PAPER – 10: COST & MANAGEMENT ACCOUNTANCY

The following table lists the learning objectives and the verbs that appear in the syllabus learning aims and examination questions:

	Learning objectives	Verbs used	Definition
LEVEL B	KNOWLEDGE What you are expected to know	List	Make a list of
		State	Express, fully or clearly, the details/facts
		Define	Give the exact meaning of
	COMPREHENSION What you are expected to understand	Describe	Communicate the key features of
		Distinguish	Highlight the differences between
		Explain	Make clear or intelligible/ state the meaning or purpose of
		Identity	Recognize, establish or select after consideration
		Illustrate	Use an example to describe or explain something
	APPLICATION How you are expected to apply your knowledge	Apply	Put to practical use
		Calculate	Ascertain or reckon mathematically
		Demonstrate	Prove with certainty or exhibit by practical means
		Prepare	Make or get ready for use
		Reconcile	Make or prove consistent/ compatible
		Solve	Find an answer to
		Tabulate	Arrange in a table
	ANALYSIS How you are expected to analyse the detail of what you have learned	Analyse	Examine in detail the structure of
		Categorise	Place into a defined class or division
		Compare and contrast	Show the similarities and/or differences between
		Construct	Build up or compile
		Prioritise	Place in order of priority or sequence for action
		Produce	Create or bring into existence

Paper – 10: Cost & Management Accountancy

Time Allowed: 3 Hours **Full Marks: 100**

This paper contains 4 questions. All questions are compulsory, subject to instruction provided against each question. All workings must form part of your answer. Assumptions, if any, must be clearly indicated.

1. Answer all questions [2x10=20]

(a) The profit volume ratio of X Ltd. is 50% and the margin of safety is 40%. You are required to calculate the net profit if the sales volume is ₹1,00,000.

Answer:

$$\text{Margin of Safety Ratio} = \frac{\text{Margin of safety in ₹}}{\text{Actual Sales}} \times 100$$

$$40 = \frac{\text{Margin of safety in ₹}}{₹1,00,000} \times 100$$

Margin of Safety in ₹ = ₹40,000

$$\text{Margin of Safety} = \frac{\text{Profit}}{\text{P/V ratio}}$$

$$₹\ 40,000 = \frac{\text{Profit}}{50\%}$$

Profit = ₹40,000 x 50%
= ₹20,000

(b) A JBC machine was used on a contract site for the period of 7 months and depreciation on it was charged to the contract ₹78,750. If the working life of the machine is 5(five) years and salvage value is ₹25,000. Estimate the cost of JBC machine.

Answer:

Depreciation for one year 78,750 × 12/7 = ₹1,35,000
Depreciation for 5 years 1,35,000 × 5 = ₹6,75,000
Cost of Machine = Total Depreciation plus salvage value
= ₹6,75,000 + 25,000 = ₹7,00,000

(c) The standard wage rate is ₹40 per hour; Actual wage rate is ₹45 per hour, standard time is 500 hours and actual hours worked is 480 hours. If wages paid for 505 hours then what will be the labour idle time variance?

Answer:

Idle Time Variance = Idle Hours x standard Hourly wage Rate
= (505 –480) x ₹40

= ₹1000 (A)

(d) During the physical verification of stores of X Ltd. it was found that 100 units of raw material 'Y' was returned to the supplier has not been recorded. Its purchase invoice price is ₹5 per unit while the current standard cost is ₹4.80 per unit. Pass necessary journal entry to record the adjustment in the Cost Ledger of X Ltd.

Answer:

Particulars	Amount (₹)	Amount (₹)
General Ledger Adjustment Account Dr	500	
To Stores ledger Account		480
To Material Purchase Variance Account		20

(e) Arena Ltd. is preparing its cash budget for the year 2015-2016. An extract from its sales budget for the same year shows the following sales values:

March 2015 ₹1,20,000
April 2015 ₹1,40,000
May 2015 ₹1,10,000
June 2015 ₹1,30,000

40% of its sales are expected to be for cash. Of its credit sales, 50% are expected to pay in the month after sales and 50% are expected to pay in the second month after the sale. Calculate the value of sales receipts to be shown in the cash budget for May 2015.

Answer:

Value of sales receipts in May 2015

Particulars		Amount (₹)
Cash Sales	₹1,10,000 x 0.4	44,000
Credit sale realized:		
April	₹1,40,000 x 0.6 x 0.5	42,000
March	₹1,20,000 x 0.6 x 0.5	36,000
Sales Receipts		1,22,000

(f) What is the meaning of "Turnover" in relation to the Companies (Cost Records and Audit) Rules, 2014?

Answer:

Sub-section 91 of Section 2 of the Companies Act, 2013 defines "turnover" as "the aggregate value of the realization of amount made from the sale, supply or distribution of goods or on account of services rendered, or both, by the company during a financial year. For the purposes of these Rules, "Turnover" means gross turnover made by the company from the sale or supply of all products or services during the financial year. It includes any turnover from job work or loan license operations but exclude duties and taxes. Export benefit received should be treated as a part of sales.

(g) What is the difference between Cost Accounting policy and Cost Accounting system?

Answer:

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

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

(h) Name the three method of pricing of a Product.

Answer:

The three method of pricing are:

(i) Cost Oriented Pricing
(ii) Competition Oriented Pricing
(iii) Demand Oriented Pricing

(i) The cost function of a firm is given by $c=x^3-4x^2+9x$, find at what level of output Average Cost is minimum and what level will it be.

Answer:

Total cost=x^3-4x^2+9x

Average cost=x^2-4x+9

In order that average cost is minimum $\frac{dy}{dx}=0$ and the value of $\frac{dy^2}{dx^2}$

i.e. $\frac{dy}{dx}=2x-4=0$

$\Rightarrow 2x = 4$

$\therefore x = 2$

$\frac{dy^2}{dx^2}=2$ which is positive so the function will have minimum values.

Minimum

Average cost=x^2-4x+9

$=4-(4x2)+9$

$= 13- 8$

$=5$

(j) Write two function of Market.

Answer:

The major functions of a market for a commodity are: (i) to determine the price for the commodity, and (ii) to determine the quantity of the commodity that will be bought and sold. Both the price and the quantity are determined by the interactions between the buyers and the sellers of the commodity

2. Answer any two questions from a, b and c. [2x20=40]

(a)

(i) Following information relates to the manufacturing of a componenet X-101 in a cost centre:

Cost of materials	**Re.0.06 per component**
Operator's wages	**Re.0.72 an hour**
Machine-hour rate	**₹1.50**
Setting up time of the machine	**2 hours and 20 minutes**
Manufacturing time	**10 minutes per component**

Prepare cost sheets showing both production and setting up costs total and per unit, when a batch consists of: (1) 10 components, (2) 100 components [5]

Answer:

1. Cost Sheet for a Batch of 10 Components (₹)

Particulars		**Total**	**Per unit**
Machine Setting Cost (fixed):			
Operator wages	(2 hr. 20 mts. @ Re.0.72)	1.68	
Machine overhead	(2 hr. 20 mts. @ ₹1.50)	3.50	
	(a)	5.18	0.52
Production Cost (Variable):			
Material	(10 units x Re.0.06)	0.60	0.06
Operator wages	(10 units x 10 mts. X Re. 0.72/60 mts)	1.20	0.12
Machine overhead	(10 units x 10 mts x 1.50/60 mts.)	2.50	0.25
	(b)	4.30	0.43
Total cost	**(a) + (b)**	9.48	0.95

2. Cost Sheet for a Batch of 100 components (₹)

Particulars		**Total**	**Per unit**
Machine Setting Cost (fixed):			
Operator wages	(2 hr. 20 mts. @ Re. 0.72)	1.68	
Machine overhead	(2 hr. 20 mts. @ ₹ 1.50)	3.50	
		5.18	0.05
Production Cost (Variable):			
Material	(100 units x Re.0.06)	6.00	0.06
Operator wages	(100 units x 10 mts. X Re.0.72/60 mts.)	12.00	0.12
Machine overhead	(100 units x 10 mts. X ₹1.50/60 mts.	25.00	0.25
	(b)	43.00	0.43
Total Cost	**(a) + (b)**	48.18	0.48

(ii) Paramount Engineers are engaged in construction and erection of a budget under a long-term contract. The cost incurred up to 31-3-2015 was as under:

Fabrication (₹ lakhs)

Direct materials	**280**
Direct labour	**100**
Overheads	**60**
	440
Erection costs to date	**110**
	550

The contract price is ₹11 crores and the cash received on account till 31-3-2015 was ₹6 crores. A technical estimate of the contract indicates the following degree of completion of work:
Fabrication – Direct material – 70%, Direct labour and overheads – 60%, Erection – 40%.
You are required to estimate the profit that could be taken to profit and loss account against this partly completed contract as at 31-3-2015. [10]

Answer:

(1) Computation of Estimated Profit to date of completion of contract

Particulars	Cost to date		Further costs		Total cost (₹)
	% completion to date	Amount (₹)	% completion to done	Amount (₹)	
Fabrication costs:					
Direct material	70	280.00	30	120.00	400.00
Direct labour	60	100.00	40	66.67	166.67
Overheads	60	60.00	40	40.00	100.00
Total fabrication cost (a)		440.00		226.67	666.67
Erection cost (b)	40	110.00	60	165.00	275.00
Total estimated cost (a)+(b)		550.00		391.67	941.67
Profit		92.48		65.85	158.33
		642.48		457.52	1,100.00

(2) Profit to date (Notional Profit) and Further Profit

Profit to date (Notional Profit)

$$= \frac{\text{Estimated profit on the whole contract} \times \text{Cost to date}}{\text{Total cost}}$$

$$= \frac{158.33 \times 550}{941.67} = ₹92.48 \text{ lakhs}$$

Further Profit = 158.33 – 92.48 = ₹65.85 lakhs

(3) Work certified

= Cost of the contract to date + Profit to date = 550 + 92.48 = ₹642.48 lakhs

(4) Degree of completion of contract to date

$$= \frac{\text{Cost of the contract to date}}{\text{Contract price}} \times 100 = \frac{642.48}{1,100} \times 100 = 58.41\%$$

Estimation of Profit to be taken to Profit and Loss Account against partly completed contract as at 31-3-2015

$$\text{Profit to be taken to P \& L Account} = \frac{2}{3} \times \text{Notional Profit} \times \frac{\text{Cash received}}{\text{Work certified}}$$

$$= \frac{2}{3} \times 92.48 \times \frac{600}{642.48} = ₹57.577 \text{lakhs}$$

(iii) Write a note on Equivalent Production. [5]

Answer:

This represents the production of a process in terms of completed units. In other words it means converting the incomplete production units into its equivalent of complete units. In each process an estimate is made of the percentage completion of any work-in-progress. A production schedule and a cost schedule will then be prepared. The work-in-progress is inspected and an estimate is made of the degree of completion, usually on a percentage basis. It is most important that this estimate is as accurate as possible because a mistake at this stage would affects the stock valuation used in the preparation of final accounts. The formula for equivalent production is:

Equivalent units of work-in-progress

= Actual no. of units in process of manufacture x Percentage of work completed

For example, if 20% work has been done on the average of 1,000 units still in process, then 1,000 such units will be equal to 200 completed units. The cost of work-in-progress will be equal to 200 completed units.

Calculation of Equivalent Production:

The following steps are worth noting in its calculation:

1. State the opening work-in-progress in equivalent completed units by applying the percentage of work needed to complete the unfinished work of the previous period. If the opening work-in-progress is 100 units which is 40 percent completed, then the equivalent units of this will be 100 x 60% i.e. 60 units.
2. Add to (1), the number of units started and completed during the period. This can be found out by deducting the units in the closing work-in-progress from the number of units put into the process.
3. Add to the above, the equivalent completed units of closing work-in-progress. This can be found out by applying the percentage of work done on the finished units at the end of the period.

(b)

(i) A company manufactures a products, currently providing 80% capacity with a turnover of ₹8,00,000 at ₹ 25 per unit.

The cost data are as under:

Material cost ₹7.50 per unit, Labour cost ₹6.25 per unit.

Semi-variable cost (including variable cost of ₹3.75 per unit) ₹1,80,000

Fixed cost ₹90,000 up to 80% level of output, beyond this an additional ₹20,000 will be incurred.

Calculate:

1. **Activity level at breakeven point**
2. **Number of units to be sold to earn a net income of 8% of sales.**
3. **Activity level needed to earn a profit of ₹95,000.**
4. **What should be the selling price per unit, if breakeven point is to be brought down to 40% activity level?** **[2½ x 4 = 10]**

Answer:

1. Number of units sold = Sales ÷ Selling price p.u. = ₹8,00,000 ÷ 25 per unit = 32,000 units

Fixed cost included in the semi-variable cost element = Total semi variable cost – variable

= ₹1,80,000 – (₹3.75 p.u. x 32,000 units)

= ₹60,000

Variable cost p.u. = ₹7.50 + 6.25 + 3.75 =₹17.50

Contribution p.u, = Selling price – variable cost = ₹(25 – 17.50) = ₹7.50

$$\text{Break even point} = \frac{\text{Fixed cost}}{\text{Contribution per unit}} = \frac{₹90,000 + ₹60,000}{₹7.50} = 20,000 \text{ units}$$

$$\text{Activity level at BEP} = \frac{80\%}{32,000 \text{ units}} \times 20,000 \text{ units} = 50.00\%$$

2. Let the number of units required to be sold = 'a' units

Now, Profit = Contribution – Fixed cost

Or, 8% of 25a = 7.5a – (90,000 – 60,000)

Or, a = 27,273 units

3. P/V ratio $= \frac{\text{Contribution p.u.}}{\text{Selling price p.u.}} = = \frac{₹7.50}{₹25} = = 30\%$

At 80% capacity profit = Contribution – fixed cost = ₹ [30% of 8,00,000 – (90,000 + 60,000)]

= ₹90,000

Therefore, it is evident, that to earn a profit of ₹95,000, the company will certainly have to perform above the present capacity of 80%. Hence the fixed cost will increase by ₹20,000 beyond 80% capacity level.

$$\text{Required sales} = \frac{\text{Fixed cost} + \text{Profit}}{\text{P/V ratio}}$$

$$= \frac{(₹90,000 + ₹20,000 + ₹60,000) + ₹95,000}{30\%} = ₹8,83,333$$

$$\text{Activity level needs to earn the profit of ₹95,000} = \frac{80\%}{₹8,00,000} \times ₹83,333 = ₹88.33\%$$

4. Desired breakeven point = 40% of activity level $= \frac{32,000 \text{ units}}{80\%} \times 40\% = 16,000 \text{ units}$

Let the desired selling price = ₹ s

Therefore, Breakeven point $= \frac{\text{Fixed cost}}{\text{Contribution per unit}}$

Or, Contribution per unit $= \frac{\text{Fixed cost}}{\text{Break even point}}$

Or, s – 17.50 $= \frac{₹90,000 + ₹60,000}{16,000}$

Or, s = ₹26.875 per unit

Therefore, required selling price is ₹26.875 per unit in order to reduce the breakeven point to 40% activity level.

(ii) Vishnu Ltd. manufactures and sells product 'PT'. The company estimates the following demand for product 'PT' for the year 2014-2015:

Quarter	Units
I	20,000
II	22,000
III	25,000
IV	33,000

The production department will manufacture 80% of the current quarter's sales and 20% of the following quarter's sales. The anticipated and desired stock position for the year 2014-2015 is as follows:

Anticipated stock as on April 1, 2014	4,000 units
Desired stock as on March 31, 2015	5,000 units

The standard cost per unit of the product based on a budgeted production volume of 3,00,000 hrs is as follows:

Direct materials	2 kgs @ ₹20	₹40
Direct labour	3 hrs @ ₹20	₹60
Variable overhead	3 hrs @ ₹10	₹30
Fixed overgead	3 hrs @ ₹12	₹36

Expected selling price of the product is ₹210.

You are required to:

1. **Prepare a quarter-wise production budget for 2014-2015, showing the number of units to be produced and total cost of direct materials, direct labour, variable overheads and fixed overheads,**
2. **Find the quarter in which the company is expected to break-even. [5+2]**

Answer:

1. **Production Budget for 2014-2015**

Particulars	Q-I	Q-II	Q-III	Q-IV	Total
80% of current quarter sales demand (units)	16,000	17,600	20,000	26,400	80,000

20% of the following quarter (units)	4,400	5,000	6,600	5,000	21,000
	20,400	22,600	26,600	31,400	1,01,000

Production Cost

Particulars	Q-I	Q-II	Q-III	Q-IV	Total
Units to be produced	10,400	22,600	26,600	31,400	1,01,000
	(₹)	(₹)	(₹)	(₹)	(₹)
Material - ₹40	8,16,000	9,04,000	10,64,000	12,56,000	40,40,000
Labour - ₹60	12,24,000	13,56,000	15,96,000	18,84,000	60,60,000
Variable Overhead - ₹30	6,12,000	6,78,000	7,98,000	9,42,000	30,30,000
Fixed overhead [Note # 1]	9,00,000	9,00,000	9,00,000	9,00,000	36,00,000
	35,52,000	38,38,000	43,58,000	49,82,000	1,67,30,000

2. Break-even sales quantity x Contribution per unit =Fixed Cost
Break-even sales quantity x (₹210 – 130) = ₹36,00,000

Break-even sales quantity = ₹36,00,000/ 80 =45,000 units

Total production in 3rd quarter = 20,000 + 22,000 + 25,000 = 67,000 units
Hence, the company will break-even in the initial part of the 3rd quarter.

Working # 1 : Fixed overhead
Fixed Overhead = 3,00,000 hrs x ₹12 = ₹36,00,000
Therefore, fixed overhead per quarter = ₹36,00,000/ 4 = ₹9,00,000

(iii) Write the factor on which the success of a Uniform Costing depends. [3]

Answer:

The success of a uniform costing system will depend upon the following:

- There should be a spirit of mutual trust, co-operation and a policy of give and take amongst the participating members.
- There should be a free exchange of ideas and methods.
- The bigger units should be prepared to share with the smaller ones, improvements, achievements of efficiency, benefits of research and know-how.
- There should not be any hiding or withholding of information.
- There should be no rivalry or sense of jealousy amongst the members.

(c)

(i) A company is organized into two divisions namely A and B produces three products K, L and M.

Data per unit are:

		K	L	M
Market price	**(₹)**	**120**	**115**	**100**
Variable costs	**(₹)**	**84**	**60**	**70**
Direct labour hours		**4**	**5**	**3**

Maximum sales potential (units)	1,600	1,000	600

Division B has demand for 600 units of product L for its use. If Division A cannot supply the requirement, Division B can buy a similar product from market at ₹ 112 per unit.

What should be the transfer price of 600 units of L for Division B, if the total direct labour-hours available in Division A are restricted to 15,000? [8]

Answer:

Calculation of contribution per Direct Labour hour (₹)

Particulars		Product		
		K	L	M
Market price		120	115	100
Less: Variable cost		84	60	70
Contribution p.u	(i)	36	55	30
Direct labour hours p.u	(ii)	4	5	3
Contribution per DLH.	(i)/(ii)	9	11	10
Rank		III	I	II

Production	Max Sales	Hrs./ Unit	Production	Hours used	Balance Hrs.
L	1000	5	1000	5000	10000
M	600	3	600	1800	8200
K	1600	4	1600	6400	1800

Spare hours available in Division A = 1800 hrs.

Division A can produce product L Division B in

1800 spare hours = 1800 hrs./5 hrs. p.u. = 360 units of product L

Balance units of product L required by Division B = 600 units - 360 units = 240 units

Labour hours required for 240 units of product L = 240 units X 5 hrs. per unit =1200 hrs.

Opportunity contribution of K per hr. = ₹. 9

∴ Unit cost = 9 hrs. X₹. 5 = ₹. 45

Calculation of Transfer price p.u. (₹)

Variable cost	(600 units × ₹. 60)	36,000
Opportunity cost of contribution lost	(240 units × ₹. 45)	10,800
Total		46,800
Transfer price p.u.	(₹. 46800/600 units)	78

(ii) The following standards have been set to manufacture a product:

Direct Material	**₹**
2 units of A @ ₹ 4 per unit	**8.00**
3 units of B @ ₹ 3 per unit	**9.00**
15 units of C @ ₹ 1 per unit	**15.00**
	32.00
Direct labour 3 hrs. @ ₹ 8 per hour	**24.00**
Total standard prime cost	**56.00**

The company manufactures and sold 6,000 units of the product during the year. Direct material costs were as follows:
12,500 units of A at ₹ 4.40 per unit
18,000 units of B at ₹ 2.80 per unit
88,500 units of C at ₹ 1.20 per unit
The company worked 17,500 direct labour hours during the year. For 2,500 of these hours the company paid at ₹ 12 per hour while for the remaining the wages were paid at standard rate. Calculate materials price variances and usage variances and labour rate and efficiency variances. **[2x4=8]**

Answer:

For Material Cost Variances

M_1 – Actual cost of material used

A	12,500 units × ₹ 4.40 =	₹ 55,000
B	18,000 units × ₹ 2.80 =	₹ 50,400
C	88,500 units × ₹ 1.20 =	₹ 1,06,200
		2,11,600

M_2 – Standard cost of material used

A	12,500 units × ₹ 4.00 =	₹ 50,000
B	18,000 units × ₹ 3.00 =	₹ 54,000
C	88,500 units × ₹ 1.00 =	₹ 88,500
		1,92,500

M_3 – not applicable

M_4 – Standard material cost of production 6,000 units × ₹ 32 = ₹ 1,92,000

Variances

Material price variance : $M_1 – M_2$ = ₹ 2,11,600 – ₹ 1,92,500 = ₹ 19,100 (A)

Material usage variance : $M_2 – M_4$ = ₹ 1,92,500 – ₹ 1,92,000 = ₹ 500 (A)

For Labour Cost Variance

L_1 – Actual wages paid to workers

2,500 hrs × ₹ 12 =	₹ 30,000
15,000 hrs × ₹ 8 =	₹ 1,20,000
	1,50,000

L_2 – Payment involved, if workers had been paid at standard rate 17,500 hrs. × ₹8 = ₹1,40,000

L_3 and L_4 not required

L_5 – Standard labour cost of output achieved 6,000 units × ₹ 24 = ₹ 1,44,000

Variances:

Labour Rate Variance: $L_1 - L_2$ = ₹ 1,50,000 – ₹ 1,40,000 = ₹ 10,000 (A)

Labour efficiency variance: $L_2 - L_5$ = ₹ 1,40,000 – ₹ 1,44,000 = ₹ 4,000 (F)

(iii) Explain the term inter-process profit. [4]

Answer:

Inter Process Profits:

The output of one process is transferred to next process at cost price. However, sometimes, the transfer is made at cost plus certain percentage of profit. This is done when each process is treated as a profit center. In such cases, the difference between the debit and credit side of the process account represents profit or loss and is transferred to the Profit and Loss Account. The stocks at the end and at the beginning contain an element of unrealized profits, which have to be written back in this method. If the profit element contained in the closing inventory is more than the profit element in the opening inventory, profit will be overstated and vice versa. Profit is realized only on the goods sold, thus to obtain the actual profit the main task would be to calculate the profit element contained in the inventories.

3. Answer any two questions from a, b and c. [2x8=16]

(a)

(i) The Rules prescribed in 2011 had introduced the concept of reporting under ―Product Group‖. The present Rules are silent about Product Group. What is the requirement of preparation of cost statements of products/services so far as maintenance of cost accounting records is concerned and reporting thereof in the cost audit report? [3]

Answer:

The concept of "Product Group" has been dispensed with in the present Rules. The cost records referred to in sub-rule (1) of Rule 5 is required to be maintained on regular basis in such manner as to facilitate calculation of per unit cost of production or cost of operations, cost of sales and margin for each of its products and activities. Hence, it is imperative that the cost accounting records are required to be maintained and cost statements prepared for each and every product/service/activity that the company is engaged in.

So far as reporting is concerned, Abridged Cost Statement for every product identified with the CETA Code is required to be provided. For activities/services for which CETA Code is not applicable, the Abridged Cost Statement shall be for each service/activity.

(ii) What constitutes the cost records under Rule 2(e)? [5]

Answer:

As per Rule 2(e) the Companies (Cost Records and Audit) Rules, 2014, "cost records" means 'books of account relating to utilization of materials, labour and other items of cost as applicable to the production of goods or provision of services as provided in section 148 of the Act and these Rules'. There cannot be any exhaustive list of cost accounting records.

Any transaction - statistical, quantitative or other details - that has a bearing on the cost of the product/activity is important and form part of the cost accounting records.

Cost records are to be kept on regular basis to make it possible to "calculate per unit cost of production/operations, cost of sales and margin for each of its products for every financial year on monthly/quarterly/half-yearly/annual basis". What is required is to maintain such records and details in a structured manner on a regular basis so that accumulation is possible on a periodical basis.

(b)

(i) The Rules state that cost records are to be maintained in Form CRA-1. However, CRA-1 does not prescribe any format but only provides principles to be followed for different cost elements. What are the role and status of Cost Accounting Standards/GACAP and its applicability vis-à-vis CRA-1? [5]

Answer:

The principles of maintenance of cost accounting records have been notified in the Rules in CRA-1. The principles are in sync with the cost accounting standards. The Rules are principle based and no formats have been prescribed for maintenance of cost accounting records like pre-2011 industry specific rules. No separate format based records maintenance has been prescribed even for the Regulated Industry and the prescription has left it open for industry to maintain cost accounting records according to its size and nature of business so long as it determines a true and fair view of the cost of production, cost of sales and margin of the products/services. The cost audit report is required to be in conformity with the "cost auditing standards" as referred to in Section 148 of the Companies Act, 2013.

It is also to be noted that the Council of the Institute of Cost Accountants of India has made it mandatory for cost accountants in practice to follow and conform to the Cost Accounting Standards issued by it and it is incumbent on the cost auditors to report any deviations from cost accounting standards.

(ii) What types of Educational Services are covered under the Companies (Cost Records and Audit) Rules 2014? [3]

Answer:

The Companies (Cost Records and Audit) Rules 2014 covers "Education services, other than such similar services falling under philanthropy or as part of social spend which do not form part of any business".

Any company imparting training or education by means of any mode is covered under Education Services. However, auxiliary services provided by companies, as a separate independent entity, to educational institutions viz., (i) transportation of students, faculty and staff; (ii) catering service including any mid-day meals scheme; (iii) security or cleaning or house-keeping services in such educational institution; (iv) services relating to admission to such institution or conduct of examination are not included under Education Services.

In case the educational institution covered under the Rules is providing the above auxiliary services as a part of their total operations, then the institution will be required to maintain records for such auxiliary services also.

(c) What are the eligibility criteria for appointment as a cost auditor? [8]

Answer:

Eligibility Criteria under Section 141 of the Companies Act, 2013 read with Rule 10 of the Companies (Audit and Auditors) Rules, 2014 and Section 148 of the Companies Act, 2013. The following persons are not eligible for appointment as a cost auditor:

(a) A body corporate. However, a Limited Liability partnership registered under the Limited Liability Partnership Act, 2008 can be appointed. [Section 141(3)(a)].

(b) An officer or employee of the company. [Section 141(3)(b)].

(c) A person who is a partner, or who is in the employment, of an officer or employee of the company. [Section 141(3)(c)].

(d) A person who, or his relative or partner is holding any security of or interest in the company or any of its subsidiary or of its holding or associate company or a subsidiary of such holding company. [Section 141(3)(d)(i)].

(e) Relatives of any partner of the firm holding any security of or interest in the company of face value exceeding ₹1 lakh. [Section 141(3)(d)(i) and Rule 10(1) of Companies (Audit and Auditors) Rules, 2014].

(f) A person who is indebted to the company or its subsidiary, or its holding or associate company or a subsidiary or such holding company, for an amount exceeding ₹5 lakhs. [Section 141(3)(d)(ii) and Rule 10(2) of Companies (Audit and Auditors) Rules, 2014].

(g) A person who has given any guarantee or provided any security in connection with the indebtedness of any third person to the company or its subsidiary, or its holding or associate company or a subsidiary of such holding company, for an amount exceeding ₹1 lakh. [Section 141(3)(d)(iii) and Rule 10(3) of Companies (Audit and Auditors) Rules, 2014].

(h) A person or a firm who, whether directly or indirectly, has business relationship with the company or its subsidiary, or its holding or associate company or subsidiary of such holding company or associate company. [Section 141(3)(e) and Rule 10(4) of Companies (Audit and Auditors) Rules, 2014].

"Business Relationship" is defined in Rule 10(4) of Companies (Audit and Auditors) Rules, 2014 and the same shall be construed as any transaction entered into for a commercial purpose, except commercial transactions which are in the nature of professional services permitted to be rendered by a cost auditor or a cost audit firm under the Act and commercial transactions which are in the ordinary course of business of the company at arm's length price - like sale of products or services to the cost auditor, as customer, in the ordinary course of business, by companies engaged in the business of telecommunications, airlines, hospitals, hotels and such other similar businesses.

(i) A person whose relative is a director or is in the employment of the company as a director or key managerial personnel of the company. [Section 141(3)(f)].

(j) A person who is in the full time employment elsewhere or a person or a partner of a firm holding appointment as its auditor if such person or persons is at the date of such appointment or reappointment holding appointment as auditor of more than twenty companies. [Section 141(3)(g)].

(k) A person who has been convicted by a court for an offence involving fraud and a period of ten years has not elapsed from the date of such conviction. [Section 141(3)(h)].

(l) Any person whose subsidiary or associate company or any other form of entity, is engaged as on date of appointment in consulting and providing specialised services to the company and its subsidiary companies: [Section 141(3)(i) and Section 144].

- accounting and book keeping services
- internal audit
- design and implementation of any financial information system
- actuarial services
- investment advisory services
- investment banking services
- rendering of outsourced financial services
- management services

4. Answer any three questions from a, b, c and d. [3x8=24]

(a) State the term Demand Forecasting and what are the factors involved in it? [2+6]

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 maximize 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:

- 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.
- Level factor: Demand forecasting may be undertaken at three different levels.
  - Macro level: It is concerned with business conditions over the whole economy.
  - Industry level: Prepared by different industries.
  - Firm-level: Firm-level forecasting is the most important from managerial view point.
- General or specific purpose factor: The firm may find either general or specific forecasting or both useful according to its requirement.
- Product: Forecasting varies with the type of product i.e., new product or existing product or well established product.
- 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.

- Competition: While making forecasting, market situation and the product position in particular market should be analyzed.
- 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)

(i) Given $C = x^3 – 5x^2 + 9x$; $R = 6x^2 + 6x – 2$. Find the total profit and hence marginal profits.[3]

Answer:

$C = x^3 – 5x^2 + 9x$

$R = 6x^2 + 6x – 2$

Total Profit = R – C

$= 6x^2 + 6x – 2 - x^3 + 5x^2 - 9x$

$= -x^3 + 11x^2 - 3x – 2$

$= -(x^3 – 11x^2 + 3x + 2)$

$$Marginal Profit = \frac{dc}{dx} = (3x2 – 22x + 3)$$

(ii) List out the components of time series. [2]

Answer:

A typical time services has the following four major components:

- A Secular trend
- Cyclical fluctuations
- Seasonal variations
- Random or unsystematic variations

(iii) Discuss briefly the degree of price discrimination as distinguished by famous Economist Prof. Pigou. [3]

Answer:

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

- 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.
- Second degree of price discrimination occurs where the monopolist is able to get a part of consumer surplus but not entire consumer surplus.
- In this third degree of price discrimination the monopolists divides 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.

(c)

(i) Difference between Perfect Competition and Monopoly. [4]

Answer:

The following are the differences between perfect competition and monopoly

1. In perfect competition there is large number of buyers and sellers who are producing homogeneous products therefore the activity of single seller may not influence the market price but in monopoly there is single seller. He controls the entire supply of the commodities. In this there is no competition.
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. We can know the nature of revenue curves with the help of following diagrams.
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 that level where MC=MR.

(ii) The Demand and Supply function under perfect Competition are $y=16-x^2$ and $y=2x^2+4$ respectively.

Find:

(i) the Market Price

(ii) Consumer's Surplus **[2+2]**

Answer:

Under Perfect Competition Market Price is: Demand = Supply i.e.

$16 - x^2 = 2x^2 + 4$

Or $16 - x^2 - 2x^2 - 4 = 0$

Or $-3x^2 + 12 = 0$

Or $-3x^2 = -12$

$\therefore x^2 = \frac{12}{3} = 4$

$x = \sqrt{4} = \pm 2$ i.e. 2 or -2 (since Quantity / units cannot be negative, rejecting the negative value (-2)

(i) Market Price $y = 16 - x^2$

$= 16 - 2^2 = 16 - 4 = 12$ (when $x = +2$)

(ii) Consumer's Surplus:

$$\int_0^2 \left(16 - x^2\right) dx - 2 \times 12$$

$$= \left[16x - \frac{x^3}{3}\right]_0^2 - 24$$

$$= 32 - \frac{8}{3} - 24 = \frac{16}{3}$$

(d)

(i) A company sells two types of products, one is Super and the other is Delux. The Super contains 2 units of chemical M and 4 units of chemical N per jar and the Delux contains 3 units of each of the chemicals M and N per carton. The super is sold for ₹3 per jar and the Delux is sold for ₹4 per carton. A customer requires at least 90 units of chemical M and at least 120 units of the chemical N for his business. How many of each type of Super should the customer purchase to minimize the cost while meeting his requirements? Formulate the Linear Programming model for the above problem, need not to solve. [2]

Answer:

	Products		Required Units
	Super	**Delux**	
Chemical M	2	3	90
Chemical N	4	3	120
Cost	3/-	4/-	

Let x_1 be the no. of litres of Super
Let x_2 be the no. of kilograms of Delux.

Objective Function:
Min. $Z = 3x_1+4x_2$

Subject to constraints:
$2x_1+3x_2 \geq 90$
$4x_1+3x_2 \geq 120$
And $x_1, x_2 \geq 0$
$2x_1+3x_2-x_3+A_1 = 90$
$4x_1+3x_2-x_4+A_2 = 120$

(ii) K ltd. sells output in a perfectly competive market. The average variable cost function K ltd. is $AVC = 400 – 40Q + 2Q^2$
K ltd has an obligation to pay ₹500 irrespective of the output produced. What is the price below which K ltd. has to shut down its operation in the short run? [3]

Answer:

A firm has to shut down its operation, if the price is less than average variable cost .under perfect competition
P = MR

i.e. Price is equal to marginal revenue. The firm will continue its operation under the short run so long as price is at least equal to average variable cost.

Thus the equilibrium price which the firm will shut down is the minimum AVC i.e. the average variable cost.

$AVC = 400 - 40Q + 2Q^2$

AVC is minimum where $\frac{d(AVC)}{dq} = 0$

i.e. $\frac{d(AVC)}{dq} = 40 + 4Q = 0$

i.e. Q = 10 units.

When the firm is producing 10 units,

$AVC = 400 - 40Q + 2Q^2$

$= 400 - 40(10) + 2(10)^2$

$= 400 - 400 + 200$

$= 200$

If the price falls before 200 the firm has to shut down its operation under short run.

(iii) The Demand function is $X = 200 + 8p + 20p^2$, where X is demand for the commodity at price 'p' compute marginal quantity demand, average quantity demand and hence elasticity of demand. At p =4 [1+1+1]

Answer:

$X = 200 + 8p + 20p^2$

Marginal quantity demand = $\frac{dx}{dq}$

$\frac{dx}{dq} = 8 + 40p$ -------- (i)

Average quantity demand = $\frac{x}{p} = \frac{200}{p} + 8 + 20p$ ------- (ii)

$E_p = \frac{dx}{dq} = \frac{x}{p} = \frac{8 + 40p}{\frac{200}{p} + 20p + 8} = \frac{(8 + 40p)p}{200 + 20p^2 + 8p}$

At p = 4

$= \frac{(8 + 160)4}{200 + (20 \times 16) + (8 \times 4)}$

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