Paper-10 : COST AND MANAGEMENT ACCOUNTANCY

SECTION - A

Question:1

a) In two consecutive periods, sales and profit were ₹ 1,60,000 and ₹ 8,000 respectively in the first period and ₹ 1,80,000 and ₹ 14,000 respectively during the second period. If there is no change in fixed cost between the two periods then P-V ratio must be

A. 20%
B. 25%
C. 30%
D. 40%

Answer C- 30%

$$\frac{\text{Change in profit}}{\text{Change in sales}} = \text{P/V Ratio}$$

$$= \frac{14,000 - 8,000}{1,80,000 - 160,000}$$

$$= \frac{6,000}{20,000}$$

$$= 0.30 \text{ or } 30\%$$

b) Budgeted sales for the next year is 5,00,000 units. Desired ending finished goods inventory is 1,50,000 units and equivalent units in ending W-I-P inventory is 60,000 units. The opening finished goods inventory for the next year is 80,000 units, with 50,000 equivalent units in beginning W-I-P inventory How many equivalent units should be produced

A. 5,80,000
B. 5,50,000
C. 5,00,000
D. 5,75,000

Answer A – ₹ 5,80,000

Using production related budgets, units to produce equals budgeted sales + desired ending finished goods inventory + desired equivalent units in ending W-I-P inventory – beginning finished goods inventory – equivalent units in beginning W-I-P inventory. Therefore, in this case, units to produce is equal to 5,00,000 + 1,50,000 + 60,000 – 80,000 – 50,000 = 5,80,000.

c) The cost data pertaining to Product "X" of Xee Ltd. are as follows :

Maximum capacity	**30,000 units**
Normal capacity	**15,000 units**
Increase in inventory	**1,880 units**
Variable cost per unit	**₹ 12**
Selling price per unit	**₹ 50**
Fixed manufacturing overhead costs	**₹ 3,60,000**

If the profit under Absorption costing method is ₹ 1,01,000, the profit under Marginal costing method would be

A. ₹ 1,46,120
B. ₹ 1,23,560
C. ₹ 55,880
D. ₹ 73,340

Answer C – ₹ 55,880

Fixed cost per unit = ₹ 3,60,000 / 15,000 units = ₹ 24
Profit under absorption costing = ₹ 1,01,000
Adjustment of fixed manufacturing overhead costs of increased inventory = 1,880 units x ₹ 24 = ₹ 45,120
Profit under marginal costing = ₹ 1,01,000 – ₹ 45,120 = ₹ 55,880

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), the standard price per kg. of material is.

A. ₹ 28.40
B. ₹ 28.80
C. ₹ 28.00
D. ₹ 29.20

Answer C – ₹ 28.00

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) Akash Ltd. is preparing its cash budget for the period. Sales are expected to be ₹ 1,00,000 in April 2013, ₹2,00,000 in May 2013, ₹ 3,00,000 in June 2013 and ₹ 1,00,000 in July 2013. Half of all sales are cash sales, and the other half are on credit. Experience indicates that 70% of the credit sales will be collected in the month following the sale, 20% the month after that, and, 10% in the third month after the sale. The budgeted collection for the month of July 2013 is

A. ₹ 1,30,000
B. ₹ 1,80,000
C. ₹ 2,60,000
D. ₹ 3,60,000

Answer B – ₹ 1,80,000
Collection from

July 2013 cash sales will be half of total sales or	₹ 50,000

From April ₹ 50,000 of credit sales, collection should be 10% or Rs, 5,000

From May ₹ 1,00,000 of credit sales, collections should be 20% or ₹ 20,000

From June ₹ 1,50,000 of credit sales, collection will be 70% or ₹ 1,05,000

Thus total collections will amount to ₹ 1,80,000

Question:2

a) State the scope and advantages of Uniform Costing.

b) A company undertook a contract for construction of a large building complex. The construction work commenced on 1st April 2013 and the following data are available for the year ended 31st March 2014.

	₹ '000
Contract Price	**35,000**
Work certified	**20,000**
Progress Payments Received	**15,000**
Materials Issued to Site	**7,500**
Planning & Estimating costs	**1,000**
Direct Wages Paid	**4,000**
Materials Returned From Site	**250**
Plant Hire Charges	**1,750**
Wage Related Costs	**500**
Site Office Costs	**678**
Head Office Expenses Apportioned	**375**
Direct Expenses Incurred	**902**
Work Not Certified	**149**

The contractors own a plant which originally cost ₹20 lacs has been continuously in use in this contract throughout the year. The residual value of the plant after 5 years of life is expected to be ₹ 5 lacs. Straight line method of depreciation is in use.

As on 31st March, 2014 the direct wages due and payable amounted to ₹ 2,70,000 and the materials at site were estimated at ₹ 2,00,000.

Required:

(i) Prepare the contract account for the year ended 31st March, 2014.

(ii) Show the calculation of profit to be taken to the profit and loss account of the year.

(iii) Show the relevant balance sheet entries

Answer

a) Scope of Uniform Costing:

Uniform costing methods may be advantageously applied:

a) In a single enterprise having a number of branches or units, each of which may be a separate manufacturing unit.

b) In a number of concerns in the same industry bound together through a trade association or otherwise, and

c) 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:

(i) 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.

(ii) 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.

(iii) 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.

(iv) 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.

(v) 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.

(vi) It serves as a prerequisite to Cost Audit and inter firm comparison.

(vii) 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.

(viii) It avoids cut-throat completion by ensuring that competition among member units proceeds on healthy lines.

(ix) The process of pricing policy becomes easier when Uniform Costing is adopted.

(x) 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.

(xi) Uniform costing simplifies the work of wage boards set up to fix minimum wages and fair wages for an industry.

b)

Dr. **Contract A/c** *Cr.*

	₹'000		*₹'000*
To Materials issued	7,500	By Materials returned	*250*
To Direct wages paid	4,000		*200*
To Direct wages accrued	270	By Materials at site	
To Wage related costs	500	By Work-in-progress c/d	
To Direct expenses incurred	902	Work certified	*20,000*

To Plant hire charges	1,750	Work uncertified	*149*
To Planning and estimating cost	1,000		
To Site Office costs	678		
To Head Office expenses apportioned			
To Plant depreciation	375		
(Refer to Working Note 1)	300		
To Notional Profit			
	3,324		
	20,599		*20,599*
To Profit and Loss A/c	1,662	By Notional profit b/d	*3,324*
[See Ans. (ii) below]			
To Work-in-progress c/d	1,662		
(Profit in reserve)			
	3,324		*3,324*
01.04.2014			
To Work in-progress b/d		By Work in-progress b/d	1662
Work certified	20,000	*(Profit in reserve)*	
Work uncertified	149		
To Materials at site	200		

(ii) ***Profit to be transferred to Profit and Loss Account (Fig. in ₹'000)***

Since the Contract is between 50% and 90% completion, therefore, two-third of the notional profit, reduced by the proportion of cash received to work certified is to be transferred to profit and loss account as shown below:

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

$$= \frac{2}{3} \text{x ₹ } 3{,}324 \times \frac{15{,}000}{20{,}000} = ₹\ 1{,}662$$

(iii) Balance Sheet (extract) as on 31st March, 2014

Liabilities	*₹'000*	*Assets*	*₹'000*
Profit and Loss A/c	1,662	Plant at site	1,700

		(₹ 2,000 – ₹ 300)	
Wages accrued	270	Materials at site	200
		Work-in-progress	3,487
		(Refer to Working Note 2)	

Working notes

		₹ *'000*
1.	**Plant depreciation**	
	Original cost of Plant	2,000
	Less: Residual value	500
	Cost of plant used	1,500
	Life of plant : 5 years	
	Annual Depreciation (₹ 1,500/5)	300
2.	**Work in-Progress**	20,149
	Less: Profit in reserve	1,662
	Difference	18,487
	Less: Cash received	15,000
	Net WIP	3,487

Question:3

a) What are the steps that need to be undertaken for making reporting of variances more effective? Name some variance reporting ratios.

b) A transport company has a fleet of three trucks of 10 tonnes capacity each plying in different directions for transport of customer's goods. The trucks run loaded with goods and return empty. The distance travelled, number of trips made and the load carried per day by each truck are as under:

Truck No.	One way Distance Km	No. of trips per day	Load carried per trip / day tonnes
1	**16**	**4**	**6**
2	**40**	**2**	**9**
3	**30**	**3**	**8**

The analysis of maintenance cost and the total distance travelled during the last two years is as under :

Year	Total distance travelled	Maintenance Cost ₹
1	**1,60,200**	**46,050**

2	**1,56,700**	**45,175**

The following are the details of expenses for the year under review:

Diesel	**:**	**₹ 10 per litre. Each litre gives 4 km per litre of diesel on an average.**
Driver's salary	**:**	**₹ 2,000 per month**
Licence and taxes	**:**	**₹ 5,000 per annum per truck**
Insurance	**:**	**₹ 5,000 per annum for all the three vehicles.**
Purchase Price per truck	**:**	**₹ 3,00,000 Life 10 years. Scrap value at the end of life is ₹ 10,000.**
Oil and sundries	**:**	**₹ 25 per 100 km run.**
General Overhead	**:**	**₹ 11,084 per annum**

The vehicles operate 24 days per month on an average.

Required:

(i) Prepare an Annual Cost Statement covering the fleet of three vehicles.

(ii) Calculate the cost per km. run.

(iii) Determine the freight rate per tonne km. to yield a profit of 10% on freight

Answer

a) In order that variance reporting should be effective, it is essential that the following requisites are fulfilled:

1. The variances arising out of each factor should be correctly segregated. If part of a variance due to one factor is wrongly attributed to or merged with that of another, the analysis report submitted to the management would be misleading and wrong conclusions may be drawn from it.
2. Variances, particularly the controllable variances should be reported with promptness as soon as they occur. Mere operation of Standard Costing and reporting of variances is of no avail. The success of a Standard Costing system depends on the extent of responsibility which the management assumes in correcting the conditions which cause variances from standard. In order to assist the management in assuming this responsibility, the variances should be reported frequently and on time. This would enable corrective action being taken for future production while work is in progress and before the project or job is completed.
3. For effective control, the line of organization should be properly defined and the authority and responsibility of each individual should be laid down in clear terms. This will avoid 'passing on the buck' and shirking of responsibility and will enable the tracing of the causes of variances to the appropriate levels of management.
4. In certain cases, a particular variance may be the joint responsibility of more than one individual or department. It is obvious that if corrective action has to be effective in such cases, it should be taken jointly.

5. Analysis of uncontrollable variances should be made with the same care as for controllable variances. Though a particular variance may not be controllable at the lower level of management, a detailed analysis of the off-standard situation may reveal far reaching effects on the economy of the concern. This should compel the top management to take corrective action, say, by changing the policy which gave rise to the uncontrollable variance.

A number of ratios are used for reporting to the management the effective use of capacity, material, labour and other resources of a concern. Some of them are named below:
1. Efficiency Ratio.
2. Activity Ratio.
3. Calendar Ratio.
4. Capacity Usage Ratio
5. Capacity Utilization Ratio.
6. Idle Time Ratio

b) Annual Cost Statement of three vehicles

	₹
Diesel	3,36,960
(Refer to working note I)	
(1,34,784 kms / 4 km) × ₹ 10	
Oil & sundries	33,696
(1,34,784 kms/100 kms) × ₹ 25	
Maintenance	39,696
(Refer to working note 2)	
{(1,34,784 kms × 0.25P) + ₹ 6,000}	
Drivers' salary	72,000
(₹ 2,000 × 12 months) × 3 trucks	
Licence and taxes	15,000
Insurance	5,000
Depreciation	87,000
(₹ 2,90,000/10 years) × 3 trucks	
General overhead	11,084
Total annual cost	6,00,436

(ii) Cost per km. run

Cost per kilometer run = $\frac{Total\ annual\ \cos t\ of\ vehicles}{Total\ kilometre\ travelled\ annually}$

(Refer to working note 1) = $\frac{Rs.6,00,436}{1,34,784\ Kms} = Rs.4.4548$

(iii) Freight rate per tonne km (to yield a profit of 10% on freight)

Cost per tonne km. = $\frac{\text{Total annual cost of three vehicles}}{\text{Total effective tonnes kms. per annum}}$

(Refer to working note 1) = $\frac{\text{Rs.6,00,436}}{\text{5,25,312 kms}} = \text{Rs.1.143}$

Freight rate per tonne km. = ₹ 1.27 since, $\left(\frac{1.143}{9}\right) \times 10$

Working notes:

1.Total kilometre travelled and tonnes kilometre (load carried) by three trucks in one year

Truck number	*One way distance in kms*	*No. of trips*	*Total distance covered in km per day*	*Load carried per trip / day in tonnes*	*Total effective tonnes km*
1	16	4	128	6	384
2	40	2	160	9	720
3	30	3	180	8	720
Total			468		1824

Total kilometre travelled by three trucks in one year 1,34,784

(468 kms × 24 days × 12 months)

Total effective tonnes kilometre of load carried by three trucks during one year 5,25,312

(1,824 tonnes km × 24 days × 12 months)

2. Fixed and variable component of maintenance cost:

Variable maintenance cost per km = $\frac{\text{Difference in maintenance cost}}{\text{Difference in distance travelled}}$

= $\frac{\text{Rs.46,050} - \text{Rs.45,175}}{\text{1,60,200 kms} - \text{1,56,700 kms}}$

= ₹ 0.25

Fixed maintenance cost = Total maintenance cost–Variable maintenance cost

= ₹ 46,050 – 1,60,200 kms × 0.25

= ₹ 6,000

Question:4

a) Write a short note on Zero Based Budgeting.

b) The following information is available from the financial books of a company having a normal production capacity of 60,000 units for the year ended 31st March, 2014:

- **Sales ₹ 10,00,000 (50,000 units).**
- **There was no opening and closing stock of finished units.**
- **Direct material and direct wages cost were ₹ 5,00,000 and ₹ 2,50,000 respectively.**
- **Actual factory expenses were ₹ 1,50,000 of which 60% are fixed.**
- **Actual administrative expenses were ₹ 45,000 which are completely fixed.**
- **Actual selling and distribution expenses were ₹ 30,000 of which 40% are fixed.**
- **Interest and dividends received ₹ 15,000.**

You are required to:

(i) Find out profit as per financial books for the year ended 31st March, 2014;

(ii) Prepare the cost sheet and ascertain the profit as per cost accounts for the year ended 31st March, 2014 assuming that the indirect expenses are absorbed on the basis of normal production capacity; and

(iii) Prepare a statement reconciling profits shown by financial and cost books.

Answer

a) Zero Based Budgeting (ZBB)

It differs from the conventional system of budgeting. It starts from scratch or zero and not on the basis of trends or historical levels of expenditure. In the customary budgeting system, the last year's figures are accepted as they are, or cut back or increases are granted. Zero based budgeting on the other hand, starts with the premise that the budget for next period is zero so long the demand for a function, process, project or activity is not justified for each rupee from the first rupee spent. The assumptions are that without such a justification no spending will be allowed. The burden of proof thus shifts to each manager to justify why the money should be spent at all and to indicate what would happen if the proposed activity is not carried out and no money is spent.

The first step in the process of zero based budgeting is to develop an operational plan or decision package. A decision package identifies and describes a particular activity with a view to:

(i) evaluate and allot ranking of the activity against other activities competing for the same scarce resources, and

(ii) decide whether to accept or reject or amend the activity.

For this purpose, each package should give details of costs, returns, purpose, expected results, the alternatives available and a statement of the consequences if the activity is reduced or not performed at all.

The advantages of Zero based budgeting are:

(a) Out of date and inefficient operations are identified.
(b) Allows managers to promptly respond to changes in the business environment.
(c) Instead of accepting the current practice, it creates a challenging and questioning attitude.
(d) Allocation of resources is made according to needs and the benefits derived.
(e) It has a psychological impact on all levels of management which makes each manager responsible for his actions taken

b)

(i) Profit & Loss Account (for the year ended 31st March, 2014) :

	₹		*Rs*
To Direct Material	5,00,000	By Sales 50,000 units	10,00,000
To Direct Wages	2,50,000	By Interest and Dividends	15,000
To Actual factory expenses	1,50,000		
To Actual administrative expenses	45,000		
To Actual selling and distribution expenses	30,000		
To Profit	40,000		
	10,15,000		10,15,000

(i) Profit as per financial books for the year ended 31st March, 1995 is ₹ 40,000 (Refer to working Note).

(ii) Cost Sheet (for the year ended 31st March, 2009)

	₹
Direct Material	5,00,000
Direct Wages	2,50,000
Prime Cost	7,50,000
Factory expenses:	
Variable : ₹ 60,000	
Fixed : $90{,}000 \times \frac{5}{6}$ = ₹ 75,000	1,35,000
Works Cost :	8,85,000
Administrative expenses : $45{,}000 \times \frac{5}{6}$	37,500
Cost of production	9,22,500
Selling & distribution expenses	
Variable : ₹ 18,000	
Fixed : $12{,}000 \times \frac{5}{6}$ = ₹ 10,000	28,000
Cost of Sales	9,50,500
Profit	49,500
Sales revenue	10,00,000

(iii) Statement of Reconciliation
(Reconciling profit shown by Financial and Cost Accounts)

	₹	₹
Profit as per Cost Accounts	49,500	–
Add: Income from interest and dividends	15,000	
		64,500
Less: Factory expenses undercharged in Cost Accounts (₹ 1,50,000 – ₹ 1,35,000)	15,000	
Administrative expenses undercharged in Cost Accounts (₹ 45,000 – ₹ 37,500)	7,500	
Selling & distribution expenses under-charged in Cost Accounts (₹ 30,000 – ₹ 28,000)	2,000	24,500
Profit is per Financial Accounts		40,000

Question:5

a) A Chemical Company carries on production operation in two processes. The material first pass through Process I, where Product 'X' is produced.

Following data are given for the month just ended:

Material input quantity	**2,00,000 kgs.**
Opening work-in-progress quantity (Material 100% and conversion 50% complete)	**40,000 kgs.**
Work completed quantity	
Closing work-in-progress quantity (Material 100% and conversion two-third complete)	**30,000 kgs.**
Material input cost	**₹ 75,000**
Processing cost	**₹ 1,02,000**
Opening work-in-progress cost	
Material cost	**₹ 20,000**
Processing cost	**₹ 12,000**

Normal process loss in quantity may be assumed to be 20% of material input. It has no realisable value.

Any quantity of Product 'X' can be sold for ₹ 1.60 per kg.

Alternatively, it can be transferred to Process II for further processing and then sold as Product 'XY' for ₹ 2 per kg. Further materials are added in Process II, which yield two kgs. of product 'XY' for every kg. of Product 'X' of Process I.

Of the 1,60,000 kgs. per month of work completed in Process I, 40,000 kgs are sold as Product 'X' and 1,20,000 kgs. are passed through Process II for sale as Product 'XY'. Process II has facilities to handle upto 1,60,000 kgs. of Product 'X' per month, if required.

The monthly costs incurred in Process II (other than the cost of Product 'X') are:

	1,20,000 kgs. of Product 'X' input	1,60,000 kgs. of Product 'X' input
	₹	₹
Materials Cost	**1,32,000**	**1,76,000**
Processing Costs	**1,20,000**	**1,40,000**

Required:

(i) Determine, using the weighted average cost method, the cost per kg. of Product 'X' in Process I and value of both work completed and closing work-in-progress for the month just ended.

(ii) Is it worthwhile processing 1,20,000 kgs. of Product 'X' further?

(iii) Calculate the minimum acceptable selling price per kg., if a potential buyer could be found for additional output of Product 'XY' that could be produced with the remaining Product 'X' quantity.

b) State the advantages of Budgetary Control.

Answer

a)

Process I
Statement of equivalent production

Inputs		Output		Equivalent output			
Particulars	**Units**	**Particulars**	**Units**	**Material**		**Conversion**	
	Kg.		*Kg.*	*%*	*Unit kg.*	*%*	*Units kg.*
Opening W.I.P.	40,000	Normal loss	40,000	–	–	–	–
New material introduced	2,00,000	Units introduced & completed	1,60,000	100%	1,60,000	100%	1,60,000
		Abnormal loss	10,000	100%	10,000	100%	10,000
	_____	Closing WIP	30,000	100%	30,000	2/3rd	20,000
	2,40,000		2,40,000		2,00,000		1,90,000

Process I
Statement of cost for each element

Elements of cost	Costs of opening WIP	Costs in process	Total cost	Equivalent units	Cost/Unit (Kg.)
	₹	₹	₹	*Kg.*	₹
Material	20,000	75,000	95,000	2,00,000	0.475
Conversion cost	12,000	1,02,000	1,14,000	1,90,000	0.600
	32,000	1,77,000	2,09,000		1.075

Statement of apportionment of cost

Units completed	Elements	Equivalent units	Cost/unit	Cost	Total cost
			₹	₹	₹
Work completed	Material	1,60,000	0.475	76,000	
	Conversion	1,60,000	0.600	96,000	1,72,000
Closing WIP	Material	30,000	0.475	14,250	
	Conversion	20,000	0.600	12,000	26,250

(ii) Statement showing comparative data to decide whether 1,20,000 kg. of product 'X' should be processed further into 'XY'.

	₹
Alternative I – To sell product 'X' after Process – I	
Sales 1,20,000 × 1.60	1,92,000
Less: Cost from Process I 1,20,000 × 1.075	1,29,000
Gain -	63,000
Alternative II – Process further into 'XY'	
Sales 2,40,000 × 2.00	4,80,000
Less: Cost from Process I 1,20,000 × 1.075 = ₹ 1,29,000	
Material in Process II = ₹ 1,32,000	
Processing cost in Process II = ₹ 1,20,000	3,81,000
Gain	99,000
Hence company should process further	
It will increase profit by 99,000 – 63,000 = ₹ 36,000	

(iii) Calculation of minimum selling price/kg:

Cost of processing remaining 40,000 kg. further	₹
Material 1,76,000 – 1,32,000	44,000

Processing cost 1,40,000 – 1,20,000		20,000
Cost from process I relating to 40,000 kg. 'X' (40,000 × 1.075)	43,000	
Benefit foregone if 40,000 kg. 'X' are further processed		
40,000 (1.60 – 1.075)		21,000
Total cost		1,28,000

Additional quantity of product 'XY' (40,000 × 2) = 80,000 kg.

$\therefore$ Minimum selling price $\left(\frac{1,28,000}{80,000}\right)$ = ₹ 1.60/kg.

b) Advantages of Budgetary Control:

(i) Budgetary control aims at maximisation of profits through optimum utilisation of resources.
(ii) It is a technique for continuous monitoring of policies and objectives of the organisation.
(iii) It helps in reducing the costs, thereby helps in better utilisation of funds of the organisation.
(iv) All the departments of the organisation are closely coordinated through establishment of plans resulting in smooth functioning of the organisation.
(v) Since budgets fix the responsibilities of the executives, they act as a plan of action for them there by reducing some of their work.
(vi) It facilitates analysis of variances, thereby identifying the areas where deficiencies occur and proper remedial action can be taken.
(vii) It facilitates the management by exception.
(viii) Budgets act as a motivating force to achieve the desired objective of the organisation.
(ix) It assists delegation of authority and is a powerful tool of responsibility accounting.
(x) It helps stabilizing the conditions in industries which face seasonal fluctuations.
(xi) It helps as a basis for internal audit.
(xii) It provides a suitable basis for introducing the payment by results system.
(xiii) It ensures adequacy of working capital to the organisation.
(xiv) It aids in performance analysis and performance reporting system.
(xv) It aids in obtaining bank credit.
(xvi) Budgets are forerunners of standard costs in the sense that they create necessary conditions to suit setting up of standard costs.

Question:6

a) State the steps that can be undertaken to increase the throughput.

b) XYZ Bank is examining the profitability of its Premier Account, a combined Savings and Cheque account. Depositors receive a 7% annual interest on their average deposit. XYZ Bank earns an interest rate spread of 3% (the difference between the rate at which it lends money and rate it pays to depositors) by lending money for home loan purpose at 10%.

The Premier Account allows depositors unlimited use of services such as deposits, withdrawals, cheque facility, and foreign currency drafts. Depositors with Premier Account balances of ₹ 50,000 or more receive unlimited free use of services. Depositors with minimum balance of less than ₹ 50,000 pay ₹ 1,000-a-month service fee for their Premier Account.

XYZ Bank recently conducted an activity-based costing study of its services. The use of these services in 2013-14 by three customers is as follows:

	Activity-Based Cost Per Transaction	Account Usage		
		Customer A	Customer B	Customer C
Deposits/withdrawal with teller	₹ 125	40	50	5
Deposits/withdrawal with automatic teller machine (ATM)	₹ 40	10	20	16
Deposits/withdrawal on pre-arranged monthly basis	₹ 25	0	12	60
Bank Cheques written	₹ 400	9	3	2
Foreign Currency drafts	₹ 600	4	1	6
Inquiries about Account balance	₹ 75	10	18	9
Average Premier Account balance for 2005-06		₹ 55,000	₹ 40,000	₹ 12,50,000

Assume Customer A and C always maintains a balance above ₹ 50,000, whereas Customer B always has a balance below ₹ 50,000.

Required:

(i) Compute the 2013-14 profitability of the customers A, B and C Premier Account at XYZ Bank.

(ii) What evidence is there of cross-subsidisation among the three Premier Accounts? Why might XYZ Bank worry about this Cross-subsidisation, if the Premier Account product offering is Profitable as a whole?

(iii) What changes would you recommend for XYZ Bank's Premier Account?

Answer

a) The theory of constraints is applied within an organisation by following what are called 'the five focusing steps.' These are a tool that Goldratt developed to help organisations deal with constraints, otherwise known as bottlenecks, within the system as a whole (rather than any discrete unit within the organisation.) These steps may be followed to increase the throughput. The steps are as follows:

(i) 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.
(ii) 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.
(iii) Subordinate everything else to the decision made in step (b). The production capacity of the bottleneck resource should determined production schedule.
(iv) Augment the capacity of the bottleneck resource with the minimum capital input.
(v) Identify the new bottlenecks in the process and repeat the same above steps to address the bottlenecks.

b)

Customer Profitability Analysis

		XYZ Bank – Premier Account Customers		
Activity	**Activity based cost**			
		A	**B**	**C**
	₹	₹	₹	₹
Deposits/withdrawal with teller	125	5,000 *(40 × 125)*	6,250 *(40 × 125)*	625 *(5 × 125)*
Deposits/withdrawal with ATM	40	400 *(10 × 40)*	800 *(20 × 40)*	640 *(16 × 40)*
Deposits/withdrawal on prearranged monthly basis	25	0 *(0 × 25)*	300 *(12 × 25)*	1,500 *(60 × 25)*
Bank cheques written	400	3,600 *(9 × 400)*	1,200 *(3 × 400)*	800 *(2 × 400)*
Foreign currency drafts	600	2,400 *(4 × 600)*	600 *(1 × 600)*	3,600 *(6 × 600)*
Inquiries about Account balance	75	750 *(10 × 75)*	1,350 *(18 × 75)*	675 (9 × 75)
Customer cost (A)		**12,150**	**10,500**	**7,840**
Spread on Average balance maintained	3%	1,650 *(3% × 55,000)*	1,200 (3% × 40,000)	37,500 *(3% × 12,50,000)*

Service fee	₹ 1,000 p.m.		12,000	
Customer benefit		**1,650**	**13,200**	**37,500**

		Customers		
		A	**B**	**C**
Customer (Benefits – Costs)	Profitability	₹ (10,500)	₹ 2,700	₹ 29,660

(ii) Customer C is most profitable and is cross-subsidising the most demanding customer A. Customer B is paying for the services used, because of not being able to maintain minimum balance. No doubt, 'Premier Account' product offering is profitable as a whole, but the worry is of not finding customers like customer C who will maintain a balance higher than the stipulated minimum. It appears, the minimum balance stipulated is inadequate considering the services availed by depositors in 'Premium Account'.

(iii) The changes suggested to XYZ Bank's 'Premier Account' are as follows:

- Increase the requirement of minimum balance from ₹ 50,000 to ₹ 1,00,000.
- Charge for value added services like Foreign Currency Drafts.
- Do not allow deposits/withdrawal below ₹ 10,000 at the teller. Only ATM machine withdrawal be allowed.
- Inquiries about account balance to be entertained only through Phone Banking/ATM.

Question:7

a) Define Activity Based Costing. State its objectives and limitations.

b) A Ltd. Manufacturers and markets a single product. The following information is available :

	(₹ Per Unit)
Materials	**8.00**
Conversion cost (variable)	**6.00**
Dealer's margin	**2.00**
Selling price	**20.00**

Fixed cost : ₹ 2,50,000; Present sales : 80,000 units; Capacity utilisation : 60%

There is acute competition. Extra efforts are necessary to sell. Suggestions have been made for increasing sales : i) by reducing sales price by 5% and ii) by increasing dealer's margin by 25% over the existing rate. Which of the two suggestions would you recommend if the company desires to maintain the present profit? Give reasons.

Answer

Activity Based Costing:

Definition:- CIMA defines Activity Based Costing as, 'cost attribution to cost units on the basis of benefit received from indirect activities e.g. ordering, setting up, assuring quality.'
Another definition of Activity Based Costing is, 'the collection of financial and operational performance information tracing the significant activities of the establishment to product costs.'

Objectives of Activity Based Costing

1. 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.
2. To help in decision making by accurately computing the costs of products and services.
3. To identify various activities in the production process and further identify the value adding activities.
4. To distribute overheads on the basis of activities.
5. To focus on high cost activities.
6. To identify the opportunities for improvement and reduction of costs.
7. To eliminate non value adding activities.

Limitations of Activity Based Costing:

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

b) Calculation of present profit

		₹
Selling price per unit	A	20.00
Material cost per unit		8.00
Conversion cost per unit		6.00
Dealer's margin per unit		2.00
Variable cost per unit	B	16.00
Contribution per unit	A – B	4.00
Total contribution	(₹ 4 x 80,000 units)	3,20,000
Less : fixed cost		2,50,000
Profit		70,000

The present profit can be maintained by keeping total contribution at present level of ₹ 3,20,000

(i) Reducing sales price by 5%

New selling price per unit	=	20 – 1	=	₹ 19.00
New dealer's margin per unit	=	19 x 10/100	=	₹ 1.90
New variable cost per unit	=	8 + 6 +1.90	=	₹ 15.90
New contribution per unit	=	19.00 – 15.90	=	₹ 3.10

Desired sales (units) to maintain the present level of profit :

= Desired contribution = 3,20,000 = 1,03,226 units

New contribution per unit 3.10

(ii) Increasing dealer's margin by 25%

New dealer's margin per unit	=	2 + 25% of 2	=	₹ 2.50
New variable cost per unit	=	8 + 6 + 2.50	=	₹ 16.50
New contribution per unit	=	20.00 – 16.50	=	₹ 3.50

Desired sales (units) required to maintain the present level of profit

= Desired contribution = 3,20,000 = 91,429 units

New contribution per unit 3.50

Analysis : From the analysis of the above it is observed that, Break-even Point is lower under Second Proposal and hence, second proposal is recommended.

Question:8

a) State the uses and application of Break-even analysis.

b) A company has two divisions. Division 'M' and Division 'N'. Division 'M' has a budget of selling 2,00,000 nos. of a particular component 'x' to fetch a return of 20% on the average assets employed. The following particulars of Division 'M" are also known :

Fixed overhead	**₹ 5 lakhs**
Variable cost	**₹ 1 per unit**
Average assets	
Sundry debtors	**₹ 2 lakhs**
Inventories	**₹ 5 lakhs**
Plant & equipments	**₹ 5 lakhs**

However, there is constraints in marketing and only 1,50,000 units of the component 'x' can be directly sold to the Market at the proposed price.

It has been gathered that the balance 50,000 units of component 'x' can be taken up by Division 'N'. Division 'M' wants a price of ₹ 4 per unit of 'x' but Division 'N' is prepared to pay ₹ 2 per unit of 'x'.

Division 'M' has another option in hand, which is to produce only 1,50,000 units of component 'x'. This will reduce the holding of assets by ₹ 2 lakhs and fixed overhead by ₹ 25,000.

You are required to advise the most profitable course of action for Division 'M'.

Answer

a) The important uses to which break-even analysis may be put to use are:

(i) Forecasting costs and profits as a result of change in volume determination of costs, revenue and variable cost per unit at various levels of output.

(ii) Fixation of sales volume level to earn or cover given revenue, return on capital employed, or rate of dividend.

(iii) Determination of effect of change in volume due to plant expansion or acceptance of order, with or without increase in costs or in other words, determination of the quantum of profit to be obtained with increased or decreased volume of sales.

(iv) Determination of comparative profitability of each product line, project or profit plan.

(v) Suggestion for shift in sales mix.

(vi) Determination of optimum sales volume.

(vii) Evaluating the effect of reduction or increase in price, or price differentiation in different markets.

(viii) Highlighting the impact of increase or decrease in fixed and variable costs on profit.

(ix) Studying the effect of costs having a high proportion of fixed costs and low variable costs and vice-versa.

(x) Inter-firm comparison of profitability.

(xi) Determination of sale price which would give a desired profit for break-even.

(xii) Determination of the cash requirements as a desired volume of output, with the help of cash breakeven charts.

(xiii) Break-even analysis emphasizes the importance of capacity utilization for achieving economy.

(xiv) During severe recession, the comparative effects of a shutdown or continued operation at a loss are indicated.

(xv) The effect on total cost of a change in the fixed overhead is more clearly demonstrated through break-even charts.

b) Working Notes :

1. Profit = 20% return on average assets employed

Average Assets	₹ in lakhs
Sundry debtors	2
Inventories	5
Plant & Equipment	5

		Total	12

Profit = ₹ 12,00,000 x 20/100 = ₹ 2,40,000

2. Budgeted sales revenue (2,00,000 units of component x) ₹ In lakhs

Fixed costs	5.00
Variable cost (2,00,000 units @ Re.1)	2.00
Profit	2.40
Total sales	9.40

Selling price per unit of component x = ₹ 9,40,000/ 2,00,000 units = ₹ 4.70 per unit

Options in hand with Division M

Option I - Sell 1,50,000 units in market and transfer 50,000 units to Division N

Option II – Sell only 1,50,000 units in market

Statement of profitability of Division M under two options

₹

Particulars		**Option – I**	**Option –II**
Sales (1,50,000 units @ ₹ 4.70)		7,05,000	7,05,000
Transfer to Division N (50,000 units @ ₹2)		1,00,000	-
Total sales revenue		8,05,000	7,05,000
Less : variable overhead		2,00,000	1,50,000
Contribution		6,05,000	5,55,000
Less : Fixed cost		5,00,000	4,75,000
Profit	(a)	1,05,000	80,000
Capital employed	(b)	12,00,000	10,00,000
Return on capital employed	[a) / (b)] x 100	8.75%	8%

Analysis : From the analysis of the above it is observed that under Option – I. division M's, Profit and ROCE is increased by ₹ 25,000 and 0.75% respectively. Hence Option –I is suggested for Division-M.

Question:9

a) A pharmaceutical drug manufacturing company's three products A, B and C emerge at a single split off stage in department P. Product A is further processed in department Q, product B in department R and product A and product C in department S. There is no loss in further Processing of any of the three products. The cost data for a month are as under:

Cost of raw materials introduced in department P	**₹ 12,68,800**
Direct Wages Department	**₹**
P	**3,84,000**
Q	**96,000**

R	**64,000**
S	**36,000**

Factory overheads of Rs 4,64,000 are to be apportioned to the departments on direct wage basis.

During the month under reference, the company sold all three products after processing them further as under:

Products	**A**	**B**	**C**
Output sold kg.	**44,000**	**40,000**	**20,000**
Selling Price per kg. ₹	**32**	**24**	**16**

There are no Opening or Closing Stocks if these products were sold at the split off stage, that is, without further processing, the selling prices would have been ₹ 20, ₹ 22 and ₹ 10 each per kg respectively for A, B and C.

Required:

(i) Prepare a statement showing the apportionment of joint costs to joint products:

(ii) Present a statement showing product-wise and total profit for the month under reference as per the company's current processing policy.

(iii) What processing decision should have been taken to improve the profitability of the company?

(iv) Calculate the product-wise and total profit arising from your recommendation in (iii) above.

b) Discuss the procedure for Job Cost Accounting.

Answer

a)

(i) Statement showing the apportionment of joint costs to joint products

	Products			
	A	*B*	*C*	*Total*
Output sold Kgs.: (I)	44,000	40,000	20,000	
Selling price per kg. at split off (₹): (II)	20	22	10	
Sales value at split off (₹): (I) x (II)	8,80,000	8,80,000	2,00,000	19,60,000
Joint costs (costs incurred in department P (₹) *(apportioned on the basis of sales value at the point of split off) i.e. (22:22:5)*	8,80,000	8,80,000	2,00,000	19,60,000

(ii) Statement showing product-wise and total profit for the month under reference (as per the company's current processing policy)

	Products			
	A	B	C	Total
Output Kgs.: (a)	44,000	40,000	20,000	
Selling price per kg. after further	32	24	16	

processing (₹): (b)				
Sales value after further processing (Rs).: (c) = {(a) x (b)}	14,08,000	9,60,000	3,20,000	26,88,000
Joint costs (₹): (d) *(Refer to b (i) working notes & 2(i)*	8,80,000	8,80,000	2,00,000	19,60,000
Further processing costs (₹): (e) *(Refer to working note 2 (ii)*	1,72,800	1,15,200	64,800	3,52,800
Total costs (₹): (f) = [(d) + (e)}	10,52,800	9,95,200	2,64,800	23,12,800
Profit/ (Loss) (₹): [(c))– (f)}	3,55,200	(35,200)	55,200	3,75,200

Alternatively:

Incremental sales revenue (₹)	5,28,000	80,000	1,20,000
	(44,000 units x ₹ 12	(40,000 units x ₹ 2)	(20,000 units x ₹ 6)
Less: Further processing costs (₹): *[Refer to working note 2 (ii)]*	1,72,800	1,15,200	64,800
Incremental net profit / (loss)	3,55,200	(35,200)	55,200

***(iii)* Processing decision to improve the profitability of the company.**

44,000 units of product A and 20,000 units of product C should be further processed because the incremental sales revenue generated after further processing is more than the further processing costs incurred. 40,000 units of product B should be sold at the point of-split off because the incremental revenue generated after further processing is less than the further processing costs.

***(iv)* The product wise and total profit arising from the recommendation in (iii) above is as follows:**

Product	*A*	*B*	*C*	*Total*
Profit (₹)	3,55,200	--	55,200	4,10,400

Working notes:

1. Statement of department-wise costs

	P	Q	R	S
	₹	₹	₹	₹
Raw materials	12,68,800			
Wages	3,84,000	96,000	64,000	36,000
Overheads	3,07,200	76,800	51,200	28,800

(Apportioned on the basis of departmental direct wages i.e. 96:24:16:9)

Total Cost	19,60,000	1,72,800	1,15,200	64,800

2. Joint costs and further processing costs

(i) Costs incurred in the department P are joint costs of products A, B and C and are equal to ₹ 19,60,000.

(ii) Costs incurred in the departments Q, R and S are further processing costs of products A, B and C respectively. Further processing costs of products A, B and C thus are ₹ 1,72, 800; ₹ 1,15,200 and ₹ 64,800 respectively.

b) On receipt of an order from the customer or an indication from the sales department for manufacturing a particular product, the production planning department prepares a suitable design for the product or job. It also works out the requirements of materials for the product and prepares a list of operations indicating the various operations to be carried out and their sequence, and the shops, departments, plants or machines to be entrusted with each of the operations.

A Production Order is issued giving instructions to the shops to proceed with the manufacture of the product. The production order constitutes the authority for work. Usually a production order contains all relevant information regarding production, such as detailed particulars of the job or product, the quantity or units to be manufactured, date of start of production, probable date of completion, details of materials required as per the bill of materials, the operations and the various shops involved in performing them and the route of the job should take.

The production order usually lays down only the quantities of materials required and the time allowed for the operations, but the values of materials and labour are also sometimes indicated. In the later case, the production order serves the combined purpose of an order for manufacture as well as the cost sheet on which the cost of the order is compiled.

The production order also provides for the material and labour on account of normal wastage or spoilage of the product in the final stage or during the various stages of manufacture.

Production orders may, in general, be of three types:

(i) Assembly type of order.

(ii) Sub-assembly type of order.

(iii) Components or parts production type.

(i) Assembly type of order:

Where components are purchased and assembled into a product in the factory. A production order for assembly only is required.

(ii) Sub-assembly type of order:

Components are purchased and sub-assemblies and assemblies are made in the factory. Production orders for each sub-assembly and final assembly will be necessary.

(iii) Components or parts production type:

Components are manufactured and sub-assembled and the sub-assemblies are assembled into the final product. Separate production orders for each component, sub-assembly and final assembly are issued.

Question:10

a) The following data pertains to Process I for March 2014 of Alpha Limited :

Opening Work in Progress 1,500 units at ₹ 15,000

Degree of completion

Materials 100% ; Labour and Overheads 33 $\frac{1}{3}$ %

Input of Materials	**18,500 Units at**	**₹ 52,000**
Direct Labour		**₹ 14,000**
Overheads		**₹ 28,000**
Closing Work in Progress	**5,000 units**	

Degree of Completion

Materials 90% ; Labour and Overheads 30%

Normal Process Loss is 10% of total Input (opening work in progress units + units put in)

Scrap value ₹ 2.00 per unit

Units transferred to the next process 15,000 units.

Your are required to :–

(i) Compute equivalent units of production.
(ii) Compute cost per equivalent unit for each cost element i.e., materials, labour and overheads.
(iii) Compute the cost of finished output and closing work in progress.
(iv) Prepare the process and other Accounts.

Assume:

(i) FIFO Method is used by the Company.

(ii) The cost of opening work in progress is fully transferred to the next process.

b) What are the reasons for difference in profit as per financial accounts and cost accounts?

Answer

a)

(i) **Statement of Equivalent Units of Production**

INPUT			**OUTPUT**	**EQUIVALENT Material**		**PRODUCTION Labour & Overhead**	
Particulars	**Units**	**Particulars**	**Units**	**%**	**Units**	**%**	**Units**

Op. WIP	1,500	Work on Op. WIP	1,500	—	—	$66\frac{2}{3}$	1,000
Introduced	18,500	Introduced and completed in the period	13,500	100	13,500	100	13,500
		Transferred to next process	15,000				
		Normal Loss	2,000	—	—	—	—
		Closing WIP	5,000	90	4,500	30	1,500
			22,000		18,000		16,000
		Less: Abnormal Gain	2,000	100	2,000	100	2,000
	20,000		20,000		16,000		14,000

(ii) Statement of Cost per Equivalent Unit for Each Cost Element

		Cost	**Equivalent Units**	**Cost per Equivalent Unit**
	₹	₹		₹
Material	52,000			
Less: Scrap Value	4,000	48,000	16,000	3
Labour		14,000	14,000	1
Overheads		28,000	14,000	2

(iii) **Statement of Cost of Finished Output and Closing Work in Progress**

Particulars	**Elements**	**Equivalent Units**	**Cost per Units**	**Cost of Equivalent Units**	**Total**
			₹	₹	₹
Opening WIP		—	—	—	15,000
(1,500 units)					
Opening WIP	Material	NIL	—	—	

Opening WIP	Labour	1,000	1	1,000	
Opening WIP	Overhead	1,000	2	2,000	3,000
Units introduced and completed during the period	Material	13,500	3	40,500	
	Labour	13,500	1	13,500	
	Overhead	13,500	2	27,000	81,000
Total Cost of 15,000 Units of finished output					**99,000**
Closing WIP	Material	4,500	3		13,500
(5,000 units)	Labour	1,500	1		1,500
	Overhead	1,500	2		3,000
Total cost of closing WIP (5,000 units)					18,000

(iv) Process Account – I

	Units	₹		*Units*	₹
To Opening WIP	1,500	15,000	By Normal Loss	2,000	4,000
To Units introduced (Direct Material)	18,500	52,000	By Transfer to next process	15,000	99,000
To Direct Labour	—	14,000	By Closing WIP	5,000	18,000
To Overhead	—	28,000			
To Abnormal Gain *(Statement i)*	2,000	12,000			
	22,000	1,21,000		22,000	1,21,000

Abnormal Gain Account

	Units	₹		*Units*	₹
To Process A/c I	2,000	4,000	By Process I	2,000	12,000
To Profit & Loss A/c	—	8,000			
		12,000			12,000

Working Note

Total cost of Abnormal Gain:

(2,000 Units) @ ₹ 6/- p.u. = ₹ 12,000

b) 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 cost accounts. They may be items of income or expenses, the former increases the profit and latter reduces the profit.

A. Purely Financial Charges

(a) Loss arising from the sale of fixed assets.
(b) Loss on sale of investments, discount on debentures, etc.
(c) Interest on bank loan, mortgage and debentures.
(d) Expenses of companies 'Share Transfer Office'.

B. Appropriation of Profits

(a) Donations and Charities
(b) Income Tax
(c) Dividend Paid
(d) Transfer to Reserves

C. Writing off Intangible and Fictitious Assets

(a) Goodwill
(b) Patents & Copyrights
(c) Advertisement
(d) Preliminary Expenses

D. Pure Financial Incomes

(a) Rent received or Profit on Sale of Fixed Assets
(b) Share transfer fee received
(c) Interest received on Bank Deposits
(d) 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.

Question:11

a) ABC Ltd. provides you the following information :

i. Sales, Purchases etc. **Amt. in ₹**

Particulars	April	May	June	July	Aug	Sept.
Cash sales	8,000	12,000	16,000	20,000	24,000	28,000
Collection from debtors	16,000	32,000	48,000	64,000	80,000	96,000
Cash purchases	8,000	12,000	16,000	20,000	24,000	28,000
Payment to creditors	12,000	24,000	36,000	48,000	60,000	72,000
Payment of expenses	12,000	5,000	7,800	2,950	27,000	20,000

ii. The opening cash balance of ₹ 10,000 is the minimum cash balance to be maintained.

iii. Any short fall in the minimum cash balance is to be met by Bank borrowings in the multiple of ₹ 5,000 @ 12% p.a. or by sale of marketable securities in the multiple of ₹ 10,000. Bank interest on monthly basis is payable on the first date of the subsequent month. Bank interest is payable for a minimum period of a month.

iv. Any surplus cash is to be used to repay the borrowings in the multiple of ₹ 5,000 or to purchase the marketable securities in the multiple of ₹ 10,000 (ignore interest on securities received and paid).

You are required to prepare the Cash Budget for April to September.

b) Enumerate the essential pre-requisites of integrated accounting system. Also state its advantages, if any.

Answer

a) Cash Budget for April to September **Amt. in ₹**

Particulars	April	May	June	July	Aug	Sept.
A. Total Cash available :						
Opening cash balance	10,000	12,000	14,900	14,000	12,000	15,000
Cash sales	8,000	12,000	16,000	20,000	24,000	28,000
Collection from debtors	16,000	32,000	48,000	64,000	80,000	96,000
	34,000	56,000	78,900	98,000	1,16,000	1,39,000
B. Total Cash Payments :						
Cash purchases	8,000	12,000	16,000	20,000	24,000	28,000
Payment to creditors	12,000	24,000	36,000	48,000	60,000	72,000
Payment of expenses	12,000	5,000	7,800	2,950	27,000	20,000
	32,000	41,000	59,800	70,950	1,11,000	1,20,000
C. surplus (Deficit) [A – B]	2,000	15,000	19,100	27,050	5,000	19,000
Financing and investment :						
D. Borrowings	10,000	-	-	-	-	-
E. Sales of securities	-	-	-	-	10,000	-
F. Less : Repayment of borrowings	-	-	5,000	5,000	-	-
G. Less : Interest on borrowings	-	100	100	50	-	-
H. Less : Purchase of securities	-	-	-	10,000	-	-
I. Closing cash balance [C +D +E – F – G –H]	12,000	14,900	14,000	12,000	15,000	19,000

b) Essential pre-requisites for integrated accounts:

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

(i) 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.

(ii) A suitable coding system must be made available so as to serve the accounting purposes of financial and cost accounts.

(iii) An agreed routine, with regard to the treatment of provision for accruals, prepaid expenses, other adjustment necessary for preparation of interim accounts.

(iv) 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.

Advantages of integrated accounting system:

The main advantages of integrated accounts are as follows

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

Question:12

a) New India Industries is manufacturing several consumer durables which have good demand in the market. The firm has been established only very recently and currently it is in the stage of introduction. It has ambitious plans to expand production after earning a name in the market. However, the company is having problems to get adequate power supply. Moreover most of its labourers are casual workers and labour – absenteeism is also affecting production. In view of these unstable conditions the firm has adopted the practice of preparing quarterly flexible budgets.

For the quarter ending 31st December, 2013 flexible budgets for three possible levels of production were prepared as follows. The company wanted to achieve 90% capacity utilization as its products had good demand.

(₹ In lakhs)

	Flexible budgets		
	60%	80%	90%
Budgeted sales	50.00	66.00	75.00
Budgeted costs :			
Direct materials	12.00	16.00	18.00
Direct labour	15.00	20.00	22.50
Production overheads	11.80	14.00	15.10
Administration overheads	2.00	2.00	2.00
Selling overheads	7.80	9.80	10.20

Soon after the decision to attain 90% capacity utilization, available power was reduced by the State Electricity Board and the reduced supply was sufficient to meet 50% capacity production. The position has been immediately reviewed and the firm is considering the following possible options to meet the situation:

(i) Stop production for the quarter. As regular employees are only few, lay off compensation payable will be only ₹ 1.20 lakhs. Further, overheads can be reduced by as much as 60%.
(ii) Continue production at 50% level. Estimated sales income at this level will be ₹ 40 lakhs
(iii) A private agency in the area has offered surplus captive power available with it. With this additional supply production can be maintained at 90% level. However. The overall variable production overhead will increase by 40%.
(iv) Sub-contract the balance 40% which cannot be made by the firm to two small industrial units in the area, which have the necessary facilities, equally at a cost of ₹ 15 lakhs each.

Evaluate each of the above options and recommend the best plan. Indicate the other important points, if any, to be considered.

b) Differentiate between Zero Based Budgeting and Traditional Budgeting.

Answer

a)

Working notes :

(₹ In lakhs)

Particulars	At 50% capacity	At 90% capacity
1. Variable cost		
Direct materials	10.00	18.00
Direct labour	12.50	22.50
2. Fixed cost		
Admin. Overheads	2.00	2.00

3. Semi-variable costs

Segregation of semi-variable costs into variable and fixed components .

(i) Variable Component = Change in cost / Change in capacity

Production overheads = ₹ 15.10 lakhs – ₹ 11.80 lakhs / 90% - 60% = ₹ 3.30 lakhs / 30%

= 0.11 lakhs for each 1% capacity

Variable production overhead

At 50% capacity = ₹ 0.11 lakhs x 50 = ₹ 5.5 lakhs

At 90% capacity = ₹ 0.11 lakhs x 90 = ₹ 9.90 lakhs

Fixed production overhead = ₹ 11.80 lakhs – (₹ 0.11 lakhs x 60) = ₹ 5.20 lakhs

Variable component of selling overheads = ₹ 10.20 lakhs – ₹ 7.80 lakhs / 90% - 60%

= ₹ 2.40 lakhs / 30%

= ₹ 0.08 lakh for each 1% capacity

Variable selling overhead

At 50% capacity = ₹ 0.08 lakh x 50 = ₹ 4 lakhs

At 90% capacity = ₹ 0.08 lakhs x 90 = ₹ 7.2 lakhs

Fixed selling overhead = ₹ 7.80 lakhs – (₹ 0.08 lakh x 60) = ₹ 3.00 lakhs

Flexible Budget

(₹ Lakhs)

Particulars		Capacity	
		50%	90%
Sales	(A)	40.00	75.00
Direct material		10.00	18.00
Direct labour		12.50	22.50
Variable overheads			
- Production		5.50	9.90
- Selling		4.00	7.20
Fixed overheads			
- Production		5.20	5.20
- Administration		2.00	2.00
- Selling		3.00	3.00
Total cost	(B)	42.20	67.80
Net profit / (loss)	(A) – (B)	(2.20)	7.20

(a) **Loss to be incurred if stoppage of operations** (₹ Lakhs)

Lay off compensation	1.20
Fixed overheads (₹ 10.20 lakhs x 40/100)	4.08
Loss if operations are closed	5.28

(b) **Loss if continue production at 50% level**

Loss would be ₹ 2.20 lakhs (Calculation given above)

(c) **Profitability if production is at 90% capacity** (₹ Lakhs)

Profit (as calculated above)	7.20
Less : Additional cost due to purchase of Power from	
Private agency (₹ 9.90 x 40/100)	3.96
Net profit	3.24

(d) **Profitability of operation at 50% capacity and sub-contracting the balance 40%**

(₹ Lakhs)

Total cost	- at 50% capacity	42.20
Sub-contract charges (₹ 15.00 lakhs x 2)	- for balance 40% capacity	30.00
Variable selling overhead (₹ 7.20 lakhs – ₹ 4 lakhs) – for balance 40% capacity		3.20
Total cost		75.40

Loss (balancing figure)	0.40
Sales	75.00

Analysis : From analysis of above alternative C is most profitable with which the company can earn a profit of ₹ 3.24 lakhs. Hence, operation at 90% capacity with the purchase of power from private agency is the suggested mode of action.

b)

Points of difference	Traditional budgeting	Zero Based Budgeting
Frequency	Annual	Every 3-5 years
Starting point	Last year's budget	Zero
Basis	Last year + %	Careful analysis of decision packages
Budgeted amount	Usually single amount	Depends upon analysis of benefits from incremental spending
Priority of activities	'Musts' and 'wants' not differentiated	Distinguished 'musts' and 'wants' and rank priorities
Alternatives	Often ignored	Considered
People involved	Boss and subordinate	Cross-functional team
Awareness necessary	Knowledge of own function	Comprehensive understanding of how the whole business works
Preparation	Can be minimal	Substantial
Appropriateness	General activities	Most effective in Support type activities

Question:13

a) Write a short note on the following, with reference to contract accounting.
- **(i) Surveyor's Certificate and Retention Money**
- **(ii) Escalation Clause**
- **(iii) Work-in-progress**

b) Calculate all the Sales Variance on Sales Margin basis from the following information provided by Vishnu Ltd. Also reconcile the standard profit with actual profit.

Product	Budgeted sales quantity Units	Budgeted selling price per unit ₹	Standard cost per unit ₹	Actual sales quantity Units	Actual selling price per unit ₹	Actual cost per unit ₹
A	60	20	15	44	25	16
B	40	10	4	66	5	5

Answer

a) Short Notes:

(i) Surveyor's Certificate and Retention Money:

In the case of contracts running for long periods of time, it is customary for the contractor's firm to get 'on account' payments against the portion of contract completed. The amount received depend upon the extent of work certified by the technical assessor i.e. on the surveyor's certificates, as these are called. Normally such payments are not received to the full extent of the work completed but a small percentage is held back as retention money, payable on completion of the contract. The retention money is a sort of safeguard available to the contractee in case the contractor is no able to fulfill one or more of the conditions laid down in the contract.

(ii) **Escalation Clause:**
Escalation clauses are often provided in contracts as safeguards against any likely changes in price or utilisation of material and labour. Such a clause in a contract would provide that in the event of a specified contingency happening, the contract price would be suitably enhanced. This clause is particularly necessary where the price of certain raw materials are likely to rise, where labour rates are anticipated to increase, or where the quantity of material or labour time cannot be properly assessed or estimated unless the work has sufficiently advanced. There may also be **'De-escalation or Reserve Clause'** to provide for any future decrease in price etc. so that the benefit may be passed on to the contractee.

(iii) **Work-in-progress:**
In Contract Accounts, the value of the work-in-progress consists of:-
1. the cost of work completed, both certified and uncertified,
2. the cost of work not yet complete, and
3. the amount of profit taken as credit.

In the Balance Sheet, the work-in-progress is usually shown under two heads, viz. certified and uncertified. The cost of work completed and certified and the profit credited will appear under the head 'certified' work-in-progress, while the completed work not yet certified and the cost of labour, material and expenses of work which has not reached the stage of completion are shown under the head 'uncertified' work-in-progress.

b) Basic calculation :

1. Budgeted margin per unit (BM) =Budgeted selling price per unit – Standard cost per unit
   Product A = ₹ 20 – ₹ 15 = ₹ 5
   Product B = ₹ 10 – ₹ 4 = ₹ 6

2. Actual margin per unit (AM) = Actual selling price per unit – Standard cost per unit
   Product A = ₹ 25 – ₹ 15 = ₹ 10
   Product B = ₹ 5 – ₹ 4 = ₹ 1

Basic calculation for the computation of sales variances (on sales margin basis)

Product	BQ	BM	BQ x BM (1)	AQ	AM	AQ x AM (2)	AQ x BM (3)	RQ	RQ x BM (4)
A	60	5	300	44	10	440	220	66	330
B	40	6	240	66	1	66	396	44	264
Total	100		540	110		506	616		594

Sales margin (profit) variance (2 – 1) = (AQ x AM) – (BQ x BM)

	=	₹ 506 – ₹ 540	=	₹ 34 (A)
Sales margin price variance (2 – 3)	=	(AQ x AM) – (AQ x BM)		
Product A	=	₹ 440 – ₹ 220	=	₹ 220 (F)
Product B	=	₹ 66 – ₹ 396	=	₹ 330 (A)
				₹ 110 (A)
Sales margin volume variance (3 – 1)	=	(AQ x BM) – (BQ x BM)		
Product A	=	₹ 220 – ₹ 300	=	₹ 80(A)
Product B	=	₹ 396 – ₹ 240	=	₹ 156 (F)
				₹ 76 (F)
Sales margin mix variance (3 – 4)	=	(AQ x BM) – (RQ x BM)		
Product A	=	₹ 220 – ₹ 330	=	₹ 110 (A)
Product B	=	₹ 396 – ₹ 264	=	₹ 132 (F)
				₹ 22 (F)
Sales margin sub-volume variance	=	(AQ – BQ) x Average budgeted margin		
	=	(110 – 100) x ₹ 540 / 100	=	₹ 54 (F)

Verification :

1. Sales margin variance = Sales margin price variance + Sales margin volume variance
   = ₹ 110 (A) + ₹ 76 (F) = ₹ 34 (A)

2. Sales margin volume variance
   = Sales margin volume variance + Sales margin sub-volume variance
   = ₹ 22 (F) + ₹ 54 (F) = ₹ 76 (F)

Statement reconciling the standard profit with actual profit

		₹	₹
A.	Budgeted profit		
	Product A [60 x ₹ 5]	300	
	Product B [40 x ₹ 6]	240	540
B.	Add : Fav. Sales margin volume variance		76
C.	Standard profit [A + B]		616
D.	Less : Adverse Sales price variance	110	
	Adverse cost variance : Product 'A' 44 x (₹ 15 – ₹ 16)	44	
	Product 'B' 66 x (₹ 4 – ₹ 5)	66	220
E.	Actual profit [C – D]		396

Verification: Actual profit = [44 x (₹ 25 – ₹ 6] + [66 x (₹ 5 – ₹ 5)] = ₹ 396

Question:14

a) Differentiate between Job Costing and Process Costing.

b) Adarsh Ltd. manufactures a product and provides you the following information :

Budgeted data -

Direct materials	**-**	**₹ 4,00,000**
Direct labour	**-**	**₹ 4,00,000**
Variable overheads	**-**	**₹ 80,000**
Fixed overheads	**-**	**₹ 2,00,000**
Sales (10,000 units)	**-**	**₹ 13,50,000**

No opening and closing stock.

	Favourable (₹)	**Adverse (₹)**

Material price variance		**66,000**
Material usage variance		**10,000**
Labour rate variance		**6,800**
Labour efficiency variance		**12,000**
Idle time variance		**8,000**
Variable overhead efficiency variance		**2,400**
Variable overhead expenditure variance	**6,400**	
Fixed overhead efficiency variance		**6,000**
Fixed overhead capacity variance		**34,000**
Fixed overhead expenditure variance	**16,000**	
Sales price variance	**40,000**	
Sales margin volume variance		**54,000**

Required :

a) **Prepare a Standard Cost sheet**
b) **Prepare a statement showing total Standard Cost for Actual Output**
c) **Prepare Actual Cost sheet**
d) **Reconcile the Actual Profit with the Standard Profit.**

Answer

a) Difference between Job Costing and Process Costing:

	Job Costing	Process Costing
(i)	The form of specific order costing which applies where the work is undertaken to customer's special requirements.	That form of costing which applies where standardised goods are produced and production is in continuous flow, the products being homogeneous.
(ii)	The job is the cost unit and costs are collected for each job.	Costs are collected by process or department on time basis and divided by output for a period to get an average cost per unit.
(iii)	Losses are generally not segregated.	Normal losses are carefully predetermined and abnormal losses are segregated.
(iv)	Overheads are allocated and apportioned to cost centers then absorbed by jobs, in proportion to the time taken.	Units pass through the same processes. Overheads are apportioned to processes on some suitable basis, sometimes, pre-determined rates may be used
(v)	Joint products / By-products do not usually arise in jobbing work.	Joint products/By-products do arise and joint cost apportionment is necessary.
(vi)	Standard costing is generally not suitable for jobbing work.	The standardized nature of products and processing methods lends itself to the adoption of standard costing.
(vii)	Work-in-progress valuation is specific and is obtained from analysis of outstanding jobs.	For WIP valuation operating costs have to be spread over fully complete output and partially complete products using the concept of equivalent units.
(viii)	Each job is separate and independent of others. Costs are computed when a job is complete.	Products lose their individual identity as they are manufactured in a continuous flow. Costs are calculated at the end of cost period.
(ix)	There are usually no transfers from one job to another unless there is a surplus work or excess production.	Transfer of costs from one process to another is made, as the product moves from one process to another.

(x)	There may or may not be work-in-progress at the beginning or end of the accounting period.	There is always some work-in-process at the beginning as well as at the end of the accounting period.
(xi)	Proper control is comparatively difficult as each product unit is different and the production is not continuous.	Proper control is comparatively easier, as the production is standardized and is more stable.
(xii)	It requires more forms and details.	It requires few forms and less details.

b)

Statement showing Standard Cost Sheet, Total Standard Cost for Actual Output and Actual Cost Sheet

Particulars A	Original budget for 10,000 units B	Standard Cost per unit C=B/10,000	Standard Cost for 8,000 units D = C x 8,000	Variance E	Actual for 8,000 units F = D ± E
Direct material	4,00,000	40	3,20,000	(-) 76,000	3,96,000
Direct labour	4,00,000	40	3,20,000	(-) 26,800	3,46,800
Variable overhead	80,000	8	64,000	4,000	60,000
Fixed overhead	2,00,000	20	1,60,000	(-) 24,000	1,84,000
Total cost	10,80,000	108	8,64,000	(-) 1,22,800	9,86,800
Net profit	2,70,000	27	2,16,000	(-) 82,800	1,33,200
Sales	13,50,000	135	10,80,000	40,000	11,20,000

Statement Reconciling the Actual Profit with the standard Profit

			₹
Budgeted profit (10,000 @ ₹ 27)			2,70,000
Less : Adverse sales margin volume variance [₹ 27.5 (8,000 – 10,000)]			(-) 54,000
Standard profit			2,16,000
Add : Sales price variance [8,000 (₹ 135 – ₹ 140)]			40,000
Profit before adjustment of cost variances			2,56,000
Adjustment of cost variances :			
	Favourable (₹)	Adverse (₹)	
Material price variance		66,000	
Material usage variance		10,000	
Labour rate variance		6,800	
Labour efficiency variance		12,000	
Idle time variance		8,000	
Variable overhead efficiency variance		2,400	
Variable overhead expenditure variance	6,400		
Fixed overhead efficiency variance		6,000	
Fixed overhead capacity variance		34,000	
Fixed overhead expenditure variance	16,000		
	22,400	1,45,200	(-) 1,22,800
Actual profit			1,33,200

Working note : Calculation of Actual Output

Sales margin volume variance = Budgeted margin per unit x (Budgeted Qty. – Actual Qty.)

₹ 54,000 = 27 x (10,000 – Actual Qty.)

$$\text{Actual Qty.} = 10{,}000 - \frac{\text{Rs. } 54{,}000}{27}$$

Actual Qty. = 10,000 – 2,000 = 8,000 units.

Question:15

a) State the accounting treatment and ways of apportionment of joint costs.

b) ABC Ltd. Makes and sells a single product. The company's trading results for the year 2013 are as follows :

		₹'000
Sales		**3,000**
Direct materials	**900**	
Direct labour	**600**	
Overheads	**900**	**2,400**
Profits		**600**

For the year 2014, the following are expected :

i. **Reduction in the selling price by 10%**
ii. **Increasing in the quantity sold by 50%**
iii. **Inflation of direct material cost by 8%**
iv. **Price inflation in variable overhead by 6%**
v. **Reduction of fixed overhead expenses by 25%.**

It is also known that

a) **In 2012, overhead expenditure totaled to ₹ 8,00,000.**
b) **Total overhead cost inflation for 2013 has been 5% more than in 2012.**
c) **Production and sales volumes have been 25% higher in 2013 than in 2012.**

You are required to :

i. **Prepare a statement showing the estimated trading results for 2014.**
ii. **Calculate the break-even point for 2013 and 2014.**
iii. **Comment on the BEP and profits of the 2013 and 2014.**

Answer

a)

Accounting Treatment:

In case of joint products, the main objective of accounting of the cost is to apportion the joint costs incurred up to the split off point. As discussed earlier, the manufacturing process is same up to a certain stage and after crossing that stage; each product has distinct manufacturing process. Therefore the main problem is apportionment of the joint cost or the cost incurred up to the split off point. The total cost of production of the joint product will be cost incurred up to the split off point duly apportioned plus the cost incurred after the split off point. There is no problem of charging the cost incurred after the split off point as the cost can be identified easily. The main problem therefore is that of apportionment of the joint cost and the following methods are used for apportioning the same.

(i) Physical Quantity Method: Under this method, cost apportionment is made in proportion to the volume of production. These physical measures may be units, pounds, liters, kilos, tones, gallons etc.

(ii) Average Unit Cost Method: Under this method, the joint cost is apportioned to the joint products by computing the average unit cost of the product units. The average unit cost is computed by dividing the total manufacturing cost by the total number of units produced of all products. This method is useful where all the products produced are uniform with

each other in all the respects. This method will not be useful if the production units are not similar with each other.

(iii) Weighted Average Method: Under this method, weights are assigned to each unit based upon size of the units, difference in type of labor employed, material consumption, market share, efforts of labour required and so on. The joint cost is apportioned on the basis of the weights assigned to each product. This method is highly useful if the weights assigned are on objective basis. If subjective element creeps in, the method may not give accurate results.

(iv) Selling Price Method: Under this method, the joint cost is apportioned on the basis of sales value at the split off point. The logic is that a product should bear the share of the joint cost according to its sale price. If sales price is higher than that of the other products, more share of joint cost should be charged to that product and if it is comparatively less than that of other products, less share of joint cost should be charged to the same. Though logically this method seems to be sound, in practice, charging higher share of joint cost to the product with higher sales value may not be justified due to the fact that lesser efforts are required for manufacturing of the same.

b) i) Statement showing trading results

Particulars	2013	2014
A. Sales :	3,000	4,050 (3,000 x 150% x 90%)
B. Less : Variable Costs : Direct material	900	1,458 (900 x 150% x 108%)
Direct labour	600	900 (600 x 150%)
Variable overhead	300	477 (300 x 150% x 106%)
Total variable cost	1,800	2,835
C. Contribution [A – B]	1,200	1,215
D. Less : Fixed overheads	600	450 (600 x 0.75)
E. Profit [C – D]	600	765

ii) P/V Ratio = Contribution / Sales x 100 — 1,200 / 3,000 x 100 = 40% — 1,215 / 4,050 x 100 = 30%

BEP = Fixed Cost / P/V Ratio — 600 / 40% = 1,500 — 450 / 30% = 1,500

iii)

Particulars	**2013**	**2014**	**% change**
BEP	1,500	1,500	No change
Fixed overheads	600	450	450 – 600 / 600 x 100 = (25%)
P/V Ratio	40%	30%	30 – 40 / 40 x 100 = (25%)
Profit	600	765	765 – 600 / 600 x 100 = 27.5%

Both fixed cost and P/V ratio have declined by 25% equally. So, BEP sales remain the same.

The contribution is only ₹ 1,215 in 2014 though quantity is increased by 50%. This is due to increase in production cost and decrease in selling price. This is more than made up by decrease in fixed cost so that overall profit has increased by 27.5%.

Working notes: Calculation of variable overheads and fixed overheads

Total overheads for same production in 2013 = 800 x 105% = 840

Variable overheads for 2013 = $\frac{900 - 840}{125 - 100} \times 125 = 300$

Fixed overheads for 2013 = 900 – 300 = 600

Section - B

Question: 16

Answer the following questions with respect to Companies (Cost Accounting Records) Rules, 2011.

a) Are there any sectors exempted under Companies(Cost Accounting Record)Rules, 2011?

b) What constitutes the cost records under Rule 2(e)? Whether the format of "Abridged Cost statement" prescribed in the Companies (Cost Audit Report) Rules, 2011 can be considered as a sample cost statement?

c) For how many years, does a company under these rules require to preserve the Cost details?

d) A company under Cost Audit maintains its records on standard costing system. Is this acceptable for Cost Audit? What are the requirements in regard to variances and their treatment in cost proformae?

Answer

a) MCA General Circular No. 67/2011 dated 30th November 2011, states that the Companies(Cost Accounting Records) Rules, 2011 are not applicable to wholesale and retail trading, banking, financial, leasing, investment, insurance, education, healthcare, tourism, travel, hospitality, recreation, transport services, business/professional consultancy, IT and IT enabled services, research and development, postal/courier services, etc. Unless any of these have been specifically covered under any other Cost Accounting Records Rules.

b) Books of account and other records relating to utilization of materials, labour and other items of cost that provides data/information to compute the cost of production, cost of sales and margin of each of the products/activities of the company on monthly/quarterly/half-yearly/annual basis are considered part of the cost records. It includes statistical, quantitative and other records which enable the company to exercise, as far as possible, control over the various operations and costs with a view to achieve optimum economies in utilization of resources. Cost records are required to be maintained on continuous basis from the basic stage of inputs to the final output. There cannot be any exhaustive list of cost records. This would depend on the materiality of cost components in the cost of the product/activity.
The abridged cost statement can be used as a sample cost statement. This may be modified according to the need of the company.

c) In respect of companies coming under the purview of the Companies(Cost Accounting Records) Rules, 2011 and the Companies(Cost Audit Report) Rules, 2011 for the first time, cost records and cost details , statements, schedules, etc. shall be kept in good order for next eight financial years beginning with first year of application of the said Rules.

d) Where a company maintains cost records on any basis other than actual such as standard costing, the records shall indicate the procedure followed by the company in working out the

cost of the activities and services under the system. The cost variances shall be shown against separate heads and analysed into material, labour, and overheads and further into quantity, price, and efficiency variances. The method followed for adjusting cost variances in determining the actual cost of activities or services should be clearly indicated in cost records. The reasons for variances should also be clearly explained in cost records.

The cost auditor should verify that treatment of variances in cost statements is reasonable and consistently applied. Whether variances are intentioned or not will be a point of specific mention by the cost auditor.

Para 5 of the Annexure to Cost Audit Report furnishing an abridged cost statement (for each product group separately) should reflect figures at actual after adjustment of variances , if any.

Question:17

a) Who can be appointed as Cost Auditor?
b) Who is competent authority in companies to appoint Cost Auditor?
c) What procedure is required to be followed by a company in respect of appointment of Cost Auditor?
d) What is the obligation of the cost auditor after receipt of formal appointment letter?

Answer:

a) 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.

b) 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".

c) The procedure to be followed by company is as follows:

- The Company is required to e-file its application with the Central Government on www.mca.gov.inportal, in the prescribed Form 23C 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.
    i) certified copy of the Board Resolution proposing appointment of cost auditor; and

    ii) copy of the certificate obtained from the cost auditor regarding compliance of section 224(1-B) of the Companies Act, 1956.

- 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.

- 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.

d) 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.

Question: 18

What you understand by the following terms?

a) Full time employment in respect to disqualifications of Cost Auditor.

b) True and Fair Cost of Production.

Answer:

a) Full time employment in respect to disqualifications of Cost Auditor would mean

i) A whole time director of a company appointed under provisions of Section 269 of Companies Act, 1956 or Secretary under provisions of Section 383 A of Companies Act, 1956 may be considered to be in full time employment.

ii) Anyone receiving a salary and PF contribution from his employer or getting such other benefits like Bonus, HRA etc. may amount to be in full time employment.

iii) A person declaring income under the head 'Salaries' under Income Tax Act may be considered to be in full time employment.

b) The concept of "True and Fair Cost of Production" is used in the context of cost audit wherein the cost auditor has to state whether in his opinion the company's cost accounting records have been kept so as to give a true and fair view of the cost of production, processing and marketing of the product. A cost auditor checks the cost accounting records to verify that the cost statements are properly drawn up as per the records and that they present a true and fair view of the cost of production and marketing of various products dealt with by the undertaking. The following are the relevant considerations in determining whether the cost of production determined by the cost auditor is true and fair:

- Determination of cost following the generally accepted cost accounting principles
- Application of the costing system appropriate to the product
- Materiality
- Consistency in the application of costing system and cost accounting principles
- Maintenance of cost records and preparation of cost statements in the prescribed form and having the prescribed contents
- Elimination of material prior-period adjustments

- Abnormal wastage's and losses and other unusual transactions being ignored in determination of cost.

It as a result of the examination of the books of account, the cost auditor desires to give a qualified report he shall indicate the extent to which he has to qualify the report and the reasons thereof .

Question:19

a) Under what conditions, will the appointment of cost auditor for conducting Cost Audit be appointed in firm's name? Who will authenticate such reports and how? Can a proprietary firm also be appointed as a cost auditor?
b) Can Cost Auditor of a company also be its internal auditor? Justify your answer.
c) Can a Cost Accountant who is appointed as the concurrent auditor of a company accept appointment as cost auditor of the same company?

Answer:

a) Appointment of cost auditor under a firm's name will be subject to the following conditions:

(i) All the partners of the firm are full time cost accounting practitioners within the meaning of Sections 6 and 7 of the Cost and Works Accountants Act, 1959.
(ii) The firm must have been constituted with the previous approval of Central Government or of the Central Council of ICWAI as per amended regulation 113 of the Cost and Works Accountants Act, 1959.
The Cost Audit Report shall be signed by any one of the partners of the firm responsible for the conduct of the cost audit in his own hand for and on behalf of the firm. In any case the report should not be signed by merely offering the firm's name.
With the amendment to Regulation 108 of the ICWAI Regulations on 25.9.93, a proprietary firm can be approved by the Council of the Institute and therefore can be appointed as Cost Auditor.

b) Since the Cost Auditor is required to comment on the scope and performance of internal audit it would tend to militate against proper and dispassionate discharge of the duties of the cost auditor if he is also the Internal Auditor of the audited company. Hence the cost auditor of a company cannot be its internal auditor also.

c) A concurrent auditor may be viewed as a person holding an office of profit of the company and so cannot be appointed as the cost auditor of the same company.

Question:20

Can you consider "Cost Audit" :
(a) as Management Audit,
(b) as Social Audit,
(c) as Propriety Audit? If so, to what extent?

Answer:

(a) Cost Audit and Management Audit :
Cost audit report and the information to be furnished therein is prescribed by the Central Government. However, most of the information contained in the cost audit report is relevant for making managerial decisions. Normally a management audit is an audit for the management and by the management. Such audit looks into the economy and the effectiveness of performance of various activities of an organization. Cost audit also looks into the effectiveness

of performance and efficiency in various areas such as capacity, input costs of materials, utilities and other controllable areas so far as the manufacturing aspect is concerned. Detailed information on these areas has to be given in the cost audit report by the cost auditor comparing it with the standards and past actuals wherever necessary. Since Cost Audit is very useful to the management as it points out areas where performance can be improved, it can be called an audit for the management. Though cost audit is not done at the behest of the management, it does not change its character from being a management tool.

(b) Cost Audit and Social Audit :

Social audit is generally defined to be the audit of data or information depicting social performance of a business in contrast to its normal economic performance as measured in financial audit. A lot of research and experimentation are being conducted to device techniques or models, which can measure the contribution of an enterprise to the society. These developments result from an increasing realization of the fact that business undertakings have social responsibilities also and that the performance as a whole should be seen in this context. Social performance is discharged by providing some social amenities for the use of community as a whole e.g. provision of a hospital, a recreation club, a temple, etc. As provision of such amenities involves diversion of profits earned by the business for charitable or philanthropic purposes, it is advisable to conduct an audit of such expenses spent on welfare which are in no way related to the main task of business of production or marketing of goods/services and earning profits. Such activities, which apparently are not directly connected with the main business activity, help the business to create a favorable image for the business and those at the helm of affairs. Cost audit provides an adequate information on the cost of production, selling price and margin of profit in respect of each item of product covered by cost audit. This information is very useful to the Government in regulating the prices of essential commodities. Therefore, cost audit can be said to subserve the interest of the community by facilitating the review of prices to be charged to the customer. A review by the government results in fair prices to the consumers which is a major social objective which cost audit is subserving. Thus cost audit is also a social audit.

(c) Cost Audit and Propriety Audit :

Propriety audit stands for verification of transactions in the best interest of the public, commonly accepted customs and standards of conduct. The term "propriety" has been defined by Kohler as "that which meets the tests of public interest, commonly accepted customs and standards of conduct and particularly as applied to professional performance, requirements of Government regulations, and professional codes." The tests boil down to consideration of financial prudence and economy, instead of too much dependence on documents, vouchers etc. It shifts the emphasis to find the wisdom and appropriateness of expenditure, rather than verifying whether it has been duly authorized or evidenced by proper vouchers etc.

In other words, the propriety audit seeks to ensure that the planned expenditure would yield the optimum returns and there is no other better alternative available. It seeks to ensure that the expenditure is not only appropriate to the circumstances of each case, it has indeed achieved the objectives for which it has been incurred. The audit of public sector undertakings as undertaken by the Comptroller and Auditor-General of India is the best example of propriety audit.

The Cost Audit Reports can be termed as propriety audit as these reports seeks to ensure that actual expenditure at each stage is appropriate and optimum returns have been achieved. The cost auditor always aims at ensuring that the actual expenditure should not be prima facie more than what the occasion demands. The cost auditor has to report on matters which appear to him to be clearly wrong in principle, cases where the company's funds have been used in a negligent or inefficient manner, arm's length pricing of related party transactions, etc. These are

the areas where the propriety aspect is involved and therefore cost audit may be in the nature of "propriety audit".

Question:21

Your company has received an order from the Government of India directing your company to have the Cost Accounting Records audited. List the actions to be taken by the company step by step from appointment of Cost Auditor till the submission of The Cost Audit Report specifying the time schedule.

Answer:

(i) The central government issues a specific order under section 233 B(1) of the Companies Act to a company to get its cost accounting records audited by a practicing Cost Accountant, indicating the product for which the audit is ordered and the year from which it is ordered. The order is automatically applicable for every subsequent year thereafter.

(ii) On receipt of the order, the Board of Directors should select a Cost Accountant or a firm of Cost Accountants, and pass a resolution at the Board Meeting appointing the Cost Auditor. The Board may appoint the same Auditor for all products and factories covered by the order, or different auditors for different products or factories. It should be ensured that the auditor or auditors so appointed do not suffer any of the disqualifications under section 233B (5), or exceed the number of audits u/s 224 (1) (B). The company should take a declaration from the auditor to this effect.

(iii) The secretary of the company or a Director should make an application to the Central Government in Form 23-C, accompanied by the applicable fee, for appointment of the Cost Auditor. The application should be made within 45 days from the commencement of the accounting period/ year for which the audit is to be conducted, or from the date on which the order is received from the Government for the first time. Such an application should be made for every year thereafter.

(iv) On receipt of the approval from the Government, the company should issue a letter to the auditor confirming his appointment and the remuneration agreed.

(v) Within 90 days form the close of the accounting year, the company should make available all the Cost accounting records u/s 209(1)(d) to the auditor and render all assistance to him to carry out the audit.

(vi) Within 135 days from the close of the accounting year, the company should prepare the Annexure to the Cost Audit (Report) Rules, 2001, get it audited and place before the Board of Directors. The approved Annexure and Proforma should be signed by one Director and Secretary and if there is not secretary, by two Directors.

(vii) The Cost Auditor should submit his Report in the prescribed form along with the Annexure and proforma to the Government of India within 180 days from the close of the accounting year – in one hard copy and one soft copy.

Section - C

Question:22

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

b) A monopolist faces the following demand curve $q = 144/p^2$ where q is the quantity demanded and p is price. Its average variable cost is $AVC = q^{1/2}$ and its fixed cost is 5.

i) What are profit maximizing price and quantity? What is the resulting profit?

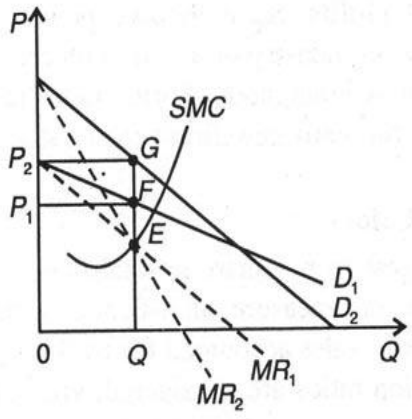
ii) Suppose the government regulates the price to be no greater than Rs. 4 per unit. How much will the monopolist produce? What will its profit be?

Answer:

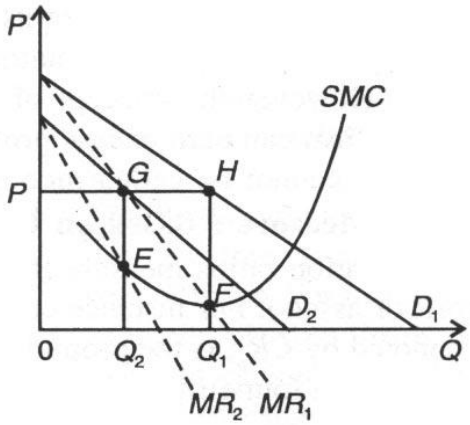
It is true that the monopolist will supply some output, provided that it can earn at least a normal rate of return by doing so. But the monopolist does not have a supply curve that corresponds to that of a competitive firm. The reason can be explained as below.

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.

(a) $Q = \frac{144}{P^2}$, $AVC = q^{\frac{1}{2}}$, TFC = 5

$\Pi = p.q - AVC.q - F.$

Now, $P^2 = \frac{144}{q}$ $\quad\quad$ $\therefore P = \frac{12}{q^{\frac{1}{2}}}$

$\therefore \quad \Pi = \frac{12}{q^{\frac{1}{2}}} . q - q^{\frac{1}{2}} . q - 5$

$= 12 . q^{\frac{1}{2}} - q^{\frac{3}{2}} - 5.$

$\frac{d\Pi}{dq} = \frac{1}{2}.12q^{\frac{1}{2}-1} - \frac{3}{2}q^{\frac{3}{2}-1} = 0$

- $6q^{-\frac{1}{2}} - \frac{3}{2}q^{\frac{1}{2}} = 0$
- $\frac{6}{q^{\frac{1}{2}}} - \frac{3}{2}q^{\frac{1}{2}} = 0$
- $\frac{12 - 3q}{2q^{\frac{1}{2}}}$
- $12 - 3q = 0$
- $q = 4$

$\therefore \quad p = \frac{12}{q^{\frac{1}{2}}} = \frac{12}{2} = 6$

$\therefore$ The profit maximizing p and q are 6, 4, respectively

$\therefore$ Total profit = p.q – AVC. q – F

= 6 x 4 – 2 x 4 – 5

= 24 – 8 – 5

= 11

(b) $\pi = p.q - AVC. q - F$

$\pi = 4q - q^{\frac{1}{2}} q_1 q - 5 = 4q - q^{\frac{3}{2}} - 5$

$\frac{d\Pi}{dq} = 4 - \frac{3}{2}q^{\frac{1}{2}} = 0$

$\frac{3}{2}q^{\frac{1}{2}} = 4$

$q^{\frac{1}{2}} = \frac{8}{3}$

$q = \frac{64}{9} = 7.11$

$$\therefore \quad \Pi \quad = 4\times\frac{16}{9}-\left(\frac{64}{9}\right)^{\frac{3}{2}}-5=13.96$$

Question:23

a) What is Demand Forecasting and what are the factors involved in it?

b) The cost function is C = 100 + q where the product is sold at ₹ 5 per unit. Determine breakeven sales and profit when 125 units are sold.

c) Define "Consumer Surplus".

Answer:

Expecting future demand for a product is called "Demand Forecasting". This estimate is made considering various factors like controllable and non-controllable and present and anticipated market conditions. Accurate forecasting is essential for a firm to enable it to produce the required quantities at the right time and arrange well in advance for the various factors of production viz., material, money, men, management, machinery etc. Demand forecasting is not a speculation. It cannot be hundred per cent correct. But it gives a reliable information and estimate of future demand. It is based on mathematical law of probability. Business planning is based on forecasting of sales or demand. Most of the business decisions depend on the basis of expected sales in future. The success of business is also influenced by the accuracy of forecasted reports. A firm can maximise profits only when it produces on the basis of the demand for its products. There will be no problem of over and under production if the figure of sales forecasts or demand forecasts is accurate. As it will reduce or have control over costs, the profits will certainly go up. Hence, the importance of forecasting is more or less depends upon the nature of business.

Factors involved in Demand Forecasting:

1. **Time factor:** Forecasting may be done for short-term or long-term. Short-term forecasting is generally taken for one year while long-term forecasting covering a period of more than 1 year.
2. **Level factor:** Demand forecasting may be undertaken at three different levels.
   a. Macro level: It is concerned with business conditions over the whole economy.
   b. Industry level: Prepared by different industries.
   c. Firm-level: Firm-level forecasting is the most important from managerial view point.
3. **General or specific purpose factor:** The firm may find either general or specific forecasting or both useful according to its requirement.
4. **Product:** Forecasting varies with the type of product i.e., new product or existing product or well established product.
5. **Nature of the product:** Goods can be classified into (i) consumer goods and (ii) producer goods. Demand for a product will be mainly dependent on nature of the product. Forecasting methods for producer goods and consumer goods will be different accordingly.
6. **Competition:** While making forecasting, market situation and the product position in particular market should be analyzed.
7. **Consumer Behaviour:** What people think about the future, their own personal prospects and

about products and brands are vital factors for firm and industry.

b)

Here TR = p x q = 5q and C = 100 + q.

For breakeven TR = C => 5q = 100 + q => q = 25

For breakeven sales = 5 x 25 = ₹ 125.

Now π = TR – C = 5q – 100 - q = 4q – 100.

For q = 125, π = 4 x 125 – 100 = ₹ 400.

c) 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.

Question:24

a) Write about Monopolistic Competition and its features.
b) Is price discrimination possible under monopoly? What would be the kinds of price discrimination and the conditions for it?
c) What are the conditions for profit maximization under a discriminating monopoly?

Answer:

a) Prof. E. H. Chambeline of Harvard University is the founder and the builder of Monopolist competition. It is also sometimes referred as group equilibrium. According to Joe. S. Bain, "Monopolistic competition is found in the industry where there is a large number of small seller selling differentiated but close substitute products".

Monopolistic competition is the midway of perfect competition and monopoly. There are some elements of perfect competition and monopoly in this monopolistic competition.

Features:

1. **Existence of large number of firms:** In monopolist competition there are large numbers of firms in the market. The output of each firm is very much less in the total output. Because of large number of firms each firm acts independently without bothering about the reaction of rivals.
2. **Product differentiation**: Product differentiation is another feature of monopolistic competition. Under the monopolist competition products are not homogeneous like in perfect competition and they are not remote substitutes as in monopoly. These products may be close substitutes. For example Colgate tooth paste, close-up etc., product differentiation can be brought about in several ways. The firms may bring about product differentiation by offering supplementary services to the customers or by differentiation the

quality of the goods or through advertisements.

3. **Free entry and exit:** There is a free entry and exit of the firms in monopolistic competition. The new firms may enter the market or the existing firms may leave the market.
4. **Excess capacity:** Under monopolistic competition the firms produce the goods upto that level where the average cost is at falling stage. The firms do not produce the output upto that level where the long run average cost is at minimum level. In monopolist competition the amount of output that is produced by the firm is less than the ideal output. This is called excess capacity.
5. **Selling costs:** The costs on advertisements are commonly called selling costs. According to E. H. Chamberlin selling cost is that cost which shifts the demand curve towards right side. Therefore the selling costs are useful for the increase of demand. The producer spends on selling costs upto that situation where the additional revenue becomes zero. Through publicity and propaganda the firm will popularize the quality of the products. With the help of advertisements the firms may change the tastes of the customers. In a real sense the selling costs will not promote the welfare of the customers.

b) Price discrimination means the practice of selling the same commodities at different prices to different buyers. Mrs. Joan Robbinson has defined the price discrimination as, "The act of selling the same article produced under single control at different prices to different buyers". This price discrimination is possible only under monopoly.

Kinds of Price Discrimination:

1. **Personal discrimination:** In this case the Monopolist will charge different prices from different customers on the basis of the ability to pay. For example a doctor may charge more fee from a rich patient and less fee from a poor patient for the same services rendered.
2. **Place (or) Local Discrimination**: In this discrimination different prices are charged from different places. The monopolist charges lower price at one place and higher price at another place. Dumping is the best example for local discrimination. In this case the monopolist sells his output with lower price in the foreign market and with higher price in the domestic market.
3. **Trade (or) Use discrimination**: In this the monopolist will charge different prices for different types of uses of the same commodity. For example electricity will be sold at cheaper rate for agricultural purpose and higher price for industrial purpose.

Conditions for price discriminations: The price discrimination is possible if the following conditions are satisfied.

1. **More than one Market:** There must be two or more than two separate markets otherwise the price discrimination is not possible. Different markets are essential for charging different prices from different persons.
2. **Different elasticity**: The elasticity of demand in each market must be different. It means that if one market is less elastic than the other it should be elastic. If the elasticity of demand is equal in all markets there will be no scope for price discrimination.

c) Price and output determination under discriminating monopoly: The main aim of the price discrimination under monopoly is to get maximum profits. The following conditions are essential for getting of maximum profits.

1. The monopolist must fix more price in the case of inelastic demand and lower price in the case of elastic demand.

2. All the marginal revenues in different market must be equal to marginal cost.

Question:25

a) Differentiate between perfect competition and monopoly.

b) Derive MC = AC, when AC is minimum.

c) Explain the U shaped nature of the AC curve.

Answer:

The following are the differences between perfect competition and monopoly.

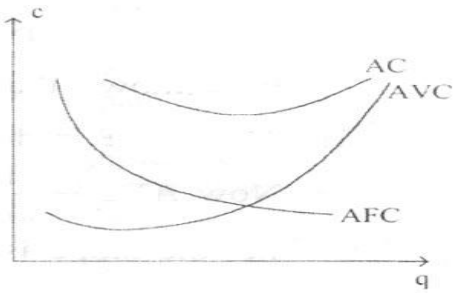
1. In perfect competition there are a large number of buyers and sellers who are producing homogeneous products therefore the activity of single seller may not influence the market price but in monopoly there is single seller. He controls the entire supply of the commodities. In monopoly there is no competition.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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 as well, because of no free entry.
8. The average cost becomes minimum at equilibrium point under perfect competition. In the case of monopoly AC curve is falling at equilibrium point.
9. 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.
10. 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.

b) Let TC = C(q) = C(say) => AC = $\frac{c}{q}$

Now AC is minimum of $\frac{d}{dq}\left(\frac{c}{q}\right) = 0 \Rightarrow \frac{qdc - cdq}{q^2} = 0$ .....(1)

$\frac{dc}{dq} = \frac{c}{q}$ = MC = AC

c) AC = AFC + AVC. When q is small, both AFC and AVC are falling => AC is failing. But as q rises, AFC still falls but its value declines and AVC starts rising. The rising value of AVC out weights the falling value of AFC and hence AC starts rising. This gives the U-shaped nature of AC curve.



Question:26

a) What are the managerial uses of production function? State its criticisms, if any.

b) The production function of a firm is given by $q = \sqrt{KL}$. If the firm wants to produce 90.50 units where W = 2 and r = 4, find the minimum cost.

Answer:

a) Managerial Use of Production Functions:

1. 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.
2. 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.
3. 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.
4. 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.

Criticisms:

1) 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.
2) 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
3) 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.
4) 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.

b) We have $q = \sqrt{KL} \Rightarrow MP_L = \frac{1}{2}\sqrt{\frac{K}{L}}$ and $MP_K = \frac{1}{2}\sqrt{\frac{L}{K}}$.

At equilibrium, $\frac{MP_L}{MP_K} = \frac{w}{r} \Rightarrow \frac{\frac{1}{2}\sqrt{\frac{K}{L}}}{\frac{1}{2}\sqrt{\frac{L}{K}}} = \frac{2}{4} \Rightarrow L = 2K$ ..... (1)

Also $q = \sqrt{KL} = 90.50 \Rightarrow \sqrt{2K^2} = 90.50$ as $L = 2K$

$\Rightarrow K_0 = 64 \Rightarrow L_0 = 2(K_0) = 128$

$\therefore$ Minimum cost $C = wL_0 + rK_0 = 2 \times 128 + 4 \times 64 = 512$.

Question:27

a) Discuss the role of Government as an entrepreneur.
b) Write a note on the different types of costs.

Answer:

Public Sector in India was designed to control the "commanding heights" of the economy. Investment in public sector has been undertaken mainly as an instrument of the policy of socialistic pattern of society. There has been a dramatic expansion of the public sector during the planning period. The growing emphasis on public sector is because of the following:

(1) Many a time, a public enterprise becomes necessary because of the sheet magnitude and size of an enterprise. For example, no private enterprise in India can and would like to provide the capital required for the construction of a dam; only public enterprises has to take up such ventures.
(2) In certain public utility services, such as power and transport, which require heavy initial investment and which have a long gestation period, only government can wait for the

result.

(3) Only public enterprises can have the consideration of a balanced regional development. The social benefits of providing employment in backward areas are much greater than a similar outlay elsewhere.

(4) If nature of product/technology necessitates monopoly in supply, it is always good to have monopoly of the State rather than a private firm. This prevents concentration of economic power with private individuals.

(5) Public enterprises can play a promotional role. They can act as pacesetters for private individuals. For example, it was only after the successfully beginning of some plants in the public sector that the private sector came forward for production of fertilizers.

(6) Public ownership of key economic points, like banks, can exert a healthy influence on the entire economy in respect of prices, geographical distribution, etc.

(7) The expansion of the public sector has also become necessary for making adequate provision for the infrastructure which is vital for overall industrial growth in the country. It provides better opportunities for expansion of the private sector too. Moreover, the private sector is normally not interested in the development of infrastructure because of the heavy investment, low rate of return and the long gestation period. In setting up of basic and key industries, like steel and heavy machinery, etc., the public sector has played a most beneficial role since most industries of this type were beyond the capacity of the private sector.

In short, the tremendous growth of public sector in India and persistent emphasis on its importance has been with following objectives in view:

- To initiate and accelerate industrialisation of the country;
- To minimize imbalances in personal, sectoral and regional incomes in the country;
- To tackle the problem of unemployment;
- To forestall and check the growth of monopolistic tendencies in the private sector;
- To create infrastructure for smooth and fast growth; and
- To ensure against economic distortions, often resulting from the operation of free market.

Forms of Public Sector organisations:

The public sector undertakings can be classified into four kinds, depending on the type of organisation of these undertakings. These are:

(1) **Departmental undertakings:** This category consists of those public sector units which are organised on the pattern of the departments of the government, e.g., the production units of Indian Railways like Chittaranjan Locomotive Works, Integral Coach Factory, and the production units under the Department of Defense Production.

(2) **Public utilities:** These are again departmentally controlled, although some autonomy in their working has been given in certain cases. This category includes undertakings like the railways, ports, posts and telegraphs, power and irrigation works.

(3) **Public corporations:** This includes those industrial undertakings which are organised as statutory corporations, like Air India International and Indian Airlines Corporation.

(4) **Government Companies:** The industrial and commercial undertakings mainly, if not wholly, financed by the government. For example, Hindustan Machine Tools, Neyveli Lignite Corporation, Bharat Heavy Electrical Limited, etc.

b) TYPES OF COST:

Actual Cost and Opportunity Cost:

Actual cost is the cost which a firm incurs while producing a commodity and it consists of the cost of raw materials, wages and salaries of labour, rent of business premises, the interest paid on borrowed funds, etc. The actual cost is also called outlay cost or absolute cost.

Opportunity cost is the cost of the best alternative forgone. It is the alternative cost or transfer cost, that is, the return the firm can get from the next best alternative use.

Past Cost and Future Cost:

A distinction is often made between actual costs and future costs. Actual costs or historical costs are records of past cost. Future costs, on the other hand, are based on forecasts. The costs which are relevant for most managerial decisions, which are generally forward looking, are forecasts of future costs. Forecasting of future is required for expense control, projection of-future income statements, appraisal of capital expenditures, decision of new projects and on expansion programmes, and price determination.

Original Cost and Replacement Cost:

Original cost, also known as historical cost, refers to the cost of plant, machinery and equipment at the price paid originally by the firm. Replacement cost, on the other hand, refers to the cost the firm would incur when it replaces the plant, machinery and capital equipment at a future date. The difference between the original and replacement costs is the price changes over time.

Explicit Cost and Implicit Cost:

The total cost of production of a particular commodity can be said to include "expenditure" or "explicit" cost and "non-expenditure" or "implicit" cost.

Explicit costs are those which are paid by the employer to owners of the factor units, which do not belong to the employer himself. These costs are in the nature of contractual payments of raw materials, interest on borrowed funds, rent on hired land and taxes paid to the government.

Non-expenditure or implicit costs arise when factor units are owned by the employer himself who is not obligated to anyone else in order to obtain these factors. The two non-expenditure costs are depreciation and a normal return on the money capital supplied by the shareholders. In the case of small business units; the wages of the entrepreneur or organiser himself will have to be included in this category.

Expenditure costs are explicit since they are paid to factors outside the firm, while non-expenditure costs are implicit and hence they are imputed costs.

Incremental Cost and Sunk Cost:

A firm may introduce a new product line, add a new machine, replace existing machinery by a better machine, change the method of distribution, and so on. In other words, the firm may want to change or innovate. As a result, there is bound to be a difference between the old cost and the new cost. The differential cost is the additional cost due to a change in the level or nature of business activity. Differential cost is often referred to as incremental cost. It is important

to emphasize that differential cost or incremental cost does not arise when a business is set up afresh but arises only when a change is contemplated in the existing business.

All the past costs may be regarded as sunk costs. As these costs have already been incurred, they are not affected or altered by a change in the level or nature of business activity. It will remain the same whatever be the level or nature of business activity. Accordingly, the management will ignore, sunk cost while evaluating the different alternative policies or changes to be effected.

Out of pocket costs and Book Costs:

Out of pocket costs consist of all current payment to the suppliers of raw materials, wages to workers, interest on capital, etc. All these costs are also explicit costs. Book costs, on the other hand, are costs in the account books of the Depreciation allowances are the best example of book costs. Book costs are implicit costs. While finalizing profit and loss accounts, the company provides for book costs. In fact, all implicit costs are book costs.

Nowadays, many firms adopt the practice of selling their capital assets to leasing companies and buying them back from the latter. In such a case, book cost of depreciation will disappear and will be replaced by out of pocket cost of rent.

Question:28

a) What the factors influencing pricing of a product.
b) Write about the different types of competition – oriented pricing.

Answer:

a) Generally, marketers consider the following factors in setting price:

1. Target customers: Price of product is dependent on the capacity of buyers to buy at various prices, in other words, influence of price elasticity of demand will be examined.
2. 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.
3. Competition: Severe competition may indicate a lower price than when there is monopoly or little competition.
4. The law: Government authorities place numerous restrictions on pricing activities.
5. Social responsibility: Pricing affects many parties, including employees, shareholders and the public at large. These should be considered in pricing.
6. 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.
7. Distribution channel policy: The prices of products will also depend upon the policy regarding distribution channel The longer the channel, the higher would be the distribution costs and consequently higher the prices.
8. 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.
9. Economic environment: In recession, prices are reduced to a sizeable extent to maintained 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) COMPETITION ORIENTED PRICING:

i) Going Rate Pricing:

It is a method of pricing adopted by small firms - which are price followers - is known as going rate pricing. Under this system, a firm sets its price according to the general pricing structure in the industry or according to the price set by the price leader. In a sense, each firm has "monopoly" power over its produce and it can, if it chooses, fix a monopoly price and face all the consequences of monopoly. In practice, however, it prefers the easier and more practical method of choosing price going in the market. It will change its price only when other firms do the same. Such a price policy is useful and safe to a firm under certain circumstances. For instance, the firm may not have an accurate idea of its costs or it may like to play safe and not provoke the larger firm to go for cut-throat competition. Besides, it is difficult for each firm to calculate the full implication of change in costs and prices and it is much better to follow the same pattern of pricing adopted by others. Even a large firm may be satisfied with going rate pricing lest a change in price by it unnecessarily disturbs the whole market. The underlying intention being that no firm would like to "spoil" the common market by reducing the price.

ii) Trade Association pricing:

To avoid uncertainties of pricing decision and the downward pressure on prices which competition exerts, firms frequently come to the express or implied agreements to maintain prices at a similar level. Though express (or, overt) agreements are generally declared as illegal, the firms can easily and safely enter into an implied (or, tacit) collusion. Individual firms, however, may frequently find it worthwhile to break out of any such agreements, but this leads to the following possible alternatives:

a) The price-cut may spark off a price war between the firms which will go on until one or all firms give up the struggle; or

b) If the firm breaking out of the collusion is able to keep its rivals in the dark about the price-cut, it can gain out of the price-cut only when either the original customers of this firm are unaware or are in some way loyal to this firm. But such situations are generally rare.

iii) Customary Pricing:

There are certain goods whose prices tend to be fixed more or less in the minds of consumers-these are known as the "Charm" prices. A good example is the price of most soft drinks in India called by various names of cola. Most or all the soft drinks sell at the price of ? 6 or so, customers are accustomed to this price. Change in costs of production - if the change is moderate - will not affect the price, as the firms will not and cannot change the price. Accordingly, a rise in cost of production may probably lead to reduction in quality of the product but not to a rise in price. Likewise, a fall in cost of production may not be accompanied by a decline in price. Pricing in this case may be known as customary pricing.

iv) Price leadership:

If often happens that in an industry there is one or many big firms whose cost of production is low and they dominate the industry. In such a situation, the small firms will not like to enter into price war with these big firms. The former may, therefore, follow the price fixed by the leader. For example, Cadbury may be accepted as a leader in the chocolate industry, Hindustan Lever in the soap industry, and so on. Small firms may change the price only when there is a general change in the cost of production and the price leader has recognized and adjusted his price on that basis. In fact, the price leadership pattern is adopted as a strategy of co-existence - each firm catering to its market.

It is not necessary that the price charged by small firms must equal that charged by the price-leader. There might be some difference in their prices (though it cannot be significant) but any change in the price is always in the same direction for both the price-leader and the followers, and is generally in the same proportion too. As a result, both will have their own markets to cater, thus avoiding diversion of customers.

v) Sealed - bid pricing:

This method is more popular in tenders and contracts. Each contracting firm quotes its price in a sealed cover called 'tender'. All the tenders are opened on a scheduled date and the person, who quotes the lowest price, other things remaining the same, is awarded the contract.

Question:29

a) What are the degrees of price discrimination and its importance.

b) Discuss the types of income elasticity of demand.

c) The annual sales of a company are as follows:

(lakhs of No.)

Year	87	88	89	90	91
Sales	50	65	80	55	75

By the method of last squares, find trend value of each year and estimate sales of the year 95.

Answer:

Degrees of Price Discrimination:

Prof. A.C.Pigou has distinguished the degrees of price discrimination into 3 on the basis of the degree or extent or price discrimination.

1. Under the first type of price discrimination the monopolist will not allow any consumer surplus to the consumers. This type of price discrimination is called perfect price discrimination.
2. Second degree of price discrimination occurs where the monopolist is able to get a part of consumer surplus but not the entire consumer surplus.
3. In this third degree of price discrimination the monopolist divide the customer into two or more classes or groups or market and are divided on the basis of elasticity of demand. This type of discrimination is the most common one.

Importance:

1. There are certain services such as Railways etc., which cannot be provided profitably unless the price discrimination is allowed to take place: uniform price for such services will lead to low incomes or losses to the entrepreneur.
2. If the welfare of the country is required in certain cases the price discrimination is desirable. For example if the doctor charges more fee from rich and less fee from poor, then the public welfare will be increased.
3. With help of price discrimination the government can reduce the inequalities of income and wealth to some extent.
4. If the monopolist fixes higher price in the case of inelastic demand goods and lower price for the elastic demand goods and then the demand and production will not be effected badly.

b) Types of income elasticity of demand:

1. **Zero income elasticity of demand:** If the change in the income fails to bring any change in demand, it is called zero income elasticity of demand. (E =0).
2. **Negative income elasticity of demand:** If the demand decreases with the increase in the income is called negative income elasticity of demand.
3. **Unitary income elasticity of demand:** If the proportionate change in the demand is equal to proportionate change in the income, it is called unitary income elasticity of demand (E_y =1)
4. **Income elasticity of demand is greater than one:** If the proportionate change in the demand is more than the proportionate change in income, it is called relatively income elastic of demand (E_y >1).
5. **Income elasticity of demand is less than one:** If the proportionate change in the demand is less than the proportionate change in the income, it is called relatively income inelastic demand (E_y <1).

c) Let the trend equation be S = a + bt where 1989 is taken as base year. Also the 1 year be 1 unit, and here x = 5 years

Year	t	s	$x = \frac{s-65}{5}$	t_x	t^2
87	-2	50	-3	6	4
88	-1	65	0	0	1
89	0	80	3	0	0
90	1	55	-2	-2	1
91	2	75	2	4	4
---	$\Sigma t = 0$	---	$\Sigma x = 0$	$\Sigma tx = 8$	$\Sigma t^2 = 10$

Hence we have $\Sigma x = ax + b\,\Sigma t = > 0 = 5a + 0.b$

and $\Sigma xt = a\,\Sigma t + b\,\Sigma t^2 => 8\ a.0 + b.10$

$\therefore$ a = 0 and b = 0.8t.

$\therefore x = 0.8t => \frac{S-65}{5} = 0.8t => S = 65 + 4t$

And this is the equation of the trend line.

For 87, t = -2 => S = 65 + 4(-2) = ₹ 57 lakhs.

For 88, t = -1 => S = 65 + 4(-1) = ₹ 61 lakhs

For 89, t = 0 => S = 65 = ₹ 65 lakhs.

For 90, t = 1 => S = 65 + 4 = ₹ 69 lakhs.

For 91, t = 2 => S = 65 + 4(2) = ₹ 73 lakhs.

For 95, t = 95 - 89 = 6.

∴ For 95, S = 65 + 4(6) = ₹ 89 lakhs.

Question:30

a) Discuss about the managerial uses of cost function.

b) The U function is given as $U = x^a y^b$

Where a, b>0 and a + b = 1. If the prices of the goods x and y are P_x and P_y, find

i) The Engle curves for x_1 & x_2

ii) The slopes of the Engle curves

iii) Income elasticity of x_1 & x_2

Answer:

a) Managerial uses of Cost Functions:

Various important managerial decision are based on estimates of cost curves such as short run choices of rates of output and prices, and long-run decision about numbers, sizes and locations of plants.

Pricing and output decisions are perhaps the most important for a profit-maximising firm. Such decisions must be based on reliable estimates of short-run cost functions.

Capital investment decisions such as plant construction or expansion are long-term decisions and are usually based on estimates of long-run cost functions. Long-run cost functions enable progressive organizations to determine whether or not to make the investment, and what should be optimum size of the plant under the present conditions. Decisions on plant size are largely based on an accurate estimate of demand. However, investment decisions are most complex because demand can shift over time. Moreover, the structure of factors affecting cost may also be expected to shift. These factors make it advisable to build or expand plants in substantial increments of capacity.

It is important to note that past production and cost relationships may not always be relevant to decision about future investments in plant and equipment. Empirical (statistical) estimates may require adjustments to reflect changes in future prices, input combinations, nature of the product, product mix, scale of output, scale of plant, the nature of the conversion process (i.e.,

conversion of inputs into output) and so forth; all these are expected to affect future costs. Costs of future periods may not behave in the same way as that in the past.

b)

i) Given $U = x^a y^b \Rightarrow MUx = ax^{a-1}y^b$ & $MUy = bx^a y^{b-1}$

At equilibrium $\frac{MUx}{MUy} = \frac{Px}{Py} \Rightarrow \frac{ax^{a-1}y^b}{bx^a y^{b-1}} = \frac{Px}{Py}$

$\Rightarrow \frac{a}{b}\frac{y}{x} = \frac{P_X}{P_Y} \Rightarrow bxPx = ayPy$ .....(A)

The budget equation is $M = xP_x + yP_y$

$\Rightarrow M = xP_x + \frac{b}{a} xP_x$ from (A)

$\Rightarrow x = \frac{Ma}{P_X(a+b)}$ ..... (B)

Putting the value of x from (B) in (A) we get $y = \frac{Mb}{P_Y(a+b)}$ ..... (C)

(B) & (C) are the Engle curves for x & y

ii) From (B) $x = \frac{Ma}{P_X(a+b)}$ which is a straight line though the origin. The slope of this function is

$\frac{dM}{dx} = \frac{P_X(a+b)}{a} > 0 \Rightarrow$ the curve will be the upward rising

From (c), $y = \frac{Mb}{P_Y(a+b)}$, which is also a straight line through the origin. It is also upward rising as the slope is $\frac{dM}{dy} = \frac{P_Y(a+b)}{b} > 0$

iii) The income elasticity of x(e_{me}) is given by $\frac{dx}{dM}\frac{M}{x} \Rightarrow e_{M,x} = \left[\frac{a}{P_X(a+b)}\right]\frac{M}{x}$

$\Rightarrow e_{M,x} = 1$ as $x = \frac{Ma}{P_X(a+b)}$

Similarly, $e_{M,y} = \frac{dy}{dM}\frac{M}{y} = 1$