



**INTERMEDIATE EXAMINATION
MODEL QUESTION PAPER
PAPER – 12
MANAGEMENT ACCOUNTING**

**SET - 2
TERM – DECEMBER 2024
SYLLABUS 2022**

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) In the context of budgeting, what is a 'flexible budget'?
 - a) A budget that remains unchanged regardless of actual performance
 - b) A budget that adjusts to changes in activity levels
 - c) A budget that is created after the actual results are known
 - d) A budget that includes only fixed costs.

- (ii) Which of the following methods is used to allocate overhead costs based on the activities that consume resources?
 - a) Traditional Costing
 - b) Direct Costing
 - c) Activity-Based Costing (ABC)
 - d) Standard Costing

- (iii) In budgeting, what does a 'master budget' encompass?
 - a) Only the sales budget
 - b) The comprehensive set of budgets including sales, production, and cash budgets
 - c) The production budget alone
 - d) Only the cash flow budget

- (iv) Marginal costing is also known as _____.
 - a) Direct Costing
 - b) Variable Costing
 - c) Contribution Costing
 - d) All of A, B and C

- (v) Fixed cost: - ₹ 2,80,000
Sales: - ₹ 1000,000
P/v ratio: - 30%
Calculate the amount of profit.
 - a) ₹50,000
 - b) ₹40,000
 - c) ₹45,000
 - d) ₹20,000

- (vi) Calculate the material price variance from the following:
Actual Quantity - 3.5 kgs
Standard Price - ₹ 4 per kg
Actual Price - ₹ 8 per kg
Standard Quantity - 4 kgs



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- a) ₹ 3(F)
b) ₹ 14(A)
c) ₹ 12(A)
d) ₹ 6 (F)
- (vii) In the context of cost accounting, what does the term 'relevant cost' refer to?
- (a) Costs that have already been incurred and cannot be changed
(b) Costs that are pertinent to a specific decision and will be directly affected by that decision
(c) Costs that are allocated equally across all products
(d) Costs that are used to determine standard pricing.
- (viii) A company has a Net Profit Margin of 0.25, total asset turnover is 1.6 times and equity multiplier is 2.5. Calculate ROE as per Du Pont analysis.
- a) 0.625
b) 4
c) 1
d) 1.5
- (ix) During September, 400 labour hours were worked for a total cost of ₹ 8,800. The variable overhead expenditure variance was ₹ 800 (A). Overheads are assumed to be related to direct labour hours of active working. What was the standard cost per labour hour?
- a) ₹ 20
b) ₹ 16.50
c) ₹ 17.50
d) ₹ 18
- (x) Responsibility accounting primarily measures which two aspects of responsibility centers?
- a) Costs and expenses
b) Budgets and actual results
c) Revenues and sales
d) Employee performance and satisfaction.
- (xi) A strategy that yields an expected monetary payoff of zero is called a:
- a) Risk-neutral strategy
b) Fair game
c) Zero-sum game
d) Certainty equivalent.
- (xii) According to Kaplan & Norton, which of the balanced scorecard perspectives serves as the focus of the other perspectives?
- a) Financial
b) Customer
c) Internal business processes
d) Learning & growth.
- (xiii) Which of the following would be considered an operating asset in return on investment computations?



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- a) Land being held for plant expansion
 - b) Treasury stock
 - c) Accounts receivable
 - d) Common stock.
- (xiv) What is a primary function of Key Performance Indicators (KPIs) in the role of a Management Accountant?
- a) Monitoring compliance
 - b) Assessing organizational performance
 - c) Implementing cost reduction strategies
 - d) Conducting variance analysis
- (xv) In a decentralized organization, what role does responsibility accounting play?
- a) It helps organization to focus on human resources.
 - b) It acts as the key management control tool.
 - c) It limits the authority of lower-level managers.
 - d) It focuses only on the company's profit margins.

SECTION – B

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

[5 x 14 = 70]

2. (a) How do you classify the functions of the management accountant? [7]
- (b) ABC Company manufactures four products, A, B, C and D, using the same manufacturing process. The following data are available relating to a production period:

Product	Volume	Material Cost per unit (₹)	Direct Labour per unit	Machine Time per unit	Labour Cost per unit (₹)
A	700	10	0.75 hour	¼ hour	5
B	5,800	15	0.75 hour	¼ hour	7
C	800	18	2 hours	1 hour	12
D	7,500	25	2.25 hours	1.75 hours	11

Total Production Overheads are as under

Particulars	₹
Machine related Costs	37,800
Set-up Costs	4,500
Ordering Costs	2,020
Material Handling Costs	8,400
Spare parts Administration Costs	5,950
	58,670

The Company absorbs factory overheads to the products by machine hour rate method and the hourly rate per machine hour is ₹4.80. The overheads cost of the products are as under:

Product	₹
A	1.2
B	1.2



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C	4.8
D	7.2

The production overheads activities for the period reveal the following:

Products	No. of Set-ups	No. of Materials Orders	No. of times Materials handled	Number of Spare parts
A	2	2	2	2
B	6	3	9	6
C	3	2	5	2
D	7	3	12	4

Prepare a Statement of Overhead Cost for all the Products, by using Activity Based Costing and compare the results with Traditional Costing. [7]

3. Division A is a profit centre, which produces four products P, Q, R and S. Each product is sold in the external market also. Data for the period is as follows:

	P	Q	R	S
Market Price per unit (₹)	350	345	280	230
Variable Cost of Production per unit (₹)	330	310	180	185
Labour hours required per unit	3	4	2	3

Product S can be transferred to Division B but the maximum quantity that might be required for transfer is 2,000 units of S.

The maximum sales in the external market are:

P - 3,000 units

Q - 3,500 units

R - 2,800 units

S - 1,800 units

Division B can purchase the same product at a slightly cheaper price of ₹ 225 per unit instead of receiving transfers of products S from Division A.

Calculate the transfer price for each unit for 2,000 units of S, if the total labour hours available in Division A are:

- (i) 24,000 hours?
(ii) 32,000 hours?

[14]

4. (a) Fashionable Clothing's revenues and cost data for 2023 are as follows:

Particulars	₹	₹
Revenues		9,00,000
Cost of goods sold		4,00,000
Gross margin		5,00,000
Operating costs:		
Salaries (fixed)	2,70,000	



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Sales commissions (10% of sales)	90,000	
Depreciation of equipment and fixtures	40,000	
Store rent (4,500 per month)	54,000	
Other operating costs	70,000	5,24,000
Operating income (loss)		(24,000)

Ms. Alpana, the owner of the store, is unhappy with the operating results. An analysis of other operating costs reveals that it includes ₹ 65,000 variable costs, which vary with sales volume, and ₹ 5,000 (fixed) costs.

- i. Calculate the contribution margin of Fashionable Clothing.
 - ii. Calculate the contribution margin percentage.
 - iii. Ms. Alpana estimates that she can increase revenues by 20% by incurring additional advertising costs of ₹ 38,000. Calculate the impact of the additional advertising costs on operating income. [7]
- (b) The Management Accountant of XYZ Ltd., has prepared the following estimates of working results for the year ending 31st December, 2022 for the purpose of preparing the budgets for the year ending 31st December, 2023.

Year ending 31/12/2022

Direct material	₹/unit	16.00
Direct wages	₹/unit	40.00
Variable overheads	₹/unit	12.00
Selling price	₹/unit	125.00
Fixed expenses	₹	6,75,000 p.a.
Sales	₹	25,00,000 p.a.

During the year 2023, it is expected that the material prices and variable overheads will go up by 10% and 5% respectively. As a result of re-organisation of production methods the overall direct labour efficiency will increase by 12% but the wage rate will go up by 5%. The fixed overheads are also expected to increase by ₹1,25,000. The technical director states that the same level of output as obtained in 2022 should be maintained in 2023 also and efforts should be made to maintain the same level of profit by suitably increasing the selling price. The marketing director states that the market will not absorb any increase in the selling price. On the other hand he proposes that publicity involving advertisement expenses in the proportions will increase the quantity of sales as under:

Advertisement expenses (₹)	80,000	1,94,000	3,20,000	4,60,000
Additional units of sales	2,000	4,000	6,000	8,000

- (i) Prepare an income statement for the year 2023.
- (ii) Calculate the revised price and the percentage of increase in the price for 2023 if the Technical Directors' views are accepted.
- (iii) Evaluate the four alternative proposals put forth by the Marketing Director, determine



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the best output level to be budgeted and prepare an overall income statement for 2023 at that level of output. [7]

5. The standard material cost for 100 kg of chemical D is made up:

Chemical A 30 kg. @ ₹ 4 per kg

Chemical B 40 kg. @ ₹ 5 per kg

Chemical C 80 kg. @ ₹ 6 per kg

In a batch 500 kg. of chemical D were produced from a mix of

Chemical A 140 kg. @ ₹588

Chemical B 220 kg. @ ₹1,056

Chemical C 440 kg. @ ₹2,860

Calculate the different variance in the actual cost per 100 kg. of chemical D over the standard cost. [14]

6. a) Budgeted and actual sales for the month of March, 2024 of two products A and B of M/s. XY Ltd. were as follows:

Product	Budgeted		Actual	
	Budgeted Units	Sales Price/Unit (₹)	Actual Units	Sales Price / Unit (₹)
A	8,000	₹8	7,500	8.00
			1,000	7.75
B	14,000	₹4	10,500	4.00
			1,750	3.50

Budgeted costs for Products A and B were ₹7.00 and ₹3.50 per unit respectively. Calculate the following variances from the above data:

Sales Volume Variance, Sales Value Variance, Sales Price Variance, Sales Sub Volume Variance, Sales Mix Variance. [7]

- b) The following data on production, materials required for products X and Y, and inventory pertain to the budget of LMN Company:

Particulars	Product X	Product Y
Production (Units)	2000	3000
Material (Units)		
A	3.0	1.0
B	4.0	6.5

Particulars	Beginning	Desired Ending	Price/unit
Material inventory:			
A	2000	3000	₹ 2
B	6000	6000	₹ 1.2

- i. Analyse the number of material units needed to produce products X and Y



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- ii. Calculate the cost of materials used for production.
- iii. Analyse the number of materials units to be purchased.
- iv. Calculate the cost of materials to be purchased.

[7]

7. a) XYZ Corporation has three divisions whose income statements and balance sheets are summarized below:

	Division X	Division Y	Division Z
Sales	₹5,00,000	(d)	(g)
Operating income	₹25,000	₹30,000	(h)
Operating assets	₹1,00,000	(e)	₹2,50,000
Asset Turnover	(a)	(f)	0.4
Margin	(b)	0.4%	5%
Return on investment (ROI)	(c)	2%	(i)

- (i) Calculate the missing data in the table above and summarize the results.
- (ii) Comment on the relative performance of each division. What questions can be raised as a result of their performance?

[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 $\log 0.8 \div \log 2 = -0.322$ 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]

8. a) Describe decision making under certainty with examples.

[7]

- b) Explain the characteristics of responsibility accounting.

[7]



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1. Choose the correct option:

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- (xiii) Which of the following would be considered an operating asset in return on investment computations?
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- (xv) In a decentralized organization, what role does responsibility accounting play?
- It helps organization to focus on human resources.
 - It acts as the key management control tool.
 - It limits the authority of lower-level managers.
 - It focuses only on the company's profit margins.

Answer:

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

SECTION – B

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

[5 x 14 = 70]

2. (a) How do you classify the functions of the management accountant? [7]
- (b) ABC Company manufactures four products, A, B, C and D, using the same manufacturing process. The following data are available relating to a production period:

Product	Volume	Material Cost per unit (₹)	Direct Labour per unit	Machine Time per unit	Labour Cost per unit (₹)
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Total Production Overheads are as under

Particulars	₹
Machine related Costs	37,800
Set-up Costs	4,500
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Spare parts Administration Costs	5,950
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The Company absorbs factory overheads to the products by machine hour rate method and the hourly rate per machine hour is ₹4.80. The overheads cost of the products are as under:

Product	₹
A	1.2
B	1.2
C	4.8
D	7.2

The production overheads activities for the period reveal the following:

Products	No. of Set-ups	No. of Materials Orders	No. of times Materials handled	Number of Spare parts
A	2	2	2	2
B	6	3	9	6
C	3	2	5	2
D	7	3	12	4

Prepare a Statement of Overhead Cost for all the Products, by using Activity Based Costing and compare the results with Traditional Costing. [7]

Answer:

- (a) The functions of a management accountant can be categorized as below:
- Planning and Accounting - Management accountants prepare an accounting system covering costs, sales forecasts, profit planning, production planning, and allocation of resources. It should also include capital budgeting, short-term and long-term financial planning. They also prepare the procedures necessary to implement the plan effectively.
 - Controlling - Management accountants assist in the control of an organisation's performance through the use of standard costing, budget control, accounting ratios, funds flow statements, cost-cutting initiatives, and assessing capital expenditure proposals and returns on investment.
 - Reporting - Management accountants assist the top management in finding out the root cause of an unfavourable operation or event by identifying the real reasons for the adverse events as well as the responsible parties and comprehensively reporting them.
 - Coordinating - Management accountants improve an organisation's efficiency and profits by providing various coordination tools such as budgeting, financial reporting, financial analysis and interpretation, and so on. These tools aid management by comparing cost and financial records, preparing financial budgets and establishing standard costs, and analyzing cost deviations to enable management by exception.
 - Communication- Management accountants create a wide range of reports to communicate results to the superiors. Through published financial statements and returns, they also inform the outside world about their company's success.
 - Financial evaluation and Interpretation - Management accountants analyze the data and present it to the management in a non-technical approach, together with their comments and ideas, so that the shareholders and senior management can understand it and make informed decisions.



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- Tax Administration- Management accountants are in charge of tax policies and processes. They make the reports that are required by various authorities. Further, they ensure that quarterly tax payments are made in advance, as required by the relevant Act, to prevent the payment of penal interest on late tax payments.
- Evaluation of external effects - There may be changes in government policy and existing laws. These amendments and policy changes can affect business goals. Management accountants assess the extent of any impact of these external factors on the business and report it to the stakeholders to take necessary precautionary measures.
- Economic appraisal - When the government makes regular announcements about the country's economic situation, management accountants are entrusted with making the economic study and determining the influence of current economic conditions on the company's operations. They compile a report containing their observations and present it to high management.
- Asset Protection - Management accountants separate fixed asset registers for each type and provide internal checks and controls to protect the company's assets. They also create the rules and regulations for each type of fixed asset and get insurance coverage for all types of fixed assets.

(b) No. of Activities:

$$\text{Set-ups} = (2+6+3+7) = 18$$

$$\text{Ordering} = (2+3+2+3) = 10$$

$$\text{Handling} = (2+9+5+12) = 28$$

$$\text{Spare parts} = (2+6+2+4) = 14$$

$$\text{Machine Hours} = (175 + 1450 + 800 + 13,125) = 15,550$$

ABC Cost Pool

Overhead Costs	Amount (₹)	Cost Driver	Activity Nos.	Cost Driver Rate (₹)
Machine related	37,800	Machine Hours	15,550	2.4308
Set-up Costs	4,500	No. of Set-ups	18	250
Ordering Costs	2,020	No. of Orders	10	202
Material Handling	8,400	No. of times	28	300
Spare parts	5,950	No. of Spares	14	425

Statement of Overhead Costs

(₹)

Product	A	B	C	D
No of Units	700	5,800	800	7,500
Overhead Costs:	500	1,500	750	1,750
Set-up Costs @ ₹250				
Material Ordering @ ₹202	404	606	404	606
Material Handling @ ₹300	600	2,700	1,500	3,600
Spare parts @ ₹425	850	2,550	850	1,700



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Machine related@ ₹2.4308	425	3,525	1,945	31,905 (Balance)
Total Overheads	2,779	10,881	5,449	39,561
Overheads Cost /unit (ABC)	3.97	1.87	6.81	5.27
Overheads Cost /unit (Traditional)	1.20	1.20	4.80	7.20
Difference	2.77	0.67	2.01	(1.93)

3. Division A is a profit centre, which produces four products P, Q, R and S. Each product is sold in the external market also. Data for the period is as follows:

	P	Q	R	S
Market Price per unit (₹)	350	345	280	230
Variable Cost of Production per unit (₹)	330	310	180	185
Labour hours required per unit	3	4	2	3

Product S can be transferred to Division B but the maximum quantity that might be required for transfer is 2,000 units of S.

The maximum sales in the external market are:

P - 3,000 units

Q - 3,500 units

R - 2,800 units

S - 1,800 units

Division B can purchase the same product at a slightly cheaper price of ₹ 225 per unit instead of receiving transfers of products S from Division A.

Calculate the transfer price for each unit for 2,000 units of S, if the total labour hours available in Division A are:

(i) 24,000 hours?

(ii) 32,000 hours?

[14]

Answer:

Statement Showing Contribution per unit and per labour hour

Particulars	P	Q	R	S
Selling Price per unit (₹)	350	345	280	230
Variable Cost per unit (₹)	330	310	180	185
Contribution per unit (₹)	20	35	100	45
Labour Hours per unit	3	4	2	3
Contribution per labour hour (₹)	6.67	8.75	50	15
Ranking	IV	III	I	II

Statement Showing Production Plan

Total Hours	Products	Hours/unit	Allocation of Hours
24,000	P	3	-
	Q	4	13,000
	R	2	5,600



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	S	3	5,400
			24,000

Statement Showing Transfer Price per unit of the product S

Total labour hours required for S (2000 units × 3 hours per unit)	6,000
Hours diverted from Product Q (1,500 units × 4 hours per unit)	6,000
Variable Manufacturing cost for Product 'S' (2000 × ₹ 185) =	₹ 3,70,000
Contribution foregone/ Opportunity Cost of Product Q (1500 × ₹35)	₹ 52,500
	₹ 4,22,500

(i) Hence, Transfer Price per unit (₹4,22,500 ÷ 2,000 units) = ₹211.25

Statement Showing Production Plan

Total Hours	Products	Hours/unit	Allocation of Hours
32,000	P	3	7,000
	Q	4	14,000
	R	2	5,600
	S	3	5,400
			32,000

Statement Showing Transfer Price per unit of the product S

Total labour hours required for Product S (2000 × 3 hours per unit)	6,000
Hours diverted from Product P (2,000 × 3 hours per unit)	6,000
Variable Manufacturing cost for Product S (2000 × ₹ 185) =	₹ 3,70,000
Contribution foregone /Opposition cost for Product P (2000 × ₹20) =	₹ 40,000
	₹ 4,10,000

(ii)Hence, Transfer Price per unit (₹4,10,000 ÷ 2,000 units) = ₹205.00

4. (a) Fashionable Clothing's revenues and cost data for 2023 are as follows:

Particulars	₹	₹
Revenues		9,00,000
Cost of goods sold		4,00,000
Gross margin		5,00,000
Operating costs:		
Salaries (fixed)	2,70,000	
Sales commissions (10% of sales)	90,000	
Depreciation of equipment and fixtures	40,000	
Store rent (4,500 per month)	54,000	
Other operating costs	70,000	5,24,000
Operating income (loss)		(24,000)



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Ms. Alpina, the owner of the store, is unhappy with the operating results. An analysis of other operating costs reveals that it includes ₹ 65,000 variable costs, which vary with sales volume, and ₹ 5,000 (fixed) costs.

- i. Calculate the contribution margin of Fashionable Clothing.
 - ii. Calculate the contribution margin percentage.
 - iii. Ms. Alpina estimates that she can increase revenues by 20% by incurring additional advertising costs of ₹ 38,000. Calculate the impact of the additional advertising costs on operating income. [7]
- (b) The Management Accountant of XYZ Ltd., has prepared the following estimates of working results for the year ending 31st December, 2022 for the purpose of preparing the budgets for the year ending 31st December, 2023.

Year ending 31/12/2022

Direct material	₹/unit	16.00
Direct wages	₹/unit	40.00
Variable overheads	₹/unit	12.00
Selling price	₹/unit	125.00
Fixed expenses	₹	6,75,000 p.a.
Sales	₹	25,00,000 p.a.

During the year 2023, it is expected that the material prices and variable overheads will go up by 10% and 5% respectively. As a result of re-organisation of production methods the overall direct labour efficiency will increase by 12% but the wage rate will go up by 5%. The fixed overheads are also expected to increase by ₹1,25,000. The technical director states that the same level of output as obtained in 2022 should be maintained in 2023 also and efforts should be made to maintain the same level of profit by suitably increasing the selling price. The marketing director states that the market will not absorb any increase in the selling price. On the other hand he proposes that publicity involving advertisement expenses in the proportions will increase the quantity of sales as under:

Advertisement expenses (₹)	80,000	1,94,000	3,20,000	4,60,000
Additional units of sales	2,000	4,000	6,000	8,000

- (i) Prepare an income statement for the year 2023.
- (ii) Calculate the revised price and the percentage of increase in the price for 2023 if the Technical Directors' views are accepted.
- (iii) Evaluate the four alternative proposals put forth by the Marketing Director, determine the best output level to be budgeted and prepare an overall income statement for 2023 at that level of output. [7]



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Answer:

(a)

Particulars	₹	₹
Revenues		9,00,000
Deduct variable costs:		
Cost of goods sold	4,00,000	
Sales commissions	90,000	
Other operating costs	65,000	5,55,000
Contribution margin		3,45,000
Contribution margin percentage =	3,45,000/9,00,000	= 0.38

Particulars	Details	₹
Incremental revenue	(20% × 900,000) =	1,80,000
Incremental contribution margin	(38% × 1,80,000) =	68,400
Incremental fixed costs (advertising)		38,000
Incremental operating income		30,400

If Ms. Alpana spends ₹38,000 more on advertising, the operating income will increase by ₹30,400.

(b)

(i) Statement of profit at budget

Particulars	Amount (₹)
(i) Selling price	125
(ii) Variable cost	
A. direct material	16
B. direct wages	40
C. variable overheads	12
	68
(iii) Contribution (i-ii)	57
(iv) No. of units (25,00,000/125)	20,000
(v) Total contribution	11,40,000
(vi) Less: Fixed cost	6,75,000
(vii) Profit (v-vi)	4,65,000

(ii) Computation of selling price, if the technical director views are implemented

Variable cost	Workings	Amount (₹)
Direct material	(16 × 110%)	17.60
Direct wages	[(40 × 105%) × (100/112)]	37.50
Variable overheads	(12 × 105%)	12.60
		67.70



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In order to get the same profit contribution to be recovered is as follows:

Particulars	Amount (₹)
Existing fixed overheads	6,75,000
Add :Expected increase	1,25,000
	8,00,000
Add : desired profit	4,65,000
Desired contribution	12,65,000

Therefore contribution per unit (12,65,000/20,000)	₹ 63.25
Required selling price = variable cost + contribution = 67.7+63.25	₹ 130.95
% increase in sale price = $[(130.95-125)/125] \times 100$	4.76%

(iii) Computation of additional profit at four alternatives proposed by marketing director:

Additional Units	2,000	4,000	6,000	8,000
	Amount (₹)			
a. contribution per unit (125-67.7)	57.30	57.30	57.30	57.30
b. Total contribution	1,14,600	2,29,200	3,43,800	4,58,400
c. additional fixed cost	80,000	1,94,000	3,20,000	4,60,000
d. Profit/(loss)	34,600	35,200	23,800	(1,600)

Statement showing overall income for the year 2023

a. No. of units	24,000
	Amount (₹)
b. Contribution per unit	57.30
c. Total contribution	13,75,200
d. Fixed cost (8,00,000+1,94,000)	9,94,000
e. Profit	3,81,200

5. The standard material cost for 100 kg of chemical D is made up:

Chemical A 30 kg. @ ₹ 4 per kg

Chemical B 40 kg. @ ₹ 5 per kg

Chemical C 80 kg. @ ₹ 6 per kg

In a batch 500 kg. of chemical D were produced from a mix of

Chemical A 140 kg. @ ₹588

Chemical B 220 kg. @ ₹1,056

Chemical C 440 kg. @ ₹2,860

Calculate the different variance in the actual cost per 100 kg. of chemical D over the standard cost. [14]



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Answer:

Analysis of Given Data

Chemical	Standard Data			Actual Data		
	Quantity	Price (₹)	Value (₹)	Quantity	Price (₹)	Value (₹)
A	30	4	120	28	4.2	117.60
B	40	5	200	44	4.8	211.20
C	80	6	480	88	6.5	572.00
	150		800	160		900.80
Less: Loss	50		-	60		-
	100		800	100		900.80

Computation of Required Values

Chemical	(1) SQSP (₹)	(2) RSQSP (₹)	(3) AQSP (₹)	(4) AQAP (₹)
A	$30 \times 4 = 120$	$32.00 \times 4 = 128.00$	$28 \times 4 = 112.00$	117.60
B	$40 \times 5 = 200$	$42.67 \times 5 = 213.35$	$44 \times 5 = 220.00$	211.20
C	$80 \times 6 = 480$	$85.33 \times 6 = 512.00$	$88 \times 6 = 528.00$	572.20
	800.00	853.35	860.00	900.80

Computation of RSQ:

$$RSQ = \frac{SQ \text{ for that product}}{SQ \text{ for all products}} \times AQ \text{ for all products}$$

$$\text{For A} = \frac{30}{150} \times 160 = 32.00 \text{ units}$$

$$\text{For B} = \frac{40}{150} \times 160 = 42.67 \text{ units}$$

$$\text{For C} = \frac{80}{150} \times 160 = 85.33 \text{ units}$$

Where (1) SQSP = Standard cost for Standard material = ₹800

(2) RSQSP = Revised standard cost of material = ₹853.35

(3) AQSP = Standard cost of actual material = ₹860.00

(4) AQAP = Actual cost of material = ₹900.80

Computation of Required Variances:

(A) Material yield variance = (1) – (2) = ₹53.35 (A) [₹800 – ₹853.35]

(B) Material Mix variance = (2) – (3) = ₹6.65 (A) [₹853.35 – ₹860]

(C) Material usage variance = (1) – (3) = ₹60 (A) [₹800 – ₹860]

(D) Material price variance = (3) – (4) = ₹40.80 (A) [₹860 – ₹900.80]

(E) Material cost variance = (1) – (4) = ₹100.80 (A) [₹800 – ₹900.80]



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6. a) Budgeted and actual sales for the month of March, 2024 of two products A and B of M/s. XY Ltd. were as follows:

	Budgeted		Actual	
Product	Budgeted Units	Sales Price/Unit (₹)	Actual Units	Sales Price / Unit (₹)
A	8,000	₹8	7,500	8.00
			1,000	7.75
B	14,000	₹4	10,500	4.00
			1,750	3.50

Budgeted costs for Products A and B were ₹7.00 and ₹3.50 per unit respectively. Calculate the following variances from the above data:
Sales Volume Variance, Sales Value Variance, Sales Price Variance, Sales Sub Volume Variance, Sales Mix Variance. [7]

- b) The following data on production, materials required for products X and Y, and inventory pertain to the budget of LMN Company:

Particulars	Product X	Product Y
Production (Units)	2000	3000
Material (Units)		
A	3.0	1.0
B	4.0	6.5

Particulars	Beginning	Desired Ending	Price/unit
Material inventory:			
A	2000	3000	₹ 2
B	6000	6000	₹ 1.2

- Analyse the number of material units needed to produce products X and Y
- Calculate the cost of materials used for production.
- Analyse the number of materials units to be purchased.
- Calculate the cost of materials to be purchased. [7]

Answer:

a)

Product	(1)	(2)	(3)	(4)
	AQAP (₹)	AQSP (₹)	RSQSP (₹)	SQSP (₹)
A	$7,500 \times 8.00$	$8,500 \times 8$	$7,545.45 \times 8$	$8,000 \times 8$
	$1,000 \times 7.75$			
B	$10,500 \times 4.00$			
	$1,750 \times 3.50$	$12,250 \times 4$	$13,204.54 \times 4$	$14,000 \times 4$
A	60,000	68,000	60,363.6	64,000
	7,750			



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B	42,000			
	6,125	49,000	52,818.16	56,000
Total	₹1,15,875	₹1,17,000	₹1,13,182	₹1,20,000

Revised Standard Quantity for

$$A = 8,000/22,000 \times 20,750 = 7,545.45 \text{ units}$$

$$B = 14,000/22,000 \times 20,750 = 13,204.54 \text{ units}$$

$$AQAP = \text{Actual Sales} = ₹1,15,875$$

$$AQSP = \text{Actual Quantity of Sales at Standard Price} = ₹1,17,000$$

$$RSQSP = \text{Revised Budgeted or Standard Sales} = ₹1,13,182$$

$$SQSP = \text{Standard or Budgeted Sales} = ₹1,20,000$$

- a) Sales Sub Volume or Quantity Variance = 3 – 4 = ₹6,818 (A)
- b) Sales Mix Variance = 2 – 3 = ₹3,818 (F)
- c) Sales Volume Variance = 2 – 4 = ₹3,000 (A)
- d) Sales Price Variance = 1 – 2 = ₹1,125 (A)
- e) Sales Value Variance = 1 – 4 = ₹4,125 (A)

b) Number of material units needed to produce products X and Y

Particulars	Material A	Material B
Number of product X to be produced	2,000	2,000
Number of material units needed per product X	3.0	4.0
Material required (a × b)	6,000	8,000

Particulars	Material A	Material B
Number of product Y to be produced	3,000	3,000
Number of material units needed per product Y	1.0	6.5
Material required (a × b)	3,000	19,500

Particulars	Material A	Material B
Total number of material units needed for production of Product X and Product Y (6000+3000) (8000+19500)	9,000	27,500

Cost of materials used for production

Particulars	Material A	Material B
Total number of material units	9,000	27,500
Unit Price	₹ 2	₹ 1.20
Cost of material used for production	₹ 18,000	₹ 33,000



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Number of materials units to be purchased.

Particulars	Material A	Material B
Total number of material units required for production	9,000	27,500
Add: Desired ending inventory	3,000	6,000
	12,000	33,500
Less: Beginning inventory	2,000	6,000
Material to be purchased	10,000	27,500

Cost of materials to be purchased

Particulars	Material A	Material B
Material to be purchased	10,000	27,500
Unit price	₹2	₹1.2
Cost of materials to be purchased	₹20,000	₹33,000

7. a) XYZ Corporation has three divisions whose income statements and balance sheets are summarized below:

	Division X	Division Y	Division Z
Sales	₹5,00,000	(d)	(g)
Operating income	₹25,000	₹30,000	(h)
Operating assets	₹1,00,000	(e)	₹2,50,000
Asset Turnover	(a)	(f)	0.4
Margin	(b)	0.4%	5%
Return on investment (ROI)	(c)	2%	(i)

- (i) Calculate the missing data in the table above and summarize the results.
(ii) Comment on the relative performance of each division. What questions can be raised as a result of their performance? [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 $\log 0.8 \div \log 2 = -0.322$ 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]



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Answer:

- a) Return on investment (ROI) = Operating income ÷ Operating assets
= (Operating income ÷ Sales) × (Sales ÷ Operating assets)
= Margin × Asset Turnover
- (a) Asset Turnover = ₹5,00,000 ÷ ₹1,00,000 = 5 times
(b) Margin = (₹ 25,000 ÷ ₹ 5,00,000) × 100 = 5%
(c) ROI = Asset Turnover × Margin = 5 times × 5% = 25%
(d) Margin = 0.4% = 0.004 = Operating income ÷ Sales (d);
d = ₹30,000 ÷ 0.004 = ₹ 75,00,000
(e) ROI = 2% = Operating income ÷ Operating assets (e) = 30,000 ÷ Operating assets
or, e = ₹30,000 ÷ 0.02 = ₹15,00,000
(f) Asset Turnover = d ÷ e = ₹ 75,00,000 ÷ ₹15,00,000 = 5 times
(g) Asset Turnover = 0.4 = Sales (g) ÷ ₹ 2,50,000 or, g = 0.4 × ₹ 2,50,000 = ₹ 1,00,000
(h) Margin = 5% = Operating income (h) ÷ Sales (g) = (h) ÷ ₹ 1,00,000, h = ₹ 1,00,000 × 5%
= ₹ 5,000
(i) ROI = 0.4 times × 5% = 2% or = 5,000 ÷ ₹ 2,50,000 = 2%
(ii) Division X performed best. It appears that Divisions Y and Z are in trouble. Division Y turns over its assets as often as Division X, but Y's margin on sales is much lower. Thus, Division Y must work on improving its margin. The following questions are raised about Division Y Is the low margin due to inefficiency? Is it due to excessive material, labour, and/or overhead costs? Division Z, on the other hand, does just as well as Division X in terms of profit margin- both divisions earn 5 percent on sales.
But Division 2 has a much lower turnover of capital than Division X. Therefore, Division Z should take a close look at its investment. Is too much tied up in inventories and receivables? Are there unused fixed assets? Is there idle cash sitting around?

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
 $\log y = 0.5811$
 $y = \text{Anti log } (0.5811) = 3.812 \text{ hrs (average time)}$
Total Time = 3.812 × 20 = 76.24 hours
- (ii) $\log y = \log 10 + \log 30^{(-0.322)}$
 $\log y = 1 - (0.322) \times (1.4771)$
= 1 - (0.4756) = 0.5244
 $y = \text{anti log } (0.5244) = 3.345 \text{ hrs (average time)}$
Total time = 3.345 × 30 = 100.35 hrs



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$$\begin{aligned} \text{(iii) } \log y &= \log 10 + \log 40^{(-0.322)} \\ &= 1 - (0.322) \times (1.6021) \\ \log y &= 0.4841 \\ y &= \text{anti log } (0.4841) = 3.049 \text{ hrs} \\ \text{Total time} &= 40 \times 3.049 = 121.96 \text{ hrs} \\ \text{Time from 31 to 40 units} &= 121.96 - 100.35 = 21.61 \text{ hrs} \end{aligned}$$

8. a) Describe decision making under certainty with examples. [7]

b) Explain the characteristics of responsibility accounting. [7]

Answer:

- a) Decision making is about selecting the best alternative from among an array of alternatives. The 'best' alternative refers to that particular alternative which helps a firm to maximise its profit or minimise its cost. In decision theory, the alternatives are referred to as acts and the possible events are referred to as states of nature (outcomes of a random process). The condition of certainty implies that the future is known and thus the probability of happening/ not happening of an event is one.

If the decision maker is certain as regards to the probability of happening/ not happening of an outcome, he is said to operate under a condition of certainty. On the contrary, if the decision maker has imperfect information or no information about the happening/ or not happening of an event he is said to operate under conditions of uncertainty or risk. Thus it may be stated that in the realm of decision making, under the condition of certainty, each action will lead invariably to a specific outcome. In this situation, only one state of nature exists and its probability is one.

Example:

Mr. Pratap is considering setting up his stall in the playground on the evening of a particular day, say 20th April 2024. He has the option of selling ice creams or coffee. He has the option of buying Ice creams from a whole seller @ ₹56 each and selling them for @ ₹60 each. Thus he would make a profit of ₹4 on each Ice cream cone. On a sunny day he sales 200 cones, but if it is a rainy day then sales fall and thus he can sell only 80 cones. On the contrary, he can sell coffee whereby he can make a profit of ₹6 per cup. On a sunny day he sales 100 cones, but if it is a rainy day then sales increase and thus he can sell 160 cups.

This can be represented in the following pay off matrix:

Particulars	States of Nature	
Acts	Sunny Day	Rainy Day
Sale Ice Cream	₹ 800	₹ 320
Sale Coffee	₹ 600	₹ 960

Now, on the morning of 20th August 2024 he wakes up and find that it has been raining from the



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previous day night and for clarification he calls the met office and they confirm that it would rain for the whole day. Thus he faces a situation of certainty as there is only one state of nature and that is it being a rainy day. Thus his decision whether he would sell Ice cream or Coffee is based on one certain information and thus the above payoff matrix may be reduced to one with a single state of nature (Rainy Day).

Particulars	States of Nature
Acts	Rainy Day
Sale Ice Cream	₹ 320
Sale Coffee	₹ 960

Thus Mr. Pratap is better off if he sales Coffee on 20th April 2024, at the playground as the payoff (₹960) from selling coffee is higher than the payoff from selling ice cream. This is particularly because of the fact that it is known with certainty that the 20th April 2024 would be a rainy day.

b) Characteristics of responsibility reporting are: -

- Reports should fit the organization chart, that is, the report should be addressed to the individual responsible for the items covered by it, who, in turn, will be able to control those costs under his jurisdiction. Managers must be educated to use the results of the reporting system.
- Report should be prompt and timely. Prompt issuance of a report requires that cost records be organized so that information is available when it is needed.
- Reports should be issued with regularity. Promptness and regularity are closely tied up with mechanical aids used to assemble and issue reports.
- Reports should be easy to understand. Often they contain accounting terminology that managers with little or no accounting training find difficult to understand, and vital information may be incorrectly communicated. Therefore, accounting terms should be explained or modified to fit the user. Top management should have some knowledge of the kind of items chargeable to an account as well as the methods used to compute overhead rates, make cost allocations and analyze variances.
- Reports should convey sufficient but not excessive details. The amount and nature of the details depend largely on the management level receiving the report. Management reports should neither be flooded with immaterial facts nor so condensed that management lacks vital information essential to carrying out its responsibilities.
- Reports should give comparative figures, i.e., a comparison of actual with budgeted figures or of predetermined standards with actual results and the isolation of variances.
- Reports should be analytical. Analysis of underlying papers, such as time tickets, scraps tickets, work orders, and materials requisitions, provide reasons for poor performance which might have been due to power failure, machine breakdown, an inefficient operator, poor quality of materials, or many other similar factors.
- Reports for operating management should, if possible, be stated in physical units as well as



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in terms of money since monetary information may give a foreman not trained in the language of the accountant a certain amount of difficulty.

- Reports may tend to highlight departmental efficiencies and inefficiencies, results achieved future goals or targets.