Paper-10: COST AND MANAGEMENT ACCOUNTANCY

Question.1

(a) What is Imputed Cost?

Answer:

Imputed Costs are hypothetical or notional costs, not involving cash outlay computed only for the purpose of decision making. In this respect, imputed costs are similar to opportunity costs.

(b) A transport service company is running 4 buses between two towns which are 50 miles apart. Seating capacity of each bus is 40 passengers. The following particulars were obtained from their books for April, 2014.

	₹
Wages of Drivers, Conductors and Cleaners	**2,600**
Salaries of Office and Supervisory Staff	**800**
Diesel oil and other oil	**3,800**
Repairs and Maintenance	**1,000**
Taxation, Insurance etc	**1,600**
Depreciation	**2,600**
Interest and Other Charges	**1,000**
	13,400

Actual passengers carried were 75% of the seating capacity. All the four buses ran on all days of the month. Each bus made one round trip per day. Find out the cost per passenger mile.

Answer:

Computation of Cost per Passenger Mile:

Passenger miles = No. of buses × Distance × Round trip × No. of Passengers × No. of days in month × Capacity.
= 4 × 50 ×2 × 40 × 30 × 75%
=3,60,000 miles

Cost per passenger mile = 13,400 / 3,60,000 = ₹ 0.037

(c) If Sales are ₹ 2,00,000, fixed cost ₹30,000, and the PV ratio is 40%, the profit will be how much.

Answer:

$$\text{Sales} = \frac{\text{Profit} + \text{Fixed Cost}}{\text{P.V.R}}$$

$$2{,}00{,}000 = \frac{X + 30{,}000}{40\%}$$

80,000=X + 30,000
Therefore X=50,000
Profit = ₹50,000

(d) During the month of March, 560 kg. of material was purchased at a total cost of ₹ 15,904. The stocks of material increased by 15 kg. It is the company's policy to value the stocks at standard purchase price. If the material price variance was ₹ 224 (A), what will be the standard price per kg. of material.

Answer:

Actual cost	₹ 15,904
Less: adverse material price variance	224
Actual purchases at standard price	₹ 15,680
Standard price = ₹ 15,680/ 560 kg =	₹ 28

(e) What is Inter Firm Comparison?

Answer:

Inter Firm Comparison, as the name indicates, is a technique by which a Company evaluates its performance with those of other firms in the same industry. Uniform Cost accounting is a must for such meaningful comparison. To facilitate such comparison and evaluation, generally a central organization is formed to collect the necessary data periodically in a standard format from all member industries. To safeguard the confidentiality of the individual firm's performance details, the data are collected as a ratio or percentage by the central organization in the industry. Information collected may relate to costs, capacity utilization, raw material usage, labour productivity, ROI etc.

(f) What is Compliance Report?

Answer:

Industries which are not covered under compulsory Cost Audit need to get compliance from the Cost Accountant. Such a compliance report shall certify compliance of all statutory requirements relating to maintence of cost Record / Cost statements related to the industry. Such a compliance report should be branged by a cost Accountant (holding a certificate of parched or permanent employee of the company having valid membership / certificate of parched).

(g) Difference between Cost Accounting policy and Cost Accounting system.

Answer:

Cost Accounting Policy of a company should state the policy adopted by the company for treatment of individual cost components in cost determination.

The Cost Accounting system of a company, on the other hand, would provide a flow of the cost accounting data/information across the activity flow culminating in arriving at the cost of final product/activity

(h) Define "Consumer Surplus".

Answer:

In the words of Marshall, "The excess of the price which he (i.e., consumer) would be willing to pay rather than go without the thing over that which he actually does pay is the economic measure of this surplus satisfaction ……………It may be called Consumer's Surplus." To use Hicks words "It is the difference between the marginal valuation of a unit and the price which is actually paid for it".

In short, consumer's surplus is what we are prepared to pay minus what we actually pay. The consumer's surplus is measured by the difference between total utility and the amount spent.

(i) How is monopoly price related to elasticity of demand?

Answer:

The concept of elasticity of demand is more useful in price determination under Monopoly. The main motive of the Monopolist is to get maximum profits. In order to get maximum profits the Monopolist fixes more price in the case of those goods in which there is in elastic demand and less price in the case of those goods in which the demand is elastic one. Therefore, monopolist generally fixes the price on the basis of elasticity of demand.

(j) A Ltd. is operating in a perfectly competitive market. The price elasticity of demand and supply of the product estimated to be 3 and 2 respectively. The equilibrium price of the product is ₹100. If the government imposes a specific tax of ₹10 per unit, what will be the new equilibrium price?

Answer:

Distribution of tax burden between buyers and sellers is in the ratio of elasticity of demand.

Thus tax burden borne by the buyer= ₹10 × 1/5= ₹4.
If the tax burden borne by buyer is ₹4, new equilibrium price will be 100 + 4= ₹104

Section A

SN-1 (Cost Accounting Methods & Systems)

Question.2

(a) Enumerate the factors which are to be considered before installing a System of Cost Accounting.

Answer:

The following points should be considered before installing a cost system are:

- The nature, method and stages of production, the number of varieties and the quantity of each product and such other technical aspects should be examined. It is to be seen how complex or how simple the production methods are and what is the degree of control exercised over them.
- The designer should consider the objectives of costing system, i.e the expectations of the management
- The size, layout and organization of the factory should be studied.
- Organization structure should be studied to determine the manner in which costing system could be introduced, without altering or extending the organization
- The methods of purchase, receipt, storage and issue of materials should be examined and modified wherever considered necessary.
- The wage payment methods should be studied.
- The policy adopted by the management towards cost control should be kept in view.
- The cost of the system to be installed should be considered. It is needless to emphasise that the installation and operation of system should be economic.
- The system should be simple and easy to operate.
- The system can be effectively run if it is appropriate and properly suited to the organization.
- Forms and records of original entry should be so designed that it involves minimum clerical work and expenditure.
- The system should be so designed that cost control can be effectively exercised.
- The system should incorporate suitable procedure for reporting to the various levels of management. This should be based on the principles of exception.

(b) Explain the term Opportunity Cost.

Answer:

Opportunity Cost:

Opportunity cost is the value of alternatives foregone by adopting a particular strategy or employing resources in specific manner. It is the return expected from an investment other than the present one. These refer to costs which result from the use or application of material, labour or other facilities in a particular manner which has been foregone due to not using the facilities in the manner originally planned. Resources (or input) like men, materials, plant and machinery, finance etc., when utilised in one particulars way, yield a particular return (or output). If the same input is utilised in another way, yielding the same or a different return, the original return on the forsaken alternative that is no longer obtainable is the opportunity cost. For example, if fixed deposits in the bank are proposed to be withdrawn for financing project, the opportunity cost would be the loss of interest on the deposits. Similarly when a building leased out on rent to a party is got vacated for own purpose or a vacant space is not leased out but used internally, say, for expansion of the production programme, the rent so forgone is the opportunity cost.

(c) List out the advantages and essential Pre-requisites of Integrated Accounting System.

Answer:

Advantages of integrated accounting system:

The main advantages of integrated accounts are as follows

- No need for Reconciliation: The question of reconciling costing profit and financial profit does not arise, as there is one figure of profit only
- Significant saving in the clerical efforts, as only one set of books is maintained.
- Retrieving of information is easy & quick
- It is economical also as it is based in the concept of centralization of accounting function

Essential pre-requisites for integrated accounts:

The essential pre-requisites for integrated accounts include the following steps:

- The managements decision about the extent of integration of the two sets of books, some concerns find it useful to integrate upto the stage of primary cost or factory cost, while others prefer full integration of the entire accounting records.
- A suitable coding system must be made available so as to serve the accounting purposes of financial and cost accounts.
- An agreed routine, with regard to the treatment of provision for accruals, prepaid expenses, other adjustment necessary for preparation of interim accounts.
- Perfect coordination should exist between the staff responsible for the financial and cost aspects of the accounts and an efficient processing of accounting documents should be ensured.

Question.3

(a) State the treatment of By-product Cost in Cost Accounting, when they are of small total value.

Answer:

Treatment of By-product cost in Cost Accounting:

When the by-products are of small total value:

- Miscellaneous Income or Other Income Method
  This method is adopted when the sales value of the products is very small as compared to the sales value of the main product and is sold off without further processing. Here the

sales value of the by-product is credited to the Costing Profit & Loss A/c as miscellaneous income. The entire joint costs (or common processing costs) are apportioned among the main products and nothing is apportioned to the by-product.

- Total cost less sales value of by-product
  The sales value of the by-products is deducted from the total common costs of the main products. The common costs, so reduced will then be apportioned among the main products. If the by-product requires further processing or certain selling and distribution expenses are required to be incurred, then these costs will have to be first subtracted from the sales value of the by-products. The balance amount, if any is to be deducted from the common costs.

(b) Write a note on Cost Ledger (maintained in a Costing Department).

Answer:

Cost Ledger (maintained in a Costing Department)

Cost Ledger maintains the accounts relating to Income and Expenditure. The following accounts are maintained in this ledger.

- Cost Control Accounts-These accounts are maintained to exercise control over the three subsidiary ledgers maintained, such as Stores ledger, work-in-progress ledger, finished goods / stock ledger and also to complete the double entry in cost accounts. The important cost control accounts are as follows:-
  (I) Stores Ledger control account, (II) Work-in-progress ledger control account, (III) Finished goods ledger control account and (IV) General Leger adjustment account.

- Other Accounts-
  They include all other impersonal accounts [real as well as nominal] which effect costs, e.g. wages control account, factory overhead accounts, administration overhead account, selling & distribution overhead account, cost of sales account, etc. Depending upon the requirement, the following additional accounts may also be maintained: Overhead suspense account, Capital orders account, Service orders account.

(c) State the reasons for difference in profit between the Cost and financial Accounts.

Answer:

Reasons for difference in profits of cost and financial accounts:

(i) Items shown in Financial Accounts:
There are a number of items which are included in financial accounts but do not find place in costaccounts. They may be items of income or expenses, the former increases the profit and latter reduces the profit.

A. Purely Financial Charges
- Loss arising from the sale of fixed assets.
- Loss on sale of investments, discount on debentures, etc.
- Interest on bank loan, mortgage and debentures.
- Expenses of companies 'Share Transfer Office'.

B. Appropriation of Profits
- Donations and Charities
- Income Tax
- Dividend Paid
- Transfer to Reserves

C. Writing off Intangible and Fictitious Assets
- Goodwill
- Patents & Copyrights
- Advertisement
- Preliminary Expenses

D. Pure Financial Incomes

- Rent received or Profit on Sale of Fixed Assets
- S hare transfer fee received
- Interest received on Bank Deposits
- Dividend received etc.

(ii) Items shown only in Cost Accounts:

There are certain items which are included in cost accounts and not in financial accounts. Such items are very few. E.g. Interest on capital employed, rent for own premises etc.

(iii) Over or Under Absorption of Overheads.

Overheads are absorbed in Cost Accounts on a certain predetermined estimated basis and in Financial Accounts, actual amounts incurred are recorded. If there is any over or under absorption it leads to difference in the profits of both sets of books.

(iv) Differences due to different basis of stock valuation and depreciation methods.

Objects of Reconciliation:

- To assure the mathematical accuracy and reliability of cost accounts.
- To have proper cost control and ascertainment.
- To find out the reasons for the profit or loss shown by the financial accounts.
- To ensure correct profit or loss in financial accounts.
- To ensure true and fair view of balance sheet of the business concern.

Question.4

(a) A shop floor supervisor of a small factory presented the following cost for Job no.421 to determine selling price.

	Per unit
Material	₹70
Direct Wages 18 hrs. @ ₹ 2.50 (Deptt. X 8 hours; Dept. Y6 hours; Deptt. Z 4 hours)	45
Chargeable Expenses (Special stores items)	5
	120
Add: 33 1/3% for Overheads	40
Total Cost	160

Analysis of the Profit/Loss Account for 2014 shows the following:

Material used		₹1,50,000	Sales less Returns	₹2,50,000
Direct Wages:				
Dept. X	10,000			
Dept. Y	12,000			
Dept. Z	8,000	30,000		
Special stores items		4,000		
Overheads:				
Dept. X	5,000			
Dept. Y	9,000			
Dept. Z	2,000	16,000		
Total Cost		2,00,000		
Gross Profit c/d		50,000		
		2,50,000		2,50,000
Selling Expenses		20,000		50,000
Net Profit		30,000	Gross Profit b/c	
		50,000		50,000

It is also noted that average hourly rates for the three departments X, Y, Z are similar.

Required:
Draw up a job cost sheet.
Calculate the entire revised cost using 2014 actual figures as basis.
Add 20% to total cost to determine selling price.

Answer:

In order to prepare the job cost sheet, the overhead rates of different departments will have to be first determined on the basis of previous year's figures. The rates are as follows:

FACTORY OVERHEAD RATES

Deptts.	X	Y	Z
(i) Overheads	₹ 5,000	₹ 9,000	₹ 2,000
(ii) Direct Labour Hours = Total Wages/Hourly Rates	4,000	4,800	3,200
(iii) Rate per hour (i) ÷ (ii)	1.25	1.875	.625

COST SHEET OF JOB NO. 421

Particulars	**Rate**	**Hrs.**	**Amount**
Material			₹70.00
Direct Wages: Deptt. X	₹ 2.50	8hrs.	20.00
Deptt. Y	2.50	6 hrs.	15.00
Deptt. Z	2.50	4 hrs	10.00
Chargeable Expenses			5.00
Prime Cost			120.00
Overheads Deptt. X	1.250		10.00
Deptt. Y	1.875	8 hrs.	11.25
Deptt. Z	.625	6 hrs	2.50
Total Cost		4 hrs.	
Add: Profit 20% of Total Cost			143.75
Selling Price			28.75
			172.50

(b) Explain the term Batch Costing.

Answer:

Batch Costing is very similar to job costing. Instead of a single job a number of similar units of the product are manufactured in a group or batch. The cost per batch is found and divided by the number of units in the batch to give the cost per unit. Batch Costing becomes necessary in the following cases:

- When the customer orders a large number of identical units of the same product/part.
- Internal manufacturing order is raised for a batch of identical parts
- Where it is vital that colour or shading or specific characteristics of goods sold to customer is uniform.

  Batch Costing is employed in toy making, footwear, radio and TV parts, pharmaceuticals, watch making, etc. When components are manufactured in batches, it becomes economical and reduces the overall cost of the product.

  Two elements of cost, which help to determine the lowest cost of operation, are:
- Setup or operation cost – which remains fixed per batch irrespective of the size of the batch.
- Carrying cost or storage cost, which very directly with the size of the batch.

Taking into account the above determinants, the economic batch quantity (EBQ) is determined by the following formula:-

$$EBQ = \sqrt{\frac{2 \times \text{annual demand} \times \text{setup cost per batch}}{\text{Annual cost of storing one unit}}}$$

Question.5

(a) A manufacturing concern, engaged in mass production produces standardised electric motors in one of its departments. From the following particulars of a job of 50 motors you are required to value the work-in-progress and finished goods.

- **Costs incurred as per job card:**
  Direct Material ₹75,000 Overheads ₹60,000
  Direct labour ₹20,000
- **Selling price per motor: ₹4,500**
- **Selling and distribution expenses are at 30% of sales value.**
- **25 Motors are completed and transferred to finished goods.**
- **Completion stage of work-in-progress:**

Direct Material 100% Direct Labour and Overhead 60%

Answer:

STATEMENT OF EQUIVALENT PRODUCTION AND COST

Particulars	Direct Material		Labour & Overhead		Total
	%	Qty.	%	Qty.	
Transferred to Finished Goods	100	25	100	25	
Work-in-progress	100	25	60	15	
Equivalent Units		50	40		
Total Cost (₹)		75,000	80,000		1,55,000
Cost per Equivalent Unit (₹)		1,500	2,000		3,500

Actual Cost of Production per Unit of Finished Goods

Direct Material	₹1,500
Labour & Overhead	₹2,000
Total	₹3,500
Market Value per Unit of Finished Goods	
Selling Price	₹4,500
Less: Selling & Distribution Overheads @ 30% of ₹4,500	₹1,300
	₹3,150

Stocks should be at the lower of the cost (i.e., ₹ 3,500) or market value (i.e. ₹ 3,150). Hence, basis of valuation will be market value in this case.

Value of work- in- Progress

Direct Material: ₹1,500 × 25 units	=	₹37,500
Labour & Overhead: ₹(3,150 – 1,500) × 15 units	=	₹24,750
		₹62,250

Value of Finished Goods stock

25 units × ₹3,150	=	₹78,750
Total Value of Inventory = ₹78,750 + ₹62,250	=	1,41,000

(b) The following was the expenditure on a contract for ₹12,00,000 commenced in January 2014:

	₹
Materials	**2,40,000**

Wages	**3,28,000**
Plant	**40,000**
Overheads	**17,200**

Cash received on account of the contract up to 31st December was ₹4,80,000 being 80% of the work certified.

The value of materials in hand was ₹20,000. The plant had undergone 20% depreciation. Prepare Contract Account.

Answer:

Contract Account

Particulars	₹	Particulars	₹
To Materials	2,40,000	By Work certified	6,00,000
To Wages	3,28,000	By Materials in hand	20,000
To Depreciation on plant (20% of 40,000)	8,000		
To Overheads	17,200		
To Notional Profit	26,800		
	6,52,000		6,52,000
To Profit & Loss (W.N.1)	14,293	By Notional profit	26,800
To Work-in-progress A/c	12,507		
	26,800		26,800

*80% = 4,80,000; Thus, 100% = 4,80,000/ 80% = ₹6,00,000

Working note -1

Assuming that work completed is greater than 50% and less than 90%.

Therefore, Amount of profit transferred =2/ 3 × Notional profit × Cash received/ work certified
= 2/ 3 × 26,800 × 4,80,000/ 6,00,000 =₹14,293

SN-2 (Decision Making Tools advanced level)

Question.6

(a) Distinguish between Absorption Costing and Marginal Costing.

Answer:

Differences between Absorption Costing and Marginal Costing:

	Absorption Costing	Marginal Costing
I.	Both fixed and variable costs are considered for product costing and inventory valuation.	Only variable costs are considered for product costing and inventory valuation.
II.	Fixed costs are charged to the cost of production. Each product bears a reasonable share of fixed cost and thus the profitability of a product is influenced by the apportionment of fixed costs.	Fixed costs are regarded as period costs. The profitability of different products is judged by their P/V ratio.
III.	Cost data are presented in conventional pattern. Net profit of each product is determined after subtracting fixed cost along with their variable cost.	Cost data are presented to highlight the total contribution of each product.
IV.	. The difference in the magnitude of opening stock and closing stock affects the unit cost of production due to the impact of related fixed cost.	The difference in the magnitude of opening stock and closing stock does not affect the unit cost of production.
V.	In case of absorption costing the cost	In case of marginal costing the cost per

	per unit reduces, as the production increases as it is fixed cost which reduces, whereas, the variable cost remains the same per unit.	unit remains the same, irrespective of the production as it is valued at variable cost.

(b) Describe the essential features of Differential Cost Analysis.

Answer:

The essential features of differential costs are as follows:-

- The basis data used for differential cost analysis are costs, revenue and the investment factors which are relevant in the problem for which the analysis is undertaken.
- Total differential costs rather than the costs per unit are considered.
- Differential cost analysis is made outside the accounting records.
- As the differences in the costs at two levels are considered, absolute costs at each level are not as relevant as the difference between the two. Thus, items of costs which do not change but are identical for the alternatives under consideration, are ignored.
- The differentials are measured from a common base point or position.
- The stage at which the difference between the revenue and the cost is the highest, measured from the common base point, determines the choice from amongst a number of alternative actions.
- In computing differential costs, historical or standard costs may be used but they should be adjusted to the requirements of future conditions.
- The elements and items of cost to be considered in differential cost analysis will depend upon the nature of the problem and the alternatives being considered.

Question.7

(a) State the application of marginal costing to price fixing.

Answer:

Marginal Costing technique is majorly used for fixation of selling price when goods are sold under normal business conditions, the sale price would cover the total cost plus a margin of profit.

However, occasionally a firm may have to sell below the total cost. Such situation may atrise in the following cases:

- Pricing in period of recession
- Differential Selling prices
- Acceptance of special offers/ contract
- To dispose of perishable goods
- To get an entry in the competitive market.

When marginal cost is applied for fixation of selling price, it should be remembered that the price cannot be less than marginal cost. The price should be fixed above the contribution level in a way so as to have sufficient margin to contribute to the pool of fixed cost and profit. If the price is equal to marginal cost, then no contribution will be left for fixed cost recovery and hence, will result in loss.

(b) ABC Ltd. and MNO LTd. sell identical products in identical market. Their budgeted income statement for the year 2014-2015 are as follows:

	ABC Ltd. (₹)	**MNO Ltd. (₹)**
Sales	**5,00,000**	**6,00,000**
Less: Variable Cost	**(4,00,000)**	**(1,80,000)**
Contribution	**1,00,000**	**4,20,000**
Less: Fixed Cost	**(20,00)**	**(2,70,000)**
Budgeted Profit	**80,000**	**1,50,000**

Calculate:

(i) BEP foe each company;

(ii) Sales at which each company will earn a profit of ₹60,000;

(iii) Sales at which both companies will have same profits;

(iv) Sales at which both companies will have same profits;

- **Heavy Demand;**
- **Low Demand?**

Answer:

(i) B.E.P of ABC Ltd. = Fixed Cost / P.V ratio
P.V Ratio of ABC Ltd. = (1,00,000/ 5,00,000) × 100 = 20%
B.E.P of ABC Ltd. = 20,000/ 20% = ₹1,00,000

$$\text{B.E.P of MNO Ltd.} = \frac{2{,}70{,}000}{\frac{4{,}20{,}000}{6{,}00{,}000}\times 100} = ₹3{,}85{,}714$$

(ii) Sales to earn a profit of ₹60,000 [using formula, S =(FC + P) ÷ C/S ratio]
Required Sales of ABC Ltd. = ₹(20,000 + 60,000) ÷ 1/5 = ₹4,00,000
Required sales of MNO Ltd. = ₹(2,70,000 + 60,000) ÷ 7/10 = ₹4,71,429

(iii) Sales yielding same profit for both companies:
Let required sales = S, and Profit = P
Therefore, S –V = Contribution = F + P
Or, S × C/S ratio = F + P
For ABC Ltd. S × 1/5 =20,000 + P
Or, S = 1,00,000 + 5P……………………..eqn.(i)
For MNO Ltd. S × 7/10 = 2,70,000 + P
Or, S = 3,85,714 + 10/7 P………………..eqn.(ii)
Solving by simultaneous equation method, we get P = ₹80,000
And S = ₹5,00,000

(iv)

- In Case of High Demand, MNO Ltd. with higher C/S ratio will earn more profits.
- In case of Low Demand, ABC Ltd. with lower BEP will earn more profits.

Question.8

(a) What are the steps to be followed to increase the throughput accounting?

Answer:

The theory of constraints is applied within an organization by following what are called 'the five focusing steps.' These are a tool that Goldratt developed to help organizations deal with constraints, otherwise known as bottlenecks, within the system as a whole (rather than any discrete unit within the organization.)

The steps are as follows:

- Identify the bottle neck in the system i.e., identification of the limiting factor of the production (or) process such as installing capacity or hours etc.
- Decide how to exploit the systems bottleneck that means bottleneck resource should be actively and effectively used as much as possible to produce as many goods as possible.
- Subordinate everything else to the decision made in step (b). The production capacity of the bottleneck resource should determined production schedule.
- Augment the capacity of the bottleneck resource with the minimum capital input.
- Identify the new bottlenecks in the process and repeat the same above steps to address the bottlenecks.

(b) State the problems with throughput accounting.

Answer:

Problems with throughput accounting:

- When throughput accounting is the driving force behind all production scheduling, a customer that has already placed an order for a product, which will result in a sub-optimal profit level for the manufacturing, may find that its order is never filled.
- The company's ability to create the highest level of profitability is now dependent on the production scheduling staff, who decides, what products are to be manufactured and in what order.
- Another issue is that all costs are totally variable in the long-run since the management then, has the time to adjust them to long-range production volumes.

(c) A company produces two products X and Y, the production cost of which are show below:

	X (₹)	Y (₹)
Direct material cost	**10**	**10**
Direct labour cost	**5**	**9**
Variable overhead	**5**	**9**
Fixed overhead	**5**	**9**
	25	**37**

Fixed overhead is absorbed on the basis of direct labour cost.
The product passes through two processes, Assembly and Finishing. The associated labour cost is ₹10 per direct labour hour in each. The direct labour associated with the two products for these processes are shown below:

Process	Time taken	
	Product X	Product Y
Assembly	**10 minutes**	**40 minute**
Painting	**20 minutes**	**15 minutes**

The current market price for X is ₹65 and for Y it is ₹52. At these prices, the market will absorb as many units of X and Y as the company can produce. The capacity of the company to produce X and Y is limited by the available capacity of the two processes. The company operates two shifts of 8 hours each. Painting is a single process line and two hours in each shift will be down time. Assembly can process two units simultaneously, although this will double the requirement of direct labour. Painting can operate for full 16 working hours each day.
What production plan should the company follow in order to maximize profit under (i) Traditional Costing System and (ii) Throughput Accounting System?

Answer:
The total maximum processing time per day in 2 shifts:

Assembly	(2 × 8 hours) × 60 minutes	= 960 minutes
Painting	(2x6 hours)x 60 minutes	= 720 minutes
Expected output (units) per day	X	Y
Assembly	(960/10)× 2*=192	(960/40)× 2*=48 [*2 units at a time]
Painting	(720/20)= 36	(720/15)= 48

The key factor or the constraint is the time for painting.

(i) Under Traditional approach

Contribution of X per minute in painting	= ₹(65-20)÷20	= ₹2.25
Contribution of Y per minute in painting	₹(52-28)÷15	= ₹1.60

So, produce maximum possible number of X for (36 units x ₹45) = ₹1,620 (contribution)

(ii) Under throughput approach-

Contribution of X per minute in painting	=₹(65-10)÷20	=₹2.27
Contribution of Y per minute in painting	=(52-10)÷15	=₹2.80

So, produce maximum possible number of Y for (48 units x ₹42)=₹2,016 (contribution)

Question.9

(a) List out the objectives and limitation of Activity Based Costing.

Answer:

Objectives of Activity Based Costing

- To remove the distortions in computation of total costs as seen in the traditional costing system and bring more accuracy in the computation of costs of products and services.
- To help in decision making by accurately computing the costs of products and services.
- To identify various activities in the production process and further identify the value adding activities.
- To distribute overheads on the basis of activities.
- To focus on high cost activities.
- To identify the opportunities for improvement and reduction of costs.
- To eliminate non value adding activities.

Limitations of Activity Based Costing:

- Activity Based Costing is a complex system and requires lot of records and tedious calculations.
- For small organizations, traditional cost accounting system may be more beneficial than Activity Based Costing due to the simplicity of operation of the former.
- Sometimes it is difficult to attribute costs to single activities as some costs support several activities.
- There is a need of trained professionals who are limited in number.
- This system will be successful if there is a total support from the top management.
- Substantial investment of time and money is required for the implementation of this system.

(b) Explain the term Activity Based Management.

Answer:

The Activity Based Management is a tool of management that involves analysing and costing activities with the goal of improving efficiency and effectiveness. Though it is closely related to the Activity Based Costing, still it differs from the same in its primary goal. The Activity Based Costing focuses on activities with the object of measuring the cost of products/services. It tries to compute the cost as accurately as possible. On the other hand Activity Based Management focuses on managing the activities themselves. While in Activity Based Management, resources are traced to activities for evaluation of the activities themselves. In other words, efforts are made to improve the activities further. Thus Activity Based Management is a set of actions that management can take, based on information from an Activity Based Costing system, to increase/improve profitability.

For continuous improvement, Activity Based Management attempts the following analysis.

- Cost Driver Analysis
- Activity Analysis
- Performance Analysis

(c) ABC Ltd. is following Activity Based Costing. Budgeted Overheads and cost driver volumes are as follows:

Cost Pool	Budgeted Overheads	Cost Driver	Budgeted Volume

Material Procurement	**11.60 lakhs**	**No. of orders**	**2,200**
Material handling	**5.00 lakhs**	**No. of movement**	**1,300**
Maintenance	**19.40 lakhs**	**Maintenance hours**	**16,800**
Set-up	**8.30 lakhs**	**No. of set-ups**	**1,040**
Quality Control	**3.52 lakhs**	**No. of inspection**	**1,800**
Machinery	**14.40 lakhs**	**No. of machine hours**	**48,000**

The company has produced a batch of 5,200 components, its material cost was ₹2.60 lakhs and labour cost ₹ 4.90 lakhs. Usage activities of the said batch are as follows:
Material order - 52, Material movements - 36, Maintenance hours - 1,380, Setups - 50, Quality Control Inspection - 56 and Machine hours - 3,600. Calculate:
Cost driver rates that are used for tracing appropriate amount of overheads to the said batch and the cost of batch of component.

Answer:

Particulars	Details	Rate of Cost Drivers
Materials procurements	$\frac{11,60,000}{2,200}$	₹527
Materials handling	$\frac{50,00,000}{1,360}$	₹368
Maintenance	$\frac{19,40,000}{16,800}$	₹ 115
Set up	$\frac{8,30,000}{1,040}$	₹798
Quality Control	$\frac{3,52,000}{1,800}$	₹195
Machinery	$\frac{14,40,000}{48,000}$	₹30

Calculation of Batch of 5,200 Components

Direct materials		2,60,000
Direct labour		4,90,000
Prime cost		
Add: Overheads,		7,50,000
Material procurements (52 × ₹ 527)	27,404	
Material handling (36 × ₹ 368)	13,248	
Maintenance (1,380 × ₹ 115)	1,58,700	
Set up (50 × ₹ 798)	39,900	
Quality Control (56× ₹195)	10,920	
Machinery (3600 × ₹ 30)	1,08,000	3,58,172
		11,08,172

Question.10

(a) State the objectives of Inter Company Transfer Pricing.

Answer:

The following are the main objectives of intercompany transfer pricing scheme:

- **To evaluate the current performance and profitability of each individual unit:** This is necessary in order to determine whether a particular unit is competitive and can stand on its working. When the goods are transferred from one department to another, the revenue of one department becomes the cost of another and such inter transfer price affects the reported profits.

- **To improve the profit position:** Intercompany transfer price will make the unit competitive so that it may maximize its profits and contribute to the overall profits of the organization.
- **To assist in decision making :** Correct intercompany transfer price will make the costs of both the units realistic in order to take decisions relating to such problems as make or buy, sell or process further, choice between alternative methods of production.
- **For accurate estimation of earnings on proposed investment decisions :** When finance is scarce and it is required to determine the allocation of scarce resources between various divisions of the concern taking into consideration their competing claims, then this technique is useful.

(b) List out the advantages and limitation of Market Based Transfer Pricing.

Answer:
Market price based transfer price has the following advantages:
- Actual costs are fluctuating and hence difficult to ascertain. On the other hand market prices can be easily ascertained.
- Profits resulting from market price based transfer prices are good parameters for performance evaluation of selling and buying divisions.
- It avoids extensive arbitration system in fixing the transfer prices between the divisions.

However, the market price based transfer pricing has the following limitations:
- There may be resistance from the buying division. They may question buying from the selling division if in any way they have to pay the market prices.
- Like cost based prices, market prices may also be fluctuating and hence there may be difficulties in fixation of these prices.
- Market price is a rather vague term as such prices may be ex-factory price, wholesale price, retail price etc.
- Market prices may not be available for intermediate products, as these products may not have any market.
- This method may be difficult to operate if the intermediate product is for captive consumption.
- Market price may change frequently.
- Market prices may not be ascertained easily.

(c) Boraco Ltd. has been offered supplies of special ingredients S at a transfer price of ₹15 per kg by chhotaco Ltd. which is part of the same group of companies. Chhotaco Ltd processes and sells S to customers external to the group at ₹15 per kg. Chhotaco Ltd. bases its transfer price on cost plus 25% profit mark-up. Total cost has been estimated as 75% variable and 25% fixed.

You are required to:

Discuss the Transfer prices at which Chhotaco Ltd. should offer to transfer special ingredient S to Boraco Ltd. in order that group profit maximizing decisions may be taken on financial ground in each of the fallowing situations:-

(i) Chhotaco Ltd. has an external market for all of its production of S at a selling price of ₹15 per kg. Internal transfers to Boraco Ltd. would enable ₹1.50 per kg of variable packing cost to be avoided.

(ii) Conditions are as per (i) but Chhotaco Ltd has production capacity for 3,000 kg of S for which no external market is available.

(iii) Conditions are as per (ii) but Chhotaco Ltd has an alternative use for some of its spare production capacity. This alternative use is equivalent to 2,000 kg of S and would earn a contribution of ₹6,000.

Answer:

(i) The proposed Transfer price [tp], ₹15, is 125% of cost. So, cost= ₹12, of which variable cost is 75%= ₹9 and fixed cost is 25%= ₹3. Since Chhotaco [C] can sell all its production of S in external market, the market price, which is marginal cost plus opportunity cost, should normally be the internal tp.
MP=₹15, Variable cost is ₹9; so opportunity cost is ₹6. However, for internal transfer, packing cost of ₹1.50 will not be needed. Hence, while the outside SP will remain at ₹15, internal tp will be=Variable cost of ₹7.50+opportunity cost of ₹6 = ₹13.50 – which is the same as MP- Selling expenses avoided.

(ii) For the 3,000 kg where no external market is available, the opportunity cost will not apply and transfers should be at the variable cost of ₹7.50. It will not add to the profit of C Ltd but will enable it to avoid under-capacity working. The remaining output should be transferred at ₹13.50 as described above.

(iii) The lost contribution for the 2,000 kg is ₹3 per kg (₹6,000/2,000 kg) giving a tp of ₹10.50 (₹7.50 variable cost + ₹3 opportunity cost). The remaining 1,000 kg for which there is an external market at ₹13.50.

(d) How do you treat Rectification Cost and Obsolescence in Cost Accounts?
Answer:

Rectification Cost: In the course of manufacturing/process, there is likely to be some defective which can be rectified or brought up to the standard by incurring some extra material, labour and overheads. The cost is booked under 'Cost on rectification of detectives or re-processing cost'.

The detectives should be classified under (i) normal (ii) abnormal for the purpose of control and treated as:

- Normal detectives - Rectification cost may be treated as part of the product cost if this is identifiable with any specific product or process, otherwise this may be treated as manufacturing overhead.
- Abnormal detectives - Such detectives should not normally have arisen and therefore, rectification cost is not to be charged in cost accounts but debitable to profit and loss account.

Obsolescence:

- Obsolescence of Fixed Assets.
- Obsolescence of Inventory.

Obsolescence of Fixed Assets:
Obsolescence represents the loss arising as a result of having the discard an asset due to its supersession in favor of a more productive asset at an earlier date than planned /contemplated. It is sometimes called "external depreciation" because the existing asset is replaced by a now asset on account of invention/innovation.
The loss due to obsolescence to fixed assets may be dealt with in the following manner:

- In industries which are vulnerable to the risks of obsolescence, e.g., electronics, it is somewhat predictable that obsolescence will take place with certain frequency. In such case, higher rates of deprecation may be charged to take care of such obsolescence.
- For industries which are not vulnerable to frequent obsolescence it is prudent to create a reserve fund to take care of such eventualities.
- For other industries bearing a remote possibility of obsolescence in the event of obsolescence taking place, loss is to be written off to profit and loss account.

Obsolescence of Inventory:
Obsolete inventory may consist of raw materials, stores of finished goods. In either case, the write off is made direct to profit and loss account or no charge is made to cost of production.

SN- 3 (Budgeting and Budgetary Control)

Question.11

(a) Explain the factors to be considered in preparing sales budget.

Answer:

The following factors must be considered in preparing the sales budget:

- The locality of the market i.e., domestic or export
- The target customers i.e., industry or trade or a section or group of general public etc.,
- The product portfolio i.e., the number of products offered and their popularity among the target customers.
- The market share of each product and its influence on the product portfolio and the total market
- The effectiveness of existing marketing policy on the current sales volume and value.
- The market share of competitor's products and their effect on the company's sales.
- Seasonal fluctuation in sales.
- Expenditure on advertisement and its impact on sales.

(b) Distinguish between Fixed Budget and Flexible Budget.

Answer:

	Fixed Budget	Flexible Budget
I.	It does not change with actual volume of activity achieved. Thus it is known as rigid or inflexible budget.	It can be recasted on the basis of activity level to be achieved. Thus it is not rigid.
II.	It operates on one level of activity and under one set of conditions. It assumes that there will be no change in the prevailing conditions, which is unrealistic.	It consists of various budgets for different levels of activity
III.	Here as all costs like – fixed, variable and semi-variable are related to only one level of activity so variance analysis does not give useful information.	Here analysis of variance provides useful information as each cost is analysed according to its behaviour.
IV.	If the budgeted and actual activity levels differ significantly, then the aspects like cost ascertainment and price fixation do not give a correct picture	Flexible budgeting at different levels of activity facilitates the ascertainment of cost, fixation of Selling price and tendering of quotations.
V.	Comparison of actual performance with budgeted targets will be meaningless specially when there is a difference between the two activity levels.	It provides a meaningful basis of comparison of the actual performance with the budgeted targets.

(c) Write a note on Responsibility Accounting.

Answer:

'Responsibility Accounting is a system of accounting that recognizes various responsibility centers throughout the organization and reflects the plans and actions of each of these centers by assigning particular revenues and costs to the one having the pertinent responsibility. It is also called profitability accounting and activity accounting. It is a system in which the person holding the supervisory posts as president, function head, foreman, etc are given a report showing the performance of the company or department or section as the case may be. The report will show the data relating to operational results of the area and the items of which he is responsible for control. Responsibility accounting follows the basic principles of any system of cost control like budgetary control and standard costing. It differs only in the sense that it lays emphasis on human beings and fixes responsibilities for individuals. It is based on the belief that control can be exercised by human beings, so responsibilities should be fixed for individuals.

Principles of responsibility accounting are as follows:
- A target is fixed for each department or responsibility center.
- Actual performance is compared with the target.
- The variances from plan are analysed so as to fix the responsibility.
- Corrective action is taken by higher management and is communicated.

Question.12

(a) Explain the pre-requisites for the adoption of a system of Budgetary Control.

Answer:

For the successful implementation of a system of budgetary control certain pre-requisites are to be fulfilled. These are enumerated below:

- There should be an organization chart laying out in clear terms the responsibilities and duties of each level of executives, and the delegation of authority to the various levels. For complete success, a solid foundation in this regard should be laid at the outset.
- The objectives, plans and policies of the business should be defined in clear cut and unambiguous terms.
- The output level for which budgets are fixed, i.e., the budgeted output, should be stated.
- The particular budget factor which will be the starting point of the preparation of the various budgets should be indicated.
- There should be an efficient system of accounting to record and provide data in line with the budgetary control system.
- For the establishment and efficient execution of the plan, a Budget Committee should be set up.
- There should be a proper system of communication and reporting between the various levels of management.
- There should be a charter of programme. This is usually in the form of a budget manual.
- The budgets should primarily be prepared by those who are responsible for performance.
- The budgets should be complete, continuous and realistic.
- There should be an assurance from the top management executives of co-operation and acceptance of the budgetary system.

(b) Explain the term Zero-Base Budgeting (ZBB).

Answer:

Zero Base Budgeting is a method of budgeting starting from scratch or zero level. Proposals for the coming period should be based on merit and not related to past performance. Budgets prepared by conventional methods are the incremental type of budget based on actual performance in the past periods. In the zero base budget, the results of the past year is not accepted as a basis, since the past may conceal inefficiencies.

Zero Base Budget is mainly prepared by taking the following steps.
- Identification of decision units
- Preparation of decision packages.
- Ranking of decision packages using cost benefit analysis.
- Allotment of available funds according to the priority determined by ranking each decision package is a self contained module explaining the need for a certain activity,

its costs, its benefits consequences if the packages is not accepted etc. The ranking of package based on cost benefit analysis by the difficult levels of management starring from the bottom upward ensures allotment of funds to relatively more important and essential activities.

(c) The budgeted cost of a factory specialising in the production of a single product at the optimum capacity of 6,400 units per annum amounts ₹1,76,048 as detailed below:

	₹	₹
Fixed Cost		**20,688**
Variable Costs:		
Power	**1,440**	
Repairs etc	**1,700**	
Miscellaneous	**540**	
Direct material	**49,280**	
Direct labour	**1,02,4000**	**1,55,360**
		1,76,048

Having regard to possible impact on sales turnover by market trends the company decided to have a flexible budget with a production target of 3,200 and 4,800 units (the actual quantity proposed to be produced being left to a later date before commencement of the budget period). Prepare a flexible budget for production levels at 50% and 75% capacity.

Assume selling price per unit is maintained at ₹40 as at present, indicate the effect on net profit.
Administration, selling and distribution expenses continue at ₹4,500.
Answer:
FLEXIBLE BUDGET

Capacity Levels	100%	75%	50%
Output (Units)	6,400	4,800	3,200
Fixed Costs	₹ 20,688	₹ 20,688	₹ 20,688
Variable costs:			
Direct materials @ ₹ 7.70 per unit	49,280	36,960	24,640
Direct labour @ ₹ 16.00 per unit	1,02,400	76,800	51,200
Power @ ₹ 0.225 per unit	1,440	1,080	720
Repairs etc. @ ₹ 0.265625 per unit	1,700	1,275	850
Miscellaneous @ ₹ 0.084375 per unit	540	405	270
Total cost	1,76,048	1,37,208	98,368
Sales @ ₹ 40 per unit	2,56,000	1,92,000	1,28,000
Gross profit	79,952	54,792	29,632
Administration expenses	4,500	4,500	4,500
Net profit	75,452	50,292	25,132

SN- 4 (Standard Costing)

Question.13
(a) Define Standard Costing. List the general principle of standard costing.

Answer:

Standard Costing is defined as "the preparation and use of standard cost, their comparison with actual costs and the measurement and analysis of variances to their causes and points of incidence."

General Principles of Standard Costing:

- Predetermination of technical data related to production. i.e., details of materials and labour operations required for each product, the quantum of inevitable losses, efficiencies expected level of activity, etc.
- Predetermination of standard costs in full details under each element of cost, viz., labour, material and overhead.
- Comparison of the actual performance and costs with the standards and working out the variances, i.e., the differences between the actual and the standards.
- Analysis of the variances in order to determine the reasons for deviations of actual from the standards.
- Presentation of information to the appropriate level of management to enable suitable action (remedial measures or revision of the standards) being taken.

(b) Distinguish between Standard Costing and Budgetary Control.

Answer:
The difference may be summarized as follows:
- A system of Budgetary Control may be operated even if no Standard Costing system is in use in the concern.
- While standard is an unit concept, budget is a total concept.
- Budgets are the ceilings or limits of expenses above which the actual expenditure should not normally rise; if it does, the planned profits will be reduced. Standards are minimum targets to be attained by actual performance at specified efficiency.
- Budgets are complete in as much as they are framed for all the activities and functions of a concern such as production, purchase, selling and distribution, research and development, capital utilisation, etc. Standard Costing relates mainly to the function of production and the related manufacturing costs.
- A more searching analysis of the variances from standards is necessary than in the case of variations from the budget.
- Budgets are indices, adherence to which keeps a business out of difficulties. Standards are pointers to further possible improvements.

Question.14
(a) List out the advantages and disadvantages in Standard Costing.

Answer:
Advantages of Standard Costing:
The advantages derived from a system of standard costing are tabulated below:
- Standard Costing system establishes yard-sticks against which the efficiency of actual performances is measured.
- The standards provide incentive and motivation to work with greater effort and vigilance for achieving the standard. This increase efficiency and productivity all round.
- At the very stage of setting the standards, simplification and standardisation of products, methods, and operations are effected and waste of time and materials is eliminated. This assists in managerial planning for efficient operation and benefits all the divisions of the concern.
- Costing procedure is simplified. There is a reduction in paper work in accounting and less number of forms and records are required.
- Cost are available with promptitude for various purposes like fixation of selling prices, pricing of interdepartmental transfers, ascertaining the value of costing stocks of work-in-progress and finished stock and determining idle capacity.
- Standard Costing is an exercise in planning - it can be very easily fitted into and used for budgetary planning.
- Standard Costing system facilities delegation of authority and fixation of responsibility for each department or individual. This also tones up the general organisation of the concern.

- Variance analysis and reporting is based on the principles of management by exception. The top management may not be interested in details of actual performance but only in the variances form the standards, so that corrective measures may be taken in time.
- When constantly reviewed, the standards provide means for achieving cost reduction.
- Standard costs assist in performance analysis by providing ready means for preparation of information.
- Production and pricing policies may be formulated in advance before production starts. This helps in prompt decision-making.
- Standard costing facilitates the integration of accounts so that reconciliation between cost accounts and financial accounts may be eliminated.
- Standard Costing optimizes the use of plant capacities, current assets and working capital.

Limitations of standard costing:

- Establishment of standard costs is difficult in practice.
- In course of time, sometimes even in a short period the standards become rigid.
- Inaccurate, unreliable and out of date standards do more harm than benefit.
- Sometimes, standards create adverse psychological effects. If the standard is set at high level, its non achievement would result in frustration and build-up of resistance.
- Due to the play of random factors, variances cannot sometimes be properly explained, and it is difficult to distinguish between controllable and non-controllable expenses.
- Standard costing may not sometimes be suitable for some small concerns. Where production cannot be carefully scheduled, frequent changes in production conditions result in variances. Detailed analysis of all of which would be meaningless, superfluous and costly.
- Standard costing may not, sometimes, be suitable and costly in the case of industries dealing with non-standardized products and for repair jobs which keep on changing in accordance with customer's specifications.
- Lack of interest in standard costing on the part of the management makes the system practically ineffective. This limitation, of course, applies equally in the case of any other system which the management does not accept wholeheartedly.

(b) A Company using a detailed system of standard costing finds that the cost of investigation of variances is ₹ 20,000. If after investigation an out of control situation is discovered, the cost of correction is ₹ 30,000. If no investigation is made, the present value of extra cost involved is ₹ 1,50,000. The probability of the process being in control is 0.82 and the probability of the processes being out of control is 0.18. You are required to advice:

(i) Whether investigation of the variances should be undertaken or not;

(ii) The probability at which it is desirable to institute investigation into variances.

Answer:

(i) Whether investigation should be undertaken or not:

Situation	**Cost (a)**	**Probability (b)**	**Effective Cost (a) × (b)**
Process under control	20,000	.82	16,400
Process out of control (20,000+30,000)	50,000	.18	9,000
Total cost to investigate:			25,400

Cost of not to investigate:

Extra cost of correction × Probability of processing being out of control

= 1,50,000 × .18

= 27,000

Since cost when investigation is undertaken is less than the cost of no investigation it should be done.

(ii) Probability at which Investigation into Variance should be instituted

Finding out the probability at which both costs are equal.
Let x be the probability of process being in control.
Therefore,
(1-x) is probability of process being out of control.

Process	Cost of Investigation		Effective Cost (1) × (2)	Cost of No Investigation
	Cost (1)	Probability (2)		
In Control	20,000	x	20,000x	1,50,000 × (1-x)
Out of Control	50,000	1-x	50,000 – 50,000x	
Net Cost			50,000-30,000x	1,50,000-1,50,000x

Equating two cost:
50,000 – 30,000x = 1,50,000 – 1,50,000x
⇨ 1,20,000x = 1,00,000
or, x = 0.833.

At the probability level of 0.83 (Process-in-control), both costs are equal. As this probability level decline, the cost of not investigating will be greater than cost of investigating. If probability level is anywhere below 0.83, investigation should be instituted.

(c) State the scope and advantages of Uniform Costing.

Answer:

Scope of Uniform Costing:

Uniform costing methods may be advantageously applied:

- In a single enterprise having a number of branches or units, each of which may be a separate manufacturing unit.
- In a number of concerns in the same industry bound together through a trade association or otherwise, and
- In industries which are similar in nature such as gas and electricity, various types of transport, and cotton, jute and woolen textiles.
  The need for application of Uniform Costing System exists in a business, irrespective of the circumstance and conditions prevailing therein. In concerns which are members of a trade association, the procedure for Uniform Costing may be devised and controlled by the association or by any other central body specially formed for the purpose.

Advantages of Uniform Costing:
Main advantages of a Uniform Costing System are summarized below:
- It provides comparative information to the members of the organization / association which may by them to reduce or eliminate the evil effects of competition and unnecessary expenses arising from competition.
- It enables the industry to submit the statutory bodies reliable and accurate data which might be required to regulate pricing policy or for other purposes.
- It enables the member concerns to compare their own cost data with that of the others detect the weakness and to take corrective steps for improvement in efficiency.
- The benefits of research and development can be passed on the smaller members of the association leading to benefit of the industry as a whole.
- It provides all valuable features of sound cost accounting such as valued and efficiency of the workers, machines, methods, etc., current reports of comparing major cost items with the predetermined standards, etc.
- It serves as a prerequisite to Cost Audit and inter firm comparison.
- Uniform Costing is a useful tool for management control. Performance of individual units can be measured against norms set for the industry as a whole.
- It avoids cut-throat completion by ensuring that competition among member units

proceeds on healthy lines.

- The process of pricing policy becomes easier when Uniform Costing is adopted.
- By showing the one best way of doing things, Uniform Costing creates cost consciousness and provides the best system of cost control and cost presentation in the entire industry.
- Uniform costing simplifies the work of wage boards set up to fix minimum wages and fair wages for an industry.

Question.15 Following information is given regarding standard composition and standard rates of a gang of workers:

Standard composition	Standard hourly rate
10 Men	₹ 0.625
5 Women	0.400
5 Boys	0.350

According to given specifications, a week consists of 40 hours and standard output for a week is 1,000 units.
In a particular week, gang consisted of 13 men, 4 women and 3 boys and actual wages were paid as follows:
Men @ ₹ 0.6 per hour Women @ ₹ 0.425 per hour Boys @ ₹ 0.325 per hour
Two hours were lost in the week due to abnormal idle time. Actual production was 960 units in the week.
Find out—
(i) Labour rate variance
(ii) Labour mix variance.
(iii) Labour idle time variance.
(iv) Labour yield variance.
(v) Labour efficiency variance.
(vi) Labour cost variance.

Answer:

L_1 - Actual payment to workers for actual hours worked

Actual composition of gang		Hrs. worked		Rate	Amount
13 Men	x	40	x	₹0.600	`₹312
4 Women	x	40	x	0.425	68
3 Boys	x	40	x	0.325	39
					419

L_2 – Payment involved, if workers had been paid at standard rate

Actual composition of gang		Hrs. worked		S. Rate	Amount
13 Men	x	40	x	₹ 0.625	₹325
4 Women	x	40	x	0.400	64
3 Boys	x	40	x	0.350	42
					431

L_3 – Payment involved, if workers had been used according to proportion of standard gang and payment had been made at standard rate.

Actual composition of gang		Hrs. worked		S. Rate	Amount
10 Men	x	40	x	₹0.625	₹250
5 Women	x	40	x	0.400	80
5 Boys	x	40	x	0.350	70
					400

L_4 – Standard labour cost of labour hours untilized.

Actual composition of gang		Hrs. worked		S. Rate	Amount
10 Men	x	38	x	₹ 0.625	₹237.50
5 Women	x	38	x	0.400	76.00
5 Boys	x	38	x	0.350	66.50
					380.00

L_5 – Standard labour cost of output achieved.

$$\frac{\text{Standard labour cost for standard output}}{\text{Standard output}} \times \text{Actual output} = \frac{₹\,400}{1{,}000 \text{ units}} \times 960 \text{ units} \text{ or } ₹384$$

Variances

(i) Labour Rate Variance = $L_1 - L_2$ = ₹419 – ₹431 or ₹12 (F)
(ii) Labour Mix Variance = $L_2 - L_3$ = ₹431 – ₹400 or ₹31 (A)
(iii) Labour Idle Time Variance = $L_3 - L_4$ = ₹400 – ₹380 or ₹20 (A)
(iv) Labour Yield Variance = $L_4 - L_5$ = ₹380 – ₹384 or ₹4 (F)
(v) Labour Efficiency Variance = $L_2 - L_5$ = ₹431 – ₹384 or ₹47 (A)

Alternatively, Labour Efficiency Variance = Labour Mix Variance + + Labour Idle Time Variance + Labour Yield Variance.
= 31 (A) + 20 (A) + 4 (F) or ₹47 (A)
(vi) Labour Cost Variance = $L_1 - L_5$ = ₹419 – ₹384 or ₹35 (A)

Alternatively, Labour Cost Variance = Labour Rate Variance + Labour Mix Variance + Labour Idle Time Variance + Labour Yield Variance = 12 (F) + 31 (A) + 20 (A) + 4 (F) or 35 (A)

Section B

SN-5 (Cost Accounting Records and Cost Audit)

Question.16
(a) Explain the objective of Cost Audit.

Answer:

Cost Audit has both general and social objectives. The general objectives can be described to include the following:

Verification of cost accounts with a view to ascertaining that these have been properly maintained and compiled according to the cost accounting system followed by the enterprise.

Ensuring that the prescribed procedures of cost accounting records rules are duly adhered to Detection of errors and fraud.
Verification of the cost of each "cost unit" and "cost center" to ensure that these have been properly ascertained.
Determination of inventory valuation.
Facilitating the fixation of prices of goods and services.
Periodical reconciliation between cost accounts and financial accounts.
Ensuring optimum utilization of human, physical and financial resources of the enterprise.
Detection and correction of abnormal loss of material and time.
Inculcation of cost consciousness.
Advising management, on the basis of inter-firm comparison of cost records, as regards the areas where performance calls for improvement.
Promoting corporate governance through various operational disclosures to the directors.
Among the social objectives of cost audit, the following deserve special mention:
Facilitation in fixation of reasonable prices of goods and services produced by the enterprise.
Improvement in productivity of human, physical and financial resources of the enterprise.

Channelising of the enterprise resources to most optimum, productive and profitable areas.
Availability of audited cost data as regards contracts containing escalation clauses.
Facilitation in settlement of bills in the case of cost-plus contracts entered into by the Government.
Pinpointing areas of inefficiency and mismanagement, if any for the benefit of shareholders, consumers, etc., such that necessary corrective action could be taken in time.

(b) Describe the provision for Cost Audit.

Answer:

Provision for Cost Audit

Section 233B was inserted by section 23 of the Companies (Amendment) Act, 1965, in order to enable Government to issue necessary directions for conducting cost audit of companies engaged in production, processing, manufacturing or mining activities. The Notes on clauses stated that the purpose of the section was to "enable Government to issue necessary directions for conducting cost audit of companies engaged in production, processing, manufacturing or mining activities" (clause 24).

- Where in the opinion of the Central Government it is necessary so to do in relation to any company required under clause (d) of sub-section (1) of section 209 to include in its books of account the particulars referred to therein, the Central Government may, by order, direct that an audit of cost accounts of the company shall be conducted in such manner as may be specified in the order by an auditor who shall be a cost accountant within the meaning of the Cost and Works Accounts Act, 1959 (23 of 1950) :
  Provided that if Central Government is of opinion that sufficient number of cost accountants within the meaning of the Cost and Works Accountants Act, 1959 (23 of 1959), are not available for conducting the audit of the cost accounts of companies generally, that Government may, by notification in the Official Gazette, direct that, for such period as may be specified in the said notification, such chartered accountant within the meaning of the Chartered Accountants Act, 1949 (38 of 1949), as possesses the prescribed qualifications, may also conduct the audit of the cost accounts of companies, and thereupon a chartered accountant possessing the prescribed qualifications may be appointed to audit the cost accounts of the company.
- The auditor under this section shall be appointed by the Board of directors of the company in accordance with the provisions of sub-section (1B) of section 224 and with the previous approval of the Central Government : Provided that before the appointment of any auditor is made by the Board, a written certificate shall be obtained by the Board from the auditor proposed to be so appointed to the effect that the appointment, if made, will be in accordance with the provisions of sub-section (1B) of section 224.
- An audit conducted by an auditor under this section shall be in addition to an audit conducted by an auditor appointed under section 224.
- An auditor shall have the same powers and duties in relation to an audit conducted by him under this section as an auditor of a company has under sub-section (1) of section 227 and such auditor shall make his report to the Central Government in such form 498 and within such time as may be prescribed and shall also at the same time forward a copy of the report to the company.
- (a) A person referred to in sub-section (3) or sub-section (4) of section 226 shall not be appointedor re-appointed for conducting the audit of the cost accounts of a company.
  (b) A person appointed, under section 224, as an auditor of a company, shall not be appointed or re-appointed for conducting the audit of the cost accounts of that company.
  (c) If a person, appointed for conducting the audit of cost accounts of a company, becomes subject, after his appointment, to any of the disqualifications specified in clause (a) or clause (b) of this sub-section, he shall, on and from the date on which

he becomes so subject, cease to conduct the audit of the cost accounts of the company.

- Upon receipt of an order under sub-section (1), it shall be the duty of the company to give all facilities and assistance to the person appointed for conducting the audit of the cost accounts of the company.
- The company shall, within thirty days from the date of receipt of a copy of the report referred to in sub-section (4), furnish the Central Government with full information and explanations on every reservation or qualification contained in such report.
- If, after considering the report referred to in sub-section (4) and the information and explanations furnished by the company under sub-section (7), the Central Government is of opinion that any further information or explanation is necessary, that Government may call for such further information and explanation and thereupon the company shall furnish the same within such time as may be specified by the Government.
- On receipt of the report referred to in sub-section (4) and the in formations and explanations furnished by the company under sub-section (7) and sub-section (8), the Central Government may take such action on the report, in accordance with the provisions of this Act or any other law for the time being in force, as it may consider necessary.
- The Central Government may direct the company whose cost accounts have been audited under this section to circulate to its members, along with the notice of the annual general meeting to be held for the first time after the submission of such report, the whole or such portion of the said report as it may specify in this behalf.
- If default is made in complying with the provisions of this section, the company shall be liable to be punished with fine which may extend to five thousand rupees, and every officer of the company who is in default, shall be liable to be punished with imprisonment for a term which may extend to three years, or with the fine which may extend to five thousand rupees, or with both.

Question.17

What procedure is required to be followed by a company in respect of appointment of Cost Auditor?

Answer:

Procedure for appointment of Cost Auditor:

(i) The company required to get its cost records audited u/s 233B(1) of the Companies Act, 1956 shall appoint Cost Auditor as defined Cost Accountant as defined in clause (b) of sub-section (1) of section 2 of the Cost and Works Accountants Act, 1959 (23 of 1959) and who holds a valid certificate of practice under sub-section (1) of section 6 of that Act and including a Firm of Cost Accountants. However, the cost accountant or partners of a firm of cost accountant should be in whole-time practice and not holding any other employment.

(ii) Under the revised procedure, the first point of reference will be the Audit Committee to ensure that the cost auditor is free from any disqualification as specified under section 233B(5) read with section 224 and sub-section (3) or sub-section (4) of section 226 of the Companies Act, 1956. The Audit Committee should also ensure that the cost auditor is independent and is at arm's length relationship with the company. After ascertaining the eligibility, the Audit Committee will recommend to the Board of Directors for appointment of the Cost Auditor.

In those companies where constitution of an Audit Committee is not required by law, the functions of the "Audit Committee" as per the procedure will be discharged by the "Board of Directors".

(iii) The cost auditor will be required to give a separate certificate to the audit committee in respect to his/its independence and arm's length relationship with the company.

(iv) The Company is required to e-file its application with the Central Government on www.mca.gov. inportal, in the prescribed Form23C within ninety (90) days from the date of commencement of each financial year, along with the prescribed fee as per the Companies (Fees on Application) Rules, 1999 as amended from time to time and other documents as per existing practice i.e.

- certified copy of the Board Resolution proposing appointment of cost auditor; and
- Copy of the certificate obtained from the cost auditor regarding compliance of section 224(1-B)of the Companies Act, 1956.

(v) After filing the online application by the Company, the same shall be deemed to be approved by the Central Government, unless contrary is heard within thirty (30) days from the date of filing such application.

However, if within thirty (30) days from the date of filing such application, the Central Government directs the Company to re-submit the said application with such additional information or explanation, as may be specified in that direction, the period of thirty days for deemed approval of the Central Government will be counted from the date of re-submission of Form 23C by the Company.

(vi) After obtaining approval of the Central Government (deemed or otherwise), the Company will be required to issue a formal letter of appointment to the cost auditor.

(vii) The Cost Auditor is required to inform the Central Government within thirty days of receipt of formal letter of appointment from the Company. Such intimation is required to be done in prescribed e-Form 23 D along with a copy of such appointment.

(viii) The Company is required to disclose full particulars of the cost auditor along with the due date and actual date of filing of the Cost Audit Report by the cost auditor, in its Annual Report for each relevant financial year. Since the notification has made effective from April 1, 2011, companies under cost audit are required to furnish the details in its Annual Report from the financial year 2010-11.

Question.18

(a) What should be the qualification of Cost Auditor?

Answer:

Qualification of Cost Auditor

The disqualifications of a person for being appointed or re-appointed for conducting the cost audit are detailed in sub-Sections (a), (b) and (c) Section 233 (5) of the Companies Act, 1956 detailed as under:

- The sub-Section (5)(a) provides that a person referred to in sub-Section (3) or sub-Section (4) of the Section 226 shall not be appointed or re-appointed for conducting the audit of the cost accounts of a company.
- The sub-Section 5(b) provides that a person appointed under Section 224 as an auditor of a company shall not be appointed or re-appointed for conducting the audit of the cost accounts of that company.
- The sub-Section (5)(c) provides that if a person, appointed for conducting the audit of cost accounts of a company, becomes after his appointment, to any of the disqualifications specified in clause 5(a) or 5(b) above, he shall on and from the date on which he becomes disqualified, shall cease to conduct the audit of the cost accounts of the company.

Section 226 of the Companies Act, 1956 provides for the qualifications and disqualifications of the auditors. Reading of sub-Section (3) of Section 226 implies that the following persons cannot be appointed or reappointed as cost auditor of a company –

- a body corporate;
- an officer or employee of the company;
- a person who is a partner, or who is in the employment, of an officer or employee of the company;
- a person who is indebted to the company for an amount exceeding one thousand rupees or who has given any guarantee or provided any security in connection with the indebtedness of any third person to the company for an amount exceeding one thousand rupees;

- a person holding any security of that company after a period of one year from the date of commencement of the Companies (Amendment) Act, 2000. (Explanation: "security" means an instrument which carries voting rights);
  The sub-Section (4) of Section 226 provides that a person shall also not be qualified for appointment as auditor of a company if he is, by virtue of sub-Section (3), disqualified for appointment as auditor of any other body corporate which is that company's subsidiary or holding company or a subsidiary of that company's holding company, or would be so disqualified if the body corporate were a company. In other words, if a person is disqualified under any of the aforesaid classes from being appointed as an auditor of any company or body corporate, he cannot be appointed as auditor of its holding company, subsidiary or 'co-subsidiary'; and
  A person, who is in full time employment elsewhere [Section 224 (1B)].
  If an auditor becomes disqualified after his appointment, under any of the above provisions he shall be deemed to have vacated his office.

(b) State the power of Cost Auditor.

Answer:

Powers of Cost Auditor

Section 233B (4) of the Companies Act, 1956 gives the cost auditor same powers as the financial auditor has under Section 227(1). In addition, Rule 6 of the Cost Audit Report Rules also requires the company and every officer thereof, including the persons referred to in sub-Section (6) of Section 209 of the Act to make available to the cost auditor, within 135 days from the close of the financial year of the company, such cost accounting records, cost statements, other books and documents, Annexure and Proforma to the Report, duly completed as would be required for conducting the cost audit, and shall render necessary assistance to the Cost Auditor so as to enable him to complete the cost audit and submit his report within the time limit specified in rule 5. Section 233B(6) further provides that it shall be the duty of the company to give all facilities and assistance to the cost auditor so as to enable him to complete the audit and send the report within the prescribed time limit.

The powers of the cost auditor under sub-Section (1) of Section 227 are as under:
Right to access at all times to the books and accounts and vouchers of the company, whether kept at the head office of the company or elsewhere.
Entitled to require from the officers of the company such information and explanations as he may think necessary for the performance of his duties as an auditor.

Question.19
(a) Enumerate the duties to be followed by Cost Auditor.

Answer:

The duties of the cost auditor are also similar to those of the (financial) auditor of the company has under sub-Section (1) of Section 227 (Section 223B(4)).The duties of the cost auditor inter-alia include:

- To ensure that the proper books of accounts as required by Cost Accounting Records Rules have been kept by the company so far as it appears from the examination of those books and proper returns for the purpose of his audit have been received from branches not visited by him;
- To ensure that the Cost Audit Report and the detailed cost statements are in the form prescribed by the Cost Audit Report Rules by following sound professional practices i.e. the report should be based on verified data and observations may be framed after the company has been afforded an opportunity to comment on them;
- The underline assumptions and basis for allocation and absorption of indirect expenses are reasonable and are as per the established accounting principles;

- If the auditor is not satisfied in any of the aforesaid matters, he may give a qualified report along with the reasons for the same;
- Sending the Report to the Cost Audit Branch within 180 days from the end of the financial year with one copy to the company;
- Sending his replies to any clarification, that may be sought by the Cost Audit Branch on his report. Sending such replies within 30 days from the date of receipt of communication calling for such clarification.

(b) Who can be appointed as Cost Auditor? Who is competent authority in companies to appoint Cost Auditor?

Answer:

The company required to get its cost records audited u/s 233B(1) of the Companies Act, 1956 shall appoint Cost Auditor as defined Cost Accountant as defined in clause (b) of sub-section (1) of section 2 of the Cost and Works Accountants Act, 1959 (23 of 1959) and who holds a valid certificate of practice under sub-section (1) of section 6 of that Act and including a Firm of Cost Accountants . However, the cost accountant or partners of a firm of cost accountant should be in whole-time practice and not holding any other employment.

Under the revised procedure, the first point of reference will be the Audit Committee to ensure that the cost auditor is free from any disqualification as specified under section 233B(5) read with section 224 and sub-section (3) or sub-section (4) of section 226 of the Companies Act, 1956. The Audit Committee should also ensure that the cost auditor is independent and is not at arm's length relationship with the company. After ascertaining the eligibility, the Audit Committee will recommend to the Board of Directors for appointment of the Cost Auditor.
In those companies where constitution of an Audit Committee is not required by law, the functions of the "Audit Committee" as per the procedure will be discharged by the "Board of Directors".

Question.20
(a) In which Companies (Cost Accounting Records) Rules 2011 is applicable.

Answer:
The said Rules are applicable to all companies engaged in production, processing, manufacturing and mining activities as defined under Rules 2(j), 2(k), 2(l) or 2(o) respectively and where:
- the aggregate value of net worth as on the last date of the immediately preceding financial year exceeds five crores of rupees; or
- the aggregate value of the turnover made by the company from sale or supply of all products or activities during the immediately preceding financial year exceeds twenty crores of rupees; or
- the company's equity or debt securities are listed or are in the process of listing on any stock exchange, whether in India or outside India.

  Any company meeting the above criteria would be required to maintain cost accounting records and file a Compliance Report in the prescribed format from financial year commencing on and from 1st April 2011.

(b) Where the Companies (Cost Accounting Records) Rule 2011 is not applicable?

Answer:
These Rules are not applicable to a company which is a body corporate governed by a Special Act.
Further, the Companies (Cost Accounting Records) Rules 2011 is not applicable to activities or products covered in any of the following rules:

- Cost Accounting Records (Bulk Drugs) Rules, 1974
- Cost Accounting Records (Formulations) Rules, 1988
- Cost Accounting Records (Fertilizers) Rules, 1993
- Cost Accounting Records (Sugar) Rules, 1997
- Cost Accounting Records (Industrial Alcohol) Rules, 1997
- Cost Accounting Records (Electricity Industry) Rules, 2001
- Cost Accounting Records (Petroleum Industry) Rules, 2002
- Cost Accounting Records (Telecommunications) Rules, 2002

In case a company is engaged in activities, in addition to the activities covered by the above 8 Rules, such activities shall be covered under the Companies (Cost Accounting Records) Rules 2011.

Question.21 Write a note on
(i) Audit Committee and Cost Audit Report
(ii) Cost Audit of Captive Power Generation Plants

Answer:

(i) Audit Committee and Cost Audit Report

Several issues are raised whether or not the Annexure to a Cost Audit Report can be approved by the Audit Committee and/or the Board of Directors by circular resolution. With reference to MCA Master Circular No. 2/2011 dated 11th November 2011 and read with Sub-section (6) of section 292A of the Companies Act, 1956 states that the Audit Committee should have discussions with the auditors periodically about internal control systems, the scope of audit including the observations of the auditors and review the half yearly and annual financial statements before submission to the Board and also ensure compliance on internal control systems. Departmental Circular No. 6/2001 dated 20.08.2001 has already clarified that the term "auditors" includes cost auditor and hence "scope of audit including observations of the auditors" occurring in the above sub-section includes the scope of cost audit including observations of the cost auditors as well. The presence of the cost auditor in such committees will ensure overall cost management, efficiency in resource utilization, business vertical-wise performance evaluation, proper pricing of inter-unit/inter-company transfers and valuation of inventories. Hence, the company must place the cost audit report before the Audit Committee first, which in its duty to ensure compliance of internal control system shall also discuss the suggestions made in the cost audit report for implementation, wherever cost audit has been directed under section 233B of the Companies Act, 1956.

The Audit Committee, after due consideration of the Cost Audit Report is required to submit the same for approval of the Board. Since the Board of Directors is required to approve the Annexure to the Cost Audit Report and authorize one of the Directors and the Company Secretary (two Directors in the absence of a Company Secretary) to sign the same, the Board should also consider the Cost Audit Report in a duly convened meeting and it would not be advisable to approve the same by circular resolution.

(ii) Cost Audit of Captive Power Generating Plants

The issue of whether or not the Cost Audit Order no. 52/26/CAB-2010 dated 2nd May 2011 on cost audit is applicable for Captive Power Generating Plants.

It has been clarified, vide MCA General Circular No. 67/2011 dated 30th November 2011, that Generation of electricity for captive consumption is not covered under the above order. For this purpose, the term "Captive Generating Plant" has been defined to have the same meaning as assigned in Rule 3 of the Electricity Rules, 2005 which is reproduced below. It may, however, be noted that cost records as required under Cost Accounting Records (Electricity Industry) Rules 2011 are required to be maintained and Compliance Report would be applicable for the Captive Generating Plant, if the final products of the company are not covered under cost audit Requirements of Captive Generating Plant:-

No power plant shall qualify as a 'captive generating plant' under section 9 read with clause (8) of section 2 of the Act unless-

(a) in case of a power plant -

(i) not less than twenty six percent of the ownership is held by the captive user(s), and

(ii) not less than fifty one percent of the aggregate electricity generated in such plant, determined on an annual basis, is consumed for the captive use:

Provided that in case of power plant set up by registered cooperative society, the conditions mentioned under paragraphs at (i) and (ii) above shall be satisfied collectively by the members of the co-operative society;

Provided further that in case of association of persons, the captive user(s) shall hold not less than twenty six percent of the ownership of the plant in aggregate and such captive user(s) shall consume not less than fifty one percent of the electricity generated, determined on an annual basis, in proportion to their shares in ownership of the power plant within a variation not exceeding ten percent;

(b) in case of a generating station owned by a company formed as special purpose vehicle for such generating station, a unit or units of such generating station identified for captive use and not the entire generating station satisfy (s) the conditions contained in paragraphs (i) and (ii) of sub-clause (a) above including -

Explanation:-

- The electricity required to be consumed by captive users shall be determined with reference to such generating unit or units in aggregate identified for captive use and not with reference to generating station as a whole; and
- The equity shares to be held by the captive user(s) in the generating station shall not be less than twenty six per cent of the proportionate of the equity of the company related to the generating unit or units identified as the captive generating plant.

Section C

SN-6 (Economics For Managerial Decision-Making)

Question.22

Define Elasticity of Demand? Explain the different types of elasticity of demand?

Answer:

"The elasticity of demand in a market is great or small according to the amount demanded increases much or little for a given fall in the price and diminishes with much or little for a given rise in price". – Marshall. "Elasticity is the degree of change in demand as a result of change in price". – Samuelson.

The elasticity of demand explains the relationship between proportionate change in demand to a proportionate change in price.

$$\text{Elasticity of demand} = \frac{\text{Proportionate change in Demand}}{\text{Proportionate change in Price}}$$

Types of Elasticity of demand: Elasticity of demand is of 3 types:

(i) Price elasticity of demand

(ii) Income elasticity of Demand.

(iii) Cross elasticity of demand

(i) Price Elasticity of demand:

Price Elasticity of Demand (Ed) explains the proportionate or percentage change in demand to a proportionate or percentage change in price.

$$E_d = \frac{\text{Proportionate change in Demand}}{\text{Proportionate change in Price}}$$

(or)

$$E_d = \frac{\text{Percentage change in Demand}}{\text{Percentage change in Price}}$$

$$E_d = \frac{\dfrac{\text{Change in Quantity Demanded}}{\text{Quantity demanded at original price}}}{\dfrac{\text{Change in price}}{\text{Original Price}}}$$

$$E_d = \frac{\Delta x}{x} \div \frac{\Delta p}{p} \quad = \quad \frac{p}{x} \times \frac{\Delta x}{\Delta p}$$

(ii) INCOME ELASTICITY OF DEMAND:

The income elasticity of demand explains the proportionate change in income and proportionate change in demand. The rate of change in the demand due to the change in the income is called income elasticity of demand.

$$\text{Income elasticity of demand} = \frac{\text{Proportionate change in demand}}{\text{Proportionate change in income}}$$

(iii) CROSS ELASTICITY OF DEMAND:

The rate of change in the demand for one commodity due to the change in the price of its substitutes and complementary goods is called cross elasticity of demand.

$$\text{Cross Elasticity of Demand} = \frac{\text{Percentage change in the demand for commodity X}}{\text{Percentage change in the price of Y}}$$

If the percentage change in the demand for commodity X is more than the percentage change in the price of Y, then the cross elasticity of demand is greater than one (Ed>1). If the percentage change in the demand for commodity X is less then percentage change in the price of commodity Y, then the cross elasticity of demand is less than one (Ed<1). If the percentage change in the demand for commodity X is equal to percentage change in the price of commodity Y, then the cross elasticity of demand is equal to one (E_d=1).

Question.23

(a) What are the factors influencing the pricing of a product?

Answer:

Marketers consider the following factors in setting price:

- **Target customers:** Price of product is depend on the capacity of buyers to buy at various prices, in other words, influence of price elasticity of demand will be examined.
- **Cost of the product:** Pricing is primarily based on the, how much it costs to produce and market the product, i.e., both production and distribution cost.
- **Competition:** Severe competition may indicate a lower price than when there is monopoly or little competition.
- **The law:** Government authorities place numerous restrictions on pricing activities.
- **Social responsibility:** Pricing affects many parties, including employees, shareholders and the public at large. These should be considered in pricing.
- **Market position of the firm:** The position of the market may also influence the pricing decision of the firm. It is only why the different producers of identical products sell their products at different prices.
- **Distribution channel policy:** The prices of products will also depend up the policy regarding distribution channel The longer the channel, the higher would be the distribution costs and consequently higher the prices.
- **Price elasticity of Demand:** Price elasticity refers to consequential change in demand due to change in price of the commodity. It is the relative responsiveness to the changes in price. As there an inverse relationship between price and demand for product, the demand will increase with fall in price.

- **Economic environment:** In recession, prices are reduced to a sizeable extend to maintain the level of turnover. On the other hand, prices are charged higher in boom period to cover the increasing cost of production and distribution.

(b) Explain the different kinds of demand oriented pricing.

Answer:

DEMAND ORIENTED PRICING:

(i) Differential pricing or price discrimination: There are many bases on which the open price discrimination is practiced. These are discussed below.

- **Time Price Differentials:** it is a general practice to use the expression "the demand for a product or service", but it is important to note that demand also has a time dimension. The demand may shift in fairly short-time intervals. For example, demand for telephone facilities is more in the day time rather than at night.
- **Use Price differentials:** Different buyers have different uses of a product or a service. For example railways can be used for long-haul or short-haul freight traffic. Railways can also be used for transporting different types of commodities. Electricity can similarly, be used for industrial or residential purposes.
- **Quality price Differentials:** If the product caters to that group of consumers who are concerned about its quality, then the quality becomes a significant determinant of demand elasticity. The seller has, therefore, to crate differences in quality to sell his product. It must be emphasized here that the differences in quality basically depend upon the buyers' understanding of the quality. Sellers use many devices to create quality differences.
- **Quantity Differentials:** When the seller discriminates on the basis of the quantity of purchase, it is known as quantity differentials. Quantity discounts are price concessions based on the size of the lot purchased at one time and delivered at one location. These discounts are thus related to size of a single purchase. The size of the lot purchased is measured in terms of either physical units or monetary units. Sometimes, discounts are according to the trade status, i.e., wholesaler, retailer, jobber, etc..

(ii) Perceived Value pricing:
Perceived value pricing refers to fixing the price on the basis of a buyer's perception of the value of the product.

Question.24

(a) What are the managerial use of production function?

Answer.

Managerial Use of Production Functions:

- The economics of production management takes, as its starting point, the study of the entire group of possible factor combinations that could be used to produce a certain output, within a given state of technology. This type of analysis is carried out through production function.
- A production function is a expression of the dependent or functional relationships that exists between the inputs of production process and the output that results. Hence it is sometimes known as input-output relations.
- Of the various types of production function the Cobb-Douglas function is the most celebrated. Because it has certain important properties which are useful for managerial decision making.
- This study of production function is useful not for its own sake. Because it answers certain questions faced by the management. It enables the management to know beforehand the most profitable decision concerning the employment of resources and the scheduling of the output. It is also useful in deriving a firm’s cost function.

(b) Write the criticism of managerial use of production function.

Answer:

Criticisms:

- Cobb-Douglas production function is criticized because it shows a constant return to scale. But constant returns to scale are not actuality. Industry is either subject to increasing returns or diminishing returns. Due to scarcity and indivisibility of some factors it is not possible to make a proportionate change of all factors. So constant returns are not possible.
- No entrepreneur will like to increase the inputs to have constant returns only. His aim will be to get increasing returns but not constant returns
- Problems arise when this production function is applied to each firm in the industry and to the industry as a whole. This function as applied to each firm may not give the same result as that of the industry.
- It is based on the assumption that factors of production are substitutable and excludes complementary of factors. But, in the short non-complementary of factors is possible. Therefore, it applies more to the long run than the short run.

Question.25

What is the difference between perfect competition and monopoly.

Answer.

The following are some of the differences between perfect competition and monopoly.

(i) In perfect competition there is large number of buyers and sellers who are producing homogeneous products therefore the activity of single seller may not influence the market price but in monopoly there is single seller. He controls the entire supply of the commodities. In this there is no competition.

(ii) In perfect competition the revenue curves are parallel to X-axis and where as in monopoly the revenue curves are falling down from left to right. We can know the nature of revenue curves with the help of following diagrams.

(iii) In perfect competition because of uniform price level the average revenue and marginal revenue are equal and they are parallel to X-axis but in monopoly the average cost and the marginal revenue curves fall down from left to right. If the monopolist wants to sell more he must reduce the price level and if he wants to fix more price he must reduce the output.

(iv) Under perfect competition the price is determined at that point where the demand and supply both are equal. In this competition both price and output are determined at equilibrium point. But in monopoly only the output is determined t that level where MC=MR.

(v) In perfect competition there is a free entry & exit. The new firms may enter the market when the existing firms are getting abnormal profits and leave the market when they are getting losses. But in monopoly the other firms have no freedom to enter the market.
In perfect competition the firm gets an equilibrium position where the marginal cost is at raising stage, if the marginal cost curve fall down there is no possibility of equilibrium between MC and MR. In monopoly market the firm may get an equilibrium position where the MC curve is at raising stage, constant or at falling stage.

(vi) In perfect competition there is a difference between firm and Industry. Firm is a production unit and where as industry is a group of firms. But under monopoly market, there is no difference between the firm and Industry and both is same.

(vii) In the short period under perfect competition the firm may get abnormal profits. But in the long run normal profits because of free entry, exit the firm. But in monopoly the firm may get abnormal profits in short period and in long period the firm may get normal profits, because of no free entry.

(viii) The average cost becomes minimum at equilibrium point under perfect competition. In the case of monopoly AC curve is falling at equilibrium point i.e., point R.

(ix) In perfect competition the output is more when the price is less and where as in monopoly the output is less and price is more.

(x) In perfect competition there is no price discrimination. Fixing of different prices to different customers for the same article is said to be price discrimination. The price discrimination is not possible under perfect competition. But in monopoly market there is a possible for price discrimination. Monopolist can fix different prices to different customers for the same commodities.

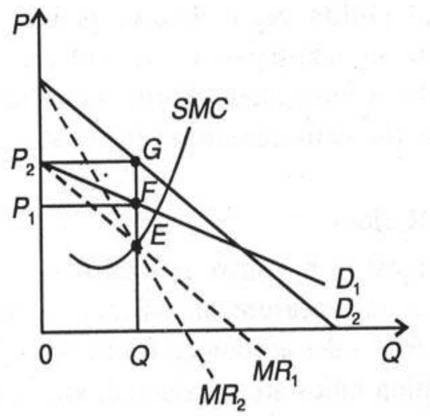
Question.26

(a) Why there is no supply curve in Monopoly Market?

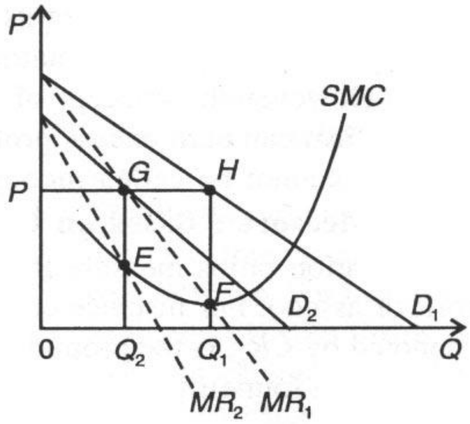
Answer:

It is true that the monopolist will supply some output, provided that it can earn at least a normal rate of return by doing so. But the monopolist does not have a supply curve that corresponds to that of a competitive firm. The reason can be explained as below.

The supply curve of the competitive firm shows how much the firm will produce at any given price. The reason for this unique relationship is that the competitive firm's demand curve is horizontal. As this demand curve moves up and down, the competitive firm equates price and marginal cost. This enables to trace out the marginal cost curve as its supply curve. For the monopolist, however, the demand curve may rotate as well as shift up and down. This implies that the monopolist may produce the same output at two different prices.
This means that there is no unique supply curve for the monopolist. It cannot be derived from its MC. Given the MC, the same quantity may be offered for sale at different prices depending on the price elasticity of demand. This point is illustrated by the following figures. The quantity Q will be sold at price P_1 if demand is D_1 while the same quantity Q will be sold at price P_2 if demand is D_2. Thus there is no unique relationship between price and quantity.



Two Possible Price for same quantity



Two Quantities Offered at the Same Price

Here also we find the application of the inverse elasticity rule. The more elastic the demand, the higher the price of the product of the monopolist.
Similarly, given the MC of the monopolist, various quantities may be supplied at any one price, depending on the market demand curve and the corresponding MR curve. In Fig. we depict such a situation. The cost conditions are represented by the MC curve. Given the costs of the monopolist, he would supply Q_1 units, if the market demand is D_1, while at the same price, P, he would supply only Q_2 if the market demand is D_2.

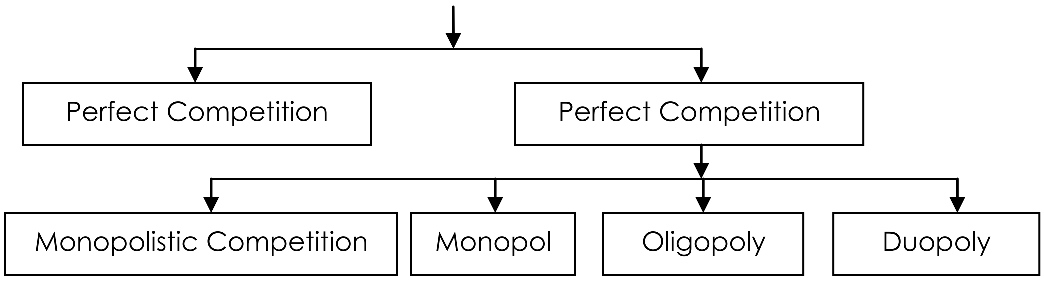
(b) Define market and what are its elements?

Answer:

In common parlance 'Market' refers to a place or locality where commodities are bought and sold. In an economic sense, a market is a system by which buyers and sellers bargain for the price of a product and transactions will take place in that system. Market does not limited to a particular place and personal contact between buyers and sellers is also not necessary. Market for a commodity may be local, regional, national or international.

"Market means the whole of any region which buyers and sellers are in such free intercourse with each other, that the price of the same goods tend to equally easily and quickly" as per Prof. Cournot.
As per Jevons, "The word market has been generalized so as to mean any body of persons who are in intimate business relations and carry on extensive transactions in any commodity".
Markets can be classified into two broad categories:

Markets



Elements of Markets:

- Sellers and buyer agree to transaction of a particular price of a product.
- Nature of the commodity is known to both parties.
- Price of the product is determined under conditions of the market.
- Competition is depend on the increase in the buyers and seller
- If there is increase in number buyers, price will increase and it is treated as Seller's market.
- If there is increase in number sellers, price will decrease, it is treated as buyer's market.
- Free communication between the buyers and sellers.
- Size of the market is not restricted; it may certain city, a region a country or even the entire world.
- Product is homogenous in case of perfect competition, and the product may be differentiated in case of other markets.

Qestion.27
(a) What are the components of time series?

Answer.

A typical time services has the following four major components:

- **A Secular trend**: representing the long-term direction, or average movement in the time series.
- **Cyclical fluctuations:** which usually follow variations in the growth of the economy in general, around a long-term, secular trend
- **Seasonal variations**: caused by changes in weather conditions and social habits, such as the need to buy X-mas cards in December and dresses during the festival season (Dewali or Durga Puja).
- **Random or unsystematic variations**: such as wars, revolutions, crop failures, natural calamities, and changes in tastes and preferences of buyers

(b) Given below are the figures of production (in thousand mounds) of a Sugar factory:

Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Production (000) mound	**45**	**40**	**46**	**42**	**47**	**50**	**46**

Fit a Straight line trend by the Least Squares Method and tabulate the trend.
Answer:
ΣCalculation of trend values by least square method

Year (t)	Production (000 mounds) Y	Time deviation (X)	X^2	XY	Trend Values (Y_c)
2008	45	-3	9	-135	42.572
2009	40	-2	4	-80	43.429
2010	46	-1	1	-46	44.286
2011	42	0	0	0	45.143
2012	47	1	1	47	46
2013	50	2	4	100	46.857
2014	46	3	9	138	47.714
N=7	ΣY = 316	ΣX =0	ΣX^2= 28	ΣXY = 24	Σ Y_c= 316.

$Y_c = a + bX = a+bX$

$a = \Sigma Y / N = 316/ 7 = 45.143$

$b = \Sigma XY / \Sigma X^2 = 24/ 28 = 0.857$

Yc = 45.143+0.857X
When X = -3, Yc = 45.143 +[0.857 x –(3)] = 42.572, Similarly we can calculate trend values for other years.

Question.28

(a) Write short note on "Regression Analysis".

Answer:

Regression Analysis: Regression equation establishes the relationship between dependent variable and independent variable, assuming the relationship to be linear. For some commodities independent variable may be only one. But for some products independent variables may more than two. In such a case, multiple regression analysis can be used.

Hence, demand for any product can be estimated at a given value of price.

Simple Regression Equation:
This equation will be form of Y = a + bx, for
Independent variable : x
Dependent variable : y

Multiple-Regression Model:
The equation in the case of multiple regression
$Y = a + b_1x_1 + b_2x_2 + \ldots\ldots\ldots\ldots + b_nx_n$
Independent variables: $x_1, x_2, \ldots\ldots x_n$
Dependent variable : y

Limitations:
(i) It is difficult to find out inter-dependence relationship between the variables.
(ii) Sometimes it may be difficult to identify dependent and independent variable.
(iii) Indicators are based on historical data. But the relationship cannot be established for the future.

(b) Given C = $x^3 - 10x^2 + 5x$; R = $8x^2 + 11x - 4$. Find the total profit and hence marginal profit.

Answer:

$C = x^3 - 10x^2 + 5x$

$R = 8x^2 + 11x - 4$

Total Profit = R – C

$= 8x^2 + 11x - 4 - x^3 + 10x^2 - 5x$

$= -x^3 + 18x^2 + 6x - 4$

$= -(x^3 - 18x^2 - 6x + 4)$ (Say P)

Marginal Profit $\frac{dp}{dx} = (3x^2 - 36x - 6)$

Question.29

(a) What are the criteria of a good forecasting method?

Answer.

Criteria of a good forecasting method are:

- **Accuracy -** It is essential to check the accuracy of the past forecasts against present performance and of present forecast against future performance.
- **Simplicity and Ease of comprehension-**Management must be able to understand the method of demand forecasting used and must have confidence in it. Too much of mathematical and econometric procedures may not find favour with the management.
- **Economy-** A good demand forecasting method is one which is highly economical. Thus it is necessary to compare the cost of the forecasting method against its likely benefits. It is desirable so to undertake cost benefit analysis.
- **Durability-** The technique of demand forecasting must be durable.
- **Effective-** The technique used for demand forecasting should be able to give meaningful result as early as possible. So the technique must be effective and productive.
- **Flexibility-** The forecasting procedure should permit changes to be made in the relationship between different variables as & when needed. It must be not rigid.
- **Maintenance of timeliness-** It must be in up to date basis. There must be continuous alterations & addition involving latest information and data.
- Longer the lead time the forecast has before the event, the greater will be its usefulness.

(b) A firm has revenue function given by R=10Q where R=Gross Revenue and Q=Number of Units Sold, Production Cost function is given by C = 20000+ 50(Q / 800)2
Find: the total Profit function, and the number of Units (Q) to be sold to get the maximum Profit.

Answer:

R = 10Q

$$C = 20000 + 50\left(\frac{Q}{800}\right)^2$$

$$\text{Profit (P)} = 10Q - 20000 - 50\left(\frac{Q^2}{640000}\right) \text{(Profit function)}$$

To find number of units to get the maximum profit,

$\frac{dP}{dQ} = 0$ and $\frac{d^2P}{dQ^2}$ should be - ve

$$= \frac{dP}{dQ} = 10 - \frac{50 \times 2Q}{640000} = 0$$

$$=> 10 - \frac{100Q}{640000} = 0$$

Therefore, $Q = \frac{640000 \times 10}{100} = 64000$

$\frac{d^2P}{dQ^2} = -\frac{100}{640000} = -\frac{1}{6400}$ Which is negative(-ve)

P (Profit) is maximum at Q = 64000 units

Maximum Profit $= 10 \times 64000 - 20000 - 50\left(\frac{64000^2}{640000}\right)$

= 6,40,000 – 20,000 – 3,20,000 = ₹3,00,000

Question.30

(a) Show that elasticity of demand = $\frac{AR}{AR - MR}$, where AR and MR are average and marginal revenue respectively at any output.

Answer:

Total Revenue, (Say R) = px, $AR = \frac{R}{X} = \frac{px}{x} = p$

$$MR = \frac{d}{dx}(R) = \frac{d}{dx}(R) = p + x\frac{dp}{dx}$$

Now, $\frac{AR}{AR - MR} = \frac{p}{p - p - x\frac{dp}{dx}} = \frac{p}{-x\frac{dp}{dx}} = \frac{p\frac{dp}{dx}}{-x} = -\frac{\frac{dp}{dx}}{\frac{x}{p}} = -\frac{dp}{dx} \times \frac{p}{x} = |E_p|$ (proved)

(b) A radio manufacturer produces 'x' sets per week at total cost of ₹ x^2 + 78x + 2,000.He is a monopolist and the demand function for his product is x =(600 – p) / 8, when the price is 'p' per set shows that maximum net revenue is obtained when 29 sets are produced per week what is the monopoly price.

Answer:

Cost (C) = x^2 + 78x + 2,000

Demand (D) x = (600 – p) /8

8x = 600 – p

Therefore, p =600 – 8x

Total Revenue per 'x' sets

Price x i.e., 600x – $8x^2$

Maximum revenue is obtained at MC = MR

Marginal Cost= $\frac{dc}{dx} = 2x + 78 - - - - - (i)$

Marginal Revenue = $\frac{dr}{dx} = 600 - 16x - - - - (ii)$

Equity (i) and (ii)

$2x + 78 = 600 – 16x$

$= 18x = 522$

Therefore, $x = 29$

Monopoly price $600 – 8x$

$=600 – 8 \times 29$

$= 600 – 232$

$= 368$