INTERMEDIATE EXAMINATION **SET 2**

MODEL ANSWERS **TERM – DECEMBER 2025**

PAPER – 12 **SYLLABUS 2022**

MANAGEMENT ACCOUNTING

Time Allowed: 1 Hour **Full Marks:100**

Answer all questions. Each question carries 2 marks.

SECTION – A (Compulsory)

I. Choose the correct option: **[15 x 2 =30]**

(i) **The primary objective of Management Accounting is to**

a. **maximize profits**
b. **minimize losses**
c. **maximize profits or minimize losses**
d. **All of the above**

(ii) **The purpose of management accounting is to help _____make decisions.**

a. **Managers**
b. **Investors**
c. **Marketers**
d. **Banks**

(iii) **In an ABC system, which of the following is likely to be classified as a batch level activity?**

a. **Machine set-up**
b. **Product design**
c. **Inspection of every item produced**
d. **Production manager's work**

(iv) **Process of Cost allocation under Activity Based Costing is:**

a. **Cost of Activities—Activities —Cost Driver – Cost allocated to cost objects**
b. **Cost Driver — Cost of Activities— Cost allocated to cost objects – Activities**
c. **Activities— Cost of Activities—Cost Driver – Cost allocated to cost objects**
d. **Activities—Cost Driver – Cost allocated to cost objects — Cost of Activities**

(v) **sales in units for desired profit if Fixed cost is ₹15,000, desired profit is ₹5,000 Selling price per unit is ₹20 and Variable cost per unit is ₹16.**

a. **₹5,000 units**
b. **₹ 5,000 units**
c. **₹ 10,000 units**
d. **₹10,000 units**

(vi) **Determine B.E.P. if sales is ₹1,00,000, variable cost is ₹50,000 and profit ₹20,000:**

a. **₹60,000**
b. **₹40,000**
c. **₹80,000**
d. **None of the above**

(vii) **Fixed cost includes:**

a. **Property taxes**
b. **Rent**
c. **Insurance premium**
d. **All of the above**

(viii) **M Group has two divisions; Division P and Division Q. Division P manufactures an item that is transferred to Division Q. The item has no external market and 6,000 units produced are transferred internally each year. The costs of each division are as follows? Variable Cost Division P ₹100 per unit Division Q ₹120 per unit Fixed cost each year ₹1,20,000 ₹90,000 Head Office management decided that a transfer price should be set that provides a profit of ₹30,000 to Division P. What should be the transfer price per unit?**

a. **₹ 145**
b. **₹ 125**
c. **₹ 120**
d. **₹ 135**

(ix) **The advantages of standard costs include all of the following except:**

a. **Management by exception may be used**
b. **Management planning is facilitated**
c. **They may simplify the costing of inventories**
d. **Management must use a static budget**

(x) **Which of the following equations can be used to calculate a material quantity variance?**

a. **(AQ × AP) - (AQ × SP)**
b. **(AP × SP) - (AQ × SP)**
c. **(AQ × SP) - (SQ × SP)**
d. **(AQ × SP) - (AQ × AP)**

(xi) **The process of budgeting helps in the control of:**

a. **Cost of production**
b. **Liquidity**
c. **Capital Expenditure**
d. **All of the above**

(xii) **Return on Equity =**

a. **Net Profit Margin × Asset Turnover Ratio × Financial Leverage**
b. **Gross Profit Margin × Asset Turnover Ratio × Financial Leverage**
c. **Net Profit Margin × Inventory Turnover Ratio × Financial Leverage**
d. **Net Profit Margin × Asset Turnover Ratio × Operating Leverage**

(xiii) **Responsibility accounting is used for _____.**

a. **cost control**
b. **planning**
c. **decision making**
d. **pricing**

(xiv) **A type of decision -making environment is**

a. **Certainty**
b. **Uncertainty**
c. **Risk**
d. **All of these**

(xv) **The minimum expected opportunity loss (EOL) is:**

a. **Equal to EVPI**
b. **Minimum regret**
c. **Equal to EMV**
d. **Both (a) and (b)**

Answer:

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

Section – B

(Answer any five questions out of seven questions given. Each question carries 14 Marks)

[5 x 14 = 70]

2. (a) Discuss the difference between Cost Accounting and Management Accounting. [7]

(b) XYZX Co. Produces three products X, Y & Z, their per unit cost data are given below:

Particulars	X	Y	Z	Total
Unit Produced	10,000	20,000	30,000	
Direct Material cost per unit (₹)	50	40	30	
Direct Labour Cost Per unit (₹)	30	40	50	
Labour Hour Per Unit	3	4	5	
Machine Hour Per Unit	4	4	7	
No. Of Purchase Requisition	1200	1800	2000	5000
Number Of Machine Set ups	240	260	300	800

Production overhead ₹26,00,000 split into two departments:
Department 1: ₹ 11,00,000,
Department 2: ₹ 15,00,000,
Department 1 is labour intensive, and Department 2 is machine intensive.

Total labour hours in Department 1 = 1,83,333
Total machine hours in department 2 = 5,00,000.
Production overheads split into two ₹26,00,000.
Receiving and inspection: ₹ 14,00,000, Production scheduling and machine set up: ₹ 12,00,000.
You are required to prepare product cost statement under Traditional method and Activity method. **[7]**

Answer:

(a)

The basis for Comparison	Cost Accounting	Management Accounting
Meaning	Cost accounting revolves around cost computation, cost control, and cost reduction.	Management accounting helps management make effective decisions about operations of the business.
Application	Cost accounting prevents a business from incurring costs beyond budget.	Management accounting offers a big picture of how management should strategize.
Scope	The scope is much narrower.	The scope is much broader.
Measuring grid	Quantitative.	Quantitative and qualitative.
Sub-set	Cost accounting is one of the many sub-sets of management accounting.	Management accounting is the universal set.
Basis of decision making	The task of decision making very less. Even if there is some, it is based on historic information	Historic and predictive information is the basis of decision-making.
Statutory requirement	Statutory audit of cost accounting is a requirement in some specified industries	The audit of management accounting has no statutory requirement.
Dependence	Cost accounting isn't dependent on management accounting to be successfully implemented.	Management accounting is dependent on both cost & financial accounting for successful implementation.
Used for	Management, shareholders, and vendors.	Only for management.

(b) Traditional method Statement of cost

Particulars	X	Y	Z
Direct Material cost per unit (₹)	50	40	30
Direct Labour Cost Per unit (₹)	30	40	50
Prime cost (₹)	80	80	80
Overhead Department 1 (Labour hr × rate*) (₹)	18	24	30
Department 2 (machine hr × rate*) (₹)	12	12	21
Total Cost Per Unit (₹)	110	116	131

* Overhead absorption rate:
Department 1: 11,00,000/1,83,333 = ₹6 /labour hour
Department 2: 15,00,000/5,00,000 = ₹3 /machine hour

- **Activity based costing**

Using ABC method, the overhead costs are absorbed according to the cost driver rate: Receiving and inspection = 14,00,000/5,000 = ₹280 per requisition
Scheduling and set up= 12,00,000/ 800= ₹1500 per set up

Particulars	X	Y	Z
Direct Material cost per unit (₹)	50	40	30
Direct Labour Cost Per unit (₹)	30	40	50
Prime cost (₹)	80	80	80
Overhead Receiving and inspection: (₹) X: 280*1200/10,000 Y: 280*1800/20,000 Z: 280*2000/30,000	33.60	25.20	18.67
Production scheduling: (₹) X: 1500*240/10000 Y: 1500*260/20000 Z: 1500*300/30000	36	19.50	15
Total Cost Per Unit (₹)	149.60	124.70	113.67

3. (a) Carbon Ltd. Manufactures 50,000 units of a product with the following cost break up:

	(₹)
Direct material cost	**5.00**
Direct wages	**3.00**
Direct expenses	**1.50**
Other variable costs	**2.50**
Fixed costs	**4.00**
Total cost	**16.00**

The product with the same specification is available in the market at a price of ₹14

I. Examine whether you would decide to buy the component at this price.

II. Calculate and evaluate your decision if the supplier offers to sell the product at a price of (i) ₹11 and (ii) ₹12. [7]

(b) A company has two profit centres; X and Y. X sells half of its output on the open market and transfers the other half to Y. Costs and external revenues in an accounting period are as follows.

	X (₹)	**Y (₹)**	**Total (₹)**
External sales	**8,000**	**24,000**	**32,000**
Costs of production	**12,000**	**10,000**	**22,000**
Company profits			**10,000**

Required:

Examine the implications of setting the transfer price at market value between profit centres X and Y. **[7]**

Answer:

(a) Marginal (Variable) Cost per unit of the product:

Cost Per Unit	(₹)
Direct material cost	5.00
Direct wages	3.00
Direct expenses	1.50
Other variable costs	2.50
Total	12.00

I. The company should go for making the product as marginal cost is lower than the current market price.

II. (a) Marginal cost = ₹12 per unit; offer price = ₹11
They should buy the product from outside market as marginal cost is higher than the offer price.

(b) Marginal cost = ₹12 per unit; Offer price = ₹12
The company can either make the product internally or buy the product from outside sources as the marginal cost is equal to the offer price. In the case, certain non-cost factors are to be considered to arrive at the final decision**.**

(b) If the transfer price is at market price, X would be happy to sell the output to Y for ₹ 8,000

	X (₹)	**Y (₹)**	**Total (₹)**
External Sales	8,000	24,000	32,000
Transfer sales	8,000	---	---
Transfer costs		8,000	---
Own costs	12,000	10,000	22,000
	4,000	6,000	10,000

The transfer sales of X are self-cancelling with the transfer cost of Y, so that the total profits are unaffected by the transfer items. The transfer price simply spreads the total profit between X and Y.

Consequences:

(i) 'A' earns the same profit on transfers as on external sales. Y must pay a commercial price for transferred goods, and both divisions will have their profit measured in a fair way.

(ii) 'A' will be indifferent about selling externally or transferring goods to Y because the profit is the same on both types of transaction. 'A' can therefore ask for and obtain as many units as it wants from X.

X division's market-based transfer price therefore seems to be the ideal transfer price.

4. (a) A retailer dealer in garments is currently selling 24,000 shirts annually. He supplies the following details for the year ended 31 December 2024:

	₹
Selling price per unit	**40**
Variable cost per unit	**25**
Fixed cost: Staff salaries for the year	**1,20,000**
General office costs for the year	**80,000**
Advertising costs for the year	**40,000**

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

i. Calculate the break-even point and margin of safety in sales revenue.

ii. Assume that 20,000 shirts were sold in a year. Determine the net profit of the firm.

iii. If it is decided to introduce selling commission of ₹3 per shirt, how many shirts would require to be sold in a year to earn a net income of ₹15,000.

iv. Calculate the break-even point (in units and sales revenue) if, for the year 2025, an additional staff salary of ₹34,000 is anticipated and the selling price per shirt increases by 15%. [7]

(b) A producer installed a machine which can produce product 'A' as well as product 'B'. Annual maximum machine running capacity is 4,000 hours. Cost details of the products are as follows:

	Product 'A'	Product 'B'
Selling price per unit	**₹ 50**	**₹ 20**
Variable cost per unit	**₹ 30**	**₹12**
Machine hours required per unit of product	**10 hrs.**	**2 Hrs.**
Annual demand	**300 Units**	**1,600**

Units Annual fixed Cost: ₹10,000

Calculate optimum product-mix showing annual contribution and profit. Give necessary explanation. Further, analyse how adopting a product-mix different from the one you have suggested would affect the overall profitability of the firm. [7]

Answer:

(a) 1. BEP = Fixed cost contribution per unit $= \frac{2,40,000}{15}$ = 16,000 units or

= 16,000×40 = ₹ 6,40,000

Margin of Safety (MS) = Actual sales – Break even sales

= 24000×40 - ₹ 6, 40,000

= 9, 60,000 - 6,40,000

= ₹3,20,000

2. Net Profit when 20,000 shirts are sold:

Contribution: 20,000 × 15	₹ 3,00,000
Less: Fixed Costs	₹ 2,40,000
Profit	₹ 60,000

3. Sales for Desired Profit. $= \frac{\text{Fixed cost+Desired profit}}{\text{contribution per unit}} = \frac{2,40,000+15,000}{15-3} = \frac{2,55,000}{12} = 21,250$ shirt

4. New Break-even Point: (In units) $= \frac{\text{New Fixed Cost}}{\text{New contribution per unit}} = \frac{2,40,000+34,000}{46-25}$

$= \frac{2,74,000}{21}$

= 13,047.62 shirts

Or, 13,048 shirts

In ₹ = 13,048 shirts ×₹46 = ₹6,00,208.

(b) Maximum machine capacity 4,000 hours

Annual fixed Cost ₹10,000

Statement of Contribution per Machine Hour

	Product A	Product B
Annual demand	300 units	1600 units
Selling price per unit	₹ 50	₹20
Less: Variable cost per unit	30	12
Contribution per unit	₹ 20	₹ 8
Machine hours per unit	10 hrs.	2 hrs.
Contribution per machine hour	₹ 2	₹ 4
Ranking	2	1

As Product B provides maximum contribution per machine hour, the available machine capacity should first be utilized to produce 1,600 units of B. It will take 3,200 i.e. 1600 × 2 machine hours. The remaining hours, i.e. 4,000 - 3,200 = 8hours, can be used to produce 80 units of Product A. Hence, the optimum product mix is 1,600 units of B and 80 units of A**.**

Statement Showing Profit from Optimum Product Mix

Contribution of Product B - 1,600 × 8	12,800
Contribution of Product A - 80 × 20	1,600
Total contribution	14,400
Less: Fixed Cost	10,000
Profit	4,400

Any other mix with constraint of 4,000 machine hours will yield lesser profit. Suppose an alternative mix is 200 units of A and 1,000 units of B. The resulting profit will be:

Contribution from B- 1000 × 8	8,000
Contribution from A - 200 × 20	4,000
Total contribution	12,000
Less: Fixed Cost	10,000
Profit	₹ 2,000

5. (a) KMLKO Ltd. has disclosed the following data for the month of January:

	Budget	Actual
Outputs (units)	**30,000**	**32,500**
Hours	**30,000**	**33,000**
Variable overhead	**60,000**	**70,000**
Working days	**25**	**26**

Calculate overhead variances. **[7]**

(b) ABC Co. uses a standard cost system and manufactures product Z. Standard cost per 1000 kg of output is as under:

In March 2022, the company produced 2,00,000 kg of output. Actual consumption was:

Material	Quantity (in kg)	Price (in ₹)
A	**800**	**2.50**
B	**200**	**4.00**
C	**200**	**1.00**

Material:

A – 1,57,000 kg @₹ 2.40

B – 38,000 kg @₹ 4.20

C – 36,000 kg @₹ 1.10

Calculate Material cost variance. **[7]**

Answer:

(a) Calculations

Standard hour per unit = Budgeted hours ÷ Budgeted units = 30,000 ÷30,000 = 1 hour

Standard hour for actual output = 32,500 units × 1 hour = 32,500

Standard overhead rate per hour = Budgeted overheads ÷ Budgeted units

variable overhead = 60,000/30,000 = ₹2 per unit

variable overhead = 32,500 hours × ₹2 = ₹65,000

Standard overhead =Actual hours × Standard Rate

variable overhead =33,000 × 2 = ₹66,000

Revised budgeted hours = (Budgeted hours ÷ Budgeted Days) × Actual days
= (30,000 ÷ 25) × 26
= 31,200 hours

Variable Overhead Variances:

- Variable Overhead Cost Variance = Recovered Overhead – Actual Overhead
  = 65,000 – 70,000
  = ₹5,000 (A)

- Variable Overhead Expenditure Variance = Standard Overhead – Actual Overhead
  = 66,000 – 70,000
  = ₹4,000(A)

- Variable Overhead Efficiency Variance = Recovered Overhead - Standard Overhead
  = 65,000 - 66,000
  = ₹1,000 (A)

(b) Standards Material Cost of 2,00,000 kg of output

	Standard Quantity (in kg)	Standard Price (in ₹)	SQ × SP (₹)
A	800×200 =1,60,000	2.50	4,00,000
B	200×200 = 40,000	4.00	1,60,000
C	200×200 = 40,000	1.00	40,000
	2,40,000		6,00,000

Actual Material Cost of 2,00,000 kg of output

Particulars	AQ (kg)	AP (₹)	AQ × AP (₹)
A	1,57,000	2.40	3,76,800
B	38,000	4.20	1,59,600
C	36,000	1.10	39,600
	2,31,000		5,76,000

Material cost variance = (SQ × SP) – (AQ × AP) = 6,00,000 – 5,76,000 = ₹ 24,000 (F)

6. (a) PC Ltd. is preparing its budget for the second quarter of 2024-25 for its popular product, 'X'. The following information has been provided to assist in the budget preparation:

(i) The company anticipates selling 150,000 bags of 'X' during the second quarter of 2024-25, with a selling price of ₹1,200 per bag.

(ii) Each bag of 'X' requires 2.5 meters of raw material 'Y' and 7.5 meters of raw material 'Z'.

(iii) Planned stock levels for raw materials and finished goods are outlined as follows:

Particulars	Beginning of Quarter	End of Quarter
Finished Bags of 'X' (Nos.)	45,000	33,000
Raw - Material 'Y' (mtr)	96,000	78,000
Raw - Material 'Z' (mtr)	1,71,000	1,41,000
Empty Bag (Nos.)	1,11,000	84,000

(iv) 'Y' cost ₹160 per mtr., 'Z' costs ₹30 per mtr. and 'Empty Bag' costs ₹120 each.

(v) It requires 9 minutes of direct labour to produce and fill one bag of 'X'. Labour cost is ₹70 per hour.

(vi) Variable manufacturing costs are ₹60 per bag. Fixed manufacturing costs ₹40,00,000 per quarter.

(vii) Variable selling and administration expenses are 5% of sales and fixed administration and selling expenses are ₹3,75,000 per quarter.

Required:

I. Prepare a production budget in terms of quantity for the second quarter of 2024-25.

II. Prepare a raw material purchase budget for raw materials 'Y', 'Z', and 'Empty Bags' for the second quarter of 2024-25, both in terms of quantity and value.

III. Calculate the budgeted variable cost per unit for producing one bag of product 'X' for the second quarter of 2024-25. **[7]**

(b) Budget for the previous two years are as provided below - (in ₹ Lakhs)

Particulars	Year 1 (for 5,000 units)		Year 2 (for 6,000 units)	
Sales		**30.00**		**39.60**
Materials	**12.50**		**15.75**	
Labour	**6.00**		**7.92**	
Overheads (Variable and Fixed)	**7.00**	**25.50**	**8.70**	**32.37**
Profit		**4.50**		**7.23**

- **The price increase in Year 2 was driven by inflation, which also impacted the overhead costs.**
- **The management believes that the increase in sales volume and labour costs in Year 3 will be consistent with the growth experienced in Year 2 compared to Year 1.**
- **Regarding the increase in sales price and other cost components, two perspectives are being considered:**

I. same increase rate will prevail, and

II. increase will be less by 2%.

Prepare Budgeted Profitability for Year 3, taking both views I. and II. above. **[7]**

Answer:

(a)

I. Production Budget of 'X' for the Second Quarter

Particulars	Bags (Nos.)
Budgeted Sales	1,50,000
Add: Desired Closing stock	33,000
Total Requirements	1,83,000
Less: Opening stock	(45,000)
Required Production	1,38,000

II. Raw-Materials Purchase Budget in Quantity as well as in ₹ for 1,38,000 Bags of 'X

Particulars	Y Mtr.	Z Mtr.	Empty Bags Nos.
Production Requirements Per bag of 'X'	2.5	7.5	1.0
Requirement for Production	3,45,000 (1,38,000 × 2.5)	10,35,000 (1,38,000 × 7.5)	1,38,000 (1,38,000 × 1)
Add: Desired Closing Stock	78,000	1,41,000	84,000
Total Requirements	4,23,000	11,76,000	2,22,000
Less: Opening Stock	(96,000)	(1,71,000)	(1,11,000)
Quantity to be purchased	3,27,000	10,05,000	1,11,000
Cost per mtr./Bag	₹160	₹30	₹120
Cost of Purchase (₹)	5,23,20,000	3,01,50,000	1,33,20,000

III. Computation of Budgeted Variable Cost of Production of 1 Bag of 'X'

Particulars	**(₹)**
Raw – Material	
Y 2.5 mtr @160	400.00
Z 7.5 mtr @30	225.00
Empty Bag	120.00
Direct Labour (₹70× 9 minutes / 60 minutes)	10.50
Variable Manufacturing Overheads	60.00
Variable Cost of Production per bag	815.50

(b) I. Basic Computations

(a) Sales and Production Quantity Increase from Year 1 to Year 2 = (6,000 - 5,000) units ÷ 5,000 units = 20%.

(b) Sales Price Increase from Year 1 to Year 2 = 39.60 - (30 * 120 %) ÷ (30.00*120%) =10%
Materials Price Increase from Year 1 to Year 2=15.75-(12.50 * 120%) ÷ (12.50*120%) =5%

(c) Labour Rate Increase from Year 1 to Year 2= 7.92 - (6 * 120 %) ÷ (6.00*120%) =10%

(d) OH for Year 2 after 10% increase (i.e. same as Sales Price Increase) = ₹7.00 Lakhs + 10% =₹7.70 Lakhs. So, change in OH, attributed to increase in quantity between Year 1 to Year 2=₹8.70 Lakhs - ₹7.70 Lakhs = ₹1.00 Lakh, for 1,000 units. Hence, Variable OH for Year 2 (at the rate of ₹1.00 Lakh for 1,000 units) = ₹6.00 Lakhs. So, Fixed OH for Year 2 = Total OH less Variable OH = ₹8.70 Lakhs - ₹6.00 Lakhs = ₹2.70 Lakhs.

II. Budget for Year 3.

Particulars	**View1: Same increase** as seen between Year 1 & Year 2	**View 2: Increase by 2%** except sales Volume and Labour Cost, which is same as previous
Quantity	6,000+ 20% = 7,200 units	6,000+ 20% = 7,200 units
Sales	(39.60/(6000units)*7,200units)* 110% = 52.27	(39.60/(6000units)*7,200units)*108% = 51.32
Materials	(15.75/(6000units)*7,200units)* 105% = 19.85	(15.75/(6000units)*7,200units)*103% = 19.47
Labour	(7.92/(6000units)*7,200 units)*110% = 10.45	(7.92/(6000units)*7,200units)*110% = 10.45
VOH	(6/(6000units)*7,200 units)*110% = 7.92	(6/(6000units)*7,200units)*108% = 7.78
Fixed OH	2.7 * 110 % = 2.97	2.7 * 108 % = 2.92
Total Cost	**41.19**	**40.62**
Profit	**11.08**	**10.70**

7. (a) XYZ LTD furnishes the following information, from which you are required to calculate the Economic Value Added of the company:

Equity shares of ₹1,000 each	**Nos. 1,58,200**
12% Debentures of ₹10 each	**Nos. 50,00,000**
Tax rate	**30%**
Financial Leverage	**1.1 times**
Securities Premium Account (₹ in lakhs)	**155**
Free reserves (₹ in lakhs)	**154**
Capital Reserve (₹ in lakhs)	**109**

It is a prevailing practice for companies in the industry to which XYZ belongs to pay at least a dividend of 15% p.a. to its Equity shareholders. [7]

(b) The usual learning curve model is $y = ax^b$ where, 'y' is the average time per unit for x units; 'a' is the time for first unit; x is the cumulative number of units; b is the learning coefficient and is equal to log 0.8 ÷ log 2 = – 0.322 for a learning rate of 80%. Given that a = 10 hours and learning rate 80%, you are required to calculate:

(i) The average time for 20 units.

(ii) The total time for 30 units.

(iii) The time for units 31 to 40.

Given that log 2 = 0.301, Antilog of 0.5811 = 3.812; log 3 = 0.4771, Antilog of 0.5244 = 3.345, log 4 = 0.6021, Antilog of 0.4841 = 3.049. [7]

Answer:

(a) Computation of Economic Value Added

Particulars	₹In lakhs
Profit after tax (WN 1)	420
Add: Interest net of tax = 60 × {(100-30)/100}	42
Return to providers of funds	462
Less: Cost of Capital (WN 2)	(342)
Economic Value Added	120

Working Note:

1. Calculation of Net Profit after interest and tax

Interest on Debentures = 50,00,000 × ₹10 × 12% = ₹60,00,000

Therefore Financial Leverage $= \frac{\textit{Profit before Interest \& taxes (PBIT)}}{\textit{PBIT less Interest}}$

or, 1.10 $= \frac{\textit{PBIT}}{\textit{PBIT} - 60{,}00{,}000}$

or, 1.10 (PBIT – ₹ 60,00,000) = PBIT
or, 1.10 PBIT – ₹66,00,000 = PBIT
or, 1.10 PBIT – PBIT = ₹66,00,000
or, 0.10 PBIT = ₹66,00,000
Therefore, PBIT = ₹6,60,00,000

Profit after interest but before tax = ₹6,60,00,000 – ₹60,00,000 = ₹6,00,00,000
Less: Income Tax @30% (₹1,80,00,000)
Profit After Interest & Tax ₹4,20,00,000

2. Calculation of Weighted Average Cost of Capital (WACC)

Particulars	₹In lakhs	Amount (₹) (1)	Weight (2)	Cost % (3)	WACC % (4) = 2×3
Equity Shareholders fund					
Common Shares (1,58,200 × ₹1,000)	1,582				
Securities Premium	155				
Free Reserves	154				
Capital Reserves	109	2,000	0.80	15	12.00
Debenture holders fund (50,00,000 × ₹10)		500	0.20	8.4*	1.68
		2,500	1.00		13.68

* Cost of Debt = 12% (1 - Tax Rate) = 12% (1 - 30%) = 8.4.
Cost of Capital = Capital Employed × WACC% = ₹2,500 lakhs × 13.68% = ₹342 lakhs

(b)

(i) $y = ax^b$ or, $y = 10(20)^{-0.322}$
Taking log on both sides Log y = log 10 + log $20^{(-0.322)}$
Log y = log 10 – (0.322) log 20 = 1 – (0.322) log 20 = 1- (0.322) × log (2×10) = 1- (0.322) × (log2 + log10) = 1- (0.322) × (1.3010) = 1- 0.41892 = 0.5811
Log y = 0.5811
y = Anti log (0.5811) = 3.812 hrs (average time)
Total Time = 3.812 × 20 = 76.24 hours

(ii) Log y = log 10 + log $30^{(-0.322)}$
Log y = 1- (0.322) × (1.4771)
= 1 - (0.4756) = 0.5244
y = anti log (0.5244) = 3.345 hrs (average time)
Total time = 3.345 × 30 = 100.35 hrs.

(iii) Log y = log 10 + log $40^{(-0.322)}$ = 1- (0.322) × (1.6021)
Log y = 0.4841
y = anti log (0.4841) =3.049 hrs
Total time=40×3.049=121.96 hrs
Time from 31 to 40 units = 121.96 – 100.35 = 21.61 hrs.

8. (a) Explain the concept of a Decision Tree as a tool of managerial decision-making. Also summarize its merits in analysing sequential decisions and expected outcomes. [7]

(b) Explain the essential features of Responsibility Accounting. [7]

Answer:

(a) A decision tree shows a complete picture of a potential decision and allows a manager to graph alternative decision paths. Decision trees are a useful way to analyse hiring, marketing, investments, equipment purchases, pricing, and similar decisions that involve a progression of smaller decisions. Generally, decision trees are used to evaluate decisions under conditions of risk. Decision making is the core function of management. New tools for analysis that aid decision making are being developed. One such tool is the decision tree. It is essentially a visual graph that uses the branching method to map every possible outcome of a particular decision.

The term decision tree comes from the graphic appearance of the technique that starts with the initial decision shown as the base. The various alternatives, based upon possible future environmental conditions, and the payoffs associated with each of the decisions branch from the trunk.

Decision trees force a manager to be explicit in analysing conditions associated with future decisions and in determining the outcome of different alternatives. The decision tree is a flexible method. It can be used for many situations in which emphasis can be placed on sequential decisions, the probability of various conditions, or the highlighting of alternatives.

Decision trees are diagrams which illustrate the choices and possible outcomes of a decision. A decision tree is a pictorial method of showing a sequence of interrelated decisions and their expected outcomes.

Decision trees can incorporate both the probabilities of, and values of, expected outcomes, and are used in decision-making.

More complex probability questions, although solvable using the basic principles, require a clear logical approach to ensure that all possible choices and outcomes of a decision are taken into consideration.

Decision trees are a useful means of interpreting such probability problems.

Merits of Decision Trees

- All the possible choices that can be made are shown as branches on the tree.
- All the possible outcomes of each choice are shown as subsidiary branches on the tree.

(b) Essential Features of Responsibility Accounting:

1. Inputs and Outputs or Costs and Revenues:

- The implementation and maintenance of responsibility accounting system is based upon information relating to inputs and outputs.
- The physical resources utilized in an organisation such as quantity of raw material used and labour hours consumed, are termed as inputs. These inputs expressed in the monetary terms are known as costs.
- Similarly, outputs expressed in monetary terms are called revenues.
- Thus, responsibility accounting is based on cost and revenue information.

2. **Planned and Actual Information or Use of Budgeting:**
   - Effective responsibility accounting requires both planned and actual financial information.
   - It is not only the historical cost and revenue data but also the planned future data which is essential for the implementation of responsibility accounting system.
   - It is through budgets that responsibility for implementing the plans is communicated to each level of management.
   - The use of fixed budgets, flexible budgets and profit planning are all incorporated into one overall system of responsibility accounting.

3. **Identification of Responsibility Centres:**
   - The whole concept of responsibility accounting is focused around identification of responsibility centres.
   - The responsibility centres represent the sphere of authority or decision points in an organisation.
   - In a small firm, one individual or a small group of individuals, who are usually the owners may possibly manage or control the entire organisation.
   - However, for effective control, a large firm is, usually, divided into meaningful segments, departments or divisions. These sub- units or divisions of organisation are called responsibility centres.
   - A responsibility centre is under the control of an individual who is responsible for the control of activities of that sub-unit of the organisation.
   - This responsibility centre may be a very small sub-unit of the organisation, as an individual could be made responsible for one machine used in manufacturing operations, or it may be very big division of the organisation, such as a divisional manager could be responsible for achieving a certain level of profit from the division and investment under his control.
   - However, the general guideline is that "the unit of the organisation should be separable and identifiable for operating purposes and its performance measurement possible".

4. **Relationship between Organisation Structure and Responsibility Accounting System:**
   - A sound organisation structures with clear-cut lines of authority—responsibility relationships are a prerequisite for establishing a successful responsibility accounting system.
   - Responsibility accounting system must be so designed as to suit the organisation structure of the organisation.
   - It must be founded upon the existing authority- responsibility relationships in the organisation.
   - In fact, responsibility accounting system should parallel the organisation structure and provide financial information to evaluate actual results of each individual responsible for a function.

5. **Assigning Costs to Individuals and Limiting their Efforts to Controllable Costs:**
   - After identifying responsibility centres and establishing authority-responsibility relationships, responsibility accounting system involves assigning of costs and revenues to individuals.

- Only those costs and revenues over which an individual has a definite control can be assigned to him for evaluating his performance
- The following guidelines should be followed while assigning of costs
  - If the person has authority over both the acquisition and use of the services, he should be charged with the cost of these services.
  - If the person can significantly influence the amount of cost through his own action, he may be charged with such costs.
  - Even if the person cannot significantly influence the amount of cost through his own direct action, he may be charged with those elements with which the management desires him to be concerned, so that he will help to influence those who are responsible.

6. Performance Reporting:

- A control system to be effective should be such that deviations from the plans must be reported at the earliest so as to take corrective action for the future. The deviations can be known only when performance is reported.
- Responsibility accounting system is focused on performance reports also known as 'responsibility reports', prepared for each responsibility unit.
- Unlike authority which flows from top to bottom, reporting flows from bottom to top. These reports should be addressed to appropriate persons in respective responsibility centres.
- The reports should contain information in comparative form as to show plans (budgets) and the actual performance and should give details of variances which are related to that centre.

The variances which are not controllable at a particular responsibility centre should also be mentioned separately in the report.