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) XYZ Company fixes the inter-divisional transfer prices for its products on the basis of cost plus an estimated return on investment in its divisions. The relevant portion of the budget for the Division A for the year 2013 -14 is given below.

Particulars	Amount in ₹
Fixed Assets	**5,00,000**
Current Assets (other than debtors)	**3,00,000**
Debtors	**2,00,000**
Annual Fixed Cost for the Division	**8,00,000**
Variable Cost Per unit of product	**10**
Budgeted Volume of Production per year (units)	**4,00,00**
Desired Return on Investment	**20%**

You are required to determine the transfer price for Division A.

Answer:

Computation of Transfer Price per unit

Particulars	Amount (₹)
Variable cost	10.00
Fixed cost (8,00,000 / 4,00,000)	2.00
Total Cost	12.00
Add: Desired return (10,00,000 x 20%) ÷ 4,00,000	0.50
Transfer Price	12.50

(b) Selling price of a product is ₹5 per unit, variable cost is ₹3 per unit and fixed cost is ₹12,000. Calculate the break-even point in unit.

Answer:

Contribution=Sales-variable cost

=5-3

=2

Break-even point=Fixed cost/contribution per unit

=12,000/2
=6,000 units

(c) Bharat 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. Calculate 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

(d) 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?

Answer

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.

(e) State out-of-pocket cost.

Answer:

Out-of-Pocket Cost: This is the portion of the cost associated with an activity that involves cash payment to other parties, as opposed to costs which do not require any cash outlay, such as depreciation and certain allocated costs. Out-of-Pocket costs are very much relevant in the consideration of price fixation during trade recession or when a make-or-buy decision is to be made.

(f) State Cost Audit.

Answer:

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.

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

Answer:

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

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

(h) The Cost(C) of a firm is given by the function $C = x^3 + 12x^2 – 10x+5$, find the Average Cost, & Marginal cost and x being the output.

Answer:

Total Cost (C) = $x^3 + 12x^2 – 10x + 5$ (given)

Average Cost (C/x) = $x^2 + 12x – 10 + 5/x$

Marginal Cost (dc /dx) = $3x^2 + 24x – 10$

(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.

$16 – x^2 = 2x^2 + 4$

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)

Market Price $y= 16 - x^2$

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

(j) State the conditions for price discrimination.

Answer:

The price discrimination is possible if the following conditions are satisfied.

- **More than one Market:** There must be two or more than two separate markets otherwise the price discrimination is not possible. Different markets must be essential for charging different prices from different persons.
- **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.

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

(a)

(i) A radio manufacturing company finds that while it costs ₹6.25 each to make componenet X 273 Q, the same is available in the market at ₹5.75 each, with an assurance of continued supply. The breakdown of cost is:

Materials	**₹2.75 each**
Labour	**₹1.75 each**
Other Variable Costs	**₹0.50 each**
Depreciation and other Fixed Cost	**₹1.25 each**
Total Cost	**₹6.25 each**

(I) Should you make or buy?

(II) What would be your decision if the supplier offered the component at ₹4.85 each?

[3+2]

Answer:

(I) The variable cost of manufacturing a component is ₹5 calculated as follows:

Materials	₹2.75
Labour	₹1.75
Other Variable Costs	₹0.50
	₹5.00

The market price is ₹5.75. This is more than the variable cost by Re. 0.75. It is therefore not profitable to procure from outside because in any case the fixed costs will continue to be incurred. However, if the surplus capacity released on account of procuring the component from outside could be put to a more profitable use, it may be better to buy from outside rather than manufacturing the component.

(II) In case the supplier is prepared to supply the component at ₹4.85, there is saving of 15 paise in the variable cost too. Hence, it is profitable to procure from outside. The surplus capacity released may be put to some other profitable use.

(ii) Explain about Zero Based Budgeting. [6]

Answer:

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:

- evaluate and allot ranking of the activity against other activities competing for the same scarce resources, and
- 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:

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

(iii) A manufacturing concern, engaged in mass production produces standardized electric motors in one of its departments. From the following particulars of a job of 50 motors you are required to value the work-in-progress and finished goods. [5+4]

I. Costs incurred as per job card:

Particulars	₹
Direct Material	**75,000**
Direct Labour	**20,000**
Overheads	**60,000**

II. Selling price per motor: ₹4,500

III. Selling and distribution expenses are at 30% of sales value.

IV. 25 Motors are completed and transferred to finished goods.

V. Completion stage of work-in-progress:

Particulars	
Direct Material	**100%**
Direct Labour & Overheads	**60%**

Answer:

Statement of equivalent production and cost

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

Actual Cost of Production per Unit of Finished Goods

Particulars	₹
Direct Material	1,500
Labour & Overheads	2,000
Total	**3,500**

Market Value per Unit of Finished Goods

Particulars	₹
Selling price	4,500
Less: Selling & Distribution Overheads @ 30% of ₹4,500	1,350
Total	**3,150**

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

Value of Work-in-progress

Particulars	₹
Direct Material: ₹1,500 x 25 units	37,500
Labour & Overheads: ₹(3,150 – 1,500) × 15 units	24,750
Total	**62,250**

Value of Finished Goods Stock

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

(b)

(i) P Ltd. has two divisions; S and T. S transfer all its output to T, which finishes the work. Costs and revenues at various levels of capacity are as follows:

Output	S. cost	T Net revenues (i.e. revenue minus costs incurred in T)	Profit
Units	**₹**	**₹**	**₹**
600	**600**	**2,950**	**2,350**
700	**700**	**3,250**	**2,550**

800	**840**	**3,530**	**2,690**
900	**1,000**	**3,780**	**2,780**
1,000	**1,200**	**4,000**	**2,800**
1,100	**1,450**	**4,200**	**2,750**
1,200	**1,800**	**4,350**	**2,550**

Company profits are maximized at ₹2,800 with output of 1,000 units. If P Ltd. wish to select a transfer price in order to establish S and T as profit centres, what transfer price would motivate the managers of S and T together to produce 1,000 units, no more and no less?

P Ltd. wants that the transfer price should be set at ₹2.10 per unit. Comment on this proposal. [6+(4+1)]

Answer:

The transfer price will be notional revenue to S and notional cost to T.

- S will continue to produce more output until the costs of further production exceed the transfer price revenue.
- T will continue to want to receive more output from S until its net revenue from further processing is not sufficient to cover the incremental transfer price costs.

Output	Division S Incremental Costs	Division T Incremental Costs
Units	**₹**	**₹**
600	-	-
700	100	300
800	140	280
900	160	250
1,000	200	220
1,100	250	200
1,200	350	150

Since S will continue to produce more output if the transfer price exceeds the incremental costs of production, a price of at least ₹ 200 per 100 units (₹2 per unit) is required to 'persuade' the manager of S to produce as many as 1,000 units, but a price in excess of ₹ 250 per 100 units would motivate the manager of S to produce 1,100 units (or more).

By a similar argument, T will continue to want more output from S if the incremental revenue exceed the transfer costs from S. If T wants 1,000 units the transfer price must be less than ₹ 220 per 100 units. However, if the transfer price is lower than ₹ 200 per 100 units, T will ask for 1,100 units from S in order to improve its divisional profit further.

In summary

- The total company profit is maximized at 1,000 units of output.
- Division S will, want to produce 1,000 units, no more and no less, if the transfer price is between ₹ 2 and ₹ 2.50 (₹200 to ₹ 250 per 100 units).
- Division T will want to receive and process 1,000 units, no more and no less, if the transfer price is between ₹2 and ₹2.20

- A transfer price must therefore be selected in the range ₹2.00 to ₹2.20 per unit (exclusive).

If a price of ₹2.10 per unit is selected, profits at 1,000 units of output would be:

₹2.10			
Particulars	Division S	Division T	Total
Sales/net revenue	2,100	4,000	4,000
Costs	1,200	2,100	1,200
Profit	900	1,900	2,800

At a transfer price of ₹2.10 any increase in output above 1,000 units, or shortfall in output below this amount, would reduce the profits of the company as a whole, but also the divisional profits of S and T.

(ii) Relevant data relating to a Company are:

	Products			
	A	**B**	**C**	**Total**
Production and sales (Units)	**60,000**	**40,000**	**16,000**	
Raw material usage in units	**10**	**10**	**22**	
Raw material costs (₹)	**45**	**40**	**22**	**24,76,000**
Direct labour hours	**2.5**	**4**	**2**	**3,42,000**
Machine hours	**2.5**	**2**	**4**	**2,94,000**
Direct Labour Costs (₹)	**16**	**24**	**12**	
No. of production runs	**6**	**14**	**40**	**60**
No. of deliveries	**18**	**6**	**40**	**64**
No. of receipts	**60**	**140**	**880**	**1,080**
No. of production orders	**30**	**20**	**50**	**100**

Overheads:	**₹**
Setup	**60,000**
Machines	**15,20,000**
Receiving	**8,70,000**
Packing	**5,00,000**
Engineering	**7,46,000**

The Company operates a JIT inventory policy and receives each component once per production run.

Required:

I. Compute the product cost based on direct labour-hour recovery rate of overheads.

II. Compute the product cost using activity based costing. [2+5]

Answer:

I. Traditional method of absorption of overhead i.e. on the basis of Direct Labour Hours

$$\text{Total Overheads} = \frac{36,96,000}{[\text{Hours}(60,000 \times 2.5) + (40,000 \times 4) + (16,000 \times 2)}$$

= 36,96,000/3,42,000
= ₹10.81 per labour hour

Calculation of Factory cost of the products under Traditional Method of apportioning overheads:

	A	B	C
	₹	₹	₹
Raw Material	45.000	40.00	22.00
Direct Labour	16.000	24.00	12.00
Overheads (2.5 x 10.81)	27.025	43.24	21.62
Factory cost (Total)	88.025	107.24	55.62

II. Under Activity Based Costing System

Computation of Cost driver's rates

Cost Pool	Cost Driver	Cost per cost driver
Set up cost	No. of production run	60,000/ 60 = ₹ 1,000 per run
Machines	Machine hour rate	15,20,000/ 2,94,000 = ₹5.17 per machine hour
Receiving cost	No. of receipts	8,70,000/ 1,080 = ₹805.56
Packing	No. of deliveries	5,00,000/ 64= ₹7,812.5 per delivery
Engineering	No. of production order	7,46,000/ 100= ₹7,460 per order

(iii) List out the two limitation of Inter-firm Comparison. [2]

Answer:

- A sense of complacence on the part of the management who may be satisfied with the present level of profits.
- Absence of a proper system of Cost Accounting so that the costing figures supplied may not be relied upon for comparison purposes.

(c)

(i) A factory has a key resource (bottleneck) of Facility X which is available for 15,650 minutes per week. Budgeted factory costs and data on two products, A and B, are shown below:

Product	Selling price/Units	Material cost/Unit	Time in Facility X
A	**₹30**	**₹15.00**	**2.5 minutes**
B	**₹30**	**₹13.125**	**5 minutes**

Budgeted factory cost per week:

	₹
Direct labour	**18,750**
Indirect labour	**9,375**
Power	**1,312.5**
Depreciation	**16,875**

Space Costs	**6,000**
Engineering	**2,625**
Administration	**3,750**

Actual production during the last week is 2,375 units of product A and 325 units of product B. Actual factory cost was ₹58,687.5.

Calculate:

(I) Total factory costs (TFC)

(II) Cost per factory minute

(III) Return per factory minute for both products

(IV)TA ratios for both product

(V) Throughput cost per the week

(VI)Efficiency ratio **[1+1+3+2+1½+1½]**

Answer:

(I) Total factory cost= Total of all costs except materials.

= ₹18,750 + ₹9,375 + ₹1,312.5 + ₹16,875 + ₹6,000 + ₹2,625 + ₹3,750

= ₹58,587.5

(II) Cost per Factory Minute=Total Factory Cost÷ Minutes available

= ₹58,687.5 ÷ 15,650

=₹3.75

(III)

(a) Return per bottleneck minute for the product A= $\frac{\text{Selling Price} - \text{Material Cost}}{\text{Minutes in bottleneck}}$

= (30-15)/ 2.5

= ₹6

(b) Return per bottleneck minute for the product B= $\frac{\text{Selling price} - \text{Material Cost}}{\text{Minutes in bottleneck}}$

= (30 – 13.125)/ 5

= ₹3.375

(IV) Throughput Accounting (TA) Ratio for the product A= $\frac{\text{Return per Minute}}{\text{Cost per Minute}}$

= (6/ 3.375)

=₹1.778

Throughput Accounting (TA) Ratio for the product B= $\frac{\text{Return per Minute}}{\text{Cost per Minute}}$

= (3.375/ 3.75

=₹0.9

Based on the review of the TA ratios relating to two products, it is apparent that if we only made product B, the enterprise would suffer a loss, as its TA ratio is less than 1. Advantage will be achieved, when product A is made.

(V) Standard minutes of throughput for the week:

= [2,375 × 2.5] + [325 ×5]

= 5,937.5 + 1,625

=7,562.5 minutes

Throughput Cost per week:

=7,562.5 × ₹3.75 per minutes

=₹28,359.375

(VI) Efficiency % =(Throughput Cost/ Actual TFC) %

= (₹28,359.375/ ₹58,687.5) ×100

=48.323%

The bottleneck resource of facility A is advisable for 15,650 minutes per week but produced only 30,250 standard minutes. This could be due to:

- The process of a 'wandering' bottleneck causing facility A to be underutilized.
- Inefficiency in facility A.

(ii) The share of production and the cost-based fair price computed separately for a common product for each of the four companies in the same industry are as follows:

	A	B	C	D
Share of Production (%)	**40**	**25**	**20**	**15**
Costs:				
Direct materials (₹ /Unit)	**75**	**90**	**85**	**95**
Direct Labour (₹ /Unit)	**50**	**60**	**70**	**80**
Depreciation (₹ /Unit)	**150**	**100**	**80**	**50**
Other Overheads(₹ /Unit)	**150**	**150**	**140**	**120**
Total (₹ / Unit)	**425**	**400**	**375**	**345**
Fair Price (₹ /Unit)	**740**	**615**	**550**	**460**
Capital employed per Unit:				
(i) Net Fixed Assets(₹ /Unit)	**1,500**	**1,000**	**800**	**500**
(ii) Working Capital (₹ /Unit)	**70**	**75**	**75**	**75**
Total (₹ /Unit)	**1,570**	**1,075**	**875**	**575**

Required:

What should be the uniform price that should be fixed for the common product? [10]

Answer:

Assume Total Production = 100

	A	B	C	D	Total
Price	740	615	550	460	
(-)Cost	425	400	375	345	
Profit per unit	315	215	175	115	
Share of	40	25	20	15	

production(%)					
Total Return	12,600	5,375	3,500	1,725	23,200
Capital Employed	1,570 x 40	1,075 x 25	875 x 2	575 x 15	1,15,800

$\therefore$ Average Return on Capital Employed = $\frac{23,200}{1,15,800}$ = 20% (approx)

Calculation of Uniform Price

A	[425 + (20% of 1,570)] x 40	29,560
B	[400 + (20% of 1,075)] x 25	15,375
C	[375 + (20% of 875)] x 20	11,000
D	[345+ (20% of 575)] x 15	6,900
	Total Cost + Profit	62,835
	No. of Units	100

Uniform Price Per Unit $\left(\frac{62,835}{100}\right)$ = 628.35

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

(a) "It is not possible to merge Cost Audit with Financial Audit to have a Composite Audit." Discuss. [8]

Answer:

Even though there are considerable areas of overlapping between cost and financial records, a composite audit requirement between the two is not feasible on the following grounds:

- Different information systems – It is difficult to collect the accounting information required for cost ad financial audit purposes, in a single format.
- Objective of audit – The main objective of financial audit is to express an opinion on the truth and fairness of the information contained in the financial statements. But the main objective of cost audit is to verify the cost statements and see whether a true and fair cost of production and of marketing has been worked out.
- Focus of audit – Cost Audit focuses on review of information in respect of each cost element in detail. Hence, the focus of audit and review of information is much different from that of financial audit.
- Classification of accounting data – Financial Accounts present data under the natural accounting heads. However, Cost Records present information based on product lines and cost-centres.
- Confidentiality – The Financial Audit Report is too general and is made public as per the requirements of the Companies Act, 1956. The Cost Auditor Report may contain certain information which the Company considers confidential.
- Applicability – The maintenance of Cost Accounting Records by all types of industries may also not be practicable. At present, small-scale industrial undertakings are exempted from maintaining Cost Accounting Records, even of they belong to industry which is required to maintain Cost Records.

- Toll of management – Cost Audit can be considered as tool of internal management by a Company to operate effectively in a competitive environment by disclosing weaknesses in a cost accounting system and disclosing inefficiencies at all levels of organization. On the other hand, Financial Audit can give a picture of the overall results only.
- Extensive nature – The Cost Auditor does not have to state only whether the Cost Statements reflect a true and fair view, but has to go much beyond and express his opinion also on propriety and efficiency aspects.

(b)

(i) State the term Telecommunication Services and Write its coverage. [6]

Answer:

The Companies (Cost Records and Audit) Rules, 2014 has covered "Telecommunication services made available to users by means of any transmission or reception of signs, signals, writing, images and sounds or intelligence of any nature (other than broadcasting services) and regulated by the Telecom Regulatory Authority of India under the Telecom Regulatory Authority of India Act, 1997 (24 of 1997)". The Telecom Regulatory Authority of India Act, 1997 defines "telecommunication service" as "service of any description (including electronic mail, voice mail, data services, audio text service, video text services, radio paging and cellular mobile telephone services) which is made available to users by means of any transmission or reception of signs, signals, writing, images and sounds or intelligence of any nature, by wire, radio, visual or other electro-magnetic means but shall not include broadcasting services".

Subsequently, the Central Government has included broadcasting services within the ambit of telecommunication services by notifying "broadcasting services and cable services to be telecommunication service". [Notification No. 39 issued by Ministry of Communication and Information Technology dated 9 January 2004, S.O. No. 44(E) issued by TRAI, vide F. No. 13-1/2004].

In view of the above, Telecommunication Services made available to users and regulated by the Telecom Regulatory Authority of India under the Telecom Regulatory Authority of India Act, 1997 would include all such services being regulated by TRAI including broadcasting services.

(ii) 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 revel 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.

(c) 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.

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

(a)

(i) Explain going rate pricing. [5]

Answer.

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. No firm would like to "spoil" the common market by reducing the price.

(ii) The price of desktop computers was slashed from ₹50,000 to ₹25,000, and it was observed that the sale of printers went up from 50 printers per month to 150 printers per month. Determine the cross price elasticity between desktop and printers. [3]

Answer:

The cross price elasticity is as follows:

$$\frac{\Delta Q_x}{\Delta P_y} \times \frac{P_y}{Q_x}$$

First, we will compute ΔQ_x and ΔP_y as proportions of the average of the two data points.

So,

$$Q_x = \frac{50+150}{2} = 100$$

$$P_y = 37,500$$

$\Delta Q_x = 100$ and $\Delta P_y = 25,000$

So,

$$\frac{100}{-25,000} \times \frac{37,500}{100} = -1.5$$

The answer indicates that x and y are compliments.

(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:

(I) the output required per month to make the Marginal Profit = 0; and

(II) the Profit of this level of output [3+1]

Answer:

(I). Profit = $R(x)-C(x)=1100x-1.5x^2-\frac{x^3}{10}-200x$

$$=-\frac{x^3}{10}-1.5x^2+900x(\text{say}P)$$

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

Pr Marginal Profit (MP) = O (given)

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

=> $-3x^2 - 30x + 9000 = 0$

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

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

or, $x(x + 60) - 50(x + 60) = 0$

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.

$$-\frac{x^3}{10}-1.5x^2+900x$$

$$=-\frac{1,25,000}{10}-3,750+45,000=₹28,750\text{thousand}$$

(ii) The demand function for a particular brand of Pocket Calculators is $P = 75 - 0.3Q - 0.05Q^2$. Find the consumer's surplus at the quantity (Q) of 15 calculators. [4]

Answer:

$P = 75 – 0.3Q – 0.05Q^2$

At $Q = 15$, $P = 75 – 0.3 \times 15 – 0.05 \times 15^2$

= 59 .25 (on reduction)

Now $PQ = 59.25 \times 15 = 888.75$

Consumer's surplus = $=\int_0^{15}PdQ-PQ=\int_0^{15}\left(75-0.3Q-0.05Q^2\right)dQ-PQ$

$$=\left[75Q-0.3\frac{Q^2}{2}-0.05\frac{Q^3}{3}\right]_0^{15}-888.75$$

$$= \left[75 \times 15 - 0.3 \times \frac{15^2}{2} - 0.05 \frac{15^3}{3} \right] - 888.75$$

$$= 1035 - 888.75 = 146.25$$

Hence the consumer's surplus is 146.25

(c)

(i) Calculate the trend values by the method of least squares from the data given below and estimate the sales for the year 2014.

Year	2010	2011	2012	2013	2014
Sales	105	111	120	129	135

[4]

Answer:

Calculation of Trend values by Least Squares Method

Year (t)	Sales Y	Time deviation(X)	XY	X^2	Trend values Y_c
2010	105	-2	-210	4	104.4
2011	111	-1	-111	1	112.2
2012	120	0	0	0	120.0
2013	129	+1	+129	1	127.8
2014	135	+2	+270	4	135.6
N= 5	**$\sum Y$ = 600**	**$\sum X$ = 0**	**$\sum XY$= 78**	**$\sum X^2$ = 10**	**$\sum Y_c$ = 600**

Equation of Trend line = $Y_C = a + bX \Rightarrow Y_C = a + (t-2012)$

Since X=0, $a = \sum Y/N = 120$

$b = \sum XY / \sum X^2 = 7.8$

The equation of Straight line would be Y = 120 + 7.8X. The value of Y when X = 2014 or in terms of deviation X = +5

$Y_{2014} = 120 + (7.8 \times 5) = 120 + 39 = 159$

Trend value for 2010= 120 + (2010 – 2011) x 7.8 = 104.4

Similarly trend values for 2011, 2012 etc have been calculated.

(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:

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

Efficiency $(E) = \frac{-W^3}{400} + 3W - 392$

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

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

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

Maximum Efficiency at W = 20

Hence the Strength of Workers = 20

(d) Describe the pricing policies for introduction stage of a new product. [8]

Answer:

There are two alternative price strategies which a firm introducing a new product can adopt, viz., skimming price policy and penetration pricing policy.

A. Skimming Price Policy:

When the product is new but with a high degree of consumer acceptability, the firm may decide to charge a high mark up and, therefore, charge a high price. The system of charging high prices for new products is known as price skimming for the object is to "skim the cream" from the market. There are many reasons for adopting a high mark-up and, therefore, high initial price:

- The demand for the new product is relatively inelastic. The high prices will not stop the new consumers from demanding the product. The new product, novelty, commands a better price. Above all, in the initial stage, there is hence cross elasticity of demand is low.
- If life of the product promises to be a short one, the management may fix a high price so that it can get as much profit as possible and, in as short a period as possible.
- Such an initially high price is also suitable if the firm can divide the market into different segments based on different elasticity's. The firm can introduce a cheaper model in the market with lower elasticity.
- High initial price may also be needed in those cases where there is heavy investment of capital and when the costs of introducing a new product are high. The initial price of a transistor radio was ₹ 500 or more (now ₹ 50 or even less); electronic calculators used to cost ₹ 1,000 or more, they are now available for ₹ 100 or so.

B. Penetration Price Policy:

Instead of setting a high price, the firm may set a low price for a new product by adding a low mark-up to the full cost. This is done to penetrate the market as quickly as possible. The assumptions behind the low penetration price policy are:

- The new product is being introduced in a market which is already served by well-known brands. A low price is necessary to attract gradually consumers who are already accustomed to other brands.
- The low price will help to maximize the sales of the product even in the short period. The low price is set in the market to prevent the entry of new products.

Penetration price policy is preferred to skimming price under three conditions:

In the first place, skimming price offering a high margin will attract many rivals to enter the market. With the entry of powerful rivals into the market, competition will be intensified, price will fall and profits will be competed away in the long run. A firm will prefer a low penetration price if it fears the entry of powerful rivals with plenty of capital and new technology. For a low penetration price, based on extremely low mark-up will be least profitable and potential competitors will not be induced to enter the market.

Secondly, a firm will prefer low penetration price strategy if product differentiation is low and if rival firms can easily imitate the product. In such a case, the objective of the firm to fix low price is to establish a strong market based and build goodwill among consumers and strong consumer loyalty.

Finally, a firm may anticipate that its main product may generate continuing demand for the complementary items. In such a case, the firm will follow penetration pricing for its new product, so that the product as well as its complements will get a wider market.