

MOCK TEST PAPER – 2
 FINAL COURSE: GROUP – II
 PAPER – 5: ADVANCED MANAGEMENT ACCOUNTING
 SUGGESTED ANSWERS/HINTS

1. (a) (i) Statement showing comparative profits assuming that costs traceable to Division Z are avoidable

Particulars	Total Company Operations, if it		Benefit / (Cost) to eliminate Z (`)
	Keeps Z (`)	Eliminates Z (`)	
Sales	1,35,000	1,20,000	(15,000)
Variable Expenses	<u>(68,000)</u>	<u>(60,000)</u>	<u>8,000</u>
Contribution	67,000	60,000	(7,000)
Total Fixed Cost	<u>(60,000)</u>	<u>(48,000)</u>	<u>12,000</u>
Profit	7,000	12,000	5,000

(ii)

Advantages to Eliminate Division Z	(`)
Reduction in Variable Expenses	8,000
Reduction in Fixed Expenses (` 12,000 – ` 6,000)	<u>6,000</u>
Total Benefit	14,000
Disadvantages to Eliminate Z	
Reduction in Sales	<u>15,000</u>
Decrease in Profit by Eliminating Division Z	<u>1,000</u>

- (iii) ` 26,549 should be added to the annual benefits of eliminating Division Z. The equivalent annual cash flow of ` 26,549 is computed by using annuity table for an assumed annuity of ten years at 12% with present value of ` 1,50,000.

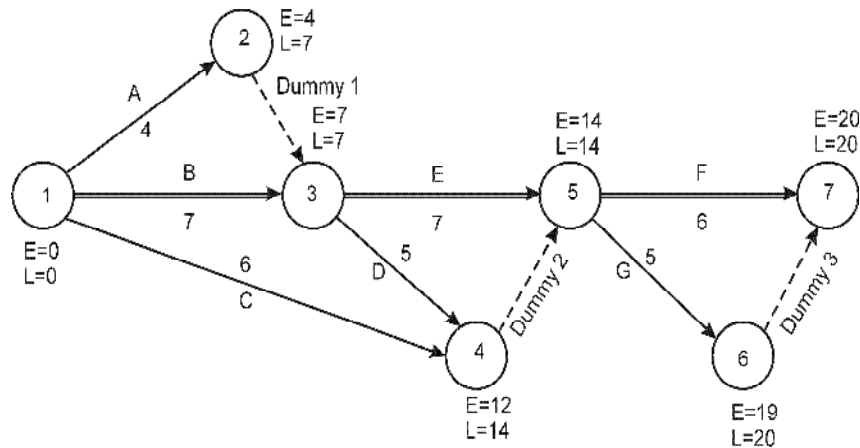
$$\text{Cash flow} = ` 1,50,000 \div 5.650 = ` 26,549$$

The equivalent annual cash flow of ` 26,549 is the opportunity cost of keeping division Z or alternatively it is a benefit from eliminating the division Z.

(b) $\text{Production Volume Ratio} = \frac{\text{Standard Hours Produced}}{\text{Budgeted Hours}} \times 100$

$$\begin{aligned}
 &= \frac{(800 \times 10) + (600 \times 5) + (280 \times 2)}{(800 \times 10) + (800 \times 5) + (200 \times 2)} \times 100 \\
 &= 93.23\% \\
 \text{Efficiency Ratio} &= \frac{\text{Standard Hours Produced}}{\text{Actual Hours}} \times 100 \\
 &= \frac{(800 \times 10) + (600 \times 5) + (280 \times 2)}{11,200} \times 100 \\
 &= 103.21\%
 \end{aligned}$$

(c) The required network is given in below:



The critical path is 1–3–5–7 with duration of 20 days. Thus, the project completion time is 20 days.

2. Calculation showing 'Actual Production & Sales Volume'

$$\text{Fixed Overhead Volume Variance} = \text{Standard Fixed Overhead Rate per Unit} \times (\text{Actual Output} - \text{Budgeted Output}^*)$$

$$\Rightarrow \quad ` 2,94,000 \text{ (A)} = ` 168 \times (\text{Actual Output} - 10,000 \text{ units})$$

$$\Rightarrow \quad \text{Actual Output} = 8,250 \text{ units}$$

$$\begin{aligned}
 \text{*Budgeted Output} &= \frac{\text{Budgeted Profit}}{\text{Budgeted Profit per unit}} \\
 &= \frac{` 3,60,000}{` 36} = 10,000 \text{ units}
 \end{aligned}$$

Sales Margin Volume Variance	= Standard Margin – Budgeted Margin
	= Budgeted Margin x Actual Qty. – Budgeted Margin x Budgeted Qty.
	= Budgeted Margin x (Actual Qty. – Budgeted Qty.)
⇒ ₹ 63,000(A)	= ₹ 36 x (Actual Qty.– 10,000 units)
⇒ Actual Qty.	= 8,250 units

Calculation showing 'Actual Quantity of Material Purchased'

Material Usage Variance	= Standard Cost of Standard Quantity for Actual Output – Standard Cost of Actual Quantity Consumed
	= Standard Qty. x Standard Price – Actual Qty. x Standard Price
	= Standard Price x (Standard Qty. – Actual Qty.)
⇒ ₹ 4,800 (F)	= ₹ 3 x (8,250 units x 4 Kg – Actual Qty.)
⇒ Actual Qty.	= 31,400 Kg.
Actual Quantity Purchased	= Actual Qty. Consumed – Decrease in Stock
	= 31,400 Kg. – 6,400 Kg.
	= 25,000 Kg.

Calculation showing 'Actual Hours Worked'

Labour Efficiency Variance	= Standard Cost of Standard Time for Actual Output – Standard Cost for Actual Time
	= Standard Hours x Standard Rate – Actual Hours x Standard Rate
	= Standard Rate x (Standard Hours – Actual Hours)
⇒ ₹ 48,000 (A)	= ₹ 48 x (8,250 units x 4 Hrs. – Actual Hours)
⇒ Actual Hours	= 34,000 Hrs.

Calculation showing 'Actual Fixed Overhead' and 'Actual Variable Overhead' incurred

$$\begin{aligned} \text{Variable Overhead Cost Variance} &= \text{Standard Variable Overheads for Production} \\ &\quad - \text{Actual Variable Overheads} \\ &= (\text{Standard/Budgeted Variable Overhead per Unit} \times \text{Actual Production in Units}) \\ &\quad - (\text{Actual Variable Overheads}) \\ \Rightarrow \quad ` 12,000 (F) + 18,000 (A) &= ` 72 \times 8,250 \text{ units} - \text{Actual Variable Overheads} \\ \Rightarrow \quad \text{Actual Variable Overheads} &= ` 6,00,000 \end{aligned}$$

$$\begin{aligned} \text{Fixed Overhead Cost Variance} &= \text{Absorbed Fixed Overheads} \\ &\quad - \text{Actual Fixed Overheads} \\ &= (\text{Standard Fixed Overhead Rate per Unit} \times \text{Actual Production in units}) - (\text{Actual Fixed Overheads}) \\ \Rightarrow \quad ` 6,000 (F) + 2,94,000 (A) &= ` 168 \times 8,250 \text{ units} - \text{Actual Variable Overheads} \\ \Rightarrow \quad \text{Actual Fixed Overheads} &= ` 16,74,000 \end{aligned}$$

- 3 (a) Introduced slack, surplus and artificial variables

$$\text{Maximize } Z = 62,000 x_1 + 1,24,000 x_2 + 0s_1 + 0s_2 + 0s_3 - M A_1 - M A_2$$

Subject to the constraints

$$3x_1 + 4x_2 + s_1 = 260$$

$$x_1 - s_2 + A_1 = 2$$

$$x_2 - s_3 + A_2 = 3$$

$$x_1, x_2, s_1, s_2, s_3, A_1, A_2 \geq 0$$

SIMPLEX TABLEAU-I

C _B	Basic Variable (B)	Value of Basic Variables b(=X _B)	62,000	1,24,000	0	0	0	-M	-M	Min. Ratio
			x ₁	x ₂	s ₁	s ₂	s ₃	A ₁	A ₂	
0	s ₁	260	3	4	1	0	0	0	0	65
-M	A ₁	2	1	0	0	-1	0	1	0	-
-M	A ₂	3	0	1	0	0	-1	0	1	3 ←
	Z _j		-M	-M	0	M	M	-M	-M	
	C _j -Z _j		62,000+M	1,24,000+M	0	-M	-M	0	0	

SIMPLEX TABLEAU-II

C _B	Basic Variable (B)	Value of Basic Variables b(=X _B)	62,000	1,24,000	0	0	0	-M	Min. Ratio
			x ₁	x ₂	s ₁	s ₂	s ₃	A ₁	
0	s ₁	248	3	0	1	0	4	0	82.66
-M	A ₁	2	1	0	0	-1	0	1	← 2
1,24,000	x ₂	3	0	1	0	0	-1	0	-
	Z _j		-M	1,24,000	0	M	-1,24,000	-M	
	C _j -Z _j		62,000+M	0	0	-M	1,24,000	0	

SIMPLEX TABLEAU-III

C _B	Basic Variable (B)	Value of Basic Variables b(=X _B)	62,000	1,24,000	0	0	0	Min. Ratio
			x ₁	x ₂	s ₁	s ₂	s ₃	
0	s ₁	242	0	0	1	3	4	← 60.5
62,000	x ₁	2	1	0	0	-1	0	-
1,24,000	x ₂	3	0	1	0	0	-1	-
	Z _j		62,000	1,24,000	0	-62,000	-1,24,000	
	C _j -Z _j		0	0	0	62,000	1,24,000	↑

SIMPLEX TABLEAU-IV

C _B	Basic Variable (B)	Value of Basic Variables b(=X _B)	62,000	1,24,000	0	0	0
			x ₁	x ₂	s ₁	s ₂	s ₃
0	s ₃	60.5	0	0	¼	¾	1
62,000	x ₁	2	1	0	0	-1	0
1,24,000	x ₂	63.5	0	1	¼	¾	0
	Z _j		62,000	1,24,000	31,000	31,000	0
	C _j -Z _j		0	0	-31,000	-31,000	0

Since all entries in 'C_j-Z_j' row are either zero or negative in table IV, the current solution is the optimum one and is given by:

$x_1=2$, $x_2=63.5$, Maximum $Z= 79,98,000$

(b) The goals of transfer pricing are that it should:

- Provide information that motivates divisional managers to take good economic decisions which will improve the divisional profits and ultimately the profits of the company as a whole.
- Provide information which will be useful for evaluating the divisional performance.
- Seek to achieve goal congruence.
- Ensure that divisional autonomy is not undermined.

4. (a) Production Budget for product X and Y

Particulars	'KX' Units	'KY' Units
Inventory at the end of the year	5,000	10,000
Sales forecast	<u>40,000</u>	<u>75,000</u>
Total requirements	45,000	85,000
Less: Beginning inventory	<u>15,000</u>	<u>25,000</u>
Production	30,000	60,000

Budgeted requirements of components 'KP', 'KQ' and 'KR'

Components	'KP'	'KQ'	'KR'
For Product 'KX': Production 30,000 units			
'KP': 30,000 × 1 per unit	30,000	–	–
'KQ': 30,000 × 2 per unit	–	60,000	–
For Product 'KY': Production 60,000 units			
'KP': 60,000 × 2 per unit	1,20,000	–	–
'KQ': 60,000 × 1 per unit	–	60,000	–
'KR': 60,000 × 2 per unit	–	–	1,20,000
For comp 'KR': Production 1,20,000 comp			
'KQ': 1,20,000 × 1 per component 'KR'	–	1,20,000	–
Total Requirements	1,50,000	2,40,000	1,20,000

Optimum Order Quantity

$$\begin{aligned} & \text{'KP'} \\ \text{EOQ} & \sqrt{\frac{2 \times 1,50,000 \times 3,000}{40 \times 10\%}} \\ & = 15,000 \text{ components} \end{aligned}$$

$$\begin{aligned} & \text{'KQ'} \\ & \sqrt{\frac{2 \times 2,40,000 \times 3,000}{16 \times 10\%}} \\ & = 30,000 \text{ components} \end{aligned}$$

- (b) Generally for taking a make vs. buy decision comparison is made between the supplier's price and the marginal cost of making plus the opportunity cost. Make vs. buy decision is a strategic decision, and, therefore, both short-term as well as well as long-term thinking about various cost and other aspects needs to be done.

A company generally buys a component instead of making it under following situations:

- If it costs less to buy rather than to manufacture it internally;

- If the return on the necessary investment to be made to manufacture is not attractive enough;
 - If the company does not have the requisite skilled manpower to make;
 - If the concern feels that manufacturing internally will mean additional labour problem;
 - If adequate managerial manpower is not available to take charge of the extra work of manufacturing;
 - If the component shows much seasonal demand resulting in a considerable risk of maintaining inventories;
 - If transport and other infrastructure facilities are adequately available;
 - If the process of making is confidential or patented;
 - If there is risk of technological obsolescence for the component such that it does not encourage capital investment in the component.
5. (a) The given problem is a balanced minimization transportation problem. The objective of the company is to minimize the cost. Let us find the initial feasible solution using Vogel's Approximation method (VAM)

	CA		CB		CC		CD		CE		Capacity	Diff
CX	11	10	6	20	8	40	10	10	10		80/40/20/0	2 4 4 1 1
CY	7	40	6		20		9		12		40/0	1 1 1 2 2
CZ	8		12		19		7	50	6	30	80/50/0	1 1 1 1
Req	50/10/0		20/0		40/0		60/10/0		30/0			
Diff:	1		-		11		2		4			
	1		-		-		2		4			
	1		-		-		2		-			
	1		-		-		2		-			
	4		-		-		1		-			

Since the number of allocations = 7 i.e. $(m+n-1)$, let us test the above solution for optimality.

(u_i+v_j) matrix for allocated cells

	11	6	8	10	u_i
v_j	0				0

	7					-4
				7	6	-3
v_j	11	6	8	10	9	

(u_i+v_j) matrix for un allocated cells

				9	0
	2	4	6	5	-4
8	3	5			-3
v_j	11	6	8	10	9

$$\Delta_{ij} = C_{ij} - (u_i + v_j)$$

				1
	4	16	3	7
0	9	14		

Since opportunity cost of all the unoccupied cells are non negative, the optimum solution is reached.

The optimal allocations are given below:

Distribution Centre	Outlet	Units [A]	Cost (')[B]	Total Cost (')[C=(A) x(B)]
CX	CA	10	11	110
CX	CB	20	6	120
CX	CC	40	8	320
CX	CD	10	10	100
CY	CA	40	7	280
CZ	CD	50	7	350
CZ	CE	30	6	180
Total				1,460

It may be noted that zero opportunity cost in cell (CZ, CA) indicates a case of alternative optimum solution.

(b) Research Project

Particulars	Relevancy	Reason	Amount (₹)
Project Cost till date	Not Relevant	Sunk cost	-
Sale Price of the Project	Relevant	Incremental Revenue/ Opportunity Gain	2,00,000
Cost of Materials Received	Not Relevant	Sunk Cost	-
Cost of Disposal of Materials	Relevant	Avoidable/Opportunity Cost	7,500
Cost of Labour	Not Relevant	Common Costs	-
Contribution Lost on the Alternative Use	Relevant	Opportunity Cost [Sales – (Prime Cost - Labour)]	(62,500)
Absorbed Fixed Overheads	Not Relevant	Sunk Cost	-
Share of General Building Expenses	Not Relevant	Sunk Costs	-
Total Incremental Inflow if the project is proceed with			1,45,000

Decision: Better to continue the project.

6 (a) Evaluation of the proposal if the company employs its own sales force

Existing Commission (25%)	7,50,000
Add: Additional 5% on Sales	<u>1,50,000</u>
Total Savings in Commission ... (i)	<u>9,00,000</u>
Additional Cost (excluding car allowance) due to own sales force	
Sales Manager (salary and expenses)	85,000
Salesmen's Expenses	25,000
Additional Sales Office Costs	60,000
Interest and Depreciation on sales department cars	42,000
Salaries of four salesmen	2,40,000
Commission to Salesmen (5% of ₹ 30,00,000)	<u>1,50,000</u>
Total Additional Cost ... (ii)	<u>6,02,000</u>
Net Savings Before Car Allowance ... [(i) – (ii)]	<u>2,98,000</u>

The company has to achieve the same budgeted profit as it would have obtained by retaining the agents (with 30% commission). Therefore, total car allowance would work out ` 2,98,000. The rate of car allowance is ` 6 per kilometer. Thus, the total kilometers travelled will be 49,667 for all the four salesmen or 12,417 kilometers per salesman.

Calculation of Required Sales

Existing P/V ratio		
Budgeted Sales		30,00,000
Less: Variable Costs	10,50,000	
Commission (5%)	<u>1,50,000</u>	<u>12,00,000</u>
Contribution		<u>18,00,000</u>
P/V Ratio: $(18,00,000 \div 30,00,000) \times 100 = 60\%$		

Desired Contribution

Fixed Overheads	4,22,000
Sales Office Expenses	50,000
Administration Costs	4,80,000
Sales Manager's Salary and Expenses	85,000
Salesmen's Expenses	25,000
Additional Sales Office Costs	60,000
Interest and Depreciation	42,000
Salaries of four Salesmen	2,40,000
Car Allowances $(16,000 \text{ km.} \times 4 \times ` 6)$	<u>3,84,000</u>
Total Fixed Costs	17,88,000
Budgeted Profit	<u>2,48,000</u>
Desired Contribution	<u>20,36,000</u>

Required Sales

Sales $\times$ P/V Ratio = Contribution

Sales = $(20,36,000 \div 60) \times 100$ or ` 33,93,333

Calculation of Maximum Level of Commission on Sales with Anticipated Increase in Profit and Sales

Variability Ratio	= $(\text{Budgeted Variable Cost} \div \text{Budgeted Sales}) \times 100$
	= $(` 10,50,000 \div ` 30,00,000) \times 100$ or 35%
Budgeted Sales	= ` 30,00,000

Desired Increase = 15%

Revised Sales	34,50,000
Variable Cost (35% of Sales)	<u>12,07,500</u>
Contribution	22,42,500
Less: Fixed Cost (excluding car allowance)	14,04,000
Car Allowance (56,000km. × `6)	<u>3,36,000</u>
Net Profit Available	5,02,500
Less: Desired Profit (20% increase over ` 2,48,000)	<u>2,97,600</u>
Amount Available for Commission	<u>2,04,900</u>

Maximum Level of Commission = $(2,04,900 \div 34,50,000) \times 100 = 5.94\%$.

- (b) It occurs when customers perceive that a business unit's product offering (defined to include all attributes relevant to the buying decision) is of higher quality, involves less risk and/or outperforms competing product offerings. For example, differentiation may include a firm's ability to deliver goods and services in a timely manner, to produce better quality, to offer the customer a wider range of goods and services, and other factors that provide unique customer value.

Once a company has successfully differentiated its offering, management may exploit the advantage in one of two ways viz., either; increase price until it just offsets the improvement in customer benefits, thus maintaining current market share; or price below the "full premium" level in order to build market share.

7. (a) The theory of constraints focuses its attention on constraints and bottlenecks within organisation which hinder speedy production. The main concept is to maximize the rate of manufacturing output is the throughput of the organisation. This requires to examine the bottlenecks and constraints. A bottleneck is an activity within the organization where the demand for that resource is more than its capacity to supply.

A constraint is a situational factor which makes the achievement of objectives / throughput more difficult than it would otherwise, for example of constraint may be lack of skilled labour, lack of customer orders, or the need to achieve high quality in product output.

For example let meeting the customers' delivery schedule be a major constraint in an organisation. The bottleneck may be a certain machine in the factory. Thus bottlenecks and constraints are closely examined to increase throughput.

- (b) In the traditional system of assigning manufacturing overheads, overheads are first allocated and apportioned to cost centres (production and support service cost centres) and then absorbed to cost objects (e.g. products). Under ABC, overheads

are first assigned to activities or activity pools (group of activities) and then they are assigned to cost objects. Thus, ABC is a refinement over the traditional costing system. Usually cost centres include a series of different activities. If different products create different demands on those activities, the traditional costing system fails to determine the product cost accurately. In that situation, it becomes necessary to use different rates for different activities or activity pools.

- (c) In an assignment minimization problem, if one task cannot be assigned to one person, introduce a prohibitively large cost for that allocation, say M , where M has a high value. Then, while doing the row minimum and column minimum operations, automatically this allocation will get eliminated.
- (d) Vilfredo Pareto, an Italian economist, observed that about 70 – 80% of value was represented by 30 – 20% of volume. This observation was found to exist in many business solutions. Analysing and focusing on the 80% value relating to 20% volume helps business in the following areas.
 - (i) Pricing of a product (in a multi-product company)
 - (ii) Customer profitability.
 - (iii) Stock control.
 - (iv) Activity Based Costing (20% cost drivers are responsible for 80% of total cost)
 - (v) Quality Control.
- (e) The benefits accruing from the implementation of a Total Quality Management programme in an organisation are:
 - (i) There will be increased awareness of quality culture in the organization.
 - (ii) It will lead to commitment to continuous improvement.
 - (iii) It will focus on customer satisfaction.
 - (iv) A greater emphasis on team work will be achieved.