

MOCK TEST PAPER – 1
INTERMEDIATE: GROUP – I
PAPER – 3: COST AND MANAGEMENT ACCOUNTING

SUGGESTED ANSWERS/HINTS

1. (a) Calculation of relative costs of three proposals and their ranking

	I- Use of company's car per km. (₹)	II- Use of own car per km. (₹)	III- Use of hired car per km. (₹)
Reimbursement	--	12.00	--
Hire Charges	--	--	10.80*
Fixed cost:			
Insurance	0.072	0.072	--
Taxes	0.048	--	0.048
Depreciation	6.24#	--	--
Running and Maintenance Cost:			
Petrol	7.20	--	7.20
Repairs and Maintenance	0.24	--	--
Tyre	0.144	--	0.144
Total cost per km.	13.944	12.072	18.192
Cost for 20,000 km.	2,78,880	2,41,440	3,63,840
Ranking of proposals	II	I	III

* (₹ 2,16,000 ÷ 20,000 km.) = ₹ 10.80

[(₹ 7,20,000 - ₹ 96,000) ÷ 5 years] ÷ 20,000 km. = ₹ 6.24

The Second alternative i.e., use of own car by the executive and reimbursement of expenses by the company is the best alternative from company's point of view.

(b) **Statement of Distribution of Costs**

Cost Elements	Basis	Total Cost	Main Product X (600 Units)		By-Product Y (150 Units)		By-Product Z (200 Units)	
			Total	Per Unit	Total	Per Unit	Total	Per Unit
Raw Materials	18:3:2	9,200	7,200	12	1,200	8	800	4
Labour	36:3:2	8,200	7,200	12	600	4	400	2
Overheads	6:1:1	12,000	9,000	15	1,500	10	1,500	7.50
Total		29,400	23,400	39	3,300	22	2,700	13.50

Working Notes:**1. Calculation of Units produced:**

Main Product X	60% of Raw Materials	600 Units
By-Product Y	15% of Raw Materials	150 Units
By Product Z	20% of Raw Materials	200 Units
Wastage	5% of Raw Materials	<u>50 Units</u>
		<u>1000 Units</u>

2. Cost Allocation**Raw Materials**

Let Product Z requires 1 unit of raw materials then, Product Y will require 2 units of raw materials and Product X will require 3 units of raw materials.

Product	X		Y		Z
Individual Unit ratio (a)	3	:	2	:	1
Units (b)	600		150		200
Ratio for Cost Allocation (a*b)	1800	:	300	:	200
Ratio	18	:	3	:	2

Labour:

Let Product Z requires 1 hour of Labour then, Product Y will require 2 hours of Labour and Product X will require 6 hours of Labour.

Product	X		Y		Z
Individual hour ratio (a)	6	:	2	:	1
Units (b)	600		150		200
Ratio for Cost Allocation (a*b)	3600	:	300	:	200
Ratio	36	:	3	:	2

(c) Workings:**(i) Percentage of work certified:**

$$\frac{\text{Value of work certified}}{\text{Contract price}} \times 100 = \frac{\text{₹ } 5,80,000}{\text{₹ } 14,50,000} \times 100 = 40\%$$

(ii) Value of material and labour used in the contract:

Particulars	Amount (₹)	Amount (₹)
Material purchased	2,90,000	2,17,500
Less: Material on hand (30-06-2022)	(72,500)	
Wages paid	1,30,500	1,45,000
Add: Wages accrued (30-06-2022)	14,500	
		3,62,500

Price of materials and wages has been increased by 25%, the value before price increase is:

$$\frac{\text{₹ } 3,62,500}{125} \times 100 = \text{₹ } 2,90,000$$

(iii) Calculation of Value of work certified:

The value of the contract would be increased by 25% of the price increased beyond 5%.

$$\begin{aligned} \text{Price increased beyond 5\%} &= \text{₹ } (3,62,500 - 2,90,000) - 5\% \text{ of ₹ } 2,90,000 \\ &= \text{₹ } 72,500 - \text{₹ } 14,500 = \text{₹ } 58,000 \end{aligned}$$

Value of contract would be increased by 25% of ₹ 58,000 = ₹ 14,500

Therefore, the revised contract value = ₹ 14,50,000 + ₹ 14,500 = ₹ 14,64,500

Calculation of the Value of work certified after taking the effect of escalation clause:

$$\begin{aligned} &= \text{Revised contract value} \times \text{Percentage of work certified} \\ &= \text{₹ } 14,64,500 \times 40\% = \text{₹ } 5,85,800 \end{aligned}$$

(d) (i) Monthly production of AB = 50,000 kgs

Raw material required = 50,000/5 x 8 = 80,000 kgs

Material Ae and Material Be ratio = 5:3

Therefore, material Ae = 80,000/8 x 5 = 50,000 kgs

$$\begin{aligned} \text{Calculation of EOQ} &= \sqrt{\frac{2 \times (\text{Annual demand} \times \text{cost per order})}{\text{Annual holding cost per unit}}} \\ \text{EOQ} &= \sqrt{\frac{2 \times 50,000 \text{ kgs} \times 12 \times 375}{12\% \text{ of ₹ } 150}} = \mathbf{5,000 \text{ kgs}} \end{aligned}$$

(ii) Calculation of maximum stock level of Material Ae which is perishable in nature and is required to be used within 3.5 days.

(a) Stock equals to 3.5 days consumption = 50,000 kgs/ 25 days x 3.5 days = **7,000 kgs**

(b) Maximum stock level for Material Ae

$$\text{Maximum stock} = \text{Reorder quantity} + \text{reorder level} - (\text{minimum consumption} \times \text{minimum lead time})$$

Where, reorder quantity = 7,500 kgs

$$\begin{aligned} \text{Reorder level} &= \text{maximum consumption}^* \times \text{maximum lead time} \\ &= 50,000/ 25 \times 3 \text{ days} = 6,000 \text{ kgs} \end{aligned}$$

Now, Maximum stock level = 7,500 kgs + 6,000 kgs – (50,000 /25 days x 2 days) = **9,500 kgs**

Stock required for 3.5 days consumption is lower than the maximum stock level calculated above. Therefore, **maximum stock level will be 7,000 kgs.**

(*since production is processed evenly throughout the month hence material consumption will also be even.)

2. (a) (i) **Material Cost Variance = Material Price Variance+ Material Usage Variance**
 = ₹ 8,775 A + ₹ 5,625 F= **₹ 3,150 Adverse**

(ii) **Actual output units**

Let x be the actual quantity of output

Then Standard Quantity of input for actual output 'x'

$$SQ = 10x$$

$$\begin{aligned} \text{Material cost variance} &= (SQ \times SP) - (AQ \times AP) \\ -3,150 &= (10x \times ₹ 22.50) - ₹ 96,525 \\ -3,150 &= 225x - ₹ 96,525 \\ 225x &= ₹ 96,525 - 3,150 = ₹ 93,375 \\ x &= ₹ 93,375/225 = \mathbf{415 \text{ Units}} \end{aligned}$$

(iii) **Actual Price of Material per unit**

$$\begin{aligned} \text{Material Usage variance} &= (SQ - AQ) \times SP \\ 5,625 &= (10x - AQ) \times ₹ 22.50 \\ 5,625 &= (10 \times 415 \text{ units} - AQ) \times ₹ 22.50 \\ 5,625/22.50 &= 4,150 - AQ \\ AQ &= 4,150 - 250 = \mathbf{3,900 \text{ units}} \\ \text{Now, } AQ \times AP &= ₹ 96,525 \text{ (given)} \\ AP &= ₹ 96,525/AQ \\ &= ₹ 96,525/3,900 \text{ units} = \mathbf{₹ 24.75} \end{aligned}$$

(iv) **Actual wages rate per labour hour**

Labour efficiency variance = 5,400 Adverse (given)

Standard rate per hour (Standard time – Actual time) = -5,400

$$₹ 120 [(Actual \text{ output units} \times \text{Number of hours per output}) - \text{Actual time}] = -5,400$$

$$₹ 120 [(415 \text{ units} \times 5 \text{ hrs}) - \text{Actual time}] = -5,400$$

$$2,075 \text{ hrs} - \text{Actual time} = -5,400/120$$

$$\text{Actual time} = 2,075 + 45$$

$$= \mathbf{2,120 \text{ hrs}}$$

Now Direct wages = ₹ 2,44,860 (given)

$$\text{Actual time} \times \text{Actual rate per hour} = ₹ 2,44,860$$

$$\text{Actual rate per hour} = ₹ 2,44,860 / 2,120 \text{ hrs}$$

$$= \mathbf{₹ 115.50}$$

(v) **Labour rate variance**

= Actual time (Standard Rate – Actual Rate)

= 2,120 hrs (₹ 120 - ₹ 115.50)

= 2,120 hrs x ₹ 4.50 = **9,540 Favourable**

(vi) **Labour Cost variance**

= Labour rate variance+ Labour efficiency variance

= 9,540 F + 5,400 A = 4,140 Favourable

(b) **Calculation of Semi Variable component**

	Repairs and Maintenance (₹)	Indirect labour (₹)
At 75% capacity	18,00,000	36,00,000
At 100% capacity	21,00,000	42,00,000
Variable component for 25%	3,00,000	6,00,000
Hence variable cost at 75%	3,00,000 x 75/25= 9,00,000	6,00,000 x 75/25 = 18,00,000
Fixed cost at 75% capacity	18,00,000 – 9,00,000 = 9,00,000	36,00,000 – 18,00,000= 18,00,000

Segregation of Fixed and Variable cost

	75%	100%	VC at 75%	FC at 75%
Direct Material	180	240	180	
Direct Labour	120	160	120	
Power and fuel	12	16	12	
Repairs and maintenance	18	21	9	9
Consumables	21	28	21	
Supervision	20	20		20
Indirect labour	36	42	18	18
Administrative expenses	21	21		21
Selling expenses	18	18		18
Depreciation	54	54		54
Total	500	620	360	140

(i) **Calculation of profit earned at 75% capacity**

Given PV ratio = 40%, Hence variable cost would be 60%

If variable cost is ₹ 360 lakhs then sales would be 360/ 0.60 = ₹ 600 lakhs

Less: Variable cost = ₹ 360 lakhs

Less: Fixed cost = ₹ 140 lakhs

Profit = ₹ 100 lakhs

(ii) **Break-even level of activity**

BEP Sales = FC/ P/V ratio = 140 /0.40 = ₹ 350 lakhs

3. (a) (i) **Process I Statement of Equivalent Production (Under Weighted Average Method)**

Particulars	Input units (in Liter)	Particulars	Output units (in Liter)	Equivalent Production			
				Material		Conversion	
				(%)	Equivalent units (in Liter)	(%)	Equivalent units (in Liter)
Opening WIP	12,000	Units introduced and completed	40,000	100	40,000	100	40,000
New Material Introduced	60,000	Normal Loss (15% of 60,000 liters)	9,000	-	-	-	-
		Closing WIP	15,000	100	15,000	80	12,000
		Abnormal Loss (Bal. fig.)	8,000	100	8,000	100	8,000
	72,000		72,000		63,000		60,000

Statement of Cost for Each Element

Elements of Costs	Material (₹)	Conversion Cost (₹)
Costs of Opening WIP	1,75,000	1,40,000
Cost of the Process (for the period)	7,70,000	8,35,000
Total Cost	9,45,000	9,75,000
Equivalent Units (in liter)	63,000	60,000
Cost Per equivalent Units (in liter)	₹ 15	₹ 16.25

Therefore, Cost of Medicine 'X' is ₹ 31.25 per liter (₹ 15 + ₹ 16.25)

(ii) **Statement showing comparative data to decide whether 30,000 Liters of Medicine 'X' should be further processed into 'XYZ'**

	Alternative 1	Alternative 2
	Sell medicine 'X' after Process I (₹)	Process further into 'XYZ' (₹)
Sales	12,75,000 (30,000 liters x ₹ 42.50)	18,75,000 (37,500 liters x ₹ 50)
Less: Costs:		
Process I - Costs (30,000 liters x ₹ 31.25)	9,37,500	9,37,500
Material in Process II	-	2,75,000
Conversion cost in Process II	-	2,50,000
Total Cost	9,37,500	14,62,500
Profit	3,37,500	4,12,500

Hence, company should process further as it will increase profit further by ₹ 75,000 (₹ 4,12,500 – ₹ 3,37,500)

(b) Cost Sheet of A Limited for the year ended 31st March 2022

Particulars	Amount (₹)	Amount (₹)
Opening Stock of Raw materials	5,00,000	
Add: Purchases (balancing figure)	20,50,000	
Less: Closing stock of raw materials	6,30,000	
Direct material consumed (balancing figure)		19,20,000
Direct labour		10,50,000
Prime Cost		29,70,000
Add: Factory Overheads (10,50,000 / 175%)		6,00,000
Add: Opening Stock of Work in Progress		6,00,000
		41,70,000
Less: Closing Stock of Work in Progress		8,00,000
Works Cost		33,70,000
Add: Administrative Overheads (relating to production activity)		1,50,000
COST OF PRODUCTION		35,20,000
Add: Opening stock of finished goods		9,80,000
Cost of Goods available for sale		45,00,000
Less: Closing Stock of finished goods		10,50,000
COST OF GOODS SOLD (Working Note: (iv))		34,50,000
Add: Selling and Distribution Overhead		2,50,000
COST OF SALES		37,00,000
Add: Profit (Balancing figure) [Sales - Cost of Sales]		13,00,000
SALES		50,00,000

$$\text{Profit as a \% of sales} = \frac{13 \text{ Lakhs}}{50 \text{ Lakhs}} \times 100 = 26\%$$

Working Notes:

- (i) The cost sheet is completed by Reverse Working. Purchases amount is the balancing figure.
- (ii) Direct labour = 175% of factory overhead (given). Hence, if direct labour = 10,50,000, then Factory Overhead = 10,50,000 / 175% = ₹ 6,00,000
- (iii) Selling Overhead ₹ 2,50,000 (total), selling per unit ₹ 500.
Number of units sold = ₹ 2,50,000 / ₹ 500 = 500 units
- (iv) Cost of goods sold = 500 units x ₹ 6,900 = ₹ 34,50,000

4. (a) (i) **Calculation of net wages receivable by each employee from the employer (October 2022):**

	Ram (₹)	Shyam (₹)	Mohan (₹)	Kundan (₹)	Total (₹)
Wages for October 2022	3,000 (₹ 100 x 30 days)	3,600 (₹ 120 x 30 days)	3,900 (₹ 130 x 30 days)	2,500	13,000

Less: Employee Contribution to PF @ 8%	240	288	312	200	1,040
Less: Employee Contribution to ESI @ 4%	120	144	156	100	520
Net Wages Receivable	2,640	3,168	3,432	2,200	11,440

(ii) **Calculation of total amount of Provident Fund required to be deposited by employer (October 2022):**

	(₹)
Total Wages for the month	13,000
Employer's Contribution to Provident Fund @8% of ₹ 13,000	1,040
Add: Employee's Contribution to Provident Fund @8% of ₹ 13,000	1,040
Total amount of Provident Fund required to be deposited by employer	2,080

(iii) **Calculation of total amount of ESI required to be deposited by employer (October 2022):**

	(₹)
Total Wages for the month	13,000
Employer's Contribution to ESI @5% of ₹ 13,000	650
Add: Employee's Contribution to ESI @4% of ₹ 13,000	520
Total amount of ESI required to be deposited by employer	1,170

(iv) **Total labour cost to employer (October 2022):**

	(₹)
Total Wages for the month	13,000
Add: Employer's Contribution to Provident Fund @8% of ₹ 13,000	1,040
Add: Employer's Contribution to ESI @5% of ₹ 13,000	650
Total labour cost to employer	14,690

(v) **Calculation of Total Cost for October 2022**

	(₹)
Total Material Cost	20,000
Total Labour Cost	14,690
Total Overheads (Equal to Labour Cost)	14,690
Total Cost	49,380

(b) **Workings -**

1. **Fixed Production overheads (given) = ₹ 25 per unit**

So, at 1,00,000 units capacity, it will be ₹ 25,00,000 (1,00,000 units x ₹ 25)

2. **Selling and distribution overheads:**

Given (1,00,000 units x ₹ 25) = ₹ 25,00,000

So, Fixed component = ₹ 25,00,000 x 20% = ₹ 5,00,000

Hence, variable component = ₹ 25,00,000 - ₹ 5,00,000 = ₹ 20,00,000

Variable per unit = ₹ 20,00,000/1,00,000 units

= ₹ 20 per unit

Flexible Budget

Particulars	Per unit (₹)	Output Level	
		60,000 units (₹)	75,000 units (₹)
Sales (A)	1,750	10,50,00,000	13,12,50,000
Variable costs:			
Direct Material	650	3,90,00,000	4,87,50,000
Direct Wages	325	1,95,00,000	2,43,75,000
Direct expenses	125	75,00,000	93,75,000
Variable overheads	50	30,00,000	37,50,000
Selling and distribution overheads	20	12,00,000	15,00,000
Total Variable cost (B)	1,170	7,02,00,000	8,77,50,000
Contribution (C = A - B)		3,48,00,000	4,35,00,000
Fixed costs:			
Production overheads		25,00,000	25,00,000
Administrative overheads		60,00,000	60,00,000
Selling and distribution overheads		5,00,000	5,00,000
Total Fixed cost (D)		90,00,000	90,00,000
Profit (C-D)		2,58,00,000	3,45,00,000

$$P/V \text{ Ratio} = (\text{₹ } 3,48,00,000 / \text{₹ } 10,50,00,000) \times 100 = 33.143\%$$

OR

$$P/V \text{ Ratio} = (\text{₹ } 4,35,00,000 / \text{₹ } 13,12,50,000) \times 100 = 33.143\%$$

5. (a) **Workings:**

Particulars	Six months 6 operators (Hours)
Normal available hours half yearly (1,248 x 6 operators)	7,488
Less: Absenteeism hours (18 x 6 operators)	(108)
Paid hours (A)	7,380
Less: Leave hours (20 x 6 operators)	(120)
Less: Normal idle time (10 x 6 operators)	(60)
Effective working hours	7,200

Computation of Comprehensive Machine Hour Rate

Particulars	Amount for six months (₹)
Operators' wages (7,380/8 x 200)	1,84,500
Production bonus (10% on wages)	18,450
Power consumed	80,500
Supervision and indirect labour	33,000
Lighting and Electricity	12,000

Repair and maintenance $\{(5\% \times ₹ 64,00,000)/2\}$	1,60,000
Insurance (₹ 7,20,000/2)	3,60,000
Depreciation $\{(₹ 64,00,000 \times 10\%)/2\}$	3,20,000
Sundry Work expenses (₹ 1,00,000/2)	50,000
Management expenses (₹ 10,00,000/2)	5,00,000
Total Overheads for 6 months	17,18,450
Comprehensive Machine Hour Rate = ₹ 17,18,450/7,200 hours	₹ 238.67

(b) (i) **Cost per unit - Conventional Costing: Absorption rate method**

Particulars	A (₹)	B (₹)	C (₹)	D (₹)
Material	140	90	180	150
Labour @ ₹ 60 per labour hour	60	180	120	90
Overheads @ ₹ 280 per machine hour	840	560	1680	1120
Cost per unit (in ₹)	1,040	830	1,980	1,360
No of units	1,500	2,500	10,000	6,000
Total cost (₹)	15,60,000	20,75,000	1,98,00,000	81,60,000

(ii) **Statement of apportionment of overheads:**

Amount (₹)

Type of Cost	Cost Driver	A	B	C	D
Setups	No. of Setups	7,48,000 (100 x 7,480)	9,35,000 (125x7,480)	44,88,000 (600 x 7,480)	29,92,000 (400 x7,480)
Machinery	Machine hours	2,52,000 (4,500 x 56)	2,80,000 (5,000 x 56)	33,60,000 (60,000 x 56)	13,44,000 (24,000 x 56)
Material Handling	No. of Movements of material	1,78,500 (15 x 11,900)	2,38,000 (20 x 11,900)	11,90,000 (100 x 11,900)	10,11,500 (85 x 11,900)
Inspection	No. of Inspections	9,16,300 (200x4,581.50)	11,45,375 (250x4,581.50)	41,23,350 (900x4,581.50)	29,77,975 (650x4,581.50)
Total		20,94,800	25,98,375	1,31,61,350	83,25,475
Output Units		1,500	2,500	10,000	6,000
Overhead/ unit		1,396.53	1,039.35	1,316.14	1,387.58

Statement showing Cost per unit and Total cost using Activity Based Costing

Particulars	A (₹)	B (₹)	C (₹)	D (₹)
Material	140.00	90.00	180.00	150.00
Labour	60.00	180.00	120.00	90.00
Total	200.00	270.00	300.00	240.00
No. of units	1,500	2,500	10,000	6,000
Total cost (excluding overheads)	3,00,000	6,75,000	30,00,000	14,40,000
Add: Overheads (as calculated)	20,94,800	25,98,375	1,31,61,350	83,25,475
Total cost	23,94,800	32,73,375	1,61,61,350	97,65,475
Cost per unit	1,596.53	1,309.35	1,616.14	1,627.58

Working Notes:**1. Calculation of Total machine hours**

Particulars	A	B	C	D
(a) Machine hours per unit	3	2	6	4
(b) Production(units)	1,500	2,500	10,000	6,000
(c) Total machine hours (a) x(b)	4,500	5,000	60,000	24,000

Total Machine hours = 93,500

Total production overheads= 93,500 x 280 = ₹ 2,61,80,000

2. Calculation of cost driver rate

Cost pool	Amount of cost (₹)	Cost Driver (basis)	Cost Driver (units)	Cost Driver Rate (₹)
Setups	91,63,000	No. of Setups	1,225	7,480 per set up
Machinery	52,36,000	Machine Hrs.	93,500	56 per machine hour
Material Handlings	26,18,000	No. of Material Movements	220	11,900 per material movement
Inspection	91,63,000	No. of Inspections	2,000	4,581.50 per inspection
	2,61,80,000			

6. (a)

Service industry	Unit of cost (examples)
Hospital	Patient per day, room per day or per bed, per operation etc.
Electricity Supply service	Kilowatt- hour (kWh)
Cinema	Per ticket
Canteen	Per item, per meal etc.
Hotels	Guest Days or Room Days

(b) Purely Financial Expenses included in Financial Accounts only:

- (i) Interest on loans or bank mortgages.
- (ii) Expenses and discounts on issue of shares, debentures etc.
- (iii) Other capital losses i.e., loss by fire not covered by insurance etc.
- (iv) Losses on the sales of fixed assets and investments
- (v) Income tax, donations, subscriptions
- (vi) Expenses of the company's share transfer office, if any.

(Any five)**(c) Unit costing:** It is that method of costing where the output produced is identical and each unit of output requires identical cost. Unit costing is synonymously known as single or output costing, but these are sub-division of unit costing method.

This method of costing is followed by industries which produce single output or few variants of a single output, therefore, this method of costing, finds its application in industries like paper, cement, steel works, mining, breweries etc. These types of industries produce identical products and therefore have identical costs.

(d)

Activity Cost Pools	Related Cost Drivers
Inspecting and testing costs	Number of tests
Setting up machines cost	Number of set-ups
Machining costs	Machine hours
Supervising Costs	Direct labour hours
Ordering and Receiving Materials cost	Number of purchase orders

(e)

Trade Discount	Trade discount is deducted from the purchase price if it is not shown as deduction in the invoice.
Cash Discount	Cash discount is not deducted from the purchase price. It is treated as interest and finance charges. It is ignored.
Penalty	Penalty of any type is not included with the cost of purchase
Insurance charges	Insurance charges are paid for protecting goods during transit. It is added with the cost of purchase.
Commission paid	Commission or brokerage paid is added with the cost of purchase.