



Time Allowed: 3 Hours

Full Marks: 100

The figures in the margin on the right side indicate full marks.

SECTION – A (Compulsory)

1. Choose the correct option:

[15 x 2 = 30]

- (i) Which of the following is not a characteristic of management accounting?
- (a) Forward-looking
 - (b) Historical orientation
 - (c) Internal focus
 - (d) Decision - making
- (ii) The break-even point is where:
- (a) Total costs equal total revenue
 - (b) Total revenue exceeds total costs
 - (c) Variable costs equal fixed costs
 - (d) Contribution margin is negative
- (iii) Variance analysis is used to:
- (a) Identify the root causes of inefficiencies
 - (b) Calculate contribution margin
 - (c) Prepare financial statements
 - (d) Determine break-even point
- (iv) Which of the following is not a relevant cost information in a make or buy decision in short run (i.e., in marginal costing)?
- (a) Burglary
 - (b) Fire
 - (c) Marine
 - (d) None of the above
- (v) If Sales - ₹ 9,00,000 ; Margin of safety = 40% ; P/V Ratio = 2/3, then what is the Break-even Sales?
- (a) ₹ 4,50,000
 - (b) ₹ 3,60,000
 - (c) ₹ 5,40,000
 - (d) ₹ 6,00,000
- (vi) Sale for two consecutive months, of a company are ₹3,80,000 and ₹ 4,20,000. The company's net profits for these months amounted to ₹ 24,000 and ₹ 40,000 respectively. There is no change in contribution/sales ratio or fixed costs. The contribution/sales ratio of the company _____ is.



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- (a) 1/3
(b) 2/5
(c) 1/4
(d) 3/8
- (vii) Standard Cost is _____ a cost.
(a) Pre-determined
(b) Actual
(c) Historical
(d) Short-term
- (viii) Which of the following budgets should be prepared first?
(a) Production Budget
(b) Purchase Budget
(c) Master Budget
(d) Sales Budget
- (ix) Labour Turnover _____
(a) The number of people working in the current period
(b) The number of people who left the organisation in the previous period
(c) Rate of change of labour force
(d) The rate of the change in the wages of the labour force
- (x) The per unit expenses of the _____ portion varies with the volume of production while portion remains the same with volume.
(a) Fixed; Variable
(b) Variable; Fixed
(c) Variable; Semi-Variable
(d) Fixed; Semi-Variable
- (xi) Which method of costing is commonly used by companies that produce unique products or services?
(a) Process costing
(b) Job costing
(c) Batch costing
(d) Both A and C
- (xii) Material price variance is calculated by _____.
(a) Standard Price × Actual Quantity - Actual Price × Actual Quantity
(b) Standard Price × Actual Quantity - Actual price × Standard Quantity
(c) Actual Price × Actual Quantity - Standard price × Standard Quantity
(d) Actual price × Standard Quantity - Standard price × Standard Quantity
- (xiii) Calculate the material price variance from the following:
Actual Quantity - 2.5 kgs



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Standard Price - ₹ 3 per kg

Actual Price - ₹ 5 per kg

Standard Quantity - 4.5 kgs

(a) ₹ 3(F)

(b) ₹ 5(A)

(c) ₹ 12(A)

(d) ₹ 6 (F)

(xiv) Which budgeting technique involves preparing budgets from the bottom of the organization hierarchy to the top?

(a) Top-down budgeting

(b) Zero-based budgeting

(c) Incremental budgeting

(d) Bottom-up budgeting

(xv) A manufacturing company budgets to produce 10,000 units during a period. It expects to incur ₹50,000 in fixed overhead costs and ₹3 per unit in variable overhead costs. If the actual production turns out to be 9,500 units, what is the company's flexible budget overhead cost?

(a) ₹74,500

(b) ₹77,000

(c) ₹79,500

(d) ₹78,500

Answer:

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)
b	a	a	b	c	b	a	d	c	a
(xi)	(xii)	(xiii)	(xiv)	(xv)					
b	a	b	d	d					

SECTION – B

(Answer any 5 questions out of 7 questions given. Each question carries 14 marks.)

[5 x 14 = 70]

2. (a) Globalisation brought about significant changes in the business environment. Along with the changes the roles of the management accountant had to be redefined. In the following lines, discuss some of the impacts of the new business environment on management accounting.

[7]



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- (b) ABC & Associates provides consulting and tax preparation services to its clients. It charges a ₹100 fee per hour for each service. The firm's revenues and costs for the month March 2022 are shown in the following income statement:

Particulars	Tax Preparation	Tax Consulting	Total
Revenue - Amount (₹)	1,30,000	2,70,000	4,00,000
Expenses:			
Secretarial support			80,000
Supplies			72,000
Computer costs, etc			40,000
Profit			1,92,000

The firm uses ABC and the following are the cost drivers:

Overhead Cost	Cost Driver	Tax Preparation	Tax Consulting
Secretarial support	Number of clients	72	48
Supplies	Transactions with clients	200	300
Computer costs	Computer hours	1,000	600

Required:

- Prepare the income statement using activity-based costing and the firm's three cost drivers.
- Calculate the income statement using direct-labour hours as the only allocation base: 1,300 hours for tax preparation; 2,700 hours for tax consulting.
- How might the firm's decisions be altered if it were to allocate all overhead costs using direct labour hours?
- Under what circumstances would the about-based allocation and activity-based costing (using the three cost drivers) result in similar profit results?

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Answer:

2. (a) The impacts of the new business environment on management accounting are: -
- Global competition** - Prior to the era of globalisation, many organizations operated in a protected competitive environment. Globalisation ushered in changes where there have been reductions in tariffs and duties on imports and exports as well as dramatic improvements in transportation and communication systems. This has facilitated firms to operate globally and resulted in stiff competition from the very best organisations worldwide. Business operations also changed significantly. The new competitive environment has increased the demand for information relating to quality and customer satisfaction. Customer profitability analysis and value analysis are important issues being incorporated in the arena of management accounting.



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- **Changing product life cycles** – Changing profile of the customer along with behavioural issues have contributed to drastically reduce the product life cycle. First mover advantage is critical and every organisation is desperately seeking the advantage by increasing their investment in research and development. In this respect, the management accountant plays a crucial role as in order to compete successfully, companies must be able to manage their costs effectively at the design stage, have the capability to adapt to new environment, different and changing customer requirements and reduce the time to market of new and modified products.
- **Advances in manufacturing technology** - In order to compete effectively, companies must be able to manufacture high quality innovative products at a low cost, and also provide a first-class customer service. Flexibility to cope with short product life cycles, demands for greater variety of product, more discriminating customers and increasing international competition has created enormous pressure on the operational activities of the business. Some internationally reputed manufacturing companies have responded to these by replacing traditional production systems with lean manufacturing systems that seek to reduce waste by implementing just-in-time (JIT) production systems, focusing on quality, simplifying processes and focusing on advanced manufacturing technologies (AMTs).
- **The impact of information technology** - The use of information technology (IT) to support business activities has increased dramatically. Along with electronic business communication technologies known as e-business, e-commerce or internet commerce have also developed significantly. Consumers have become more discerning in their purchases as in online transactions it is relatively easy to compare the merits of different products and services. This has a significant impact on the work of management accountants. The role of the management accountant as a gatherer and processor of information is lost as the managers can directly access the management accounting system on their personal computers to derive the information they require for decision making. Management accountants have now become more involved in interpreting the information generated from the accounting system and providing business support for managers
- **Environmental and sustainability issues** – In recent times, ESG has become the focal point in the operations of the company. Along with this, ethical issues have also come to the forefront as the business has to deal with customers who are more aware of these issues than they were a decade back. Thus, there is a desperate need for organisations to be run in a suitable way. Sustainable development, where it is acknowledged that environmental resources are limited and should be preserved for future generations, is the order of the day. Management accounting with specific focus on environmental issues is becoming increasingly important in organizations as environmental costs are large in many organisations. There are three specific reasons for this:
 - Environmental costs are often high in the many manufacturing organisations.
 - Regulatory requirements often impose huge fines for non-compliance.
 - Companies are increasingly realizing that being socially and environmentally responsible improves their image and this has a positive impact on their bottom line.



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The above mentioned changes impacted the management of the companies and the managers have realized that they need to develop system for measuring and reporting environmental costs along with preparation of detailed report on the consumption of scarce environmental resources, hazardous materials used and pollutants emitted to the environment.

- **Deregulation and privatization** – Prior to the era of globalization, companies in many industrial sectors were government owned monopolies and operated in a highly regulated, protected and non-competitive environment. Thus the organisations, especially those incurring losses, were not under any pressure to improve the quality and efficiency of their operations and to improve profitability by adding or dropping particular products or services from their array of product or service. Thus trivial attention was given to developing management accounting systems that accurately measured the costs and profitability of individual products or services. Globalization ushered in the privatization and deregulation which resulted in the elimination of pricing and competitive restrictions. Thus, companies were compelled to design an elaborate management accounting system that made them to realize their cost base and determine the source of profitability for their products, customers and markets.
- **Focus on value creation** – The scope of management accounting is enormous. Managers who are in charge of the operations of the organisations depends on the management accountants in realisation of the strategic goal of the organisations. With the advent of time, the role of the management accountant has changed from merely interpreting, managing and recording costs to creating value. Though cost reduction still remains as the basic function of the management accountant as it has specific impact on selling price fixation which impacts customer value. The new business environment resulted in management accounting distinguishing between value-added and non-value-added activities.
- There is another aspect of new business paradigm which the management accountant has to consider as they develop the company's management accounting system. Intangibles have increased manifold. This presents a challenge to management accountants as to how to identify, measure and report on the value of intangibles.
- **Customer orientation** – In the new business environment, gaining competitive advantage has become the singular goal of every business organisation. Companies have realized that in order to sustain in today's competitive environment they need to become more customer driven and recognize that customers are crucial to their future success. This has made the companies realize that customer satisfaction is one of the most important critical success factor (CSF) which helps companies realize their strategic goal. Customer satisfaction is relational to cost, quality, reliability, delivery and the choice of innovative new products.

**(b) Activity-based versus Traditional Costing****(i)**

Particulars	Tax Preparation Amount ₹	Consulting Amount ₹	Total Amount ₹
Revenue	1,30,000	2,70,000	4,00,000
Less: Expenses Secretarial support	48,000	32,000	80,000
Supplies	28,800	43,200	72,000
Computer Depreciation	25,000	15,000	40,000
Profit	28,200	1,79,800	2,08,000

Working Notes:

- ₹80,000 ÷ 120 clients = ₹666.67 per client
- ₹ 72,000 ÷ 500 transactions = ₹144 per transaction
- ₹40,000 ÷ 1,600 hours = ₹25 per computer hour
- ₹666.67 per client × 72 clients = ₹48,000
- ₹144 per hour × 200 transactions = ₹28,800
- ₹25 per computer hour × 1,000 hours = ₹ 25,000

(ii)

Particulars	Tax Preparation (₹)	Tax Consulting (₹)	Total (₹)
Revenue	1,30,000	2,70,000	4,00,000
Expenses	62,400	1,29,600	1,92,000
Profit	67,600	1,40,400	2,08,000

Working Notes:

- ₹48 per labour hour (₹1,92,000 total expenses ÷ 4,000 labour hours)
- ₹62,400 = ₹48 per labour hour × 1,300 hours of labour
- 2,700 labour hours × ₹48 per labour hour = ₹1,29,600

(iii) Under the labour-based overhead allocation, tax preparation appears to be more profitable than it does under ABC, and might lead the firm to concentrate more heavily on tax preparation.

(iv) ABC and traditional costing systems generally yield comparable product-line profits when overhead is a small portion of costs, or when cost drivers are highly correlated with direct-labour hours.

In this case, labour hours were distributed 32.5% to Preparation and 67.5% to Consulting. If firm's three cost drivers were each also distributed 32.5% to preparation and 67.5% to Consulting, the labour-hour and ABC allocation would be identical.

- 3. Aurthor company is a multidivisional company and its managers have been delegated full profit responsibility and autonomy to accept or reject transfers from other divisions.**



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Division X produces a sub-assembly with a ready competitive market. This sub-assembly is currently used by Division Y for a final product that is sold outside at ₹1,200. Division X Charges Division Y market price for the sub-assembly which is ₹700 per unit. Variable costs are ₹520 and ₹600 for Divisions X and Y respectively.

The manager of Division Y feels that Division X should transfer the subassembly, at a lower price than market because at this price, Division Y is unable to make a profit.

Required:

- (i) Calculate Division Y's profit contribution if transfers are made at the market price and also the total contribution to profit for the company.
- (ii) Assume that Division A can sell all its production in the open market. Should Division X transfer goods to Division Y? If so, at what price.
- (iii) Assume that Division X can sell in the open market only 500 units at ₹700 per unit out of 1,000 units that it can produce every month and that a 20 per cent reduction in price is necessary to sell at full capacity. Should transfers be made? If so, how many units should it transfer and at what price? prepare a schedule showing comparisons of contribution margins under three different alternatives to support your decision. [14]

Answer:

Particulars	₹	₹
Calculation for Division Y's contribution Margin		
1. Selling Price of Final Product		1,200
Less: Division Y's variable cost	600	
Division Y's purchase cost	<u>700</u>	<u>1,300</u>
Division Y's loss		<u>(100)</u>
Calculation for Company's contribution Margin		
Selling price of final product		1,200
Less: Division Y's variable cost	600	
Division X's variable cost	<u>520</u>	<u>1,120</u>
Company's Contribution margin		<u>80</u>
2. Selling price of sub-assembly		700
Less: Division X's variable cost		<u>520</u>
Company's contribution margin		<u>180</u>

The company contribution is ₹100 greater if the sub-assembly is sold on the intermediate market rather than to Division B. Thus, it should be sold in the intermediate market. The market price would be the appropriate transfer price if transfers were made:

3. Alternative 1: Transfer 1,000 units to Division Y.

Alternative 2: Sell 500 units in the intermediate market at ₹700 and transfer 500 units to Division Y.



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Alternative 3: Sell 1,000 units on the intermediate market at 20% reduced price.

Alternative 1:	₹
Company sales: (1000 units × ₹1200)	12,00,000
Less: Variable costs (1000 units @ ₹520 + 1,000 units @ ₹600)	<u>11,20,000</u>
Contribution margin	<u>80,000</u>

Alternative 2:	₹
Company sales:	9,50,000
(500 units @ ₹700 + 500 units @ ₹1,200)	
Variable costs: (1000 units @ ₹520 + 500 units @ ₹600)	<u>8,20,000</u>
Contribution margin	<u>1,30,000</u>

Alternative 3:	₹
Company sales:	
1000 units @ ₹560 (700 – 140)	5,60,000
Variable costs: (1000 units @ ₹520)	<u>5,20,000</u>
Contribution Margin	<u>40,000</u>

Conclusion:

Transfers should be made, 500 units should be transferred to Division Y. The transfer price should be set at a price greater than the variable cost of Division X (₹520) and less than the marginal revenue to Division Y (₹600). Division Y's marginal revenue will be ₹600 (₹1,200 market price - division Y's own variable cost ₹600).

4. (a) Company XYZ manufactures and sells a single product. Here are the details for the current period:-

Selling Price per Unit: ₹50

Variable Cost per Unit: ₹30

profit: ₹20,000

Current Sales Volume: 5,000 units

Calculate the following:

(i) **Fixed cost**

(ii) **P/v ratio**

(iii) **Break-Even Point in Units**

(iv) **Margin of safety**

(v) **Number of Units Needed to Achieve a Desired Profit of ₹40,000**

[7]

4. (b) A Co. currently operating at 80% capacity has the following profitability particulars:

Particulars	Amount ₹
Sales	16,00,000



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Costs:	
Direct Materials	5,80,000
Direct labour	2,40,000
Variable Overheads	60,000
Fixed Overheads	5,20,000
Profit	2,00,000

An export order has been received that would utilise 40% of the capacity of the factory. The order has either to be taken in full and executed at 10% below the normal domestic prices, or rejected totally. The alternatives available to the management are given below:

- A. Reject order and Continue with the domestic sales only, as at present;
- B. Accept the order, and turn away excess domestic demand;
- C. Increase capacity so as to accept the export order and maintain the present domestic sales by:
 - (i) buying an equipment that will increase capacity by 10% and fixed cost by ₹65,000 and
 - (ii) Work overtime at one and a half the normal rate to meet balance of required capacity.

Prepare a statement showing profits from different alternatives and suggest the best. [7]

Answer:

4 (a)

(i) Calculation of Fixed cost:-

$$\begin{aligned}\text{Sales} &= \text{current sales volume} \times \text{selling price per unit} \\ &= 5,000 \text{ units} \times ₹50 \\ &= ₹2,50,000\end{aligned}$$

$$\begin{aligned}\text{Variable cost} &= \text{variable cost per unit} \times \text{current sales volume} \\ &= ₹30 \times 5,000 \text{ units} \\ &= ₹1,50,000\end{aligned}$$

$$\begin{aligned}\text{Contribution} &= \text{sales} - \text{variable cost} \\ &= ₹2,50,000 - 1,50,000 \\ &= ₹1,00,000\end{aligned}$$

$$\text{Profit} = ₹20,000$$

$$\begin{aligned}\text{Fixed cost} &= \text{contribution} - \text{profit} \\ &= ₹1,00,000 - ₹20,000 \\ &= ₹80,000\end{aligned}$$

(ii) Calculation of P/V ratio:

$$\begin{aligned}\text{P/V ratio} &= \text{contribution} / \text{sales} \\ &= ₹1,00,000 / ₹2,50,000 \\ &= 40\%\end{aligned}$$



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(iii) Calculation of Break-even point in units

$$\begin{aligned}\text{Break - even sales} &= \text{fixed cost} \div \text{p/v ratio} \\ &= 80,000/40\% \\ &= ₹200,000\end{aligned}$$

$$\begin{aligned}\text{Break-even point in units} &= \text{break-even sales/ selling price per unit} \\ &= ₹2,00,000/₹50 \\ &= 4,000\text{units.}\end{aligned}$$

(iv) Calculation of margin of safety

$$\begin{aligned}\text{MOS} &= \text{sales} - \text{break-even sales} \\ &= ₹2,50,000 - ₹2,00,000 \\ &= ₹50,000\end{aligned}$$

(v) Number of units needed to achieve a desired profit of ₹40,000

$$\begin{aligned}\text{Desired Profit} &= ₹40,000 \\ \text{Fixed cost} &= ₹80,000 \\ \text{Desired Contribution} &= \text{fixed cost} + \text{profit} \\ &= ₹80,000 + ₹40,000 \\ &= ₹1,20,000\end{aligned}$$

$$\begin{aligned}\text{Desired sales} &= \text{desired contribution/ p/v ratio} \\ &= ₹1,20,000/40\% \\ &= ₹3,00,000\end{aligned}$$

$$\begin{aligned}\text{Therefore, no. of units needed to achieve a desired profit of ₹40,000} &= ₹3,00,000/₹50 \\ &= 6,000 \text{ units.}\end{aligned}$$

(b) Alternative (A): Continue with domestic sales and reject the export order

Serial	Description	Workings	₹ Lakhs
1	Capacity	Given – 80%	
2	Sales	Given	16.00
3	Variable Costs		
	a. Direct Material		5.80
	b. Direct Labour	Given	2.40
	c. Variable Overheads		0.60
	d. Sub Total		8.80
4	Contribution	(2-3)	7.20
5	Fixed Costs	Given	5.20
6	Profit	(4-5)	2.00

Alternative (B): Accept the export order and allow the domestic market to starve to the extent of excess of demand

**INTERMEDIATE EXAMINATION****SET - 1****MODEL ANSWERS****TERM – DEC 2024****PAPER – 12****SYLLABUS 2022****MANAGEMENT ACCOUNTING**

This alternative envisages utilization of 40% of the capacity for the export order and 60% of the capacity for domestic market. Further, the export order is to be executed at 10% below the current domestic prices i.e., $(100 - 10) \% = 90\%$ of the price. Accordingly:

Sales at 100% Capacity = $(16 \div 80\%) = ₹20$ Lakhs

Value of the export order = $(40\% \text{ of Capacity} \times 90\% \text{ of the Price}) = (20 \times 40\% \times 90\%) = ₹7.20$ lakhs.

Value of the domestic sales = $(20 \times 60\%) = ₹ 12.00$ lakhs.

Serial	Description	Workings	₹ Lakhs
1	Capacity	Export40%+Domestic 60%	
2	Sales	7.20+12.00	19.20
3	Variable Costs		
	a. Direct Material	$(5.80 / 80\%) \times 100\%$	7.25
	b. Direct Labour	$(2.40 / 80\%) \times 100\%$	3.00
	c. Variable Overheads	$(0.60 / 80\%) \times 100\%$	0.75
	d. Sub Total		11.00
4	Contribution	(2-3)	8.20
5	Fixed Costs	Given	5.20
6	Profit	(4-5)	3.00

Alternative (C): Increase capacity so as to accept the export order and maintain the domestic demand by:

- (i) Purchasing additional plant and increasing 10% capacity and thereby increasing fixed overheads by ₹ 65,000, and
- (ii) Working overtime at one and half time the normal rate to meet balance of the required capacity

Serial	Description	Workings	₹Lakhs
1	Capacity	Export40%+Domestic 80%	
2	Sales	7.20+16.00	23.20
3	Variable Costs		
	a. Direct Material	$(5.80 / 80\%) \times 120\%$	8.70
	b. Direct Labour	$(2.40 / 80\%) \times 120\%$	3.60
	c. Variable Overheads	$(0.60 / 80\%) \times 120\%$	0.90
	d. Overtime Premium [Balance capacity of 10%]	$(2.40 / 80\%) \times 10\% \times$ 50%	0.15
	e. Sub Total		13.35



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4	Contribution	(2-3)	9.85
5	Fixed Costs	(5.20+0.65)	5.85
6	Profit	(4-5)	4.00

From the above computation, it was found that the profit is more at the III alternative i.e. accepting the foreign order fully and maintaining the present domestic sales, it is the best alternative to be suggested.

5. The budgeted output of a manufacturing company for 2023-24 was 5,000 units. The financial results in respect of actual output of 4,800 units achieved during the year were as under:

	₹		₹
Direct Material	29,700	Fixed Overheads	39,000
Direct Wages	44,700	Profit	36,600
Variable Overheads	72,750	Sales	2,22,750

The standard direct wages rate is ₹4.50 per hour and the standard variable overhead rate is ₹7.50 per hour.

The cost accounts recorded the following variances for the year:

Variations	Favourable (₹)	Adverse (₹)
Material Price	-	300
Material Usage	-	600
Wage rate	750	-
Labour efficiency	-	2,250
Variable overhead expense	3,000	-
Variable overhead efficiency	-	3,750
Fixed overhead expense	-	1,500
Selling price	6,750	-

- Prepare a statement showing the original budget and the standard product cost sheet per unit.
- Prepare a statement showing the reconciliation of originally budgeted profit and actual profit.

[14]



Answer:

(i) Statement showing the original budget and standard cost sheet per unit

Particulars	Actual cost, profit & sales of 4,800 units (₹)	Adjustment of variances (₹)		Standard cost, profit & sales of 4,800 units (₹)	Standard cost, profit & sales of 5,000 units	
		(F)	(A)		Total (₹)	p.u.
Sales	2,22,750					
Sales price variance		6,750	-	2,16,000	2,25,000	45.00
Direct Material	29,700					
Material price variance		-	300			
Material usage variance		-	600			
Standard material cost				28,800	30,000	6.00
Direct wages	44,700					
Wages rate variance		750	-			
Labour efficiency variance		-	2,250			
Standard Labour cost				43,200	45,000	9.00
Variable overheads	72,750					
V.O. expenditure variance		3,000	-			
V.O. efficiency variance		-	3,750			
Standard variable overhead				72,000	75,000	15.00
Fixed overheads	39,000					
Fixed overhead exp. variance		-	1,500			
Budgeted F.O.				37,500	37,500	7.50
Cost of sales	1,86,150			1,81,500	1,87,500	37.50
Profit	36,600			34,500	37,500	7.50



(ii) Statement showing the reconciliation of original budgeted profit and actual profit

Particulars	Details (₹)	Amount (₹)
Budgeted Profit		37,500
Add: Favourable cost variances		
Wage Rate	750	
Variable overhead expense	3,000	3,750
		41,250
Add: Sales price variance		6,750
		48,000
Less: Adverse cost variances		
Material Price	300	
Material usage	600	
Labour efficiency	2,250	
Variable overhead efficiency	3,750	
Fixed overhead expense	1,500	8,400
		39,600
Less: Sales margin volume variance [5,000 – 4,800 = 200 units × ₹7.50 profit per unit]		1,500
		38,100
Less: Fixed overhead volume variance [200 units × ₹7.50 budgeted fixed overhead per unit]		1,500
Actual Profit		36,600

6. (a) Following information is given regarding standard composition and standard rates of a gang workers:

Standard composition	Standard hourly rate
100 Men	₹0.625
50 Women	₹0.400
50 Boys	₹0.350

According to given specifications, a week consists of 40 hours and standard output for a week is 1,000 units.

In a particular week, gang consisted of 130 men, 40 women and 30 boys and actual wages were paid as follows:

Men @ ₹0.6 per hour

Women @ ₹0.425

Boys @ ₹0.325 per hour



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Two hours were lost in the week due to abnormal sale time. Actual production was 960 units in the week.

Calculate the following-

- (i) Labour rate variance,
- (ii) Labour mix variance,
- (iii) Labour idle time variance,
- (iv) Labour yield variance,
- (v) Labour efficiency variance,
- (vi) Labour cost variance

[7]

(b) Prepare a Cash Budget for the three months ending 30th June, 2024 from the information given below:

(i)

Month	Sales (₹)	Materials (₹)	Wages (₹)	Overheads (₹)
February	14,000	9,600	3,000	1,700
March	15,000	9,000	3,000	1,900
April	16,000	9,200	3,200	2,000
May	17,000	10,000	3,600	2,200
June	18,000	10,400	4,000	2,300

(ii) Credit terms are:

Sales/debtors: 10% sales are on cash, 50% of the credit sales are collected next month and the balance in the following month.

Creditors: Materials 2 months

Wages 1/4 in the following month

Overheads 1/2 in the following month

(iii) Cash and bank balance on 1st April, 2022 is expected to be ₹ 6,000.

(iv) Other relevant information are:

- Plant and machinery will be installed in February 2022 at a cost of ₹96,000. The monthly instalment of
- ₹2,000 is payable from April onwards.
- Dividend @ 5% on preference share capital of ₹2,00,000 will be paid on 1st June.
- Advance to be received for sale of vehicles ₹9,000 in June.
- Dividends from investments amounting to ₹1,000 are expected to be received in June.

[7]



Answer:

(a) L1 - Actual payment to workers for actual hours worked

Actual composition of gang	Hrs. worked	Actual Rate (₹)	Amount (₹)
130 Men	× 40	× 0.600	3,120
40 Women	× 40	× 0.425	680
30 Boys	× 40	× 0.325	390
			4,190

L2 - Payment involved, if workers had been paid at standard rate

Actual composition of gang	Hrs. worked	Standard Rate (₹)	Amount (₹)
130 Men	× 40	× 0.625	3,250
40 Women	× 40	× 0.400	640
30 Boys	× 40	× 0.350	420
			4,310

L3 - Payment involved, if workers had been used according to proportion of standard gang and payment had been made at standard rate

Standard composition of gang	Hrs. worked	Standard Rate (₹)	Amount (₹)
100 Men	× 40	× 0.625	2,500
50 Women	× 40	× 0.400	800
50 Boys	× 40	× 0.350	700
			4,000

L4 - Standard labour cost of labour hours utilized

Standard composition of gang	Hrs. utilized	Standard Rate (₹)	Amount (₹)
100 Men	× 38	× 0.625	2,375
50 Women	× 38	× 0.400	760
50 Boys	× 38	× 0.350	665
			3,800

L5 - Standard labour cost of output achieved

$$\frac{\text{standard labour cost for standard output}}{\text{standard output}} \times \text{actual output}$$

$$\frac{4000}{1000 \text{ units}} \times 960 \text{ units} \\ = ₹3840$$

Variances:

(i) Labour Rate Variance = L1 – L2 = ₹4190 – ₹4310 or ₹120 (F)

(ii) Labour Mix Variance = L2 – L3 = ₹4310 – ₹4000 or ₹310 (A)



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(iii) Labour Idle Time Variance = L3 – L4 = ₹4000 – ₹3800 or ₹200 (A)
 (iv) Labour Yield Variance = L4 – L5 = ₹3800 – ₹3840 or ₹40 (F)
 (v) Labour Efficiency Variance = L2 – L5 = ₹4310 – ₹3840 or ₹470 (A) Alternatively,
 Labour Efficiency Variance = Labour Mix Variance + Labour Idle Time Variance
 + Labour Yield Variance = 310 (A) + 200 (A) + 40 (F) or ₹470 (A)
 (vi) Labour Cost Variance = L1 – L5 = ₹4190 – ₹3840 or ₹350 (A)
Alternatively, Labour Cost Variance = Labour Rate Variance + Labour Mix Variance + Labour Idle
 Time Variance + Labour Yield Variance = 120 (F) + 310 (A)
 + 200 (A) + 40 (F) or ₹350 (A)

(b) Cash Budget for the 3 Months Ending 30th June 2024

Particulars	April(₹)	May(₹)	June(₹)
Opening Balance (A)	6,000	3,950	3,000
Add: Receipts : (B)			
Cash Sales	1,600	1,700	1,800
Collection from debtors [see note(i)]	13,050	13,950	14,850
Advance for sale of vehicles	-	-	9,000
Dividends from Investments	-	-	1,000
Total (A+B)	20,650	19,600	29,650
Less: Payments :			
Materials	9,600	9,000	9,200
Wages [see note (ii)]	3,150	3,500	3,900
Overheads	1,950	2,100	2,250
Instalment of Plant & Machinery	2,000	2,000	2,000
Preference dividend	-	-	10,000
Total (C)	16,700	16,600	27,350
Closing Balance (A+B-C)	3,950	3,000	2,300

Working Notes:

(i) Computation of Collection from Debtors

(Amount in ₹)

Month	Total Sales	Credit Sales	Feb	Mar	Apr	May	June
Feb	14,000	12,600	---	6,300	6,300	---	---
Mar	15,000	13,500	---	---	6,750	6,750	---
Apr	16,000	14,400	---	---	---	7,200	7,200
May	17,000	15,300	---	---	---	---	7,650
					13,050	13,950	14,850



(ii) Wages payment in each month is to be taken as three-fourths of the current month plus one-fourth of the previous month.

7.(a) The following information is supplied by ABC Ltd. for the year 31-03-2024:

Sl. No.	Particulars	(₹ In Crores)	(₹ In Crores)
(i)	Profit after tax (PAT)		275.90
(ii)	Interest		4.95
(iii)	Equity Share Capital	40.00	
	Accumulated Surplus	750.00	
	Shareholders fund	790.00	
	Loans (Long term)	40.00	
	Total long term funds		830.00
(iv)	Market Capitalization		2900.00
Additional information			
(a)	Risk free rate		12.00
(b)	Long Term Market Rate (Based on BSE Sensex)		15.50 %
(c)	Effective tax rate for the company		30 %
(d)	Beta (β) for last few years		
	Year		
	1	0.48	
	2	0.52	
	3	0.60	
	4	1.10	
	5	0.99	

You are required to calculate the Economic Value Added of ABC Ltd. as on 31st March, 2024

[7]

(b)C has designed a new type of sailing boat, for which the cost and sales price of the first boat to be produced has been estimated as follows:

Particulars	₹
Materials	5,000
Labour (800 hrs @ ₹5 per hr)	4,000
Overhead (150% of labour cost)	<u>6,000</u>
	15,000
Profit mark-up (20%)	<u>3,000</u>
Sales price	<u>18,000</u>

It is planned to sell all the yachts at full cost plus 20%. An 80% learning curve is expected to apply to the production work. Only one customer has expressed interest in buying the yacht so far, but he thinks ₹18,000 is too high a price to pay. He might want to buy two or even four of the yachts over the next six months.



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He has asked the following questions:

- (i) If he paid ₹18,000 for the first yacht, what price would he have to pay later for a second yacht?
- (ii) Could C quote the same unit price for two yachts, if the customer ordered two at the same time?
- (iii) If the customer bought two yachts now at one price, what would be the price per unit for a third and fourth yacht, if he ordered them both together later on?
- (iv) Could C quote a single unit price for the following numbers of yachts if they were all ordered now?
 - Four yachts
 - Eight yachts

Assuming there are no other prospective customers for the yacht, calculate the price for different yachts and how would the questions be answered? [7]

Answer: -

(a) Net Operating Profit after Tax (NOPAT) = Profit After Tax (PAT) + Interest (net of tax)
= 275.90 + 4.95 × (1-0.30)
= 279.365 crores

Debit Capital		₹40 crores
Equity capital	=	₹790 crores
Capital employed	=	₹830 crores
Debt to capital employed	=	₹40 crores / ₹830 crores = 0.04819
Equity to capital employed	=	₹790 crores / ₹830 crores = 0.9518
Interest cost before tax		₹4.95 crores
Less: Tax (30% of ₹4.85 crores)		(₹1.485 crores)
Interest cost after tax		₹3.465 crores
Cost of debt	=	(₹3.465 crores / ₹40 crores) × 100
	=	8.66%

According to Capital Asset Pricing Model (CAPM)

Beta for calculation of EVA should be the highest of the given beta for the last few years.

Accordingly,

Cost of equity capital = risk free rate + beta (market rate - risk free rate)

$$\begin{aligned} &= 12\% + 1.10 \times (15.50\% - 12\%) \\ &= 12\% + 1.10 \times 3.5\% \\ &= 15.85\% \end{aligned}$$

Weighted Average Cost of Capital (WACC) = Equity to Capital Employed (CE) × Cost of Equity capital + Debt to CE × Cost of Debt

$$\begin{aligned} &= 0.09518 \times 15.85\% + 0.04819 \times 8.66\% \\ &= 15.08\% + 0.41\% \\ &= 15.49\% \end{aligned}$$

Cost of Capital Employed (COCE) = WACC × Capital Employed
= 15.49% × ₹830 crores
= ₹128.567 crores



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Economic Value Added (E.V.A.)= NOPAT – COCE
 = ₹279.365 crores – ₹128.567 crores
 = ₹150.798 crores

(b)

Number of yachts		Cumulative average time per yacht (Hours)		Total time for all yachts to date (Hours)		Incremental time for additional yachts (Hours)
1		800.00		800.00		
2	(×80%)	640.00	(×2)	1,280.00	(1,280.00 - 800.00)	480.00
4	(×80%)	512.00	(×4)	2,048.00	(2,048.00 - 1,280.00)	768.00
8	(×80%)	409.60	(×8)	3,276.80	(3,276.80 - 2,048.00)	1,228.80

(a) Separate price for a second yacht:		₹
Materials		5,000
Labour (480 hrs @ ₹5)		2,400
Overhead (150% of labour cost)		<u>3,600</u>
Total cost		11,000
Profit (20%)		<u>2,200</u>
Sales price		<u>13,200</u>
(b) A single price for the first two yachts:		
Materials cost for two yachts		10,000
Labour (1,280 hrs @ ₹5)		6,400
Overhead (150% of labour cost)		<u>9,600</u>
Total cost for two yachts		26,000
Profit (20%)		<u>5,200</u>
Total sales price for two yachts		<u>31,200</u>
Price per yacht (÷ 2)		<u>15,600</u>
(c) A price for the third and fourth yachts:		
Materials cost for two yachts		10,000
Labour (768 hours @ ₹5)		3,840
Overhead (150% of labour cost)		<u>5,760</u>
Total cost		19,600
Profit (20%)		<u>3,920</u>
Total sales price for two yachts		<u>23,520</u>
Price per yacht (÷ 2)		<u>11,760</u>



(d) A price for the first four yachts together and for the first eight yachts together

Particulars		First four yachts ₹		First eight yachts ₹
Materials		20,000		40,000
Labour	(2,048 hrs × ₹5)	10,240	(3,276.80 hours × ₹5)	16,384
Overhead	(150% of labour cost)	15,360	(150% of labour cost)	24,576
Total cost		45,600		80,960
Profit (20%)		9,120		16,192
Total sales price		54,720		97,152
Price per yacht	(÷ 4)	13,680	(÷ 8)	12,144

8.(a) LTB Ltd. has a new wonder product, the V, of which it expects great things. At the moment the company has two courses of action open to it, to test market the product or abandon it.

If the company test markets it, the cost will be ₹1,00,000 and the market response could be positive or negative with probabilities of 0.60 and 0.40. If the response is positive the company could either abandon the product or market it full scale.

If it markets the V in full scale, the outcome might be low, medium or high demand, and the respective net gains/ (losses) would be (200), 200 or 1,000 in units of ₹1,000 (the result could range from a net loss of ₹2,00,000 to a gain of ₹10,00,000). These outcomes have probabilities of 0.20, 0.50 and 0.30 respectively.

If the result of the test marketing is negative and the company goes ahead and markets the product, estimated losses would be ₹6,00,000.

If, at any point, the company abandons the product, there would be a net gain of ₹50,000 from the sale of scrap. All the financial values have been discounted to the present.

Required

(i) Draw a decision tree.

(ii) Include figures for cost, loss or profit on the appropriate branches of the tree. [7]

(b) Describe responsibility centres and explain its different types [7]

Answer:

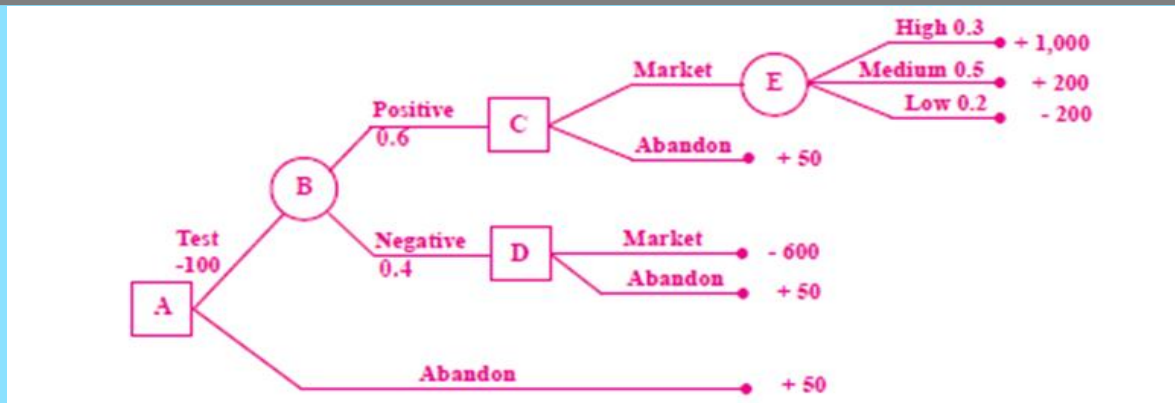
The starting point for the tree is to establish what decision has to be made now. What are the options?

(a) To test market

(b) To abandon

The outcome of the 'abandon' option is known with certainty. There are two possible outcomes of the option to test market, positive response and negative response.

Depending on the outcome of the test marketing, another decision will then be made, to abandon the product or to go ahead.



Evaluating decisions by using decision trees has a number of limitations as follows:

- i. The time value of money may not be taken into account.
- ii. Decision trees are not very suitable for use in complex situations.
- iii. The outcome with the highest EV may have the greatest risks attached to it. Managers may be reluctant to take risks which may lead to losses.
- iv. The probabilities associated with different branches of the 'tree' are likely to be estimates, and possibly unreliable or inaccurate.

(b) A responsibility centre may be defined as an area of responsibility which is controlled by an individual. A responsibility centre is an activity such as department over which a manager exercises responsibility. Responsibility areas may be departments (drilling or maintenance department), product lines (chemicals or fertilizers), territories (North or South) or any other type of identifiable unit or combination of units.

It should be noted that effective planning and control systems are structured around the implicit or explicit areas of responsibility within the organization. Further, to be held accountable for performance, managers must have clearly defined areas of responsibility—activities they control.

When an entity is divided into segments with managers having responsibility over specific areas, the segmented areas are known as responsibility centers. Four types of responsibility centers are commonly identified:

- (i) Cost or Expense Center,
- (ii) Profit Center or Earnings Center, and
- (iii) Revenue Center
- (iv) Investment Center.

(i) Cost Centre

- A cost or expense centre is a segment of an organisation in which the managers are held responsible for the cost incurred in that segment but not for revenues.
- According to CIMA, London a cost centre is "a location person or equipment, for which costs may be ascertained and used for purposes of cost control"



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- Responsibility in a cost centre is restricted to cost.
- For planning purposes, the budget estimates are cost estimates; for control purposes, performance evaluation is guided by a cost variance equal to the difference between the actual and budgeted costs for a given period.
- Cost centre managers have control over some or all of the costs in their segment of business, but not over revenues.
- In manufacturing organisations, the production and service departments are classified as cost centre. Also, a marketing department, a sales region or a single sales representative can be defined as a cost centre.
- Cost centre may vary in size from a small department with a few employees to an entire manufacturing plant. In addition, cost centres may exist within other cost centres.
- E.g. accounting department, repairs & maintenance department

(ii) Revenue Centre

- It is a segment of the organisation which is primarily responsible for generating sales revenue.
- A revenue centre manager does not possess control over cost, investment in assets, but usually has control over some of the expense of the marketing department.
- The revenue centre manager will control the selling price, promotion mix and product mix
- The performance of a revenue centre is evaluated by comparing the actual revenue with budgeted revenue, and actual marketing expenses with budgeted marketing expenses.
- E.g. sales department

(iii) Profit Centre

- Also called business centre
- It is a segment of an organisation whose manager is responsible for both revenues and costs.
- In a profit centre, the manager has the responsibility and the authority to make decisions that affect both costs and revenues (and thus profits) for the department or division.
- The managers are encouraged to act as if they were running their own separate business.
- The main purpose of a profit centre is to maximise profit by making decisions relating to production volume, product mix, selling price, marketing strategy.
- Profit centre managers aim at both the production and marketing of a product.

(iv) Investment Centre

- It is responsible for both profits and investments.
- The investment centre manager has control over revenues, expenses and the amounts invested in the centre's assets.
- He also formulates the credit policy which has a direct influence on debt collection, and the inventory policy which determines the investment in inventory.
- The manager of an investment centre has more authority and responsibility than the manager of either a cost centre or a profit centre.
- Besides controlling costs and revenues, he has investment responsibility too. 'Investment on asset' responsibility means the authority to buy, sell and use divisional assets.
- E.g. a new hotel being developed.