As a cost control tool, it fosters a sense of 'cost consciousness' among employees.
- It facilitates clear communication of individual and company goals.
- It enhances operational control within the company, leading to effective and efficient results.
- It simplifies report structures and promotes timely reporting.

Limitations of Responsibility Accounting :

While implementing the system of responsibility accounting, the following difficulties are likely to be faced by the management :

1) Classification of Costs : For responsibility accounting system to be effective, a proper classification between controllable and non-controllable costs is a prime requisite. But practical difficulties arise while doing so on account of the complex nature and variety of costs.

2) Inter-departmental Conflicts : Separate departmental pursuits may lead to inter-departmental rivalry and it may be prejudicial to the interest of the enterprise as a whole. Managers may act in the best interests of their own, but not in the best interests of the enterprise.

3) Delay in Reporting : Responsibility reports may be delayed. Each responsibility centre can take its own time in preparing reports.

4) Overloading of Information : Responsibility accounting reports may be overloading with all available information. This danger is inherent in the system but with clear instructions by management as to the functioning of the system and preparation of reports, etc., only relevant information flow in.

5) Complete Reliance Will Be Deceptive : Responsibility accounting can't be relied upon completely as a tool of management control. It is a system just to direct the attention of management to those areas of performance which required further investigation.

Responsibility Centers:

Responsibility accounting often entails the creation of monthly and annual budgets for each responsibility centre. It also keeps track of a company's costs and revenues, with reports compiled monthly or annually and sent to the appropriate manager for review. The focus of responsibility accounting is mostly on **Responsibility Centers**.

Responsibility Centers

A **responsibility center** is a functional business entity that has definite objectives and goals, dedicated personnel, procedures, and policies as well as the duty of generating a financial report. Different types of responsibility centers are being set up under responsibility accounting and every responsibility center has different goals assigned to them that they have to fulfill in order to contribute to the overall growth of the organization. Some basic responsibility centers that all organisations generally need are Cost center, Profit center, Revenue Center and Investment Center.

Types of Responsibility Centers

1. Cost Center

A cost center is responsible for cost control. The main objective of the cost center is to minimize cost. The cost center's prime work is to check the cost of an organisation and to limit the unwanted expenditure that the company may acquire. Costs, in this respect, are basically classified as controllable costs and non-controllable costs. Controllable costs are the costs that can be controlled by the organization. Uncontrollable costs are the cost that the organization can not control. The concerned center is made responsible and accountable for only controllable expenses. So, it is important to distinguish between controllable costs and non-controllable costs. The performance evaluation is done on the basis of the actual cost that occurred and the targeted cost.

Some types of costs centers are:

- Production Cost Center
- Personal Cost Center
- Service Cost Center
- Impersonal Cost Center
- Process Cost Center

- Operation Cost Center

2. Revenue Center

This center is basically inclined towards the generation of leads and subsequently increasing the overall revenue of the firm. Company's sales team is mainly held responsible for this. A revenue center is judged solely on its ability to generate sales; it is not judged on the amount of costs incurred. Revenue centers are employed in organisations that are heavily sales focused. Sales team are trained to generate more leads and convert them. Trainings are set up for them and evaluation of the personnel is made on the basis of the conversion rates.

3. Profit Center

A profit center refers to a center whose performance is measured in cost and revenue both. It contributes to both revenue and expenses, resulting in profit and loss**.** Profit occurs when revenues are more than costs and loss occurs when costs are more than profits. The profit center is accountable for all the actions associated with the sale of goods and production. The principle objective of a profit center is to generate and maximize profit by minimising the cost incurred and increasing sales. The accomplishment of a profit center is estimated in terms of profit growth during a definite period.

4. Investment Center

This center is held responsible for using the company's assets in the most efficient way and investing them in the best opportunities in order to increase returns. Companies evaluate the performance of an investment center according to the revenues it brings in through investments in capital assets. An investment center is sometimes called an **investment division**. Investment centers are increasingly important for firms as financialization leads companies to seek profits from investment and lending activities in addition to core production. In other words efficiency of the management is measured in terms of Returns on Investment which can be calculated as under:

ROI = Net Profit⁄Sales ×⁄Sales⁄Investment × 100

Or

= Net Profit⁄Investment × 100

Problems: A **production department of a large manufacturing organization has furnished the following data for March, 2010:**

	Budget Rs.	Actual Rs.
Direct Material	4,00,000	5,10,000
Direct Wages	2,50,000	3,25,000
Repairs and Maintenance (Rs. 1,00,000 fixed)	2,00,000	2,20,000
Supervision (fixed)	1,00,000	1,10,000
Consumable Stores (variable)	75,000	95,000
Factory Rent (fixed)	50,000	50,000
Depreciation (fixed)	1,00,000	1,00,000
Tools (variable)	25,000	30,000
Power and Fuel (variable)	1,50,000	1,80,000
Administration (fixed)	2,50,000	2,50,000

The department has 50 identical machines. During March,2010 the budgeted and actual production of the department are 10,000 and 12,500 units respectively.

You are required to present a report showing the evaluation of the performance of the department based on the concept of responsibility centre.

Solution:

Report showing the Evaluation of Departmental Performance on Responsibility Centre Basis

	Budget	Actual	Variance
Controllable:			
Direct Material	5,00,000	5,10,000	10,000 **(A)**
Direct Wages	3,12,500	3,25,000	12,500 **(A)**
Repairs & Maintenance (Rs.1,25,000+1,00,000)	2,25,000	2,20,000	5,000 (F)
Consumable Stores	93,750	95,000	1,250 **(A)**
Tools	31,250	30,000	1,250 (F)
Power and Fuel	1,87,500	1,80,000	7,500 (F)
Supervision	1,00,000	1,10,000	10,000 **(A)**
	14,50,000	**14,70,000**	**20,000 (A)**
Non- Controllable:			
Factory Rent	**50,000**	**50,000**	**-**
Depreciation	**1,00,000**	**1,00,000**	**-**
Administration	**2,50,000**	**2,65,000**	**15,000 (A)**
	4,00,000	**4,15,000**	**15,000 (A)**

Note: Budgeted cost are calculated for actual output, i.e

$$\frac{\text{Budgeted Costs} \times \text{Actual Output}}{\text{Budgeted Output}}$$

Chapter-12 Activity Based Costing (ABC)

Generally, activity-based costing is used in the manufacturing industry, as it produces more accurate cost data, generating values that are close to the true cost and can be identified during the production phase.

Activity-based costing serves and complements many other analyses and measures, including target costing, product costing, product line profitability analysis, service pricing, and more. Thus, it is used to better understand the company's true costs, and thereby formulate an appropriate pricing strategy to mitigate unnecessary expenses.

INADEQUACIES OF TRADITIONAL METHODS OF OVERHEADS ABSORPTION

Thus, the cost of product arrived in traditional cost accounting system is not so accurate due to the following reasons.

(i) Conventional methods of absorption of overheads concentrate on overhead recovery rates which are acceptable when valuing stocks for traditional financial reporting. These conventional methods do not help, management while taking typical decisions related with product strategies.
(ii) The conventional split of cost into fixed and variable on the basis of their behaviour is often unrealistic since, as business grows they become more complex and complicated.
(iii) Conventional cost accounting was confined to report information at product level. The new changing manufacturing technologies demand the feedback of performance with manufacturing is Still in progress rather than history.
(iv) Conventional cost accounting fails to assist management of companies dealing in multiple products while taking decisions on product mix, pricing and process technology.
(v) Conventional methods do not concentrate on integration of activity measurement and financial measurement.
(vi) Conventional methods do not suit to fast changing cost structure of products.

Therefore, to overcome the above noted inadequacies or limitation of traditional methods of overhead absorption activity based costing (ABC) has been devised which attempts to absorb overhead into product cost on a more realistic basis.

NEED for EMERGENCE OF ACTIVITY BASED COSTING

Traditional product costing systems were designed when most of the companies manufactured a narrow range of products. Direct materials and direct labour were the dominant factors of production then. Companies were in the sellers' market. Overheads were relatively small and distortions due to inappropriate treatment were not significant. Cost of processing information was high.

Today, companies produce a wide range of products. Overheads are of considerable importance. Simple methods of apportioning overheads based on direct labour are not justified. Intense global competition calls for correct costing of products to avoid errors in decision-making Traditional systems can measure volume related costs. Non-volume related

activities like material handling, set-up etc. are important and their costs cannot be apportioned on volume basis. Hence, the need for emergence of activity based costing arises.

(a) Generate accurate product cost information.

(b) Clearly link all costs to individual products on the basis of cause and effective relationship.

(c) Identify and differentiate value adding activities and non- value adding activities.

(d) Provide information about the cost and performance of activities and resources to trace costs accurately to cost objects other than products Such as customer and channels of distribution.

(e) Reduce cost- subsidisation of indirect cost of one product by the other.

(f) Integrate the two dimensions of the grand old slogan of the buying philosophy 'cheap and best'.

(g) Improve the quality of products according to customers demand situation.

(h) Meet the challenges of 'Target cost'.

CONCEPTS OF ACTIVITY BASED COSTING (ABC)

Activity based costing (ABC) is a new term developed for finding out the cost. The basic feature of ABC is its focus on activities as the fundamental cost objects. It uses activities as the basis for calculating the costs of products and services.

The distinctive feature of ABC is its focus on activities as the fundamental cost objects. In contrast, more traditional approaches to developing the cost numbers used in job or process costing systems rely on general purpose (generic) accounting systems not tailored to the activities found in individual organisations. The ABC approach is more expensive than traditional approaches. ABC has the potential, however, to provide managers with information they find more useful for costing purposes".

CIMA London The CIMA official terminology defines ABC as "Cost attribution to cost units on the basis of benefit received from indirect activities e.g., ordering, setting up, assuring quality".

The ABC technique aims at to overcome the drawbacks by cutting across conventional departmental boundaries. Costs are grouped into 'pools' according to the activities which drive them e.g. a cost pool may be of

procurement of goods. In this, all the costs associated with the procurement (ordering, inspection, storing etc.) would be included in this cost pool and cost driver identified.

The procurement cost per requisition is then calculated and this provides a means of tracing the cost of procurement to product. The technique of ABC lays importance on different costs for different purposes and the identification of just those costs which are relevant to particular decision.

Elements of Activity Based Costing (ABC)

(i) Resources (ii) Activity (iii) Activity cost pool (iv) Cost Drivers (v) Process (vi) Cost object (vii) Non-value Adding Activity

CHARACTERISTICS OF ACTIVITY BASED COSTING

1. It raises the number of cost pools used to accumulate overhead costs. The number of pools relies on the cost driving activities. So, in spite of accumulating overhead costs-in a single company-wise pool or departmental pools, the costs are accrued through activities.

2. It charges overhead costs to dissimilar jobs or products in proportion to the cost driving activities instead of a blanket rate relies on direct labour cost or direct hours or machine hours.

3. It enhances the traceability of the overhead costs that results in more precise unit cost data for management.

4. Identification of cost throughout activities and their causes not only assist in calculation of more precise cost of a product or a job but also remove non-value added activities. The elimination of non-value added activities would make down the cost of the product. Actually this is the essence of activity based costing.

Determination of Cost of Each Activity:

The ABC calculation is as follows:

1. Identify all the activities required to create the product.
2. Divide the activities into cost pools, which includes all the individual costs related to an activity—such as manufacturing. Calculate the total overhead of each cost pool.
3. Assign each cost pool activity cost drivers, such as hours or units.
4. Calculate the cost driver rate by dividing the total overhead in each cost pool by the total cost drivers.
5. Divide the total overhead of each cost pool by the total cost drivers to get the cost driver rate.
6. Multiply the cost driver rate by the number of cost drivers.

DISTINCTION BETWEEN ABC SYSTEM AND TRADITIONAL SYSTEM

BASIS OF DIFFERENCE	TRADITIONAL COSTING	ACTIVITY BASED COSTING
MEANING	Traditional costing is the allocation of factory overhead to products based on the volume of production resources consumed.	The Activity-Based Costing (ABC) is a costing system, which focuses on activities performed to produce Products. ABC is that costing in which costs are first traced to activities and then to products.
COST POOLS	Traditional costing system accumulates costs into facility-wise or departmental cost pools. The costs in each cost pool are heterogeneous- they are costs of many major processes and generally are not caused by a single factor.	ABC system accumulates costs into activity cost pools. These are designed to correspond to major activities or business processes. By design, the costs in each cost pool are largely caused by single factor- the cost driver.
ALLOCATION BASES	Traditional systems allocate costs to products using volume-based allocation bases: units, direct labor input, machine hours, revenue etc.	ABC system allocates costs to products, services and other cost objects from the activity cost pools using allocation bases corresponding to the cost drivers of activity costs.
HIERARCHY OF COSTS	This costing generally estimates all the costs of an organization as being driven by the volume of product or service delivered.	ABC allows for non- linearity of costs within the organization by explicitly recognizing that some costs is not caused by the number of units produced.
COST OBJECTS	Traditional Costing focuses on estimating the cost of a single cost object i.e. unit of product or service.	ABC focuses on estimating the costs of many cost objects of interest: units, batches, product lines, business processes, customers and suppliers.
DECISION SUPPORT	Because of the inability to align allocation bases with cost drivers, leads to the problems of over casting and under casting of costs.	Because of the ability to align allocation bases with cost drivers, provides more accurate information to support managerial decisions.
COST CONTROL	Cost control is viewed as a departmental exercise rather than a cross functional effort.	By providing summary costs of the organizational activities, ABC allows for prioritization of cost management efforts.
COSTING SYSTEM	Traditional costing system is relatively less expensive to implement and maintain.	ABC system is expensive to implement and maintain.
SUITABILITY	Traditional costing is suitable for labor intensive and low overhead companies.	Activity based costing system is suitable for capital-intensive, product-diverse, widely diverse set of operating activities, variation in numbers of production runs, high-overhead companies.

TYPES OF ACTIVITIES	Only two types of activities viz. Unit Level Activities and Facility Level Activities are identified.	All levels of activities in the manufacturing cost hierarchy viz. Unit Level, Batch Level, Product Level and Facility Level are identified.
OVERHEAD RATES	Overhead Rates can be used to ascertain cost of products only.	Activity Cost Driver Rates can be used to ascertain cost of products and also cost of other cost objects such as customer segments, distribution channels. etc.

ADVANTAGES OF ACTIVITY BASES COSTING:

The following are the advantages of ABC:

1. Accurate Product Cost: ***ABC brings accuracy and reliability in product cost determination by focusing on cause and effect relationship in the cost incurrence. It recognises that it is activities which cause costs, not products and it is product which consume activities. In advanced manufacturing environment and technology where support functions overheads constitute a large share of total costs, ABC provides more realistic product costs.***

ABC produces reliable and correct product cost data in case of greater diversity among the products manufactured such as low-volume products, high-volume products. Traditional costing system is likely to bring errors and approximation in product cost determination due to using arbitrary apportionment and absorption methods.

2. Information about Cost Behaviour: ***ABC identifies the real nature of cost behaviour and helps in reducing costs and identifying activities which do not add value to the product. With ABC, managers are able to control many fixed overhead costs by exercising more control over the activities which have caused these fixed overhead costs. This is possible since behaviour of many fixed overhead costs in relation to activities now become more visible and clear.***

3. Tracing of Activities for the Cost Object: ***ABC uses multiple cost drivers, many of which are transaction based rather than product volume. Further, ABC is concerned with all activities within and beyond the factory to trace more overheads to the products.***

4. Tracing of Overhead Costs: ***ABC traces costs to areas of managerial responsibility, processes, customers, departments besides the product costs.***

5. Better Decision Making: ABC improves greatly the manager's decision making as they can use more reliable product cost data. ABC helps usefully in fixing selling prices of products as more correct data of product cost is now readily available.

6. Cost Management: ***ABC provides cost driver rates and information on transaction volumes which are very useful to management for cost management and performance appraisal of responsibility centres. Cost driver rates can be used advantageously for the design of new products or existing products as they indicate overhead costs that are likely to be applied in costing the product.***

7. Use of Excess Capacity and Cost Reduction: ***ABC, through the processes of pooling of activity costs and the identification of cost drivers, can lead to a range of applications. These include the identification of spare capacity and the fostering of cost reduction by comparing the resources required under ABC with the resources that are currently provided. This provides a platform for the development of activity-based budgeting in which the resource relationships identified by ABC are used to project future resource requirements.***

8. Benefit to Service Industry: ***Service organizations, such as banks, hospitals and government departments, have very different characteristics than manufacturing firms. Service organizations have almost no direct costs, most of the costs are overheads and they do not hold stocks of service as the service is consumed when it is produced. Traditional costing has generally been considered inappropriate for these organizations, whereas ABC offers the potential of benefits from improved decision making and cost management.***

An ABC system can provide better costing information and help management manage efficiently and gain a better under-standing of the firm's competitive advantages, strengths and weaknesses. Often, managers recognize needs for a better costing system such as ABC when they are experiencing increased lost sales due to erroneous pricing that resulted from inaccurate costing data.

An ABC system has the most impact on firms that have areas with large, increasing expenses or have numerous products, services, customers, processes, or a combination of these. Example are plants that produce standard and custom products, high-volume and low-volume products, or mature and new products.

Firms that accept small and large orders, offer standard and customized deliveries, or satisfy all customers including those who demand frequent changes and services either before or after the delivery, and customers who hardly ever request special services can benefit substantially from activity-based costing systems.

DISADVANTAGES OF ACTIVITY BASED COSTING (ABC):

1. Expensive and Complex: ABC has numerous cost pools and multiple cost drivers and therefore can-be more complex than traditional product costing systems. It can prove costly to manage ABC system.

2. Selection of Drivers: Some difficulties emerge in the implementation of ABC system, such as selection of cost drivers, assignment of common costs, varying cost driver rates etc.

3. Disadvantages to Smaller Firms: ABC has different levels of utility for different organisation such as large manufacturing firm can use it more usefully than the smaller firms. Also, it is likely that firms depending on cost-plus pricing can take advantages from ABC as it gives accurate product cost. But those firms who use market based prices may not favour ABC. The level of technology and manufacturing environment prevailing in different firms also affect the application of ABC.

4. Measurement Difficulties: ***The main costs and limitations of an ABC system are the measurements necessary to implement it. ABC systems require management to estimate costs of activity pools and to identify and measure cost drivers to serve as cost allocation bases. Even basic ABC systems require many calculations to determine costs of products and services. These measurements are costly. Activity cost rates also need to be updated regularly.***

Problems:

Q.1 A Company manufacturing two products furnishes the following data for a year:

Product	Annual Output (Units)	Total Machine Hours	Total Number of Purchase Orders	Total Number of set-ups
A	5,000	20,000	160	20
B	60,000	1,20,000	384	44

The annual overheads are as under:

Volume related activity costs	Rs. 5,50,000
Set-up related cost	Rs. 8,20,000
Purchase related costs	Rs. 6,18,000

You are required to calculate the cost per unit of each Product A and B based on:
(a) Traditional methods of charging overheads
(b) Activity based costing method.

Solution:
(a) Traditional Methods of Charging Overheads

Statement Showing Overheads Costs per Unit

	Products A	**Products B**
Annual Output (units)	**5,000**	**60,000**
Total Machine hours	**20,000**	**1,20,000**
Overhead cost component	**2,84,000**	**17,04,000**
	(20,000 hrs.× Rs. 14.20)	**(1,20,000 hrs. × Rs.14.20)**

Overhead cost per unit	**56.80** **(Rs. 2,84,000÷5,000 unit)**	**28.40** **(Rs. 17,04,000÷60,000 unit)**

Machine hour rate = Total annual overheads

Total machine hours

Rs. 19,88,000 =Rs.14.20 per hour

1,40,000 hours

(b)Activity Based Costing Method

Calculation of Activity Driver Rates

(a) Machine hour rate (under ABC) = Total annual overhead cost for volume related activities

Total Machine hours

Rs. 5,50,000 ÷ 1,40,000 = 3.93 (approx)

(b) Cost of one set-up = Total costs related to set-up

Total number of set-ups

= Rs.8,20,000 ÷ 64 set –ups = Rs.12,812.50

(c) Cost of purchase order = Total costs related to purchase

Total number of purchase order

= Rs. 6,18,000 ÷ 544 orders = Rs. 1,136.03

Statement Showing Overhead Costs per unit

	Product	
	A	**B**
1.Annual output units	5,000	60.000
2.Total Machine Hours	20,000	1,20,000
3.Cost related to volume activities (a)	Rs. 78,600 (20,000 hrs.× Rs. 3.93)	Rs.471,600 (1,20,000 hrs.× Rs. 3.93)
4.Cost related to purchase (c)	Rs. 1,81,764.80 (160 order × Rs. 1,136.03)	Rs.4,36,235.52 (384 order × Rs. 1,136.03)
5.Cost related to set-ups (b)	Rs.2,56,250 (20 set-ups ×Rs.12,812.5)	Rs. 5,63,750 (44 set-ups ×Rs.12,812.5)
6.Total cost (3+4+5)	Rs.6,16,614.80	Rs. 14,71,585.52
7.Cost per unit (6 ÷ 1)	Rs. 103.32	Rs. 24.53

Q.2 Alpha Limited has decided to analyse the profitability of its five new customers. It buy bottled water at Rs. 90 per case and sells to retail customers at a list price of Rs. 108 per case. The data pertaining to five customers are:

	Customers				
	A	**B**	**C**	**D**	**E**
Cases Sold (units)	4,680	9,688	1,36,800	71,550	**8.775**
List Selling Price (Rs.)	108	108	108	108	**108**
Actual Selling Price (Rs.)	108	106.20	99	104.04	**97.20**
Number of Purchase Orders	15	25	30	25	**30**
Numbers of Customer Visits	2	3	6	2	**3**
Number of Deliveries	10	30	60	40	**20**
Kilometres Travelled Per Delivery	20	6	5	10	**30**
Number of Expedited Deliveries	0	0	0	0	**1**

Activity	**Cost Driver Rate**
Order Taking	Rs. 750 per purchase order
Customer Visits	Rs.600 per customer visit
Deliveries	Rs. 5.75 per delivery Km. Travelled
Product handling	Rs. 3.75 per case sold
Expedited Deliveries	Rs.2,250 per expedited Delivery

You are required to compute the customer-level operating income of each of five retail customers (A,B,C,D and E) now being examined.

Customer Profitability Analysis

	A	**B**	**C**	**D**	**E**
Revenues as per list price Less: Discount	5,05,440 NIL	21,26,304 35,438	1,47,74,400 12,31,200	77,27,400 2,57,580	9,47,700 94,770
Revenues (at actual price) Less: Cost of Goods Sold@ Rs. .90 per case	5,05,440 4,21,200	20,90,866 17,71,920	1,345,43,200 1,23,12,000	74,69,820 64,39,500	8,52,930 7,89,750
Gross Margin (A)	84,240	3,18,946	12,31,200	1030,320	62,180
Customer level Operating Activities Cost Order Taking (@ Rs.750) Customer Visits (@ Rs.600) Delivery Vehicles (Rs.5.75\km) Product handling (Rs.3.15\case) Expedited Deliveries 2,250 (Rs.2,250\run)	11,250 1,200 1,150 17,750 -	18,750 1,800 1,035 73,830 -	22,500 3,600 1,725 5,13,000 -	18,750 1,200 2,300 2,68,313 -	22,500 1,800 3,450 32,906 2,250
Total Cost (B)	31,150	95,415	5,40,825	2,90,563	62,906
Customer level Operating Income (A-B)	53,090	2,23,531	6,90,375	7,39,757	274