

INTERMEDIATE: GROUP – II
PAPER – 4: COST AND MANAGEMENT ACCOUNTING
Suggested Answers/ Solution

PART I – Case Scenario based MCQs

1. c. 40,000 units.

Projected Sales of Product P – 24,000 units

Less: Opening stock of Product P- (4,000 units)

Product P to be produced- 20,000 units

Raw Material required- 50,000 units (20,000 x 2/80% yield)

Opening stock of Material R available- 10,000 units

Material to be procured- 40,000 units.

2. a. Order Quantity as per the current inventory policy – 10,000 units and EOQ – 1,000 units

Annual requirement - Procurement- 40,000 units

Order Quantity as per the current inventory policy (Quarterly) - 10,000 units

Ordering Cost- ₹125 per order

Carrying Cost- ₹ 10 per unit p.a.

EOQ - 1,000 units.

3. b. Savings from EOQ as Compared to current discount policy – ₹ 20,500

Associated Costs under EOQ:

Ordering Costs = No. of orders x Ordering cost per order

No of orders = Annual Requirement/ EOQ (or) current order quantity

Hence No of orders = 40

Therefore Ordering Cost = 40 x 125 = ₹ 5,000.

Carrying cost = Average Inventory x Carrying cost per unit per annum

Average Inventory = (EOQ/ current order quantity)/2

= 1,000/2 = 500

Carrying cost = 500 x 10 = ₹ 5,000

Associated Costs under EOQ = Ordering cost + Carrying Cost
= ₹ 10,000 -----A

Associated Costs under current inventory policy:

No of orders = 4 (Quarterly)

Ordering cost = 4 x 125 = ₹ 500

Average inventory = 10,000/2 = 5,000

Carrying cost = 5,000x10 = 50,000

Associated Costs = 50,000+500 = 50,500

Less: Discount = 20,000

Net cost = 30,500 -----B

Incremental Cost = B – A = 20,500

4. b. ₹ 6,400

Time taken under the Overtime regime 180 Hours + 20 Hours overtime
= 200 Hours

Time to be taken under the Incentive regime

Units to be produced = 20,000 units

Units produced per hour under incentive scheme = 125 units

Time taken = 160 Hours

Time saved = 200 – 160 = 40 hours.

Incentive under Rowan scheme = (Time saved/Time allowed) x time
taken x Rate

= (40/200) x 160x200 = ₹ 6,400.

5. b. ₹ 5,600

Cost under the Overtime scheme:

Base wage = 200 x 200 = 40,000

OT Premium = 20 x 200 = 4,000

Total Wages under Overtime scheme = 44,000

Cost under Incentive scheme:

Base Wage = 160 hours x 200 = 32,000

Incentive = 6,400

Total wages paid = 38,400

Savings in Incentive scheme over Overtime scheme = ₹ 5,600.

6. a ₹ 550

Contribution Margin per Unit = Selling Price per Unit - Variable Cost per Unit

= Variable Cost per unit = ₹ 500* + ₹ 300** + ₹ 100 + ₹ 50

Contribution Margin per Unit = ₹ 1,500 - ₹ 950 = ₹ 550

*Raw Material Cost Calculation

Let the cost of Plastic be x

1. The cost of Copper is ₹ 80 more than the cost of Plastic: Cost of Copper = $x + 80$
2. The cost of Other Materials is twice that of Plastic: Cost of Other Materials = $2x$
3. The total Raw Material Cost per unit is ₹ 210 more than the combined cost of Copper & Plastic: $x + (x+80) + 2x = (x + (x+80)) + 210$

Solving for X = 105

Now, calculate the total cost of Raw Materials:

$105 + (105+80) + 210 = 500$

So, the total cost of Raw Materials is ₹ 500.

** Labour Cost Calculation

1. The Labour Hour Rate is ₹ 100 per hour.
2. The total labour hours used in the last month were 36,000 hours.
3. The production units last month were 12,000 units (10000 normal units plus 2000 special order).

Total Labour Cost = Labour Hour Rate × Total Labour Hours

Total Labour Cost = ₹ 100/hour × 36,000 hours = ₹ 3,600,000

Per Unit Labour Cost = Total Labour Cost/Production Units

Per Unit Labour Cost = ₹ 3,600,000/12000

Per Unit Labour Cost = ₹ 300

So, the per unit labour cost is ₹ 300.

7. c ₹ 27,27,025

- Break-even Point (Sales Revenue) = Total Fixed Costs / Contribution Margin Ratio
- Contribution Margin Ratio = Contribution Margin per Unit / Selling Price per Unit
- = ₹ 550 / ₹ 1,500 = 0.3667

- Break-even Point = ₹ 10,00,000 / 0.3667 ≈ ₹ 27,27,025

8. b 2,727 units

- Required Sales Volume (Units) = (Total Fixed Costs + Target Profit) / Contribution Margin per Unit
- = (₹ 10,00,000 + ₹ 5,00,000) / ₹ 550 ≈ 2,727.27 units ≈ 2,727 units (rounded up)

9. b 2,198 units

- New Variable Cost per Unit = ₹ 950 + 10% of ₹ 950 = ₹ 950 + ₹ 95 = ₹ 1,045
- New Contribution Margin per Unit = ₹ 1,500 - ₹ 1,045 = ₹ 455
- New Break-even Point (Units) = Total Fixed Costs / New Contribution Margin per Unit
- = ₹ 10,00,000 / ₹ 455 ≈ 2198 units

10. c 45.05%

- Margin of Safety (Units) = Actual Sales - Break-even Sales
- = 4,000 - 2198 = 1,802 units
- Margin of Safety (%) = (Margin of Safety in Units / Actual Sales in Units) * 100
- = (1,802 / 4,000) * 100 ≈ 45.05%

11. d 9,129 units

Annual demand (D) = 50,000 units

Setup cost per batch (S) = ₹ 10,000

Carrying cost per unit per month (C) = ₹ 1

$$EBQ = \sqrt{\frac{2 \times D \times S}{C}}$$

= 9,129 units

12. a ₹ 3000(A)

Standard quantity = Standard quantity per sofa × Actual production

= 5 sq. ft x 1000 = 5,000 sq. ft.

Standard material cost = Standard quantity × Standard price per sq. ft.

= 5,000 sq. ft. × ₹ 10/sq. ft. = ₹ 50,000

Actual material cost = Actual quantity used × Actual purchase price per sq. ft.

= 5,300 sq. ft. × ₹ 10/sq. ft. = ₹ 53,000

$$\begin{aligned} \text{Material cost variance} &= \text{Standard material cost} - \text{Actual Material cost} \\ &= ₹ 50,000 - ₹ 53,000 = -₹ 3,000 \end{aligned}$$

13. b ₹ 100 per part type

$$\begin{aligned} \text{Activity rate} &= \text{budgeted overhead/budgeted activity level} \\ &= 4,00,000/4,000 \\ &= ₹ 100 \text{ per part type} \end{aligned}$$

14. a 52,000

$$\begin{aligned} \text{Ton-kilometers} &= 10 \text{ tons} \times 200 \text{ kilometers} \times 26 \text{ days} \\ &= 52,000 \end{aligned}$$

15. b 83.33%

$$\begin{aligned} \text{Activity Ratio} &= \frac{\text{Standard Hours}}{\text{Budgeted Hours}} \times 100 \\ &= 83.33\% \end{aligned}$$

PART-II Descriptive Questions

1. (a) Calculation of Cost of Production of Meta Ltd for the period.....

Particulars	Amount (₹)
Raw materials purchased	64,00,000
Add: Opening stock	2,88,000
Less: Closing stock	(4,46,000)
Material consumed	62,42,000
Wages paid	23,20,000
Prime cost	85,62,000
Repair and maintenance cost of plant & machinery	9,80,500
Insurance premium paid for inventories	26,000
Insurance premium paid for plant & machinery	96,000
Quality control cost	86,000
Research & development cost	92,600
Administrative overheads related with factory and production	9,00,000
	1,07,43,100
Add: Opening value of W-I-P	4,06,000
Less: Closing value of W-I-P	(6,02,100)
	1,05,47,000
Less: Amount realised by selling scrap	(9,200)

Add: Primary packing cost	10,200
Add: Expenses paid for pollution control and engineering & maintenance	22,000
Cost of Production	1,05,70,000

Notes:

- (i) Other administrative overhead does not form part of cost of production.
- (ii) Salary paid to Director (Technical) is an administrative cost.

(b) Memorandum Reconciliation Accounts

Dr.

Cr.

Particulars	Amount (₹)	Particulars	Amount (₹)
To Net Loss as per Cost Accounts	48,700	By Administration overheads over recovered in Cost Accounts	65,000
To Factory overheads under absorbed in Cost Accounts	30,500	By Depreciation overcharged in Cost Accounts (₹ 2,70,000 – ₹ 2,25,000)	45,000
To Provision for Income tax	52,400	By Transfer fees in Financial Accounts	10,200
To Obsolescence loss	20,700	By Notional Rent of own premises	49,000
To Overvaluation of closing stock in Cost Accounts**	9,500	By Overvaluation of Opening stock in Cost Accounts*	23,000
To Net Profit (as per Financial Accounts)	30,400		
	1,92,200		1,92,200

* Overvaluation of Opening Stock as per Cost Accounts

= Value in Cost Accounts – Value in Financial Accounts

= ₹ 1,38,000 – ₹ 1,15,000 = ₹ 23,000.

** Overvaluation of Closing Stock as per Cost Accounts

= Value in Cost Accounts – Value in Financial Accounts

= ₹ 1,22,000 – ₹ 1,12,500 = ₹ 9,500.

(c) Calculation of:

(i) Time saved and wages:

Workmen	A	B
Standard time (hrs.)	40	40
Actual time taken (hrs.)	<u>32</u>	<u>30</u>
Time saved (hrs.)	<u>08</u>	<u>10</u>
Wages paid @ ₹ x per hr. (₹)	32x	30x

(ii) Bonus Plan:

	Halsey	Rowan
Time saved (hrs.)	8	10
Bonus (₹)	4x	7.5x
	$\left[\frac{8 \text{ hrs} \times ₹ x}{2} \right]$	$\left[\frac{10 \text{ hrs}}{40 \text{ hrs}} \times 30 \text{ hrs} \times ₹ x \right]$

(iii) Total wages:

$$\text{Workman A: } 32x + 4x = ₹ 36x$$

$$\text{Workman B: } 30x + 7.5x = ₹ 37.5x$$

Statement of factory cost of the job

Workmen	A	B
	₹	₹
Material cost (assumed)	y	y
Wages (shown above)	36x	37.5x
Works overhead	<u>240</u>	<u>225</u>
Factory cost (given)	<u>2,200</u>	<u>2,200</u>

The above relations can be written as follows:

$$36x + y + 240 = 2,200 \quad (i)$$

$$37.5x + y + 225 = 2,200 \quad (ii)$$

Subtracting (i) from (ii) we get

$$1.5x - 15 = 0$$

$$\text{or } 1.5x = 15$$

$$\text{or } x = ₹ 10 \text{ per hour}$$

On substituting the value of x in (i) we get $y = ₹ 1,600$

Hence the wage rate per hour is ₹ 10 and the cost of raw material is ₹ 1,600 on the job.

2. (a) Statement of Equivalent Production

Input Details	Units	Output Particulars	Units	Equivalent Production					
				Material		Labour		Overhead	
				%	Units	%	Units	%	Units
Unit Introduced	45,000	Finished output	42,000	100	42,000	100	42,000	100	42,000
		Normal loss (2% of 45,000)	900	-	-	-	-	-	-
		Abnormal loss	300	100	300	80	240	60	180
		Closing W-I-P	1,800	100	1,800	50	900	40	720
	45,000		45,000		44,100		43,140		42,900

Statement of Cost

Particulars	Units	Rate (₹)	Amount (₹)	Amount (₹)
(i) Finished goods	42,000	17.9042		7,51,976.40
(ii) Abnormal Loss				
Material	300	11.5873	3,476.19	
Labour	240	2.1048	505.15	
Overhead	180	4.2121	758.18	4,739.52
(iii) Closing W-I-P:				
Material	1,800	11.5873	20,857.14	
Labour	900	2.1048	1,894.32	
Overhead	720	4.2121	<u>3,032.71</u>	25,784.17

Cost per Unit

Particulars	Amount (₹)	Units	Per Unit (₹)
(i) Direct Material :			
Unit Introduced	4,50,000		
Add: Material	<u>65,500</u>		
	5,15,500		
Less: Value of normal loss (900 units × ₹ 5)	<u>(4,500)</u>		
	5,11,000	44,100	11.5873
(ii) Labour	90,800	43,140	2.1048
(iii) Overhead	1,80,700	42,900	<u>4.2121</u>
			<u>17.9042</u>

Process – P A/c

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Input	45,000	4,50,000	By Normal loss	900	4,500
To Direct Material	-	65,500	By Abnormal loss	300	4,740
To Labour	-	90,800	By Finished goods	42,000	7,51,976
To Overhead		1,80,700	By Closing W-I-P	1,800	25,784
	45,000	7,87,000		45,000	7,87,000

Abnormal Loss A/c

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Process-B A/c	300	4,740	By Cost ledger control A/c or Bank A/c	300	600
			By Costing Profit & loss A/c	-	4,140
	300	4,740		300	4,740

(b) Treatment is as follows:

- (i) **Credit for Recoveries:** The realised or realisable value of scrap or waste is deducted as it reduces the cost of production.
- (ii) **Packing Cost (primary):** Packing material which is essential to hold and preserve the product for its use by the customer is added in the factory cost.
- (iii) **Joint Products and By-Products:** Joint costs are allocated between/among the products on a rational and consistent basis. In case of by-products, the net realisable value of by-products is deducted from the cost of production.
- (iv) **Quality Control Cost:** It is added in the factory cost as this is the cost of resources consumed towards quality control procedures.

3. (a) (i) **Statement showing allocation of Joint Cost**

Particulars	AB	PQ
No. of units Produced	1,800	3,000
Selling Price Per unit (₹)	40	30
Sales Value (₹)	72,000	90,000

Less: Estimated Profit (AB -20% & PQ -30%)	(14,400)	(27,000)
Cost of Sales	57,600	63,000
Less: Estimated Selling Expenses (AB -15% & PQ -15%)	(10,800)	(13,500)
Cost of Production	46,800	49,500
Less: Cost after separation	(35,000)	(24,000)
Joint Cost allocated	11,800	25,500

(ii) **Statement of Profitability**

Particulars	MA (₹)	AB (₹)	PQ (₹)
Sales Value (A)	4,00,000	72,000	90,000
	(4,000x ₹ 100)		
Less:- Joint Cost	1,75,100	11,800	25,500
	(2,12,400 -11,800 - 25,500)		
Cost after separation	-	35,000	24,000
Selling Expenses (MA- 30%, AB-15% & PQ-15%)	1,20,000	10,800	13,500
(B)	2,95,100	57,600	63,000
Profit (A –B)	1,04,900	14,400	27,000
Overall Profit = 1,04,900 + 14,400 + 27,000 = ₹ 1,46,300			

(b) **Operating Cost Statement**

	Particulars	Total Cost Per annum (₹)
A.	Fixed Charges:	
	Insurance	15,600
	Garage rent (₹ 2,400 × 4 quarters)	9,600
	Road Tax	5,000
	Salary of operating staff (₹ 7,200 × 12 months)	86,400
	Depreciation	68,000
	Total (A)	1,84,600
B.	Variable Charges:	
	Repairs (₹ 4,800 × 4 quarters)	19,200
	Tyres and Tubes (₹ 3,600 × 4 quarters)	14,400
	Diesel {(1,80,000 km. ÷ 5 km.) × ₹ 13}	4,68,000
	Oil and Sundries {(1,80,000 km. ÷ 100 km.) × ₹ 22}	39,600

Total (B)	5,41,200
Total Operating Cost (A+B)	7,25,800
Add: Passenger tax (Refer to WN-1)	3,01,275
Add: Profit (Refer to WN-1)	3,42,359
Total takings	13,69,434

Calculation of Cost per passenger kilometre and one way fare per passenger:

$$\begin{aligned} \text{Cost per Passenger-Km.} &= \frac{\text{Total Operating Cost}}{\text{Total Passenger -Km.}} \\ &= \frac{\text{₹ 7,25,800}}{40,32,000 \text{ Passenger -Km.}} = \text{₹ 0.18} \end{aligned}$$

$$\begin{aligned} \text{One way fare per passenger} &= \frac{\text{Total Takings}}{\text{Total Passenger -Km.}} \times 30 \text{ Km.} \\ &= \frac{\text{₹ 13,69,434}}{40,32,000 \text{ Passenger -Km.}} \times 30 \text{ km} = \text{₹ 10.20} \end{aligned}$$

Working Notes:

1. Let total taking be X then Passenger tax and profit will be as follows:

$$X = \text{₹ 7,25,800} + 0.22 X + 0.25 X$$

$$X - 0.47 X = \text{₹ 7,25,800}$$

$$X = \frac{\text{₹ 7,25,800}}{0.53} = \text{₹ 13,69,434}$$

$$\text{Passenger tax} = \text{₹ 13,69,434} \times 0.22 = \text{₹}$$

$$3,01,275 \text{ Profit} = \text{₹ 13,69,434} \times 0.25 = \text{₹ 3,42,359}$$

2. Total Kilometres to be run during the year
= 30 km. x 2 sides x 10 trips x 25 days x 12 months = 1,80,000 Kilometres
3. Total passenger Kilometres
= 1,80,000 km. x 32 passengers x 70% = 40,32,000 Passenger-km.

4. (a) Working Notes:

(i) Total Productive hours = Estimated Working hours – Machine Maintenance hours

$$= 2,200 \text{ hours} - 200 \text{ hours} = 2,000 \text{ hours}$$

(ii) Depreciation per annum = $\frac{\text{₹ 10,000} - \text{₹ 1,000}}{10 \text{ years}}$ = ₹ 900

10 years

(iii) Chemical solution cost per annum = ₹ 20 × 50 weeks = ₹ 1,000

(iv) Wages of attendants (per annum) = $\frac{₹ 120 \times 50 \text{ weeks}}{6 \text{ machines}} = ₹ 1,000$

Calculation of Machine hour rate

Particulars	Amount (per annum)	Amount (per hour)
A. Standing Charge		
(i) Wages of attendants	1,000	
(ii) Departmental and general works overheads	3,000	
Total Standing Charge	4,000	
Standing Charges per hour $\left(\frac{4,000}{2,000} \right)$		2.0
B. Machine Expense		
(iii) Depreciation	900	0.45
(iv) Electricity $\left(\frac{₹ 0.09 \times 16 \text{ units} \times 1,900 \text{ hours}}{2,000 \text{ hours}} \right)$	-	1.37
(v) Chemical solution	1,000	0.50
(vi) Maintenance cost	1,800	0.90
Machine operating cost per hour (A + B)		5.22

(b) (i) Material Usage Variance = Std. Price (Std. Quantity – Actual Quantity)

= ₹ 45 (9,000 kgs. – 8,900 kgs.)

= ₹ 4,500 (Favourable)

(ii) Material Price Variance = Actual Quantity (Std. Price – Actual Price)

= 8,900 kgs. (₹ 45 – ₹ 46)

= ₹ 8,900 (Adverse)

(iii) Material Cost Variance = Std. Material Cost – Actual Material Cost

= (SQ × SP) – (AQ × AP)

= (9,000 kgs. × ₹ 45) – (8,900 kgs. × ₹ 46)

= ₹ 4,05,000 – ₹ 4,09,400

= ₹ 4,400 (Adverse)

- (iv) Labour Efficiency Variance = Std. Rate (Std. Hours – Actual Hours)
- $$= ₹ 50 \left(\frac{9,000}{\times 8 \text{ hours}} - 7,000 \text{ hrs.} \right)$$
- $$= ₹ 50 (7,200 \text{ hrs.} - 7,000 \text{ hrs.})$$
- $$= ₹ 10,000 \text{ (Favourable)}$$
- (v) Labour Rate Variance = Actual Hours (Std. Rate – Actual Rate)
- $$= 7,000 \text{ hrs.} (₹ 50 - ₹ 52)$$
- $$= ₹ 14,000 \text{ (Adverse)}$$
- (vi) Labour Cost Variance = Std. Labour Cost – Actual Labour Cost
- $$= (SH \times SR) - (AH \times AR)$$
- $$= (7,200 \text{ hrs.} \times ₹ 50) - (7,000 \text{ hrs.} \times ₹ 52)$$
- $$= ₹ 3,60,000 - ₹ 3,64,000$$
- $$= ₹ 4,000 \text{ (Adverse)}$$
- (vii) Variable Overhead Cost Variance = Std. Overhead for Actual Production – Actual Variable Overhead Cost
- $$= (7,200 \text{ hrs.} \times ₹ 10) - ₹ 72,500$$
- $$= ₹ 500 \text{ (Adverse)}$$
- (viii) Fixed Overhead Cost Variance = Absorbed Fixed Overhead – Actual Fixed Overhead
- $$= \frac{₹ 200}{10 \text{ kgs.}} \times 9,000 \text{ kgs.} - ₹ 1,92,000$$
- $$= ₹ 1,80,000 - ₹ 1,92,000$$
- $$= ₹ 12,000 \text{ (Adverse)}$$

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 $\left(\frac{2,400 \text{ units}}{20 \text{ days}} \times 4 \text{ days} \right)$ $\left(\frac{3,600 \text{ units}}{20 \text{ days}} \times 5 \text{ days} \right)$	480	900
Less: Opening stock	400	200
Production (units)	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 ($\frac{25,300\text{kgs.}}{20\text{days}} \times 10\text{days}$) ($\frac{35,720\text{kgs.}}{20\text{days}} \times 6\text{days}$)	12,650	10,716
Less: Opening stock	1,000	500
Quantity to be purchased	36,950	45,936
Rate per kg. of Material	₹ 4	₹ 6
Total Cost	₹ 1,47,800	₹ 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 × ₹ 25 + 14,610 hours × ₹ 37.5

= ₹ 7,20,000 + ₹ 5,47,875

= ₹ 12,67,875

(b) a.

1. Estimation of cost-driver rate

Activity	Overhead cost (₹)	Cost driver	Cost driver rate (₹)
Packaging	1,50,00,000	950 Packaging hours	15,789.47
Fridge	2,10,00,000	1,900 Fridge hours	11,052.63

2. Overhead cost for chocolate ice cream

Activity	Overhead for a 1,000 ice cream batch	Amount (₹)
Packaging	1 x ₹ 11,052.63	11,052.63
Fridge	0.5 x ₹ 15,789.47	7,894.74
Total		18,947.37

3. Operating profit for chocolate ice cream

Particulars	Amount (₹)
Revenue (1,000 x ₹ 75)	75,000.00
Less: Direct Material (1,000 x ₹ 15)	15,000.00
Less: Direct Labour (10,000 x ₹ 2)	20,000.00
Less: Overhead	18,947.37
Operating Profit	21,052.63

b. Overhead per direct hour

= Total Overhead / Total Direct Labour Hours

= ₹ 3,60,00,000 / 24,000 hours

= ₹ 1,500 per direct labour hour

Since it takes 10 direct labour hour per 1,000 Chocolate ice cream, the overhead is ₹ 15,000

Particulars	Amount (₹)
Revenue (1,000 x ₹ 75)	75,000.00
Less: Direct Material (1,000 x ₹ 15)	15,000.00
Less: Direct Labour (10,000 x ₹ 2)	20,000.00
Less: Overhead	15,000
Operating Profit	25,000

6. (a) The various types of responsibility centres are as follows:
- (i) **Cost Centres:** The responsibility centre which is held accountable for *incurrence of costs* which are under its control. The performance of this responsibility centre is measured against pre-determined standards or budgets. The cost centres are of two types:
 - (a) Standard Cost Centre and (b) Discretionary Cost Centre
 - (a) **Standard Cost Centre:** Cost Centre where *output is measurable and input required for the output can be specified*. Based on a well-established study, an estimate of standard units of input to produce a unit of output is set. The actual cost for inputs is compared with the standard cost. Any deviation (variance) in cost is measured and analysed into controllable and uncontrollable cost. The manager of the cost centre is expected to comply with the standard and held responsible for adverse cost variances. The input-output ratio for a standard cost centre is clearly identifiable.
 - (b) **Discretionary Cost Centre:** The cost centre *whose output cannot be measured in financial terms, thus input-output ratio cannot be defined*. The cost of input is compared with allocated budget for the activity. Examples of discretionary cost centres are Research & Development department, Advertisement department where output of these department cannot be measured with certainty and co-related with cost incurred on inputs.
 - (ii) **Revenue Centres:** The responsibility centres which are accountable for *generation of revenue for the entity*. Sales Department for example, is responsible for achievement of sales target and revenue generation. Though, revenue centres do not have control on expenditures it incurs but sometimes expenditures related with selling activities like commission to sales person etc. are incurred by revenue centres.
 - (iii) **Profit Centres:** These are the responsibility centres which have *both responsibility of generation of revenue and incurrence of expenditures*. Since, managers of profit centres are accountable for both costs as well as revenue, profitability is the basis for measurement of performance of these responsibility centres. Examples of profit centres are decentralised branches of an organisation.

(iv) **Investment Centres:** These are the responsibility centres which are *not only responsible for profitability but also have the authority to make capital investment decisions*. The performance of these responsibility centres are measured on the basis of Return on Investment (ROI) besides profit. Examples of investment centres are Maharatna, Navratna and Miniratna companies of Public Sector Undertakings of Central Government.

(b) Efficiency is usually related with performance and may be computed by comparing the time taken with the standard time allotted to perform the given job/task.

If the time taken by a worker on a job equals or less than the standard time, then he is rated efficient.

In case he takes more time than the standard time he is rated as inefficient.

$$\text{Efficiency in \%} = \frac{\text{Time allowed as per standard}}{\text{Time Taken}} \times 100$$

For efficiency rating of employees the following procedures may be followed:

1. **Determining standard time/performance standards:** The first step is to determine the standard time taken by a worker for performing a particular job/task. *The standard time can be determined by using Time & Motion study or Work study techniques*. While determining the standard time for a job/task a heterogeneous group of workers is taken and contingency allowances are added for determining standard time.
2. **Measuring Actual Performance of workers:** For computing efficiency rating it is necessary to develop a procedure for recording the actual performance of workers. The system developed should record the output of each worker along with the time taken by him.
3. **Computation of efficiency rating:** The efficiency rating of each worker can be computed by using the above mentioned Formula.

(c) The essential pre-requisites for integrated accounts include the following steps:

1. The management's decision about the extent of integration of the two sets of books. Some concerns find it useful to integrate up to the stage of prime cost or factory cost while other prefers full integration of the entire accounting records.
2. A suitable coding system must be made available so as to serve the accounting purposes of financial and cost accounts.

3. An agreed routine, with regard to the treatment of provision for accruals, prepaid expenses, other adjustment necessary for preparation of interim accounts.
4. Perfect coordination should exist between the staff responsible for the financial and cost aspects of the accounts and an efficient processing of accounting documents should be ensured.

Under this system there is no need for a separate cost ledger. Of course, there will be a number of subsidiary ledgers; in addition to the useful Customers' Ledger and the Purchase Ledger, there will be: (a) Stores Ledger; (b) Stock Ledger and (c) Job Ledger.

(d) After identification of the costs and benefits, it is now required to be quantified i.e., the cost and benefit should be measured and estimated. The estimation is done by following the two principles as discusses below:

- (i) **Variability:** Variability means by how much a cost or benefit increased or decreased due to the choice of the option. Variable costs are the cost which differs under the different volume or activities. On the other hand, fixed costs remain same irrespective of volume and activities.
- (ii) **Traceability:** Traceability of cost means degree of relationship between the cost and the choice of the option. Direct costs are directly assigned to the option on the other hand indirect costs needs to be apportioned to the option on some reasonable basis.

Navigyan Edutech
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