Test Series: October, 2018

MOCK TEST PAPER – 2

INTERMEDIATE (NEW): GROUP – I

PAPER – 3: COST AND MANAGEMENT ACCOUNTING

SUGGESTED ANSWERS/HINTS

1. (a) Workings:

Let us assume that the selling price before increment is Rs.100, the other relevant details are as follows:

Particulars	Before increase	After increase
Selling Price	100	110
Variable Cost	60	63
Contribution	40	47
P/V Ratio	40%	42.73%

(i) Computation of Break-even point sales:

$$\text{Break-even point sales} = \frac{\text{Fixed Overheads}}{\text{P/V ratio}}$$

- Before increase $= \frac{\text{Rs. } 20,00,000}{40\%} = \text{Rs. } 50,00,000$

- After increase $= \frac{\text{Rs.}30,00,000}{42.73\%} = \text{Rs. } 70,20,828 \text{ (approx.)}$

(ii) Sales value to make a profit of Rs.4,50,000:

$$= \frac{\text{Fixed Overheads} + \text{Desired profit}}{\text{P/V ratio}} = \frac{\text{Rs.}30,00,000 + \text{Rs.}4,50,000}{42.73\%} = \text{Rs.}80,73,953$$

(b) (i) $\text{EOQ} = \sqrt{\frac{2AO}{C}}$

$$A = \text{Annual consumption} = \frac{96,000 \text{ units} \times 1 \text{kg.}}{4 \text{ units}} = 24,000 \text{kgs.}$$

O = Cost of placing order = Handling cost + Freight = Rs. 1,500 +Rs.4,000 = Rs.5,500

C = Carrying cost per kg. per annum

Carrying cost (Rs.1.50 × 12)	= Rs.18
Finance charges on investment in inventory	= Rs.8
	Rs.26

$$\text{EOQ} = \sqrt{\frac{2 \times 24,000 \text{kgs.} \times \text{Rs.}5,500}{\text{Rs.}26}} = 3,186.5 \text{ kgs.}$$

(ii) Number of orders = 24,000 kgs./ 3,186.5 kgs. = 7.53 or 8 orders

Frequency in placing orders = 365 days / 8 orders = 45.63 or 46 days

(iii) If company places orders on quarterly basis, percentage of discount in price of raw material to be negotiated:

Cost under EOQ:

Ordering cost	8 orders × Rs. 5,500	44,000.00
Carrying cost	3,186.5kgs. × ½ × Rs.26	41,424.50
Total		85,424.50

Cost under Ordering on Quarterly Basis:

Ordering cost	4 orders × Rs.5,500	22,000.00
Carrying cost	(24,000 kgs./ 4 orders) × ½ × Rs.26	78,000.00
Total		1,00,000.00

Inc

Incremental cost if orders are placed on quarterly basis

= Rs.1,00,000– Rs. 85,424.50 = Rs. 14,575.50

Reduction in purchase price to be negotiated

= Rs.14,575.50 ÷ 24,000 kgs. = Rs.0.61 per kg.

Percentage of discount to be negotiated 0.61 ÷ 54 × 100 = 1.13%

(c) Labour Turnover Rate (Replacement method) = $\frac{\text{No. of workers replaced}}{\text{Average no. of workers}} \times 100$

Or, $\frac{10}{100} = \frac{50}{\text{Average no. of workers}}$

Thus, Average No. of workers = 500

Labour Turnover Rate (Separation method) = $\frac{\text{No. of workers separated}}{\text{Average No. of workers}} \times 100$

Or, $\frac{5}{100} = \frac{\text{Number of workers separated}}{500}$

Thus, No. of workers separated = 25

Labour Turnover Rate (Flux Method)

$= \frac{\text{No. of Separations + No. of Accession (Joinings)}}{\text{Average no. of workers}} \times 100$

Or, $\frac{20}{100} = \frac{25 + \text{No. of accessions (Joinings)}}{500}$

Or, 100 (25 + No. of Accessions) = 10,000

Or, 25 + No. of Accessions =100

Thus, No. of Accessions = 100 - 25 =75

Accordingly,

(i) Workers recruited and Joined = 75

(ii) Workers left and discharged = 25

(iii) Average number of workers on roll = 500

(d) (i) Optimum batch size or Economic Batch Quantity (EBQ):

$$EBQ = \sqrt{\frac{2DS}{C}} = \sqrt{\frac{2\times 48,000\times 3,200}{12}} = 5,060 \text{ units.}$$

(ii) Number of Optimum runs = 48,000 ÷ 5,060 = 9.49 or 10 runs

Interval between 2 runs (in days) = 365 days ÷ 10 = 36.5 days

(iii) Minimum Inventory Cost = Average Inventory × Inventory Carrying Cost per unit per annum

Average Inventory = 5,060 units ÷ 2 = 2,530 units

Carrying Cost per unit per annum = Rs.1 × 12 months = Rs.12

Minimum Inventory Holding Costs = 2,530 units × Rs. 12 = Rs.30,360

2. (a) Workings:

	Skilled	Unskilled
Standard Rate per hour	80	60
Standard time for producing one unit	1.5 hours (Rs.120 ÷ Rs.80)	1.5 hours (Rs.90 ÷ Rs.60)
Actual hours paid (AH_{Paid})	6,600 hours	5,400 hours
Standard hours required to produce 4,000 units (SH)	6,000 hours (1.5 hours× 4,000 units)	6,000 hours (1.5 hours× 4,000 units)
Actual hours worked (AH_{Worked})	$\frac{6,600}{100}\times 97.5$ = 6,435 hours	$\frac{5,400}{100}\times 97.5$ = 5,265 hours
Revised Std. Hours (RSH)	$\left(\frac{6,600+5,400}{100}\times 97.5\right)\times 0.5$ = 5,850 hours	$\left(\frac{6,600+5,400}{100}\times 97.5\right)\times 0.5$ = 5,850 hours
$Idle\ time_{Abnormal}$	6,600 - 6,435 = 165 hours	5,400 – 5,265 = 135 hours

(i) Labour Rate Variance = AH_{Paid}(Std. Rate – Actual Rate)

- Skilled = 6,600 hours (Rs.80 – Rs.87.50) = Rs.49,500 (A)
- Unskilled = 5,400 hours (Rs.60 – Rs.55) = Rs.27,000 (F)

= Rs.22,500 (A)

(ii) Labour Efficiency Variance = Std. Rate (SH – AH_{Worked})

- Skilled = Rs.80 (6,000 hours – 6,435 hours) = Rs.34,800 (A)
- Unskilled = Rs.60 (6,000 hours – 5,265 hours) = Rs.44,100 (F)

= Rs.9,300 (F)

(iii) Labour Mix Variance = Std. Rate (RSH – AH_{Worked})

- Skilled = Rs.80 (5,850 hours – 6,435 hours) = Rs.46,800 (A)
- Unskilled = Rs.60 (5,850 hours – 5,265 hours) = Rs.35,100 (F)

= Rs.11,700 (A)

(iv) Labour Yield Variance = Std. Rate (SH – RSH)

- Skilled = Rs.80 (6,000 hours – 5,850 hours) = Rs.12,000 (F)
- Unskilled = Rs.60 (6,000 hours – 5,850 hours) = Rs.9,000 (F)

= Rs.21,000 (F)

(v) Labour Idle time Variance = Std. Rate × $\text{Idle time}_{\text{Abnormal}}$

- Skilled = Rs.80 × 165 hours = Rs.13,200 (A)
- Unskilled = Rs.60 × 135 hours = Rs.8,100 (A)

= Rs.21,300 (A)

(vi) Variable Overhead Expenditure Variance

$= AH_{Worked}$ (SR - AR)

$= 11{,}700 \text{ hours} \left(\frac{Rs.75}{2 \times 1.5 \text{hours}} - \frac{Rs.2{,}85{,}000}{11{,}700 \text{hours}} \right)$

= 11,700 hours (Rs.25 – Rs.24.36) = Rs.7,488 (F)

(vii) Variable Overhead Efficiency Variance

= Std. Rate (SH – AH_{Worked})

= Rs.25 (12,000 – 11,700) = Rs.7,500 (F)

(b) **Stores Ledger Control A/c**

Particulars	(Rs.)	Particulars	(Rs.)
To Balance b/d	90,000	By Work in Process Control A/c	4,80,000
To General Ledger Adjustment A/c	4,80,000	By Overhead Control A/c	60,000
To Work in Process Control A/c	2,40,000	By Overhead Control A/c (Deficiency)	18,000*
		By Balance c/d	2,52,000
	8,10,000		8,10,000

*Deficiency assumed as normal (alternatively can be treated as abnormal loss)

Work in Process Control A/c

Particulars	(Rs.)	Particulars	(Rs.)
To Balance b/d	1,80,000	By Stores Ledger Control A/c	2,40,000
To Stores Ledger Control A/c	4,80,000	By Costing P/L A/c (Balancing figures being Cost of finished goods)	12,00,000
To Wages Control A/c	1,80,000	By Balance c/d	1,20,000
To Overheads Control A/c	7,20,000		
	15,60,000		15,60,000

Overheads Control A/c

Particulars	(Rs.)	Particulars	(Rs.)
To Stores Ledger Control A/c	60,000	By Work in Process Control A/c	7,20,000
To Stores Ledger Control A/c	18,000	By Balance c/d* (Under absorption)	1,38,000
To Wages Control A/c (Rs. 2,10,000- Rs.1,80,000)	30,000		
To Gen. Ledger Adjust. A/c	7,50,000		
	8,58,000		8,58,000

*Alternatively may be transferred to Costing P& L A/c

Costing Profit & Loss A/c

Particulars	(Rs.)	Particulars	(Rs.)
To Work in Process Control A/c	12,00,000	By Gen. Ledger Adjust. A/c (Sales) (12,00,000+1,20,000)	13,20,000
To Gen. Ledger Adjust. A/c (Profit)	1,20,000		
	13,20,000		13,20,000

General Ledger Adjustment A/c may also be written as Cost Ledger Control A/c

3. (a) (i) Statement of operating income of DKG Airlines for Melbourne-Delhi flight (one way)

Particulars	Amount (Rs.)	Amount (Rs.)
Fare received (per flight): 250 passengers × Rs. 50,000		1,25,00,000
Variable costs (per flight):		
- Fuel cost	28,00,000	
- Food (250 × Rs. 2,600)	6,50,000	
- Commission to Travel Agents (15% of Rs. 1,25,00,000)	18,75,000	(53,25,000)
Contribution per flight		71,75,000
Fixed cost (per flight):		
Annual lease cost	15,30,000	
Fixed ground service costs	1,70,000	
Salaries of flight crew	6,50,000	(23,50,000)
Operating income per flight		48,25,000

(ii) Operating income of DKG Airlines per Melbourne-Delhi flight (one way) after reduction in fare

Fare received (per flight): 275 passengers × Rs. 48,000		1,32,00,000
Variable costs (per flight):		
Fuel cost	28,00,000	
Food (275 × Rs.2,600)	7,15,000	
Commission to Travel Agents (17.5% of Rs.1,32,00,000)	23,10,000	(58,25,000)
Contribution per flight		73,75,000

Excess contribution due to lowering of fare (Rs.73,75,000 – Rs.71,75,000) = Rs.2,00,000. DKG Airlines should lower its fare as it would increase its contribution by Rs.2,00,000.

(b) Computation of Machine Hour Rate

	Basis of apportionment	Total (Rs)	Machines		
			A (Rs.)	B (Rs.)	C (Rs.)
(A) Standing Charges					
Insurance	Depreciation Basis (3:3:2)	8,000	3,000	3,000	2,000
Indirect employee cost	Direct Labour hours (2:3:3)	24,000	6,000	9,000	9,000
Building maintenance expenses	Floor Space (2:2:1)	20,000	8,000	8,000	4,000
Rent and Rates	Floor Space (2:2:1)	1,20,000	48,000	48,000	24,000
Salary of foreman	Equal	2,40,000	80,000	80,000	80,000
Salary of attendant	Equal	60,000	20,000	20,000	20,000
Total standing charges		4,72,000	1,65,000	1,68,000	1,39,000
Hourly rate for standing charges			84.70	86.24	71.36
(B) Machine Expenses:					
Depreciation	Direct	20,000	7,500	7,500	5,000
Spare parts	Final estimates	13,225	4,600	5,750	2,875
Power	K.W. rating (3:2:3)	40,000	15,000	10,000	15,000
Consumable Stores	Direct	8,000	3,000	2,500	2,500
Total Machine expenses		81,225	30,100	25,750	25,375
Hourly Rate for Machine expenses			15.45	13.22	13.03
Total (A + B)		553,225	1,95,100	1,93,750	1,64,375
Machine Hour rate			100.15	99.46	84.38

Working Notes:

(i) Calculation of effective working hours:

No. of full off-days = No. of Sunday + No. of holidays

= 52 + 12 = 64 days

No. of half working days = 52 days – 2 holidays = 50 days

No. of full working days = 365 days – 64 days – 50 days = 251 days

Total working Hours = {(251 days × 8 hours) + (50 days × 4 hours)}

= 2,008 hours + 200 = 2,208 hours.

Total effective hours = Total working hours × 90% - 2% for break-down

= 2,208 hours × 90% - 2% (2,208 hours × 90%)

= 1,987.2 hours – 39.74 hours

= 1947.46 or Rounded up to 1948 hours.

(ii) Amount of spare parts is calculated as under:

	A (Rs.)	B (Rs.)	C (Rs.)
Preliminary estimates	4,000	4,000	2,000
Add: Increase in price @ 15%	600	600	300

	4,600	4,600	2,300
Add: Increase in consumption @ 25%	–	1,150	575
Estimated cost	4,600	5,750	2,875

(iii) Amount of Indirect employee cost is calculated as under:

	(Rs.)
Preliminary estimates	20,000
Add: Increase in wages @ 20%	4,000
	24,000

(iv) Interest on capital outlay is a finance cost, therefore it has been excluded from the cost accounts.

4. (a) (i) Statement of Equivalent Production

(FIFO Method)

Input		Output		Equivalent Production			
Particulars	Units	Particulars	Units	Material		Labour & Overheads	
				(%)	Units	(%)	Units
Opening WIP	8,000	Transfer to next Process:					
Introduced	1,82,000	Opening WIP completed	8,000	--	--	40	3,200
		Introduced & completed	1,50,000	100	1,50,000	100	1,50,000
		Normal loss 10% (8,000 + 182,000)	19,000	--	--	--	--
		Abnormal gain	(5,000)	100	(5,000)	100	(5,000)
		Closing WIP	18,000	100	18,000	70	12,600
	1,90,000		1,90,000		1,63,000		1,60,800

(ii) Computation of Cost per unit

Particulars	Materials (Rs.)	Labour (Rs.)	Overhead (Rs.)
Input of Materials	1,47,50,000	--	--
Expenses	--	68,12,000	34,06,000
Total	1,47,50,000	68,12,000	34,06,000
Less: Sale of Scrap (19,000 units × Rs.15)	(2,85,000)	--	--
Net cost	1,44,65,000	68,12,000	34,06,000
Equivalent Units	1,63,000	1,60,800	1,60,800
Cost Per Unit	88.7423	42.3632	21.1816

Total cost per unit = Rs. (88.7423+42.3632+21.1816) = Rs.152.2871

(iii) Value of units transferred to next process:

	Amount (Rs.)	Amount (Rs.)
Opening W-I-P	15,00,000.00	
Add: Labour (3,200 units × Rs. 42.3632)	1,35,562.24	
Overhead (3,200 units × Rs. 21.1816)	67,781.12	17,03,343.36
New introduced (1,50,000 units × Rs. 152.2871)		2,28,43,065.00
		2,45,46,408.36

(b) (i) Optimum run size or Economic Batch Quantity (EBQ) = $\sqrt{\frac{2 \times D \times S}{C}}$

Where, D = Annual demand i.e. 1.15% of 8,00,00,000 = 9,20,000 units

S = Set-up cost per run = Rs. 3,500

C = Inventory holding cost per unit per annum

= Rs.1.5 × 12 months = Rs. 18

$$EBQ = \sqrt{\frac{2 \times 9,20,000 \text{ units} \times Rs.3,500}{Rs.18}} = 18,915 \text{ units}$$

(ii) Calculation of Total Cost of set-up and inventory holding

	Batch size	No. of set-ups	Set-up Cost (Rs.)	Inventory holding cost (Rs.)	Total Cost (Rs.)
A	40,000 units	23 $\left(\frac{9,20,000}{40,000}\right)$	80,500 (23 × Rs. 3,500)	3,60,000 $\left(\frac{40,000 \times Rs.18}{2}\right)$	4,40,500
B	18,915 units	49 $\left(\frac{9,20,000}{18,915}\right)$	1,71,500 (49 × Rs.3,500)	1,70,235 $\left(\frac{18,915 \times Rs.18}{2}\right)$	3,41,735
	Extra Cost (A – B)				98,765

(iii)

	Costs	Unit level	Batch level
(a)	Inventory carrying cost	Variable cost	Variable cost
(b)	Designing cost for a job	Fixed cost	Variable cost, provided the entire job work is processed in a single batch.
(c)	Machine set-up cost to run production	Fixed cost	Variable cost
(d)	Depreciation of factory building	Fixed cost	Fixed cost

5. (a) Number of days in budget period = 4 weeks × 5 days = 20 days

Number of units to be produced

	Product-A (units)	Product-B (units)
Budgeted Sales	2,400	3,600
Add: Closing stock	480	900

	$\left(\frac{2,400 \text{ units}}{20 \text{ days}} \times 4 \text{ days}\right)$	$\left(\frac{3,600 \text{ units}}{20 \text{ days}} \times 5 \text{ days}\right)$
Less: Opening stock	(400)	(200)
	2,480	4,300

(i) Material Purchase Budget

	Material-X (Kg.)	Material-Y (Kg.)
Material required:		
- Product-A	12,400 (2,480 units × 5 kg.)	9,920 (2,480 units × 4 kg.)
- Product-B	12,900 (4,300 units × 3 kg.)	25,800 (4,300 units × 6 kg.)
	25,300	35,720
Add: Closing stock	12,650 $\left(\frac{25,300 \text{ kgs.}}{20 \text{ days}} \times 10 \text{ days}\right)$	10,716 $\left(\frac{35,720 \text{ kgs.}}{20 \text{ days}} \times 6 \text{ days}\right)$
Less: Opening stock	(1,000)	(500)
Quantity to be purchased	36,950	45,936
Rate per kg. of Material	Rs. 4	Rs. 6
Total Cost	Rs. 1,47,800	Rs. 2,75,616

(ii) Wages Budget

	Product-A (Hours)	Product-B (Hours)
Units to be produced	2,480 units	4,300 units
Standard hours allowed per unit	3	5
Total Standard Hours allowed	7,440	21,500
Productive hours required for production	$\frac{7,440 \text{ hours}}{80\%} = 9,300$	$\frac{21,500 \text{ hours}}{80\%} = 26,875$
Add: Non-Productive down time	1,860 hours. (20% of 9,300 hours)	5,375 hours. (20% of 26,875 hours)
Hours to be paid	11,160	32,250

Total Hours to be paid	= 43,410 hours (11,160 + 32,250)
Hours to be paid at normal rate	= 4 weeks × 40 hours × 180 workers = 28,800 hours
Hours to be paid at premium rate	= 43,410 hours – 28,800 hours = 14,610 hours
Total wages to be paid	= 28,800 hours × Rs. 25 + 14,610 hours × Rs. 37.5 = Rs. 7,20,000 + Rs. 5,47,875 = Rs. 12,67,875

(b) (i) Statement Showing "Cost *per unit* - Traditional Method"

Particulars of Costs	P (Rs.)	Q (Rs.)	R (Rs.)
Direct Materials	90	80	120
Direct Labour [(4, 12, 8 hours) × Rs.20]	80	240	160
Production Overheads [(10, 18, 14 hours) × Rs.6]	60	108	84
Cost *per unit*	230	428	364

(ii) Statement Showing "Cost *per unit* - Activity Based Costing"

Products	P	Q	R
Production (units)	3,000	5,000	20,000
	(Rs.)	(Rs.)	(Rs.)
Direct Materials (90, 80, 120)	2,70,000	4,00,000	24,00,000
Direct Labour (80, 240, 160)	2,40,000	12,00,000	32,00,000
Machine Related Costs @ Rs.1.80 *per hour* (30,000, 90,000, 2,80,000)	54,000	1,62,000	5,04,000
Setup Costs @ Rs.9,600 *per setup* (20, 10, 20)	1,92,000	96,000	1,92,000
Inspection Costs @ Rs.4,800 *per inspection* (100, 40, 60)	4,80,000	1,92,000	2,88,000
Purchase Related Costs @ Rs.750 *per purchase* (60, 100, 160)	45,000	75,000	1,20,000
Total Costs	12,81,000	21,25,000	67,04,000
Cost *per unit*(Total Cost ÷ Units)	427.00	425.00	335.20

Workings

Number of Batches, Purchase Orders, and Inspections-

	Particulars	P	Q	R	Total
A.	Production (units)	3,000	5,000	20,000	
B.	Batch Size (units)	150	500	1,000	
C.	Number of Batches [A ÷ B]	20	10	20	50
D.	Number of Purchase Order *per batch*	3	10	8	
E.	Total Purchase Orders [C × D]	60	100	160	320
F.	Number of Inspections *per batch*	5	4	3	
G.	Total Inspections [C × F]	100	40	60	200

Total Machine Hours-

	Particulars	P	Q	R
A.	Machine Hours *per unit*	10	18	14
B.	Production (units)	3,000	5,000	20,000
C.	Total Machine Hours [A × B]	30,000	90,000	2,80,000

Total Machine Hours = 4,00,000

Total Production Overheads-

= 4,00,000 hrs. × Rs. 6 = Rs. 24,00,000

Cost Driver Rates-

Cost Pool	%	Overheads (Rs.)	Cost Driver (Units)	Cost Driver Rate (Rs.)
Setup	20%	4,80,000	50	9,600 per Setup
Inspection	40%	9,60,000	200	4,800 per Inspection
Purchases	10%	2,40,000	320	750 per Purchase
Machine Hours	30%	7,20,000	4,00,000	1.80 per Machine Hour

6. (a) Like other branches of accounting, cost and management accounting is also having certain limitations. The limitations of cost and management accounting are as follows:

1. **Expensive:** It is expensive because analysis, allocation and absorption of overheads require considerable amount of additional work, and hence additional money.
2. **Requirement of Reconciliation:** The results shown by cost accounts differ from those shown by financial accounts. Thus Preparation of reconciliation statements is necessary to verify their accuracy.
3. **Duplication of Work:** It involves duplication of work as organization has to maintain two sets of accounts i.e. Financial Account and Cost Account.
4. **Inefficiency:** Costing system itself does not control costs but its usage does.

(b) **Level of activity method:** Under this method, the variable overhead may be determined by comparing two levels of output with the amount of expenses at those levels. Since the fixed element does not change, the variable element may be ascertained with the help of the following formula.

$$\frac{\text{Change in the amount of expense}}{\text{Change in the quantity of output}}$$

Suppose the following information is available:

	Production Units	Semi-variable expenses (Rs.)
January	100	260
February	140	300
Difference	40	40

The variable cost :

$$\frac{\text{Change in Semi} - \text{variable expenses}}{\text{Change in production volume}} = \frac{\text{Rs. } 40}{40 \text{ units}} = \text{Re. } 1/\text{ unit}$$

Thus, in January, the variable cost will be 100 × Re. 1 = Rs. 100 and the fixed cost element will be (Rs. 260 – Rs. 100) or Rs. 160. In February, the variable cost will be 140 × Re. 1 = Rs. 140 whereas the fixed cost element will remain the same, i.e., Rs. 160.

(c) Advantages of Cost sheet or Cost Statements

The main advantages of a Cost Sheet are as follows:

(i) It provides the total cost figure as well as cost per unit of production.

(ii) It helps in cost comparison.

(iii) It facilitates the preparation of cost estimates required for submitting tenders.

(iv) It provides sufficient help in arriving at the figure of selling price.

(v) It facilitates cost control by disclosing operational efficiency.

(d) The difference between the allocation and apportionment is important to understand because the purpose of these two methods is the identification of the items of cost to cost units or centers. However, the main difference between the above methods is given below.

(1) Allocation deals with the whole items of cost, which are identifiable with any one department. For example, indirect wages of three departments are separately obtained and hence each department will be charged by the respective amount of wages individually.

On the other hand, apportionment deals with the proportions of an item of cost for example; the cost of the benefit of a service department will be divided between those departments which has availed those benefits.

(2) Allocation is a direct process of charging expenses to different cost centres whereas apportionment is an indirect process because there is a need for the identification of the appropriate portion of an expense to be borne by the different departments benefited.

(3) The allocation or apportionment of an expense is not dependent on its nature, but the relationship between the expense and the cost centre decides that whether it is to be allocated or apportioned.

(4) Allocation is a much wider term than apportionment.