

Answer to PTP_Intermediate_Syllabus 2012_Dec2014_Set 3

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) A Contract is estimated to be 80% complete in its first year of construction as certified. The Contractee pays 75% of value of work certified, as and when certified and makes the final payment on the completion of contract. Following information is available for the first year:

	₹
Cost of work-in-progress uncertified	18,000
Profit transferred to Profit & Loss A/c at the end of year 1 on incomplete contract	60,000
Cost of work to date	98,000

Calculate the value of work-in-progress certified and amount of contract price.

Answer:

$$\text{Profit transferred to P \& L A/c} = \frac{2}{3} \times \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

$$₹60,000 = \frac{2}{3} \times \text{Notional Profit} \times \frac{75\% \text{ of work certified}}{\text{work certified}}$$

Or, Notional Profit = 1,20,000

Notional Profit = Value of work certified + Cost of uncertified work – Cost of work to date

Therefore, Value of work certified = Notional Profit – Cost of uncertified work + Cost of work to date

$$= ₹1,20,000 - ₹18,000 + ₹98,000$$

$$= ₹2,00,000$$

Value of work certified = 80% of contract price

Therefore, Contract price = Value of work certified ÷ 80%

$$= ₹2,50,000$$

- (b) A lorry starts with a load of 25 tonnes of goods from station A. It unloads 5 tonnes at station B and rest of goods at station C. It reaches back directly to station A after getting reloaded with 18 tonnes of goods at station C. The distance between A to B, B to C and then from C to A are 60 kms, 100kms, and 150 kms respectively. Compute 'Absolute tones – kms' and 'Commercial tones – kms'.

Answer:

'Absolute tones – kms': It is the sum total of tones – kms. arrived at by multiplying various distances by respective load quantities carried. Mathematically it is:

$$= 25 \text{ tonnes} \times 60 \text{ kms} + 20 \text{ tonnes} \times 100 \text{ kms} + 18 \text{ tonnes} \times 150 \text{ kms.}$$

$$= 6,200 \text{ tonnes – kms.}$$

'Commercial tones – kms' = Average load × Total kms. travelled.

$$= \left(\frac{25 + 20 + 18}{3} \right) \text{ tonnes} \times 310 \text{ kms.}$$

$$= 6,510 \text{ tonnes – kms.}$$

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- (c) A company is currently operating at 80% capacity level. The production under normal capacity level is 1,50,000 units. The variable cost per unit is ₹14 and the total fixed costs are ₹8,00,000. If the company wants to earn a profit of ₹4,00,000, then what should be the price of the product per unit?

Answer:

Total fixed cost	-	₹8,00,000
Expected profit	-	₹4,00,000
Variable cost at 80% level (80% x 1,50,000 units x ₹14)	-	₹16,80,000
Total price	-	₹28,80,000
Per unit price at 80% level = (₹28,80,000 / 1,20,000 units) = ₹24.00.		

- (d) Distinguish between Indifference Point and Break-Even Point with regard to their definition and purpose.

Answer:

With regard to definition:

The cost in Indifference Point analysis tool determines the point at which there is no difference in cost between two alternative methods.

Whereas, Break-even Point is the level of sales at which total sales revenue is equal to total costs and there is neither profit nor loss to the firm. At Break-even Point, total contribution equals fixed cost.

Purpose:

Indifference Point is used to compare two strategies. This analysis can be used to decide between different cost structures or selling prices.

Whereas, Break-even Point is used for profit planning.

- (e) Akash Ltd. is preparing its cash budget for the period. Sales are expected to be ₹1,00,000 in April 2014, ₹2,00,000 in May 2014, ₹3,00,000 in June 2014 and ₹ 1,00,000 in July 2014. 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. What is the budgeted collection for the month of July 2014?

Answer.

Collection from	
July 2014 cash sales will be half of total sales or	₹50,000
From April ₹50,000 of credit sales, collection should be 10% or	₹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

- (f) "Turnover". Is gross turnover whether includes excise duty or not – State.

Answer:

As per Rule 2(p), "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 does not include any non-operational income.

The term "Turnover" defined in the Companies (Cost Accounting Records) Rules, 2011 shall exclude taxes & duties. It shall have the same meaning, wherever it appears, in all other orders/rules issued in connection with the cost accounting records and cost audit.

- (g) State the term Cost Audit.

Answer:

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Cost Audit has been defined as "the verification of cost records and accounts and a check on the adherence to the prescribed cost accounting procedures and the continuing relevance of such procedures".

The Institute of Cost Accountants of India on the other hand, defines cost audit as "a system of audit introduced by the Government of India for the review, examination and appraisal of the cost accounting records and attendant information, required to be maintained by specified industries."

(h) What are the determinants of Demand?

Answer:

Determinants of demand are enumerated below:

- Price of the Commodity (P)
- Prices of Substitutes (Ps) [Tea and Coffee]
- Price of Complements (Pc) [Pen and Ink]
- Income of household (I)

(i) The Demand and Supply function under perfect Competition are $y=16-x^2$ and $y=2x^2+4$ respectively. Find the Market Price.

Answer:

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

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

$$\text{Or } 16 - x^2 - 2x^2 - 4 = 0$$

$$\text{Or } -3x^2 + 12 = 0$$

$$\text{Or } -3x^2 = -12$$

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

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

$$\text{Market Price } y = 16 - x^2$$

$$= 16 - 2^2 = 16 - 4 = 12 \quad (\text{when } x = +2)$$

(j) State the limitation of Simultaneous Equation.

Answer:

Limitation of Simultaneous Equation

- It is difficult to find out an appropriate equation and relationship between variables.
- For new products it is not suitable, as no past data are available.
- A few indicators always correctly indicate changes in another variable.

2. Answer any two questions.

[2x20=40]

(a)

(i) The monthly budgets for manufacturing overhead of SHAHEEN LTD. for two levels of activity were as follows:

Capacity	60%	100%
Budgeted production	600	1,000
	₹	₹
Wages	1,200	2,000
Consumable stores	900	1,500

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Maintenance	1,100	1,500
Power & Fuel	1,600	2,000
Depreciation	4,000	4,000
Insurance	1,000	1,000
	9,800	12,000

Required:

- I. Indicate which of the items are fixed, variable and semi-variable;
- II. Prepare a Budget for 80% capacity; and
- III. Find the total cost, both fixed and variable per unit of output at 60%, 80% and 100% capacity. [$1\frac{1}{2}+4\frac{1}{2}+3=9$]

Answer:

SHAHEEN LTD

- I. Fixed -> Depreciation and Insurance
Variable -> Wages and consumable stores
Semi-variable -> Maintenance, and Power & fuel

II. Working Notes:

Segregation of semi-variable costs:

Maintenance = $[1,500 - 1,100] / 400 = ₹ 1$. Per unit variable and

Fixed cost = $1,100 - 600 = ₹ 500$.

Power & Fuel = $[2,000 - 1,600] / 400 = ₹ 1$. Per unit variable and

Fixed cost = $1,600 - 600 = ₹ 1000$.

BUDGET FOR 80% CAPACITY LEVEL

Budgeted Production (80 % Capacity)	800 Units
	₹
Wages @ ₹ 2.00 per unit	1,600
Consumable stores @ ₹ 1.50 per unit	1,200
Maintenance : ₹ 500 + ₹ 1.00 per unit	1,300
Power & Fuel : ₹ 1,000 + ₹ 1.00 per unit	1,800
Depreciation	4,000
Insurance	1,000
Total Cost :	10,900

- III. To sum up the Variable Cost per unit works out to ₹ 5.50.
(It consists of wages: ₹ 2, Consumables Stores: ₹ 1.50, Maintenance: ₹ 1.00 Power & Fuel : ₹ 1.00)
Total Fixed Cost comes to ₹ 6500;
(Maintenance: ₹ 500 + Power & Fuel : ₹ 1,000 + Depreciation : ₹ 4,000 + Insurance : ₹ 1,000)

COMPUTATION OF TOTAL COST PER UNIT:

Particulars	Capacity		
	60%	80%	100%
Production (Units)	600	800	1,000
Variable cost per unit (₹)	5.50	5.50	5.50
Fixed Cost Per Unit (₹6,500 ÷ Production Units) (₹)	10.83	8.13	6.50

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Total Cost Per Unit (₹)	16.33	13.63	12.00
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- (ii) The following information provides details of costs, volumes and cost drivers for a particular period in respect of AKASH INDUSTRIES LTD. for the products X, Y and Z:

	Product X	Product Y	Product Z	Total
Production and Sales (Units)	30,000	20,000	8,000	
Raw material usage (Units)	5	5	11	
Direct material cost (₹)	25	20	11	12,38,000
Direct Labour hours	4/3	2	1	88,000
Machine hours	4/3	1	2	76,000
Direct Labour Cost (₹) per unit	8	12	6	
Number of production runs	3	7	20	30
Number of deliveries	9	3	20	32
Number of receipts (2x7)*	15	35	220	270
Number of production orders	15	10	25	50
Overhead Costs (₹):				
Setup	30,000			
Machines	7,60,000			
Receiving	4,35,000			
Packing	2,50,000			
Engineering	<u>3,73,000</u>			
	<u>18,48,000</u>			

* The company operates a just-in-time inventory policy and receives each component once per production run.

In the past, the company has allocated overheads to products on the basis of direct labour hours. However, the majority of overheads are related to machine hours rather than direct labour hours. The company has recently redesigned its costing system by recovering overheads using two volume-related bases: machine hours and a materials handling overhead rate for recovering overheads of the receiving department.

Both the current and the previous cost systems reported low profit margins for Product X, which is the company's highest-selling product.

The cost accountant has recently attended a seminar/workshop on Activity Based Costing and the overhead costs for the last period have been analysed by the major activities in order to compute activity-based costs.

Required:

- I. Compute the product costs using a traditional volume-related costing system based on the assumption that:
 - (A) all overheads are recovered on the basis of direct labour hours (i.e. the company's past product costing system); and
 - (B) the overheads of the receiving department are recovered by a materials handling overhead rate and the remaining overheads are recovered using a machine hour rate (i.e. the company's current costing system). [3+3]

Answer:

AKASH INDUSTRIES LTD

- I. COMPUTATION OF PRODUCT COSTS USING TRADITIONAL COSTING SYSTEM (based on assumption that all overheads are recovered on the basis of Direct Labour hours)

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(A)

Products	X	Y	Z
	₹	₹	₹
Direct Labour	8	12	6
Direct Materials	25	20	11
Over head [4/3 x 21, 2 x 21; 1 x 21]	28	42	21
TOTAL	61	74	38

Direct labour hour rate = 18,48,000 / 88,000 = ₹ 21 per hour.

(B) The overheads of the receiving deptt. are recovered by a material handling overhead rate the remaining overheads are recovered by using a machine hour rate:

Products	X	Y	Z
	₹	₹	₹
Direct Labour	8	12	6
Direct Materials	25	20	11
Material handling overhead [25 x 35.14%, 20 x 35.14%, 11 x 35.14%]	8.78	7.03	3.87
Other overheads [4/3 x 18.59, 1 x 18.59, 2 x 18.59]	24.79	18.59	37.18
TOTAL Cost	66.57	57.62	58.05

Material handling rate = 4,35,000 / 12,38,000 = 35.14% and M/C hr. rate = 14,13,000 / 76,000 = ₹ 18.59.

(iii) Explain the term Negotiated Price of transfer Price.

[5]

Answer:

Negotiated Pricing: - Under this method, the transfer prices may be fixed through negotiations between the selling and the buying division. Sometimes it may happen that the concerned product may be available in the market at a cheaper price than charged by the selling division. In this situation the buying division may be tempted to purchase the product from outside sellers rather than the selling division. Alternatively the selling division may notice that in the outside market, the product is sold at a higher price but the buying division is not ready to pay the market price. Here, the selling division may be reluctant to sell the product to the buying division at a price, which is less than the market price. In all these conflicts, the overall profitability of the firm may be affected adversely. Therefore it becomes beneficial for both the divisions to negotiate the prices and arrive at a price, which is mutually beneficial to both the divisions. Such prices are called as 'Negotiated Prices'. In order to make these prices effective care should be taken that both, the buyers and sellers should have access to the available data including about the alternatives available if any. Similarly buyers and sellers should be free to deal outside the company, but care should be taken that the overall interest of the organization is not affected.

- The main limitation of this method is that lot of time is spent by both the negotiating parties in fixation of the negotiated prices.
- Negotiating skills are required for the managers for arriving at a mutually acceptable price, otherwise there is a possibility of conflicts between the divisions.

(b)

(i) In its budget for the period ahead 'M' Ltd. is considering two possible sales forecasts for the three products as follows:

Forecast	Product		
	X	Y	Z

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I. Sales (Units)	22,000	40,000	6,000
Selling price per unit	₹ 10	₹ 6	₹ 7.50
II. Sales (Units)	30,000	50,000	7,000
Selling price per unit	₹ 9	₹ 5.50	₹ 7.50

Variable costs per unit are expected to be the same at the different levels of possible sales. The variable costs per unit are as follows:

Particulars	Product		
	X	Y	Z
Direct material	3.00	2.00	4.00
Direct labour	2.00	1.50	1.00
Variable overheads	1.00	0.50	1.00

Fixed overheads are expected to total ₹ 1,00,000. These are expected to be unaffected by the possible changes in activity which are being considered. Due to recent high labour turnover problems, direct labour will be restricted to a maximum of ₹ 1,30,000 in the period. It can be assumed that all labour is of the same grade and is freely transferable between products. Other resources are expected to be generally available.

You are required to:

Taking each of the possible sales forecasts in turn

- I. Say what the principal budget factor is for each of the forecasts.
- II. For each forecast calculate the sales budget that you would recommend to maximize profits.
- III. What profit would you expect from each sales budget?

Assume that the products will be sold according to the selling price estimated as per the forecast and no interchange of the forecast is allowed. [3+3+6=12]

Answer.

- I. Determination of Principal Budget Factor :

Particulars	Products			Total
	X	Y	Z	
Forecast I				
Sales (units)	22,000	40,000	6,000	
Labour cost (₹ Per unit)	2.00	1.50	1.00	
Total labour cost (₹)	44,000	60,000	6,000	1,10,000
Direct labour available (₹)				1,30,000
Forecast II				
Sales (units)	30,000	50,000	7,000	
Labour cost (₹ Per unit)	2.00	1.50	1.00	
Total labour cost (₹)	60,000	75,000	7,000	1,42,000
Direct labour available (₹)				1,30,000

Sales is the principal budget factor in Forecast I, and labour is the principal budget factor in Forecast II.

- II. Sales budget – Forecast I (Sales – principal budget factor)

Product	Sales (units)	Selling price p.u. ₹	Amount ₹
X	22,000	10.00	2,20,000
Y	40,000	6.00	2,40,000
Z	6,000	7.50	45,000
Total			5,05,000

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Sales budget – Forecast II (Labour - principal budget factor)

Product	Sales (units)	Selling price p.u. ₹	Amount ₹
X	30,000	9.00	2,70,000
Y	42,000	5.50	2,31,000
Z	7,000	7.50	52,500
Total			5,53,500

III. Budgeted sales and profit – Forecast I

Particulars	Products			Total
	X	Y	Z	
Sales (units) (i)	22,000	40,000	6,000	
Selling price p.u.	10.00	6.00	7.50	
Variable cost p.u.	6.00	4.00	6.00	
Contribution p.u. (ii)	4.00	2.00	1.50	
Total contribution (i) x (ii)	88,000	80,000	9,000	1,77,000
Less : Fixed cost				1,00,000
Profit				77,000

Working notes:

In case of Forecast II, since labour is the principal budget factor, in order to maximize profit, the product which gives highest contribution per rupee of direct labour should be given priority in production and sales.

Ranking of products based on contribution per rupee of direct labour :

Particulars	Products		
	X	Y	Z
Selling price (a)	9.00	5.50	7.50
Variable cost			
Direct material	3.00	2.00	4.00
Direct labour	2.00	1.50	1.00
Variable overheads	1.00	0.50	1.00
Total Cost (b)	6.00	4.00	6.00
(i) Contribution (a) – (b)	3.00	1.50	1.50
(ii) Labour cost	2.00	1.50	1.00
Contribution per rupee of direct labour (i)/(ii)	1.50	1.00	1.50
Ranking	I	III	II

Manufacturing budget based on ranking

Product	Units	Labour cost per unit ₹	Total labour cost ₹
X	30,000	2.00	60,000
Z	7,000	1.00	7,000
Y	42,000#	1.50	63,000*
		Total	1,30,000

*Balancing figure # ₹ 63,000/₹ 1.50 = 42,000 units

Budgeted sales and profit – Forecast II

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Particulars	Products			Total
	X	Y	Z	
Sales (units) (i)	30,000	42,000	7,000	
Selling price p.u.	9.00	5.50	7.50	
Less : Variable cost p.u.	6.00	4.00	6.00	
Contribution p.u. (ii)	3.00	1.50	1.50	
Total contribution (i) x (ii)	90,000	63,000	10,500	1,63,500
Less : Fixed cost				1,00,000
Profit				63,500

- (ii) Monarch Limited undertakes to supply 1,000 units of a component per month for the months of January, Feb. and March 2014. Every month a batch order is opened against which materials and labour cost are booked at actual. Overheads are levied at a rate per labour hour. The selling price is constructed at ₹15 per unit. From the following data, present the cost and profit per unit of each batch order and the overall position of the order for 3,000 units.

Month	Batch output (Numbers) ₹	Material Cost ₹	Labour Cost ₹
January 2014	1,250	6,250	2,500
February 2014	1,500	9,000	3,000
March 2014	1,000	5,000	2,000

Labour is paid at the rate of ₹2 per hour. The other details are:

Month	Overheads	Total labour Hour
January 2014	₹12,000	4,000
February 2014	₹9,000	4,500
March 2014	15,000	5,000

[5+3]

Answer:

Statement of Cost and Profit per unit of each Batch

Particulars	January	February	March	Total
A. Batch Output (Number)	1,250	1,500	1,000	3,750
B. Sales Value (Ax₹15)	₹18,750	₹22,500	₹15,000	₹56,250
Material	6,250	9,000	5,000	20,250
Wages	2,500	3,000	2,000	7,500
Overheads	3,750	3,000	3,000	9,750
C. Total Cost	12,500	15,000	10,000	37,500
D. Profit per batch (B-C)	6,250	7,500	5,000	18,750
E. Cost per unit (C/A)	10	10	10	10
F. Profit Per unit (D/A)	5	5	5	5

Working Notes:

Particulars	Jan. 2014	Feb. 2014	March 2014
A. Labour Hours (Labour Cost/Labour rate per hour)	₹2,500/2 =1,250	₹3,000/2 =1,500	₹2,000/2 =1,000
B. Overheads per hour (Total Overheads/Total Labour Hours)	₹12,000/4,000 =₹3	₹9,000/4,500 =₹2	₹15,000/5,000 =₹3
C. Overheads for the batch (Ax B)	₹3,750	₹3,000	₹3,000

Particulars	₹

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A. Sales Value (3,000 units x ₹15)	45,000
B. Less: total Cost (3,000 units x ₹10)	30,000
Profit (A-B)	15,000

(c)

- (i) A Company manufacture its sole product by passing the raw material through three distinct process in its factory. During the month of April 2014, the company purchased 96,000 kg of raw material at ₹5 per kg & introduced the same in process 1. Further particulars of manufacture for the month are given below:-

	Process I	Process II	Process III
Material consumed	₹33,472	₹27,483	₹47,166
Direct labour	80,000	72,000	56,000
Overhead	1,20,000	1,08,000	84,000
Normal Waste in process as % of input	3%	1%	1%
Sale value of waste (₹/kg)	2	3	5
Actual output during the month (kg)	93,000	92,200	91,500

Prepare the three process accounts relating to abnormal; loss/gain, if any.

$$[3+3+3+2^{1/2}+2^{1/2}]$$

Answer:

-----Company
Three Process Accounts are given below:
Process-1 Account

	Quantity (kg.)	Rate (₹)	Amount (₹)		Quantity (kg.)	Rate (₹)	Amount (₹)
To Input of R.M.	96,000	5.00	4,80,000	By Process-II A/C (Transferred to)	93,000	7.60	7,06,800
To Other materials			33,472	By Normal Waste A/C (3% of 96,000)	2,880	2.00	5,760
To Direct labour			80,000	By Abnormal Loss A/C	120	7.60	912
To Overheads			1,20,000				
	96,000		7,13,472		96,000		7,13,472

Process-II Account

	Quantity (kg.)	Rate (₹)	Amount (₹)		Quantity (kg.)	Rate (₹)	Amount (₹)
To Process-I A/C (Transferred from)	93,000	7.60	7,06,800	By Process-III A/C (Transferred to)	92,200	9.90	9,12,780
To Materials			27,483	By Normal Waste A/C (1% of 93,000)	930	3.00	2,790
To Direct labour			72,000				
To Overheads			1,08,000				
To Abnormal gain	130	9.90	1,287				
	93,130		9,15,570		93,130		9,15,570

Process-III Account

	Quantity (kg.)	Rate (₹)	Amount (₹)		Quantity (kg.)	Rate (₹)	Amount (₹)
To Process-II A/C	92,200	9.90	9,12,780	By Finished	91,500	12.00	10,98,000

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(Transferred from)				Goods Stock			
To Materials			47,166	By Normal waste (1% of 92,200)	922	5.00	4,610
To Direct labour			56,000				
To Overheads			84,000				
To Abnormal gain	222	12.00	2,664				
	92,422		11,02,610		92,422		11,02,610

Accounts relating to Abnormal Loss/Gains are as under:-

Abnormal Loss Account

	Quantity (kg.)	Amount (₹)		Quantity (kg.)	Amount (₹)
To Process-I Account	120	912	By Cash @ ₹2 (normal waste)	120	240
			By Profit & Loss Account	-----	672
	120	912		120	912

Abnormal Gain Account

	Quantity (kg.)	Amount (₹)		Quantity (kg.)	Amount (₹)
To Process-II A/C (normal waste) @₹3	130	390	By Process-II A/c	120	1,287
To Process-III A/c (Normal waste)	222	1,110	By Process-III A/c	222	2,664
To Profit & Loss A/C	-----	2,451			
	352	3,951		352	3,951

Working Notes:-

Valuations of output, abnormal loss/Gain are worked out below:

$$= \frac{\text{Total Cost of Input} - \text{Sale Value of Normal Waste}}{(\text{Input quantity} - \text{Qty of Normal Waste})}$$

$$\begin{aligned} \text{Process-I: } & \frac{7,13,472 - 5,760}{96,000 - 2,880} \\ & = \frac{7,07,712}{93,120} \\ & = ₹7.60 \end{aligned}$$

$$\begin{aligned} \text{Process-II: } & \frac{9,14,283 - 2,790}{(93,000 - 930)} \\ & = \frac{9,11,493}{92,070} \\ & = ₹9.90 \end{aligned}$$

$$\text{Process-III: } \frac{10,99,946 - 4,610}{92,200 - 922}$$

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$$= \frac{10,95,336}{91,278}$$

$$= ₹12.00$$

(ii) Following data is available for T.T.D & Co.:

Standard working hours 8 hours per day 5 days per week

Maximum capacity	50 employees
Actual working	40 employees
Actual hours expected to be worked per four weeks	6,400 hours
Standard hours expected to be earned per four weeks	8,000 hours
Actual hours worked in the four-week period	6,000 hours
Standard hours earned in the four week period	7,000 hours

The related period is of 4 weeks. In this period there was a special one day holiday due to national event. Calculate the following ratios:

(I) Efficiency ratio, (II) Activity ratio, (III) Calendar ratio, (IV) Standard capacity usage ratio, (V) Actual capacity usage ratio, (VI) Actual usage of budgeted capacity ratio. [6]

Answer:

I. Efficiency ratio = $\frac{\text{Output expressed in terms of standard hours}}{\text{Actual hours spent for producing that output}}$

$$= \frac{7,000 \text{ hours}}{6,000 \text{ hours}} \times 100 \text{ or } 116.7\%$$

II. Activity ratio = $\frac{\text{Actual output in standard hours}}{\text{Budgeted output in standard hours}}$

$$= \frac{7,000 \text{ hours}}{6,400 \text{ hours}} \times 100 \text{ or } 109.4\%$$

III. Calendar ratio = $\frac{\text{Actual No. of working days in a period}}{\text{No. of working days in related budgeted period}}$

$$= \frac{(5 \text{ days} \times 4 \text{ weeks}) - 1^*}{5 \text{ days} \times 4 \text{ weeks}} \times 100 = \frac{19}{20} \times 100 \text{ or } 95.0\%$$

IV. Standard Capacity usage ratio = $\frac{\text{Budgeted Hours}}{\text{Maximum possible no. of working hrs of budgeted period}}$

$$= \frac{6,400 \text{ hours}}{8,000 \text{ hours}} \times 100 = 80.0\%$$

* Due to National Holiday

V. Actual usage of budgeted Capacity ratio = $\frac{\text{Actual hours}}{\text{Budgeted hours}} \times 100$

$$= \frac{6,000 \text{ hours}}{6,400 \text{ hours}} \times 100 = 93.75\%$$

VI. Actual Capacity Usage ratio = $\frac{\text{Actual hours worked}}{\text{Maximum possible working hours in a period}} \times 100$

Answer to PTP_Intermediate_Syllabus 2012_Dec2014_Set 3

$$= \frac{6,000\text{hours}}{8,000\text{hours}} \times 100 = 75.0\%$$

3. Answer any two questions.

[2x8=16]

(a) List out the objectives of Cost Audit.

[8]

Answer:

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

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

Ensuring that the prescribed procedures of cost accounting records rules are duly adhered to Detection of errors and fraud.

Verification of the cost of each "cost unit" and "cost center" to ensure that these have been properly ascertained.

Determination of inventory valuation.

Facilitating the fixation of prices of goods and services.

Periodical reconciliation between cost accounts and financial accounts.

Ensuring optimum utilization of human, physical and financial resources of the enterprise.

Detection and correction of abnormal loss of material and time.

Inculcation of cost consciousness.

Advising management, on the basis of inter-firm comparison of cost records, as regards the areas where performance calls for improvement.

Promoting corporate governance through various operational disclosures to the directors.

Among the social objectives of cost audit, the following deserve special mention:

Facilitation in fixation of reasonable prices of goods and services produced by the enterprise. Improvement in productivity of human, physical and financial resources of the enterprise.

Channelising of the enterprise resources to most optimum, productive and profitable areas.

Availability of audited cost data as regards contracts containing escalation clauses.

Facilitation in settlement of bills in the case of cost-plus contracts entered into by the Government.

Pinpointing areas of inefficiency and mismanagement, if any for the benefit of shareholders, consumers, etc., such that necessary corrective action could be taken in time.

(b)

(i) Explain the relevance of Cost Audit.

[6]

Answer:

The main objective of Cost Audit when statutorily introduced under the provisions of Companies Act, 1956 was to meet the Government requirements for regulating the price mechanism in core industries like Cement, Sugar, Textiles and consumer industries like Vanaspati, Formulations and Automobiles. The objective was to provide an authentic data to the Government to regulate the demand and supply in the country through a price control mechanism.

Expert Committee (formed by the Government of India to study the Cost Audit) scenario in the country, highlighted the following benefits of cost information:

Answer to PTP_Intermediate_Syllabus 2012_Dec2014_Set 3

- Cost Information enables the organization to structure the cost, understand it and use it for communicating with the stakeholders.
- Costing is an important tool in assessing organizational performance in terms of shareholder and stakeholder value. It informs how profits and value are created, and how efficiently and effectively operational processes transform input into output. It contributes to the data input on economy level parameters like resources efficiency, waste management, resources allocation policies etc.
- Costing includes product, process, and resource-related information covering the functions of the organization and its value chain. Costing information can be used to appraise actual performance in the context of implemented strategies.
- Good practice in costing should support a range of both regular and non-routine decisions when designing products and services to
 - meet customer expectations and profitability targets;
 - assist in continuous improvements in resources utilisation; and
 - guide product mix and investment decisions.
- Working from a common data source (or a single set of sources) also helps to ensure that output reports for different audiences are reconcilable with each other.
- Integrating databases and information systems can help to provide useful costing information more efficiently as well as reducing source data manipulation.

Cost audits help to ascertain whether an organization's cost accounting records are so maintained as to give a true and fair view of the cost of production, processing, manufacturing, and mining of a product. Therefore, cost audits can be used to the benefit of management, consumers and shareholders by (a) helping to identify weaknesses in cost accounting systems, and (b) to help drive down costs by detecting wastage and inefficiencies. Cost audits are also of assistance to governments in helping to formulate tariff and taxation policies.

(ii) What is the time limit within which the central government can seek clarification from the Cost Auditor? [2]

Answer:

There is no time limit within which the Central Government can seek clarification from the cost auditor. The Rules have now specified that the Company would be required to maintain the cost accounting records for the preceding eight financial years in good order. The cost auditor is required to provide reply to any clarification sought for by the Central Government from the cost auditor in writing within 30 days of the receipt of the communication addressed to him calling for such clarifications.

(c)

(i) Difference between Cost Accounting Policy and Cost Accounting system. [3]

Answer:

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

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

(ii) How will you treat the following items in Cost Accounting Records?

- I. Interest received on security deposit with the Electricity Board.
- II. Voluntary Retirement Compensation paid to workers, included under wages
- III. Profit on sale of fertilizers to cane-growers by a sugar company. [3]

Answer.

Answer to PTP_Intermediate_Syllabus 2012_Dec2014_Set 3

- I. This cannot be considered as an investment outside the business. Deposit with Electricity Board is made for obtaining power connection and is based on estimated monthly bill for power consumption. It is part of the Working Capital (Current Assets), interest on such deposits can therefore be set off against interest paid or alternatively taken as a credit against overhead. However, the amount involved may not be very significant.
- II. This is a one-time non-recurring expenditure. Even if it is included under salaries and wages in Financial A/c., it should be excluded for Cost Accounts purposes. This item is also an item of reconciliation.
- III. Some sugar factories supply fertilizers to cane growers to ensure quality of suppliers, and as an incentive for regular supply. Although it helps sugar production, this activity is not directly related to sugar production and is purely a trading activity. The profit from such activity should be shown as an item of reconciliation between Financial and Cost Accounts.

(iii) Variance Accounting is also part of a system of Cost Records. Explain

[2]

Answer.

The company may maintain Cost Records on any basis other than actual, i.e., Standard Costing System. In such case, the Cost Records should reveal the following:

- Particulars of norms and standards established – both physical and financial
- Details of variances recognized and accounted by the Costing System.
- Time of recognition of variances and the method of accounting – either single plan or partial plan.
- Method of disposition of variances at the end of the period.

4. Answer any three questions.

[3x8=24]

(a) What are the factors involved in Demand Forecasting? Name the methods of demand forecasting?

[7+1]

Answer:

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 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 consume/ goods will be different accordingly.
- Competition: While making forecasting, market situation and the product position in particular market should be analyzed

Answer to PTP_Intermediate_Syllabus 2012_Dec2014_Set 3

- Consumer Behavior: What people think about the future, their own personal prospects and about products and brands are vital factors for firm and industry.

Demand Forecasting Methods can be categorized into two types:

- Opinion Survey method or Qualitative Techniques
- Statistical Method or Quantitative Techniques.

(b)

(i) **NANDINI ELECTRICALS** an electronics firm assumes a cost function $C(x) = x\left(\frac{x^2}{10} + 200\right)$,

where 'x' is a monthly output in thousands of units. Its revenue function is given by $R(x) = x(1100 - 1.5x)$.

Find:

- the output required per month to make the Marginal Profit = 0; and
- the Profit of this level of output

[3+1]

Answer:

$$\begin{aligned} \text{I. Profit} &= R(x) - C(x) = 1100x - 1.5x^2 \frac{x^3}{10} - 200x \\ &= -\frac{x^3}{10} - 1.5x^2 + 900x \text{ (say P)} \end{aligned}$$

$$\text{Marginal Profit (MP)} = \frac{dp}{dx} = -\frac{3x^2}{10} - 3x + 900$$

Pr Marginal Profit (MP) = 0 (given)

$$-\frac{3x^2}{10} - 3x + 900 = 0$$

$$\Rightarrow -3x^2 - 30x + 9000 = 0$$

$$x^2 + 10x - 3000 = 0$$

$$x^2 + 60x - 50x - 3000 = 0$$

$$\text{or, } x(x + 60) - 50(x + 60) = 0$$

$$\text{or, } (x - 50)(x + 60) = 0$$

Either $x = 50$ or $x = -60$

[Since units cannot be negative rejecting the negative value (- 60)]

The required output level = 50 (thousand) units.

II. Total Profit at output $x = 50$ (thousand) units.

$$\begin{aligned} &-\frac{x^3}{10} - 1.5x^2 + 900x \\ &= -\frac{1,25,000}{10} - 3,750 + 45,000 = ₹28,750 \text{ thousand} \end{aligned}$$

(ii) **State the main features of Perfect Competition Market.**

[4]

Answer:

The following are the features of perfect competition market:

- There must be large number of Buyers and sellers.
- In perfect competition, the goods produced by different firms are homogeneous or identical.

Answer to PTP_Intermediate_Syllabus 2012_Dec2014_Set 3

- In perfect competition there is free entry and exit of the firms into the industry.
- The buyers and the sellers must have the knowledge with regard to the prices of various commodities at different supply and demand forces.
- The factors must be mobilized from those places where they are getting less remuneration to those places where they will get maximum remuneration.
- All commodities are identical in perfect competition. So the prices of the commodities are also uniform.
- In order to maintain the uniform price level in perfect, competition we should not include the transport cost in the price level.
- There is a difference between firm & industry under perfect competition. Firm is a production unit and where as industry is a group of firms

(c) State the term Law of Demand. Illustrate the exceptions to the law of demand. [1+7]

Answer:

The Law of Demand simply expresses the relation between quantity of a commodity demanded and its price. The law states that "demand varies inversely with price, not necessarily proportionately". If the price falls, demand will extend, and vice versa. The law of demand indicates this inverse relationship between price and quantity demanded. "Other things remaining same higher will be demanded at a lower price and lower will be demanded at a higher price".

The law of demand does not apply in every case and situation. The circumstances when the law of demand becomes ineffective are known as exceptions of the law. Some of these important exceptions are as under.

Giffen goods:

Some special varieties of inferior goods are termed as Giffen goods. Cheaper varieties of this category like bajra, cheaper vegetable like potato come under this category. Sir Robert Giffen or Ireland first observed that people used to spend more their income on inferior goods like potato and less of their income on meat. But potatoes constitute their staple food. When the price of potato increased, after purchasing potato they did not have so many surpluses to buy meat. So the rise in price of potato compelled people to buy more potato and thus raised the demand for potato. This is against the law of demand. This is also known as Giffen paradox.

Conspicuous Consumption:

This exception to the law of demand is associated with the doctrine propounded by Thorsten Veblen. A few goods like diamonds etc are purchased by the rich and wealthy sections of the society. The prices of these goods are so high that they are beyond the reach of the common man. The higher the price of the diamond the higher the prestige value of it. So when price of these goods falls, the consumers think that the prestige value of these goods comes down. So quantity demanded of these goods falls with fall in their price. So the law of demand does not hold good here.

Conspicuous necessities:

Certain things become the necessities of modern life. So we have to purchase them despite their high price. The demand for T.V. sets, automobiles and refrigerators etc. has not gone down in spite of the increase in their price. These things have become the symbol of status. So they are purchased despite their rising price. These can be termed as "U" sector goods.

Ignorance:

A consumer's ignorance is another factor that at times induces him to purchase more of the commodity at a higher price. This is especially so when the consumer is haunted by the phobia that a high-priced commodity is better in quality than a low-priced one.

Emergencies:

Answer to PTP_Intermediate_Syllabus 2012_Dec2014_Set 3

Emergencies like war, famine etc. negate the operation of the law of demand. At such times, households behave in an abnormal way. Households accentuate scarcities and induce further price rises by making increased purchases even at higher prices during such periods. During depression, on the other hand, no fall in price is a sufficient inducement for consumers to demand more.

Future changes in prices:

Households also act speculators. When the prices are rising households tend to purchase large quantities of the commodity out of the apprehension that prices may still go up. When prices are expected to fall further, they wait to buy goods in future at still lower prices. So quantity demanded falls when prices are falling.

Change in fashion:

A change in fashion and tastes affects the market for a commodity. When a broad toe shoe replaces a narrow toe, no amount of reduction in the price of the latter is sufficient to clear the stocks. Broad toe on the other hand, will have more customers even though its price may be going up. The law of demand becomes ineffective.

(d)

- (i) **HITACHI LTD. an air conditioner manufacturer, produces 'x' sets per week at a total cost of $x^2+780x+25000$. The firm is a monopolist and the demand function for its product is $x = (15000 - \frac{p}{4})$, where the price is 'p' per set.**

- I. **Determine the number of AC sets to be produced per week at which the firm will earn maximum net revenue; and**
II. **Decide the monopoly price.** [3+1=4]

Answer:

- I. Cost (c) = $x^2 + 780x + 25000$
Demand (D) $x = \left(15000 - \frac{P}{4}\right) = \frac{60000 - P}{4}$
Or, $4x = 60000 - P$
 $\Rightarrow P = 60000 - 4x$
So total Revenue per x sets, $R = 60000x - 4x^2$
Maximum Revenue is obtained at $MC = MR$
 $MR = \frac{dR}{dx} = 60000 - 8x$ (Marginal Revenue)
 MC (Marginal Cost) = $\frac{dC}{dx} = 2x + 780$
 $\square \square 2x + 780 = 60000 - 8x$
or, $10x = 59220$
or, $x = 5922$ Sets
- II. Monopoly Price = $60000 - 4x$
 $= 60000 - 4 \times 5922 = ` 36312$

- (ii) **The efficiency (E) of a small manufacturing concern depends on the number of workers (W) and is given by: $10E = \frac{-W^3}{40} + 30W - 392$. Find the strength of the workers, which give maximum efficiency.** [4]

Answer:

Answer to PTP_Intermediate_Syllabus 2012_Dec2014_Set 3

$$\text{Given } 10 E = \frac{-W^3}{40} + 30W - 39.2$$

$$\text{Efficiency (E)} = \frac{-W^3}{400} + 3W - 39.2$$

$$\frac{dE}{dW} = -\frac{1}{400} \times 3W^2 + 3 = 0$$

$$\Rightarrow 3W^2 = 1200 \quad \Rightarrow W = 20$$

$$\frac{d^2E}{dW^2} = -\frac{6W}{400} \quad \therefore \frac{d^2E}{dW^2} \text{ at } W = 20 = \frac{-6(20)}{400} = \frac{-3}{10} < 0$$

Maximum Efficiency at $W = 20$

Hence the Strength of Workers = 20