Paper 10 - Cost & Management Accountancy

1. Answer all questions :

(i) Deerbound Manufacturing transferred₹3,000,000 of raw materials into production during the most recent year. Direct labor and factory overhead for the period totaled ₹20,00,000. Beginning work in process was ₹6,70,000 and ending work in process was ₹8,50,000. Finished goods inventory decreased by ₹50,000. If gross profit was ₹16,00,000, how much was sales for the period? **(2)**

Solution :
Total manufacturing costs were ₹50,00,000 (₹30,00,000 + ₹20,00,000). Of this total cost entering production,₹48,20,000 was transferred to finished goods (the other ₹1,80,000 remained in work in process (₹8,50,000 - ₹6,70,000)).

Given that finished goods inventory decreased, the total cost of goods sold was ₹48,70,000 (₹48,20,000 transferred into finished goods + ₹50,000 decrease in finished goods).

Total sales equaled ₹64,70,000 (₹48,70,000 cost of goods sold + ₹16,00,000 gross profit)

(ii) Coal India Ltd. (CI) owns the rights to extract minerals from Jharkhand state. CI has costs in three areas:
  i. Payment to a mining subcontractor who charges₹4,000 per ton of coal mined and returned to the beach (after being processed on the mainland to extract three minerals – ilmenite, rutile, and zircon).
  ii. Payment of a government mining and environmental tax of₹ 3,000 per ton of coal mined.
  iii. Payment to a barge operator. This operator charges₹ 1,50,000 per month to transport each batch of coal up to 100 tons per batch per day to the mainland and ten return to Jharkhand State (i.e., 0-100 tons per day₹1,50,000 per month; 101 – 200 tons per day =₹ 3,00,000 per month, and so on.) Each barge operates 25 days per month. The₹ 50,000 monthly charge must be paid even if fewer than 100 tons are transported on any day and even if Coal India Ltd. requires fewer than 25 days of barge transportation in that month.)

What is the unit cost per ton of coal mined (a) if 180 tons are mined each day, or (b) if 220 tons are mined each day? Explain the difference in the unit-cost figures. **(3)**

Solution:

	Tons Mined per day (1)	Tons Mined per Month (2) = (1) x 25	Fixed Unit Cost per Ton (3) = FC ÷ (2)	Variable Unit Cost per Ton (4)	Total Unit Cost per Ton (5) = (3) + (4)
(a)	180	4,500 =₹ 66.67	₹ 3,00,000 ÷ 4,500	₹ 7,000	₹ 7,066.67
(b)	220	5,500 =₹ 81.82	₹ 4,50,000 ÷ 5,500	₹ 7,000	₹ 7,081.82

The unit cost for 220 tons mined per day is ₹ 7,081.82, while for 180 tons it is only ₹ 7,066.67. This difference is caused by the fixed cost increment from 101 to 200 tons being spread over an increment of 80 tons, while the fixed cost increment from 201 to 300 tons is spread over an increment of only 20 tons.

(iii) List the non-cost considerations in a shut-down or continue decision. (3)

Answer :
The non-cost considerations are as follows:
  (i)   Loss of market share to competition
  (ii)   Loss of goodwill and market image.
  (iii)   Strain in labour management relations.
  (iv)   Availability of skilled labour on re-opening.
  (v)   Risk of obsolescence of machinery.
  (vi)   Need to maintain machine in operating condition.
  (vii) Arrangement of finance for compensation payable on retrenchment, if any.

(iv) What are the limitations of ZBB ? (2)

Answer:
The limitations are as follows:
  (i)   Lack of co-ordination: Various operational problems are likely to be faced in implementing the technique of ZBB. It requires the wholehearted support from Top Management.
  (ii)   Old is gold attitude: Generally, managers are reluctant to start afresh. They tend to plan for future just by reference to past actions and budgets.
  (iii)   Time consuming: It is time consuming as well as costly. It needs properly trained managerial personnel to do the required job.
  (iv)   Lack of adequate data : ZBB requires data for justifying the allocation of resources to various alternatives in every period. Sometimes, this data may not be available for analysis.

(v) A Company manufacturing Cotton Textiles, wrote off in the same year the expenditure in replacement of Copper Rollers used for Printing Fabrics and Stainless Steel Frames used for Drying Yarn. Whether the Cost Auditor can qualify the report for these? (2)

Answer:
The Cost Auditor is justified in qualifying his report because according to Cost Accounting Records (Textiles) Rules, cost of items like Copper Rollers used for printing fabrics and the stainless steel frames used for dying yarn put into use in the relevant year shall be treated as deferred revenue expenditure and spread over the effective life of such items. Thus writing off such items in the same year.

(vi) A person is doing Internal Audit on one of the factories manufacturing 'Cement' in a company. He was proposed for appointment as Cost Auditor in another factory of the same company manufacturing cement for the same period. Is this appointment as Cost Auditor 'In Order'? (2)

Answer:
A Cost Auditor can be appointed separately for each factory. If a person is working as an Internal Auditor of one factory, there is no objection on the same person working as a Cost Auditor of another factory of the same company, even though both factories are manufacturing the same product.

(vii)Given the following data:
WIDGETS P = 80 - Q (Demand)
P = 20 + 2Q (Supply)
Now suppliers must pay a tax of ₹6 per unit. Find the new equilibrium price-inclusive price and quantity. (3)

Solution:

Now suppliers do not get the full price when they make a sale - they get ₹6 less. This changes our supply curve to: P - 6 = 20 + 2Q (Supply)

P = 26 + 2Q (Supply)

To find the equilibrium price, set the demand and supply equations equal to each other:

80 - Q = 26 + 2Q

54 = 3Q

Q = 18

Thus our equilibrium quantity is 18. To find our equilibrium (tax inclusive) price, we substitute our equilibrium quantity into one of our equations. We'll substitute it into our demand equation:

P = 80 - Q

P = 80 - 18

P = 62

Thus the equilibrium quantity is 18, the equilibrium price (with tax) is ₹ 62, and the equilibrium price without tax is ₹ 56. (62-6)
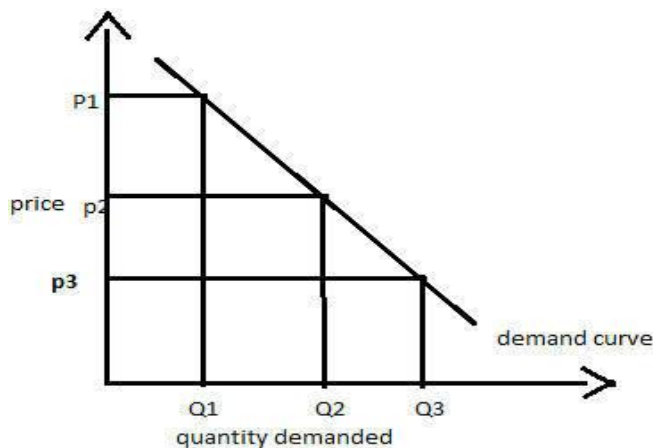
(viii)   What is Law of Demand?   (3)
Solution:

The law of demand states that other factors being constant (cetris peribus), price and quantity demand of any good and service are inversely related to each other. When the price of a product increases, the demand for the same product will fall.

Law of demand explains consumer choice behavior when the price changes. In the market, assuming other factors affecting demand being constant, when the price of a good rises, it leads to a fall in the demand of that good. This is the natural consumer choice behavior. This happens because a consumer hesitates to spend more for the good with the fear of going out of cash.

The above diagram shows the demand curve which is downward sloping. Clearly when the price of the commodity increases from price p3 to p2, then its quantity demand comes down from Q3 to Q2 and then to Q3 and vice versa.

Section A – Answer any two questions from this section

2. (a) A company fixes the inter-divisional transfer prices for its products on the basis of cost plus and estimated return on investment in its division. The relevant portion of the budget for the Division A for the year 2012-13 is given below :

	₹
Fixed assets	5,00,000
Current assets (other than debtors)	3,00,000
Debtors	2,00,000
Annual fixed cost of the division	8,00,000
Variable cost per unit of product	10
Budgeted volume of production per year (units)	4,00,000
Desired return on investment	28%

You are required to determine the transfer price for the division A. (4)

Answer:

Statement showing the transfer price for Division A

Particulars	₹	₹
Fixed assets		5,00,000
Working capital – Current assets	3,00,000	
- Debtors	2,00,000	5,00,000
Total Investment		10,00,000
Desired Rate of Return		28%
Total Return (i.e. profit) ₹ 10,00,000 x 28%		2,80,000
Budgeted Production p.a. (units)		4,00,000
Return per unit (2,80,000/4,00,000)		0.70
Variable cost per unit		10.00
Fixed Cost per unit (8,00,000 /4,00,000)		2.00
Transfer price for Div A		12.70

So, the transfer price is ₹ 12.70

(b) ABC Limited manufactures two radio models, the Nova which has been produced for five years and sells for ₹ 900, and the Royal, a new model introduced in early 2012, which sells for ₹1,140. Based on the following Income statement for the year 2012-13, a decision has been made to concentrate ABC Limited's marketing resources on the Royal model and to begin to phase out the Nova model.

ABC Limited
Income Statement for the year ended March 31, 2013

	Royal Model	Nova Model	Total
	₹	₹	₹
Sales	45,60,000	1,98,00,000	2,43,60,000
Cost of Goods sold	31,92,000	1,25,40,000	1,57,32,000
Gross margin	13,68,000	72,60,000	86,28,000
Selling& Administrative Expenses	9,78,000	58,30,000	68,08,000
Net Income	3,90,000	14,30,000	18,20,000
Unit Produced and sold	4,000	22,000	
Net Income per unit sold	97.50	65	

The standard unit costs for the Royal and Nova models are as follows:

	Royal Model	Nova Model
	₹	₹
Direct materials	584	208
Direct Labour		
Royal (3.5 hrs x ₹ 12)	42	
Nova (1.5 hrs x ₹ 12)		18
Machine usage		
Royal (4 hrs x ₹ 18)	72	
Nova (8 hrs x ₹ 18)		144
Manufacturing overheads (applied on the basis of machine hours at a pre-determined rate of ₹ 25 per hour)	100	200
Standard Cost	798	570

ABC Ltd.'s Controller is advocating the use of activity-based costing and activity-based cost management and has gathered the following information about the company's manufacturing overheads cost for the year ended March 31, 2013.

Activity centre (Cost driver)	Traceable Costs (₹)	Number of Events		
		Royal	Nova	Total
Soldering (Number of solder joints)	9,42,000	3,85,000	11,85,000	15,70,000
Shipments (Number of shipments)	8,60,000	3,800	16,200	20,000
Quality control (Number of Shipments)	12,40,000	21,300	56,200	77,500
Purchase orders (Number of orders)	9,50,400	1,09,980	80,100	1,90,080
Machine Power (Machine hours)	57,600	16,000	1,76,000	1,92,000
Machine setups (Number of setups)	7,50,000	14,000	16,000	30,000
Total Traceable costs	48,00,000			

Required:
  (i) Prepare a Statement showing allocation of manufacturing overheads using the principles of activity-based costing.
  (ii) Prepare a Statement showing product cost profitability using activity-based costing.
  (iii) Should ABC Ltd. continue to emphasize the Royal model and phase out the Nova model? Discuss.   (4+4+2 = 10)

Solution:
Statement Showing Allocation of Manufacturing Overheads Using Principles of Activity Based Costing.

Activity Center	Traceable cost ₹	Cost allocation basis	Cost Allocation	
			Royal ₹	Nova ₹
Soldering	9,42,000	385:1185	2,31,000	7,11,000
Shipments	8,60,000	38:162	1,63,400	6,96,600
Quality control	12,40,000	213:562	3,40,800	8,99,200
Purchase orders	9,50,400	109980:80100	5,49,900	4,00,500
Machine power	57,600	16:176	4,800	52,800
Machine set ups	7,50,000	14:16	3,50,000	4,00,000
	48,00,000		16,39,900	31,60,100
Units produced and sold			4,000	22,000
Manufacturing Overheads Cost per unit			₹ 409.98	₹ 143.64

(ii) Statement Showing Product Cost and Profitability using Activity Based Costing

	Royal Per Unit Cost ₹	Nova Per Unit Cost ₹	Total ₹
Standard cost other than manufacturing OHs cost	698	370	
Manufacturing OHs using activity-based costing	409.98	143.64	
Cost	1,107.98	513.64	
Selling Price/unit	1,140	900	
Gross Margin / unit	32.02	386.36	
Gross Margin	1,28,080	84,99,920	86,28,000
Selling & Adm. Expenses	9,78,000	58,30,000	68,08,000
Net Income	**(8,49,920)**	**26,69,920**	**18,20,000**

(iii) Novo Model should continue to be bread and butter product and Royal model should not be over-emphasized; rather it's pricing is required to be corrected.

c) What are the characteristics of Product Life Cycle? **(6)**

Answer:
The major characteristics of Product Life cycle (PLC) concepts are as follows:
- **(i) Finite Lives:** The products have finite lives and pass through the cycle of development, introduction, growth, maturity, decline and deletion at varying speeds.
- **(ii) Follow Predictable Courses:** Product cost, Revenue and profit patterns tend to follow predictable courses through the PLC. Profits first appear during the Growth Phase, and after stabilizing during the Maturity phase, declining at the point of deletion.
- **(iii) Profits per Unit Vary:** Profits per unit vary as products move through their life cycles.
- **(iv) Different Opportunities and Threats:** Each phase of the PLC poses different opportunities and threats that give rise to different strategic actions.
- **(v) Different Functional Emphasis in Each Phase:** Products require different functional emphasis in each phase, e.g. R&D emphasis in development phase and cost control emphasis in decline phase.
- **(vi) Extend the Life Cycle:** Finding new uses or new users or getting the present users to increase their consumption, may extend the life cycle of the product.

3. **(a) A construction company undertook a contract at an estimated price of ₹108 lacs, which includes a budgeted profit of ₹ 18 lacs. The relevant data for the year ended 31.03.2013 are as under:**

	(₹ '000)
Materials issued to site	5,000
Direct wages paid	3,800
Plant hired	700
Site office costs	270
Materials returned from site	100
Direct expenses	500
Work certified	10,000
Progress payment received	7,200

A special plant was purchased specifically for this contract at ₹8,00,000 and after use on this contract till the end of 31.03.2013, it was valued at ₹5,00,000. This cost of materials at site at the end of the year was estimated at ₹ 18,00,000. Direct wages accrued as on 31.03.2013 was ₹ 1,10,000.
Required:
Prepare the Contract Account for the year ended 31st March, 2013 and compute the profit to be taken to the Profit and Loss account. **(6)**

Solution:

(a) Contract Account for the year ended 31st march, 2013

Dr.				Cr.
Particulars	₹'000	Particulars	₹'000
To Materials issued at site	5,000	By materials at site	1,800
To Direct wages	3,800	By materials Returned	100
To Wages accrued	110		
To Plant hire	700	By cost of contract	8,780
To Site Office Costs	270		
To Direct expenses	500		
To Depreciation of Special Plant	300		
	10,680		**10,680**
To cost of contract	8,780	By work certified	10,000
To Profit & Loss A/c	1,200		

(Refer to working note 2)			
To Work – in – progress c/d	20		
(profit in reserve)	**10,000**		**10,000**

Working notes

(i)   Percentage of contract completion

$$= \frac{\text{Cost of work certified}}{\text{Value of the contract}} \times 100$$

$$= \frac{100 \text{ lacs}}{108 \text{ lacs}} \times 100 = 92.59\%$$

(ii)   Since the percentage of contract completion is more than 90% therefore the profit to be taken to profit and Loss Account can be computed by using the following formula.

Profit to be taken to P & L A/c = Budged/ Estimated profit $\times \frac{\text{Cash received}}{\text{Work certified}} \times \frac{\text{Work certified}}{\text{Contract Price}}$

$$= 1,800 \times \frac{7,200}{10,000} \times \frac{10,000}{10,800}$$

$$= 1,800 \times \frac{7,200}{10,800}$$

$$= ₹1,200$$

(b) A company produces two joint products X and Y, from the same basic materials. The processing is completed in three departments.

Materials are mixed in department I. At the end of this process X and Y get separated. After separation X is completed in the department II and Y is finished in department III. During a period 2,00,000 kgs of raw material were processed in department I, at a total cost of ₹ 8,75,000, and the resultant 60% becomes X and 30% becomes Y and 10% normally lost in processing.

In department II 1/6 of the quantity received from department I is lost in processing. X is further processed in department II at a cost of ₹ 1,80,000.

In department III further new material added to the material received from department I and weight mixture is doubled, there is no quantity loss in the department and further processing cost (with material cost) is ₹1,50,000.

The details of sales during the year:

	Product X	Product Y
Quantity sold (kgs)	90,000	1,15,000
Sales price per kg (₹)	10	4

There were no opening stocks. If these products sold at split-off-point, the selling price of X and Y would be ₹ 8 and ₹ 4 per kg respectively.

Required:

(i)   Prepare a statement showing the apportionment of joint cost to X and Y in proportion of sales value at split off point.

(ii)   Prepare a statement showing the cost per kg of each product indicating joint cost, processing cost and total cost separately.

(iii) Prepare a statement showing the product wise profit for the year.

(iv) On the basis of profits before and after further processing of product X and Y, give your comment that products should be further processed or not.

(2+3+2+2=9)

Solution:

Calculation of quantity produced

Particulars	Dept I	Dept II	Dept III
Input (kg)	2,00,000	1,20,000	60,000
Weight lost or added	(20,000)	(20,000)	60,000
	1,80,000	1,00,000	1,20,000
Production of X	1,20,000	1,00,000	
Production of Y	60,000		1,20,000

(i) Statement of apportionment of joint cost

(Joint cost ₹ 8,75,000)

Particulars	Product X	Product Y
Output (kg)	1,20,000	60,000
Selling price per kg. (Rs.)	8	4
Sales value (₹)	9,60,000	2,40,000
Share in Joint cost (4:1)	7,00,000	1,75,000

(ii) Statement of cost per kg.

Particulars	Product X	Product Y
Share in joint cost (₹)	7,00,000	1,75,000
Output (kg)	1,00,000	1,20,000
Cost per kg (₹) (Joint cost)	7.00	1.458
Further processing cost per kg (₹)	1.80	1.250
Total cost per kg. (₹)	8.80	2.708

(iii) Statement of Profit

Particulars	Product X	Product Y
Output (kg)	1,00,000	1,20,000
Sales (kg)	90,000	1,15,000
Closing Stock	10,000	5,000

Particulars	₹	₹
Sales @ ₹10, 4 (for product X and Y)	9,00,000	4,60,000
Add: closing stock (kg) (at full cost)	88,000	13,540
Value of production	9,88,000	4,73,540
Less: Share in joint cost	7,00,000	1,75,000
Further processing	1,80,000	1,50,000
Profit	1,08,000	1,48,540

(iv) Profitability statement, before and after processing

Particulars	Product X Before (₹)	Product X After (₹)	Product Y Before (₹)	Product Y After (₹)
Sales Value	9,60,000		2,40,000	
Share in joint costs	7,00,000		1,75,000	
Profit	2,60,000	1,08,000	65,000	1,48,540
		(as per iii above)		(as per iii above)

Product X should be sold at split off point and product Y after processing because of higher profitability.

(c) List a few reasons of Material Price Variance (5)

Answer:

Controllable	Non- controllable
1. Failure to purchase the quantities anticipated when standards were set, resulting in higher prices and loss of discounts.	**1.** Changes in basic price of materials.
2. Not availing cash discount, when standards are set in anticipation of receiving cash discounts.	**2.** Changes in related charges like Transport costs.
3. Failure to buy the standard quality of materials resulting in different prices being paid, despite availability of materials in the market.	**3.** Failure to buy the standard quality of materials, resulting in a different price being paid.
4. Deficiencies in price negotiation.	

4.a) Gadgets Ltd. manufactures and sells one product only. The budgeted volume of production and sales is 70,000 units per month. The standard selling price is ₹ 4 per unit. The standard costs are as follows :

Variable:	Materials	₹	1.00
	Labour		0.50
Fixed:	Overheads		2.25
	Total		3.75

The company carries a substantial stock of finished units at all times. The following statement has been prepared covering the first three months' trading of the current year:

	Month 1	Month 2	Month 3
Units produced	80,000	50,000	80,000
Units sold	80,000	70,000	60,000
Sales	₹ 3,20,000	₹ 2,80,000	₹ 2,40,000
Standard cost of production	3,00,000	1,87,500	3,00,000
Stock transfer		75,000	(75,000)
Standard cost of sales	3,00,000	2,62,500	2,25,000
Standard profit	20,000	17,500	15,000

In the opinion of the Sales Director, sales are likely to continue for the rest of the year at an average rate of 60,000 units per month. The Managing Director, although somewhat disappointed at this figure, says that the company is not likely to suffer with a monthly profit less than ₹ 15,000 and asks you to confirm his view.

You are required to write a brief memorandum to the Managing Director commenting on his view and setting out the position as you see it. (10)

Solution:

From
Mr. X
Management Accountant

To,
The Managing Director,
Gadgets Ltd.
New Delhi

Sub : Effect of reduced sales on profitability

Dear Sir,

This is in response to your request for my opinion on the likely effect of reduced sales level of 60,000 units on company's profits. Accordingly, I am submitting herewith a statement comparing the original monthly budget with the revised budget:

		Original Monthly Budget		**Revised Monthly Budget**	
Sales (units)		70,000		60,000	
1.	Sales value	₹ 2,80,000		₹ 2,40,000	
2.	Less : Variable costs :				
	Material	70,000		60,000	
	Labour	35,000	1,05,000	30,000	90,000
3.	Contribution (1-2)		1,75,000		1,50,000
	Fixed overhead		1,57,500		1,57,500
4.	Net profit (loss)		17,500		(7,500)

The above statement shows that due to fall in sales by 10,000 units, the profit gets reduced by ₹ 25,000 resulting in a net loss of ₹ 7,500. This is contrary to the original conclusion that the company would be able to maintain minimum profit of ₹ 15,000. The reason for this discrepancy is due to budgeted fixed overhead being originally apportioned over 70,000 units in order to arrive at a total unit cost. Inclusion of fixed overhead in determining unit cost unfortunately tend to distort profits, when the budgeted sales are not achieved. Therefore, the statement for the first three months has been revised to show the incidence of fixed overhead alongwith a year-end projection as follows :

	Month 1	**Month 2**	**Month 3**	**Annual projection ***
Production (units)	80,000	50,000	80,000	7,50,000
Sales (units)	80,000	70,000	60,000	7,50,000
Sales value @ ₹ 4 per unit	3,20,000	2,80,000	2,40,000	30,00,000
Standard variable cost (₹ 1.50 per unit)	1,20,000	1,05,000	90,000	11,25,000
Contribution	2,00,000	1,75,000	1,50,000	18,75,000
Budgeted fixed overhead	1,57,500	1,57,500	1,57,500	1,57,500
Budgeted net profit (loss)	42,500	17,500	(7,500)	(15,000)

*Total of 3 months = 2,10,000 units
For 9 months (60,000 x 9) = 5,40,000
7,50,000

The revised monthly budget shows a net loss of ₹ 7,500 whereas as per annual projections, the net loss is ₹ 15,000. The B.E. Sales (in units) is 63,000 (Fixed cost 1,57,500 ÷ contribution per unit ₹ 2.50). If there is reduction of 10% in sales volume of ₹ 70,000, then company will incur further loss. Therefore efforts should be made to reduce the fixed cost or reduce variable cost. The management should concentrate on investigation of controllable variances. Every possible effort should be made to increase the unit selling price, alternative use of surplus capacity and finding additional markets for existing products. Pricing at marginal cost may be considered for export pricing purpose in the short run. You are, therefore, advised to consider all the above factors before arriving at the final conclusions.

(b) A retail dealer in garments is currently selling 24,000 shirts annually. He supplies the following details for the year ended 31st March 2009.

> **Selling price per shirt: ₹800**
> **Variable cost per shirt: ₹600**
> **Fixed Cost:**
> **Staff salaries: ₹24,00,000**

General Office Cost : ₹ 8,00,000

Advertising Cost: ₹ 8,00,000

As a Cost Accountant, you are required to answer the following each part independently:

  i. Calculate Break Even Point and margin of safety in sales revenue and number of shirts sold.

  ii. Assume that 30,000 shirts were sold during the year, find out the net profit of the firm.

  iii. Assuming that in the coming year, an additional staff salary of ₹ 10,00,000 is anticipated, and price of shirt is likely to be increased by 15%, what should be the break- even point in number of shirts and sales?   **(3+2+2 = 7)**

Solution:

i) Break Even Point: [units]   = Fixed Cost / Contribution Per Unit

            = ₹40, 00, 000/₹ 200

            = 20 000 number of shirts

Note: Contribution per units is selling price – variable cost per unit

            =₹ 800 – ₹ 600 = ₹ 200

Break Even Point [sales value] = 20000 units - ₹800 = ₹1, 60, 00, 000

Margin of safety   = Actual Sales – Break Even Sales

            = (24, 000 shirts x ₹800) – ₹ 1,60,000

            = ₹1, 92, 00, 000 – ₹1, 60, 00, 000

            = ₹32, 00, 000

Margin of safety [units] = 24, 000 shirts – 20, 000 shirts = 4000 shirts

ii) Amount of profit if 30, 000 shirts are sold:

Sales [units] = Fixed Cost + Profit / Contribution Per Unit

Or, 30, 000 = ₹40, 00, 000 + Profit /₹200

Or, Profit = ₹20, 00, 000

iii) Revised Break Even Point if fixed cost rise by ₹10, 00, 000 and selling price increase by 15% :

New selling price = ₹800 + 15% = ₹920,

New fixed cost = ₹40, 00, 000 + ₹10, 00, 000   = ₹50,00,000

Revised Break Even Point [number of shirts] = ₹50,00,000 / ₹920 – ₹600

            = 15,625 shirts

Break Even Point (₹) = 15, 625 x ₹920 = ₹1,43,75, 000

(c) What are the essential pre-requisites of integrated accounting system?   (3)

Answer:

Essential pre-requisites of Integrated Accounting System:

The essential pre-requisites of integrated accounting system include the following:

  (i) The management's decision about the extent of integration of the two sets of books. Some concerns find it useful to integrate upto the stage of primary cost or factory cost while other prefer full integration of the entire accounting records.

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

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

(iv) Perfect coordination should exist between the staff responsible for the financial and cost aspects of the accounts and an efficient processing of accounting documents should be ensured.

Under this system there is no need for a separate cost ledger. Of course, there will be a number of subsidiary ledgers; in addition to the useful Customers Ledger and the Bought Ledger, there will be : (a) Stores Ledger; (b) Stock Ledger and (c) Job Ledger.

Section B – Answer any one question from this section

5. (a) Under what conditions, will the appointment of Cost Auditor for conducting Cost Audit be appointed in firm's name? Who will authenticate such reports and how? Can the appointment of proprietary firms also be appointed? **(2+2+2)**

Answer.
Appointment of Cost Auditor under a firm's name will be subjected to the following conditions :
   (i) All the partners of the firm are full time Cost Accounting Practitioners within the Meaning of Secs 6 & 7 of the Cost And Works Accountants Act, 1959.
   (ii) The firm must have constituted with the previous approval of Central Government or of the Central Council of ICAI.
The cost audit report shall be signed by any one partner of the firm responsible for the conduct in his own hand for and on behalf of the firm. In any case the report should not be signed by merely offering the firm's name.

(b) A company is exporting 80% of its sales and 20% is domestic sale. Can this company be exempted from the mandatory cost audit? **(3)**

Answer.
The exemption from mandatory cost audit is available only to those 100% EOUs who are registered under the policy document as per the Foreign Trade Policy and which are functioning within the permissible approved limit as per the said Policy. The DTA (Domestic Tariff Area) sales should not exceed the permissible limits as per the policy in force.

If the percentage of domestic sales is within the DTA limit, the company will be exempted from mandatory cost audit. It may be noted that if DTA sales for any year exceeds the permissible limits, then the exemption from cost audit available to the unit shall be withdrawn and the unit will be subjected to cost audit in accordance with the provisions of applicable rules/orders starting with the year in which exemption stood withdrawn and for every subsequent year thereafter.

(c) The profit as per financial accounts of XY Cement Ltd. For the year 2011-2012 was ₹ 1,34,27,561. The profit as per Cost Accounting Records for the same period was more. You are required to prepare a reconciliation statement and arrive at the profit as per Cost Accounts. The following details are collected from the financial accounting schedules and cost accounting records. **(7)**

Particulars	Financial Accounts (₹)	Cost Accounts (₹)
Value of stock :		
Opening Balance : W.I.P.	29,52,315	23,45,720
Finished Goods	2,48,37,410	2,72,16,930

Closing Balance : W.I.P.	41,72,635	36,35,345
Finished Goods	3,67,51,410	4,15,24,148
Interest Income from Inter-Company Deposits	6,14,250	-
Donation gives	4,75,250	-
Loss on sale of Fixed Assets	1,04,148	-
Value of cement taken for own consumption	3,75,920	3,45,200
Cost of Power drawn from own wind mill:		
- E.B. Tariff	-	48,58,415
- At Cost	34,10,420	-

Solution.
Reconciliation of Financial Profit and Costing Profit

	₹	₹
Profit as per financial accounts		1,34,27,561
Add : Difference in stock valuation	24,62,523	
Loss on sale of fixed assets	1,04,148	
Donations not considered in Cost A/cs.	4,75,250	30,41,921
		1,64,69,482
Less : Interest income from inter-corporate deposits	6,14,250	
Differences in value of cenvat taken for own consumption	30,720	
Difference in valuation of wind mill power	14,47,995	20,92,965
Profit as per Cost Accounts		1,43,76,517

Note : Computation of difference in valuation of stock

	Financial A/c.	Cost A/c.
Opening (WIP + FG)	2,77,89,725	2,95,62,650
Closing (WIP + FG)	4,09,24,045	4,51,59,493
Increase	1,31,34,320	1,55,96,843

The increase is higher in Cost A/cs and hence the Cost Accounts profit would be more than the Financial Profit by (₹ 1,55,96,843 - ₹ 1,31,34,320) i.e. ₹ 24,62,523.

6.   (a) As a Cost Auditor, suggest different measures to rectify imbalance in production facilities.   (5)

Answer.
Different measures for rectifying imbalances in production facilities could be listed as below :
   (i)   Outsource/ sub-contract outside the company that part of the job, which is restricting the production.
   (ii)   Introduce shift working among the operatives.
   (iii) Replacing entire existing plant by a new automatic plant, in case there is consistent imbalance in the production facilities.
   (iv)   Idle equipment should be sold so that entire attention can be focused on the critical equipment.
   (v)   Install balancing equipment with higher output potential.

(b) The following figures are extracted from the statement prepared by the cost Accountant and the Trial balance of XYZ., which is a single product company:

Particulars		Year ending	
	31.03.12	31.03.11	31.03.10
		(₹ In Lakhs)	
Gross sales inclusive of Excise Duty	2,040	1,985	1,875
Excise Duty	295	280	265

	1,140	1,060	975
Raw Materials consumed	**1,140**	**1,060**	**975**
Direct Wages	**35**	**32**	**27**
Power and Fuel	**30**	**27**	**24**
Stores and Spares	**6**	**5**	**4**
Depreciation charged to production cost centers	**16**	**15**	**13**
Factory overheads:			
Salaries and Wages	**5**	**4**	**3**
Depreciation	**2**	**2**	**2**
Rates and taxes	**1**	**1**	**1**
Other overheads	**6**	**5**	**4**
Administrative overheads:			
Salaries and wages	**10**	**9**	**8**
Rate and Taxes	**2**	**2**	**2**
Other overheads	**162**	**154**	**148**
Selling and distribution overheads:			
Salaries and Wages	**7**	**6**	**5**
Packing and Forwarding	**6**	**6**	**5**
Depreciation	**1**	**1**	**1**
Other overheads	**124**	**118**	**108**
Interest	**85**	**74**	**68**
Bonus and Gratuity	**12**	**10**	**9**
Gross current assets	**840**	**724**	**640**
Current Liabilities and provisions	**324**	**305**	**246**

You are required to compute the following ratios as per requirement the Cost Audit report Rules, 2011:

(i) Operating Profit as percentage of value Addition.

(ii) Value Addition as percentage of net sales.   **(5+6 = 11)**

   Note: The computation should be based on EBDIT as operating profit.

Solution.

(₹ In lakhs)

	31.03.12	Year ending 31.03.11	31.03.10
Gross sales inclusive of Excise Duty	2,040	1,985	1,875
Excise Duty	295	280	265
Net sales (A)	1,745	1,705	1,610
Cost of Sales excluding depreciation & Interest			
Raw Materials consumed	1,140	1,060	975
Direct Wages	35	32	27
Power and Fuel	30	27	24
Stores and Spares	6	5	4
Factory overheads (excluding depreciation)	12	10	8
Administrative overheads (excluding depreciation)	174	165	158
Selling and distribution overheads (excluding depreciation)	137	130	118
Bonus and Gratuity	12	10	9
Total (B)	1,546	1,439	1,323
∴ Operating Profit (A) – (B) =	199	266	287

Value addition is defined in the Cost Audit (Report) Rules, 2011 as "the difference between the net output value (Net Sales) and cost of brought out materials and services for the product under reference".

The working will be.

		31.03.12	Year ending 31.03.11	31.03.10
(X)	Net sales	1,745	1,705	1,610
	Less : (i) Cost of Bought Out Materials & Service (Raw Materials and Stores & Spares)	1,146	1,065	979
	(ii) Power & Fuel, other bought out services	30	27	24
	(iii) Overheads (excluding Salaries & Wages, Rates & Taxes and depreciation)	298	283	265
(Y)		1,474	1,375	1,268
	Value Addition: (X) – (Y) =	271	330	342

		31.03.12	Year ending 31.03.11	31.03.10
Hence,				
(a)	Operating profit as % of Value Added	199/271	266/330	287/342
	i.e.	73.43%	80.6%	83.92%
				= 84%
(b)	Value addition as % of Net Sales	271/1745	330/1705	342/1610
	i.e.	15.53%	19.35%	21.24%

Section C – Answer any two from this section

7. (a) Determine breakeven point & profitable range of output if p = 20 – 0.02x and c = 320 + 10x + 0.03x^2 **(4)**

Solution.
We have TR = Px = 20x – 0.02x^2
For breakeven TR = TC

$\Rightarrow$ 20x – 0.02x^2 = 320 + 10x + 0.03x^2

$\Rightarrow$ 0.05x^2 – 10x + 320 = 0

$\Rightarrow$ 5x^2 – 1000x + 32000 = 0

$\Rightarrow$ x^2 – 200x + 6400 = 0

$\Rightarrow$ (x^2 – 160) (x – 40) = 0

∴ x = 160, 40

∴ Breakeven points are 160, 40
Profitable range of output is 40 < x < 160.

(b) A producer sells saress in a competitive market during the festive season: where TC = 1600 + 300q – 40q ^{2} + 2q^3. At what minimum price will the firm continue production? (4)

Solution.

We know TC = TFC + TVC

$\Rightarrow$ TVC = 300q – 40q ^{2} + 2q ^{3}, TFC = 6000

Now AVC = $\dfrac{\text{TVC}}{q}$ = 300 – 40q + 2q ^{2}

A firm operates if p $_0$ > min AVC.

Now for min AVC, we must have

$\dfrac{d}{dq}$ (AVC) = 0 $\Rightarrow$ - 40 + 4q = 0 $\Rightarrow$ q = 10.

$\dfrac{d^2(\text{AVC})}{dq}$ = 4 > 0

$\therefore$ at q = 10, AVC = 300 – 40(10) + 2(10) ^{2} = 100.

$\therefore$ If price falls below 100, the firm shuts down.

(c) What are the factors influencing Elasticity of Demand? (4)

Answer.

1. Nature of goods:

Elasticity of demand depends on the nature of goods. The elasticity of demand for a commodity depends upon the necessity of it for a human life. Goods may be necessary for human life, comfort or luxurious. Necessary goods are extremely essential so the demand for these goods-is inelastic.

But the consumption of comfort and luxury goods enhances man's efficiency and social prestige. So their consumption is less important and can be very well postponed. Thus the elasticity of demand for such commodities is elastic.

2. Availability of substitutes:

The demand for a commodity having perfect substitute is relatively more elastic. If a flood gives the same pleasure and satisfaction in place of the consumption of another commodity, it is called a substitute commodity. A substitute may be close and remote.

Close substitute has got more elastic demand and remote substitute has less elastic demand. Tea and coffee are substitute commodities. Both can be used in absence of another. Thus the demand for tea and coffee is elastic.

3. Alternative use:

The demand for those goods having more than one use is said to be elastic. In other words goods having alternative uses are elastic. All the uses are not of same importance. As the commodities are put to certain less urgent needs or uses as a result of fall in price their demand raises. People use those commodities for certain urgent use in response to a rise in price.

For example electricity can be used for a number of purposes like heating, lighting, cooking, cooling etc. If the electricity hill increases people utilise electricity for certain important urgent purpose and if the bill falls people use electricity for a number of other unimportant uses. Thus the demand for electricity is elastic.

4. Possibility of postponing consumption:

The demand for those goods whose consumption can be postponed for sometime is said to be elastic. On the other hand if the commodities cannot be postponed and need to be fulfilled the demand for them is in elastic.

Medicine for a patient, books for a student and milk for a child cannot be postponed. They are to be satisfied first. That is why the demand for those commodities is in elastic.

5. Proportion of income spent:
Elasticity of demand also depends on the proportion of income spent on different goods. The demand for those goods on which a negligible amount of the total income of the consumer is spent is said to be inelastic.

Salt, edible oil, match box, soap etc account for a very negligible amount of the consumer income. That is why their demand is inelastic.

6. Price-level:
The demand for high priced commodities is elastic. On the other hand the low priced goods is said to have inelastic demand. High priced commodities are luxurious goods and low priced goods are necessaries. Luxurious goods are mainly consumed by the people of high income brackets. For example if the price of a colour TV falls from Rs 15000 to Rs 5000 the price comes to the reach of the people who were unable to buy at the old price.

Now they rush to buy colour TV. Thus with a rise or fall in price the amount demanded of colour TV remarkably falls or rise. But if the price of salt raises from Rs 2.00 to Rs 5.00 it account for no such remarkable fall in the quantity demanded of salt.

7. Force of habit:
A repeated and constant use of a commodity by a person forms habit. A habit can't be avoided. Thus in such a case the consumption of the commodity can't be abstained in spite of the rise in price.

The consumer has to satisfy his habit regardless of change in price. Thus the demand for habitual commodities is fairly inelastic.

8. Durability of Commodities:
The demand for durable commodities is elastic whereas the demand for less durable commodity is inelastic. Durable commodity is used over a long period of time. The utility of a durable good is destroyed continuously. Once a durable good is bought the buyer feels no want of it for a long period of time. Thus the change (rise or fall) in price can't influence the demand.

Thus the demand becomes elastic. On the other hand less durable or perishable goods are consumed repeatedly. Any change in price affects the demand. Thus the demand for perishable goods is less elastic.

9. Income level:
Elasticity of demand depends on income level. The rich and the poor are not equally affected at the change in price. Poor people are more affected than the rich. Because of high income rich people buy the same amount of an expensive commodity in response to a rise in price.

For example with a rise in price of Horlicks, poor people by other milk powder relatively cheaper than Horlicks. Thus for rich people the demand for Horlicks is inelastic whereas for poor people the demand for the Horlicks is elastic.

8. (a) The market for tri-cycles for small kids is competitive and each tri-cycle is priced at ₹230. The cost function of a firm is given by TC = 130q – 10q ^{2} + q³.
   i.   **What is q_0 and p_0**
   ii.   **Is the industry in equilibrium?**   (4)

Solution.
(i) We have $P_0 = 230$. With $TC = 130 – 10q^2 + q^3$
      $\Rightarrow MC = 130 – 20q + 3q^2$
At equilibrium
$P_0 = MC \Rightarrow 230 = 130 – 20q + 3q^2 \Rightarrow 3q^2 – 20q – 100 = 0 \Rightarrow (3q – 10)(q – 10) = 0$

$\therefore q_0 = 10$ Now $\pi_0 = P_0 q_0 – [130q_0 – 10q_0^2 + q_0^3$

     $= 230 \times 10 – [130 \times 10 – 10 \times (10)^2 + (10)^3]$
     $= 2300 – [1300] = 1000.$
We see $q = 10$, satisfies 2nd order condition

(ii) As the economic profits are negative i.e., as there are losses the industry is not in equilibrium. Some firms will leave the industry.

(b) The cost function of a competitive firm is c = 200+ 10q + 2q ^{2} . Determine price level if the firm only earns normal profit. **(4)**

Solution.
If a firm is earning just normal profits, we have P_0 = min AC.

Now AC = $\dfrac{c}{q} = \dfrac{200}{q}$ + 10 + 2q

For minimum AC, $\dfrac{d(AC)}{dq}$ = 0 $\Rightarrow$ $\dfrac{-200}{q^2}$ + 2 = 0 $\Rightarrow$ q = 10.

$\therefore$ Min AC at q = 10 is $\dfrac{200}{10}$ + 10 + 2.(10) = 50.

$\therefore$ P_0 = 50.

(c) What are factors involved in Demand Forecasting? **(4)**

Answer.
Price of the Product - There is an inverse (negative) relationship between the price of a product and the amount of that product consumers are willing and able to buy. Consumers want to buy more of a product at a low price and less of a product at a high price. This inverse relationship between price and the amount consumers are willing and able to buy is often referred to as The Law of Demand.

The Consumer's Income - The effect that income has on the amount of a product that consumers are willing and able to buy depends on the type of good we're talking about. For most goods, there is a positive (direct) relationship between a consumer's income and the amount of the good that one is willing and able to buy. In other words, for these goods when income rises the demand for the product will increase; when income falls, the demand for the product will decrease. We call these types of goods normal goods.

However, for some goods the effect of a change in income is the reverse. For example, think about a low-quality (high fat-content) ground beef. You might buy this while you are a student, because it is inexpensive relative to other types of meat. But if your income increases enough, you might decide to stop buying this type of meat and instead buy leaner cuts of ground beef, or even give up ground beef entirely in favor of beef tenderloin. If this were the case (that as your income went up, you were willing to buy less high-fat ground beef), there would be an inverse relationship between your income and your demand for this type of meat. We call this type of good an inferior good. There are two important things to keep in mind about inferior goods. They are not necessarily low-quality goods. The term inferior (as we use it in economics) just means that there is an inverse relationship between one's income and the demand for that good. Also, whether a good is normal or inferior may be different from person to person. A product may be a normal good for you, but an inferior good for another person.

The Price of Related Goods - As with income, the effect that this has on the amount that one is willing and able to buy depends on the type of good we're talking about. Think about two goods that are typically consumed together. For example, bagels and cream cheese. We call these types of goods compliments. If the price of a bagel goes up, the Law of Demand tells us that we will be willing/able to buy fewer bagels. But if we want fewer bagels, we will also want to use less cream cheese (since we typically use them together). Therefore, an increase in the price of bagels means we want to purchase less cream cheese. We can summarize this by saying that when two goods are complements, there is an inverse

relationship between the price of one good and the demand for the other good.

On the other hand, some goods are considered to be substitutes for one another: you don't consume both of them together, but instead choose to consume one or the other. For example, for some people Coke and Pepsi are substitutes (as with inferior goods, what is a substitute good for one person may not be a substitute for another person). If the price of Coke increases, this may make Pepsi relatively more attractive. The Law of Demand tells us that fewer people will buy Coke; some of these people may decide to switch to Pepsi instead, therefore increasing the amount of Pepsi that people are willing and able to buy. We summarize this by saying that when two goods are substitutes, there is a positive relationship between the price of one good and the demand for the other good.

The Tastes and Preferences of Consumers - This is a less tangible item that still can have a big impact on demand. There are all kinds of things that can change one's tastes or preferences that cause people to want to buy more or less of a product. For example, if a celebrity endorses a new product, this may increase the demand for a product. On the other hand, if a new health study comes out saying something is bad for your health, this may decrease the demand for the product. Another example is that a person may have a higher demand for an umbrella on a rainy day than on a sunny day.

The Consumer's Expectations - It doesn't just matter what is currently going on - one's expectations for the future can also affect how much of a product one is willing and able to buy. For example, if you hear that Apple will soon introduce a new iPod that has more memory and longer battery life, you (and other consumers) may decide to wait to buy an iPod until the new product comes out. When people decide to wait, they are decreasing the current demand for iPods because of what they expect to happen in the future. Similarly, if you expect the price of gasoline to go up tomorrow, you may fill up your car with gas now. So your demand for gas today increased because of what you expect to happen tomorrow. This is similar to what happened after Huricane Katrina hit in the fall of 2005. Rumors started that gas stations would run out of gas. As a result, many consumers decided to fill up their cars (and gas cans), leading to long lines and a big increase in the demand for gas. This was all based on the expectation of what would happen.

The Number of Consumers in the Market - As more or fewer consumers enter the market this has a direct effect on the amount of a product that consumers (in general) are willing and able to buy. For example, a pizza shop located near a University will have more demand and thus higher sales during the fall and spring semesters. In the summers, when less students are taking classes, the demand for their product will decrease because the number of consumers in the area has significantly decreased.

9. (a) Describe the effects of each of the following managerial decisions or economic influences on the value of the firm:
A. The firm is required to install new equipment to reduce air pollution.
B. Through heavy expenditures on advertising, the firm's marketing department increases sales substantially.
C. The production department purchases new equipment that lowers manufacturing costs.
D. The firm raises prices. Quantity demanded in the short run is unaffected, but in the longer run, unit sales are expected to decline.   **(2+2+2+2 = 8)**

Answer.
A. The most direct effect of a requirement to install new pollution control equipment would be an increase in the operating cost component of the valuation model. Secondary effects might be expected in the discount rate due to an increase in regulatory risk, and in the

revenue function if consumers react positively to the installation of the pollution control equipment in production facilities

B. All three major components of the valuation model--the revenue function, cost function, and the discount rate--are likely to be affected by an increase in advertising. Revenues and cost will both increase as output is expanded. The discount rate may be affected if the firm's profit outlook changes significantly because of increased demand (growth) or if borrowing is necessary to fund a rapid expansion of plant and equipment to meet increased demand.

C. The primary effect of newer and more efficient production equipment is a reduction in the total cost component of the valuation model. Secondary effects on firm revenues could also be important if lower costs make price reductions possible and result in an increase in the quantity demanded of the firm's products. Likewise, the capitalization rate or discount factor can be affected by the firm's changing prospects.

D. The time pattern of revenues is affected by such a pricing decision to raise prices in the near term. This will alter production relationships and investment plans, and affect the valuation model through the cost component and capitalization factor.

(b) The demand for fresh water is given by P = 24 – 12q where TC = 0. If there are 2 sellers in the market calculate p & q. What happens if there are 8 sellers? **(4)**

Solution.
As TC = 0 $\Rightarrow$ MC = 0. The demand curve is p = 24 – 12q and comparing it with p = a – bq we get a = 24, b = 12.
By using equation (3) of problem 26,
$$q = \left(\frac{n}{n+1}\right)\frac{a}{b} = \left(\frac{1}{n-1}\right)\frac{24}{12}$$
for 2 sellers q = $\left(\frac{2}{2+1}\right).\frac{24}{12}$ = 1.33

$\therefore$ p = 24 – 12(1.33) = 8

If there are 8 sellers q = $\left(\frac{8}{8+1}\right)\frac{24}{12}$ = 1.8

$\therefore$ p = 24 – 12(1.8) = 2.4