

**MOCK TEST PAPER**  
**INTERMEDIATE (NEW): GROUP – I**  
**PAPER – 3: COST AND MANAGEMENT ACCOUNTING**

*Answers are to be given only in English except in the case of the candidates who have opted for Hindi medium. If a candidate has not opted for Hindi medium his/ her answer in Hindi will not be valued.*

*Question No. 1 is compulsory.*

*Attempt any **four** questions from the remaining **five** questions.*

*Working notes should form part of the answer.*

**Time Allowed – 3 Hours**

**Maximum Marks – 100**

1. Answer the following:

(a) The following are the details in respect of Process A and Process B of a processing factory:

	Process A (₹)	Process B (₹)
Materials	40,000	--
Labour	40,000	56,000
Overheads	16,000	40,000

The output of Process A is transferred to Process B at a price calculated to give a profit of 20% on the transfer price and the output of Process B is charged to finished stock at a profit of 25% on the transfer price. The finished stock department realized ₹ 4,00,000 for the finished goods received from Process B.

PREPARE process accounts and CALCULATE total profit, assuming that there was no opening or closing work-in-progress.

(b) Two workers 'A' and 'B' produce the same product using the same material. Their normal wage rate is also the same. 'A' is paid bonus according to Rowan scheme while 'B' is paid bonus according to Halsey scheme. The time allowed to make the product is 120 hours. 'A' takes 90 hours while 'B' takes 100 hours to complete the product. The factory overhead rate is ₹ 50 per hour actually worked. The factory cost of product manufactured by 'A' is ₹ 80,200 and for product manufactured by 'B' is ₹ 79,400.

Required:

- (i) COMPUTE the normal rate of wages.
  - (ii) CALCULATE the material cost.
  - (iii) PREPARE a statement comparing the factory cost of the product as made by two workers.
- (c) Maximum Production capacity of KM (P) Ltd. is 28,000 units per month. Output at different levels along with cost data is furnished below:

Particulars of Costs	Activity Level		
	16,000 units	18,000 units	20,000 units
Direct Material	₹ 12,80,000	₹ 14,40,000	₹ 16,00,000
Direct labour	₹ 17,60,000	₹ 19,80,000	₹ 22,00,000
Total factory overheads	₹ 22,00,000	₹ 23,70,000	₹ 25,40,000

You are required to CALCULATE the selling price per unit at an activity level of 24,000 units by considering profit at the rate of 25% on sales.

- (d) Bank of Surat operated for years under the assumption that profitability can be increased by increasing Rupee volume. But that has not been the case. Cost analysis has revealed the following:

Activity	Activity Cost (₹)	Activity Driver	Activity Capacity
Providing ATM Service	1,00,000	No. of Transactions	2,00,000
Computer Processing	10,00,000	No. of Transactions	25,00,000
Issuing Statements	8,00,000	No. of Statements	5,00,000
Customer Inquiries	3,60,000	Telephone Minutes	6,00,000

The following annual information on three products was also made available:

Activity Driver	Checking Accounts	Personal Loans	Gold Visa
Units of Product	30,000	5,000	10,000
ATM Transactions	1,80,000	0	20,000
Computer Transactions	20,00,000	2,00,000	3,00,000
Number of Statements	3,00,000	50,000	1,50,000
Telephone Minutes	3,50,000	90,000	1,60,000

**Required**

- (i) CALCULATE rates for each activity.  
(ii) Using the rates computed in requirement (i), CALCULATE the cost of each product.

**(4 × 5 = 20 Marks)**

2. (a) A store keeper has prepared the below list of items kept in the store of the factory.

Item	Units	Unit cost (₹)
A	12,000	30.00
B	18,000	3.00
C	6,000	35.00
D	750	220.00
E	3,800	75.00
F	400	105.00
G	600	300.00
H	300	350.00
I	3,000	250.00
J	20,000	7.50
K	11,500	27.50
L	2,100	75.00

The store keeper requires your help to classify the items for prioritization. You are required to APPLY ABC analysis to classify the store items as follows:

Store items which constitutes approx 70%, 20% and 10% of total value as A, B and C respectively.

**(10 Marks)**

- (b) SK Ltd. engaged in the manufacture of tyres. Analysis of income statement indicated a profit of ₹150 lakhs on a sales volume of 50,000 units. The fixed cost is ₹ 850 lakhs which appears to be high. Existing selling price is ₹ 3,400 per unit. The company is considering to revise the profit target to ₹ 350 lakhs. You are required to COMPUTE –
- Break-even point at existing levels in units and in rupees.
  - The number of units required to be sold to earn the target profit.
  - Profit with 15% increase in selling price and drop in sales volume by 10%.
  - Volume to be achieved to earn target profit at the revised selling price as calculated in (ii) above, if a reduction of 8% in the variable costs and ₹ 85 lakhs in the fixed cost is envisaged. **(10 Marks)**

- 3 (a) R Limited is presently operating at 50% capacity and producing 60,000 units. The entire output is sold at a price of ₹ 200 per unit. The cost structure at the 50% level of activity is as under:

	₹
Direct Material	75 per unit
Direct Wages	25 per unit
Variable Overheads	25 per unit
Direct Expenses	15 per unit
Factory Expenses (25% fixed)	20 per unit
Selling and Distribution Exp. (80% variable)	10 per unit
Office and Administrative Exp. (100% fixed)	5 per unit

The company anticipates that the variable costs will go up by 10% and fixed costs will go up by 15%.

You are required to PREPARE an Expense budget, on the basis of marginal cost for the company at 50% and 60% level of activity and COMPUTE profits at respective levels. **(10 Marks)**

- (b) A machine shop cost centre contains three machines of equal capacities.

To operate these three machines nine operators are required i.e. three operators on each machine. Operators are paid ₹ 20 per hour. The factory works for forty eight hours in a week which includes 4 hours set up time. The work is jointly done by operators. The operators are paid fully for the forty eight hours. In additions they are paid a bonus of 10 per cent of productive time. Costs are reported for this company on the basis of thirteen four-weekly period.

The company for the purpose of computing machine hour rate includes the direct wages of the operator and also recoups the factory overheads allocated to the machines. The following details of factory overheads applicable to the cost centre are available:

- Depreciation 10% per annum on original cost of the machine. Original cost of the each machine is ₹ 52,000.
- Maintenance and repairs per week per machine is ₹ 60.
- Consumable stores per week per machine are ₹ 75.
- Power : 20 units per hour per machine at the rate of 80 paise per unit.
- Apportionment to the cost centre : Rent per annum ₹ 5,400, Heat and Light per annum ₹9,720, foreman's salary per annum ₹12,960 and other miscellaneous expenditure per annum ₹ 18,000.

**Required:**

- CALCULATE the cost of running one machine for a four-week period.
- CALCULATE machine hour rate.

**(10 Marks)**

4. (a) Following information have been extracted from the cost records of XYZ Pvt. Ltd.

<b>Stores:</b>	<b>(₹)</b>
Opening balance	1,08,000
Purchases	5,76,000
Transfer from WIP	2,88,000
Issue to WIP	5,76,000
Issue for repairs	72,000
Deficiency found in stock	21,600

<b>Work-in-process:</b>	<b>(₹)</b>
Opening balance	2,16,000
Direct wages applied	2,16,000
Overheads charged	8,64,000
Closing balance	1,44,000

<b>Finished Production:</b>	<b>(₹)</b>
Entire production is sold at a profit of 15% on cost of WIP	
Wages paid	2,52,000
Overheads incurred	9,00,000

PREPARE Stores Ledger Control Account, Work-in-Process Control Account, Overheads Control Account and Costing Profit and Loss Account. **(10 Marks)**

- (b) SV chemicals Limited processes 9,00,000 kgs. of raw material in a month purchased at ₹ 95 per kg in department X. The input output ratio of department X is 100 : 90. Processing of the material results in two joint products being produced 'P<sub>1</sub>' and 'P<sub>2</sub>' in the ratio of 60 : 40. Product 'P<sub>1</sub>' can be sold at split off stage or can be further processed in department Y and sold as a new product 'YP<sub>1</sub>'. The input output ratio of department Y is 100 : 95. Department Y is utilized only for further processing of product 'P<sub>1</sub>' to product 'YP<sub>1</sub>'. Individual departmental expenses are as follows:

	<b>Dept. X (₹ lakhs)</b>	<b>Dept. Y (₹ lakhs)</b>
Direct Materials	95.00	14.00
Direct Wages	80.00	27.00
Variable Overheads	100.00	35.00
Fixed Overheads	75.00	52.00
Total	350.00	128.00

Further, selling expenses to be incurred on three products are:

<b>Particulars</b>	<b>Amount (₹ in lakhs)</b>
Product 'P <sub>1</sub> '	28.38
Product 'P <sub>2</sub> '	25.00
Product 'YP <sub>1</sub> '	19.00

Selling price of the products 'P<sub>1</sub>' and 'P<sub>2</sub>' at split off point is ₹ 110 per kg and ₹ 325 per kg respectively. Selling price of new product 'YP<sub>1</sub>' is ₹ 150 per kg.

You are required to:

- (i) PREPARE a statement showing apportionment of joint costs, in the ratio of value of sales, net of selling expenses.
- (ii) PREPARE a Statement showing profitability at split off point.
- (iii) PREPARE a Statement of profitability of 'YP<sub>1</sub>'.
- (iv) DETERMINE that would you recommend further processing of P<sub>1</sub>? **(10 Marks)**

5. (a) The standard labour component and the actual labour component engaged in a week for a job are as follows:

	Skilled Workers	Semi-skilled Workers	Un-Skilled workers
Standard number of workers in the gang	32	12	6
Standard wage rate per hour (₹)	30	20	10
Actual number of workers employed in the gang during the week	28	18	4
Actual wages rate per hour (₹)	34	23	12

During the 40 hours working week the gang produced 1,800 standard labour hours of work.

CALCULATE:

- (i) Total labour cost variance;
- (ii) Labour yield variance;
- (iii) Labour mix variance; and
- (iv) Labour wage rate variance.

**(10 Marks)**

- (b) 'RP' Resorts (P) Ltd. offers three types of rooms to its guests, viz deluxe room, super deluxe room and luxury suite. You are required to COMPUTE the tariff to be charged to the customers for different types of rooms on the basis of following information:

Types of Room	Number of Rooms	Occupancy
Deluxe Room	100	90%
Super Deluxe Room	60	75%
Luxury Suite	40	60%

Rent of 'super deluxe' room is to be fixed at 2 times of 'deluxe room' and that of 'luxury suite' is 3 times of 'deluxe room'. Annual expenses are as follows:

Particulars	Amount (₹ lakhs)
Staff salaries	680.00
Lighting, Heating and Power	300.00
Repairs, Maintenance and Renovation	180.00
Linen	30.00
Laundry charges	24.00
Interior decoration	75.00
Sundries	30.28

An attendant for each room was provided when the room was occupied and he was paid ₹ 500 per day towards wages. Further, depreciation is to be provided on building @ 5% on ₹ 900 lakhs, furniture and fixtures @ 10% on ₹ 90 lakhs and air conditioners @ 10% on ₹ 75 lakhs.

Profit is to be provided @ 25% on total taking and assume 360 days in a year. **(10 Marks)**

6. (a) DISCUSS cost classification based on variability.  
(b) EXPLAIN Single and Multiple Overhead Rates.  
(c) DISCUSS the four different methods of costing alongwith their applicability to concerned industry?  
(d) STATE how Economic Batch Quantity is determined? **(4 × 5 = 20 Marks)**

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**SUGGESTED ANSWERS/ HINTS**

1. (a)

**Process A Account**

Dr.	₹	Cr.	₹
To Materials	40,000	By Process B A/c (Transfer to Process B)	1,20,000
To Labour	40,000		
To Overheads	16,000		
	96,000		
To Profit (20% of transfer price, i.e., 25% of cost)	24,000		
	1,20,000		1,20,000

**Process B Account**

Dr.	₹	Cr.	₹
To Process A A/c (Transferred from Process A)	1,20,000	By Finished Stock A/c (Transfer to finished stock)	2,88,000
To Labour	56,000		
To Overhead	40,000		
	2,16,000		
To Profit (25% of transfer price i.e., 33.33% of cost)	72,000		
	2,88,000		2,88,000

**Statement of Total Profit**

	₹
Profit from Process A	24,000
Profit from Process B	72,000
Profit on Sales (₹ 4,00,000 – ₹ 2,88,000)	1,12,000
<b>Total Profit</b>	<b>2,08,000</b>

(b) Let x be the cost of material and y be the normal rate of wage/hour

	Worker A (₹)	Worker B (₹)
Material cost	x	x
Labour wages	90 y	100 y
Bonus	Rowan system	Halsey system

	$\frac{\text{Time saved}}{\text{Time allowed}} \times \text{hour worked} \times \text{rate}$	Hours saved $\times 50\% \times \text{rate}$
	$\frac{30}{120} \times 90 \times y = 22.5y$	$20 \times \frac{1}{2} \times y = 10y$
Overheads	$90 \times ₹ 50 = 4,500$	$100 \times ₹ 50 = 5,000$
Factory cost	$x + 112.5y + 4,500 = 80,200$ $\therefore x + 112.5y = 75,700 \dots\dots\dots (1)$	$x + 110y + 5,000 = 79,400$ $\therefore x + 110y = 74,400 \dots\dots (2)$

Solving (1) and (2) we get  $x = ₹17,200$  and  $y = ₹ 520$

(i) Normal rate of wages is ₹ 520 per hour.

(ii) Cost of materials = ₹ 17,200.

(iii) **Comparative Statement of factory cost**

	Worker A (₹ )	Worker B (₹ )
Material cost	17,200	17,200
Wages	46,800 ( $90 \times ₹ 520$ )	52,000 ( $100 \times ₹ 520$ )
Bonus	11,700 $(\frac{30}{120} \times 90 \times 520)$	5,200 $(20 \times \frac{1}{2} \times 520)$
Overheads	4,500 ( $90 \times ₹ 50$ )	5,000 ( $100 \times ₹ 50$ )
Factory cost	80,200	79,400

(c) Computation of Overheads

$$\begin{aligned} \text{Variable Overhead per unit} &= \frac{\text{Change in Factory Overheads}}{\text{Change in activity level}} \\ &= \frac{23,70,000 - 22,00,000}{18,000 - 16,000} \text{ or } \frac{25,40,000 - 23,70,000}{20,000 - 18,000} \\ &= \frac{1,70,000}{2000} = ₹ 85 \text{ per unit} \end{aligned}$$

Fixed Overhead

Activity level = 16,000 units

Particulars	Amount (₹)
Total factory overheads	22,00,000
Less: Variable overheads 16,000 units @ ₹ 85 per unit	(13,60,000)
Fixed Overhead	8,40,000

**Computation of Costs at Activity Level 24,000 units**

	Per Unit (₹)	Amount (₹)
Direct Material (12,80,000/16,000)	80.00	19,20,000
Direct Labour (17,60,000/16,000)	110.00	26,40,000

Variable Overhead (As calculated above)	85.00	20,40,000
Fixed Overhead		8,40,000
Total Cost		<b>74,40,000</b>

Computation of Selling Price at activity level 24,000 units

Profit required is 25% on selling price, hence cost will be 75%.

$$\text{Therefore desired profit} = \frac{25 \times 74,40,000}{75} = ₹ 24,80,000$$

Cost of 24,000 units	74,40,000
Desired Profit	24,80,000
Total Sales	99,20,000

Alternatively

$$\text{Total Sales} = \frac{\text{Total Cost}}{75} \times 100 = \frac{74,40,000}{75} \times 100 = ₹ 99,20,000$$

$$\text{Selling Price per unit} = \frac{\text{Total Sales}}{\text{No of Units}} = \frac{99,20,000}{24,000} = ₹ 413.33$$

(d) (i) Statement Showing “Activity Rate”

Activity	Activity Cost [a] (₹)	Activity Driver	No. of Units of Activity Driver [b]	Activity Rate [a] / [b] (₹)
Providing ATM Service	1,00,000	No. of ATM Transactions	2,00,000	0.50
Computer Processing	10,00,000	No. of Computer Transactions	25,00,000	0.40
Issuing Statements	8,00,000	No. of Statements	5,00,000	1.60
Customer Inquiries	3,60,000	Telephone Minutes	6,00,000	0.60

(ii) Statement Showing “Cost of Product”

Activity	Checking Accounts (₹)	Personal Loans (₹)	Gold Visa (₹)
Providing ATM Service	90,000 (1,80,000 tr. × ₹ 0.50)	---	10,000 (20,000 tr. × ₹ 0.50)
Computer Processing	8,00,000 (20,00,000 tr. × ₹ 0.40)	80,000 (2,00,000 tr. × ₹ 0.40)	1,20,000 (3,00,000 tr. × ₹ 0.40)
Issuing Statements	4,80,000 (3,00,000 st. × ₹ 1.60)	80,000 (50,000 st. × ₹ 1.60)	2,40,000 (1,50,000 st. × ₹ 1.60)
Customer Inquiries	2,10,000 (3,50,000 min. × ₹ 0.60)	54,000 (90,000 min. × ₹ 0.60)	96,000 (1,60,000 min. × ₹ 0.60)
Total Cost [a]	₹ 15,80,000	₹ 2,14,000	₹ 4,66,000
Units of Product [b]	30,000	5,000	10,000

Cost of each Product [a] / [b]	52.67	42.80	46.60
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2. (a) Statement of Total Cost and Ranking

Item	Units	% of Total units	Unit cost (₹)	Total cost (₹)	% of Total cost	Ranking
A	12,000	15.30%	30.00	3,60,000	12.97%	2
B	18,000	22.94%	3.00	54,000	1.95%	11
C	6,000	7.65%	35.00	2,10,000	7.57%	5
D	750	0.96%	220.00	1,65,000	5.95%	7
E	3,800	4.84%	75.00	2,85,000	10.27%	4
F	400	0.51%	105.00	42,000	1.51%	12
G	600	0.76%	300.00	1,80,000	6.49%	6
H	300	0.38%	350.00	1,05,000	3.78%	10
I	3,000	3.82%	250.00	7,50,000	27.03%	1
J	20,000	25.49%	7.50	1,50,000	5.41%	9
K	11,500	14.66%	27.50	3,16,250	11.40%	3
L	2,100	2.68%	75.00	1,57,500	5.68%	8
	78,450	100.00%		27,74,750	100.00%	

Statement of classification of Inventory

Rankin	Item	% of Total units	Cost (₹)	% of Total Cost	Category
1	I	3.82%	7,50,000	27.03%	
2	A	15.30%	3,60,000	12.97%	
3	K	14.66%	3,16,250	11.40%	
4	E	4.84%	2,85,000	10.27%	
5	C	7.65%	2,10,000	7.57%	
<b>Total</b>		<b>46.27%</b>	<b>19,21,250</b>	<b>69.24%</b>	<b>A</b>
6	G	0.76%	1,80,000	6.49%	
7	D	0.96%	1,65,000	5.95%	
8	L	2.68%	1,57,500	5.68%	
9	J	25.49%	1,50,000	5.41%	
<b>Total</b>		<b>29.89%</b>	<b>6,52,500</b>	<b>23.53%</b>	<b>B</b>
10	H	0.38%	1,05,000	3.78%	
11	B	22.94%	54,000	1.95%	
12	F	0.51%	42,000	1.51%	
<b>Total</b>		<b>23.84%</b>	<b>2,01,000</b>	<b>7.24</b>	<b>C</b>
	12	100%	27,74,750	100%	

(b) Sales Volume 50,000 Units

Computation of existing contribution

Particulars	Per unit (₹)	Total (₹ in lakhs)
Sales	3,400	1,700
Fixed Cost	1,700	850
Profit	300	150
Contribution	2,000	1,000
Variable Cost	1,400	700

(i) Break even sales in units =  $\frac{\text{Fixed Cost}}{\text{Contribution per unit}} = \frac{8,50,00,000}{2,000} = 42,500$  units

Break even sales in rupees = 42,500 units x ₹ 3,400 = ₹ 1,445 lakhs

OR

P/V Ratio =  $\frac{2,000}{3,400} \times 100 = 58.82\%$

B.E.P (in rupees) =  $\frac{\text{Fixed Cost}}{\text{P/V Ratio}} = \frac{8,50,00,000}{58.82\%} = ₹ 1,445$  lakhs (approx.)

(ii) Number of units sold to achieve a target profit of ₹ 350 lakhs:

Desired Contribution = Fixed Cost + Target Profit  
= 850 lakhs + 350 lakhs  
= 1,200 lakhs

Number of units to be sold =  $\frac{\text{Desired Contribution}}{\text{Contribution per unit}} = \frac{12,00,00,000}{2,000} = 60,000$  units

(iii) Profit if selling price is increased by 15% and sales volume drops by 10%

Existing Selling Price per unit = ₹ 3,400

Revised selling price per unit = ₹ 3,400 × 115% = ₹ 3,910

Existing Sales Volume = 50,000 units

Revised sales volume = 50,000 units – 10% of 50,000 = 45,000 units.

Statement of profit at sales volume of 45,000 units @ ₹ 3,910 per unit

Particulars	Per unit (₹)	Total (₹ in lakhs)
Sales	3,910.00	1,759.50
Less: Variable Costs	(1,400.00)	(630.00)
Contribution	2,510.00	1,129.50
Less: Fixed Cost		(850.00)
Profit		279.50

(iv) Volume to be achieved to earn target profit of ₹ 350 lakhs with revised selling price and reduction of 8% in variable costs and ₹ 85 lakhs in fixed cost.

Revised selling price per unit = ₹ 3,910

Variable costs per unit existing = ₹ 1,400

Revised Variable Costs

Reduction of 8% in variable costs = ₹ 1,400 – 8% of 1,400

= ₹ 1,400 – ₹ 112

= ₹ 1,288

Total Fixed Cost (existing) = ₹ 850 lakhs

Reduction in fixed cost = ₹ 85 lakhs

Revised fixed cost = ₹ 850 lakhs – ₹ 85 lakhs = ₹ 765 lakhs

Revised Contribution (unit) = Revised selling price per unit – Revised Variable Costs per units

Revised Contribution per unit = ₹ 3,910 – ₹ 1,288 = ₹ 2,622

Desired Contribution = Revised Fixed Cost + Target Profit

= ₹ 765 lakhs + ₹ 350 lakhs = ₹ 1,115 lakhs

No. of units to be sold =  $\frac{\text{Desired Contribution}}{\text{Contribution per unit}} = \frac{\text{₹ 1,115 lakh}}{\text{₹ 2,622}} = 42,525 \text{ units}$

3. (a) Expense Budget of R Ltd. for the period.....

	Per unit (₹)	50% Capacity	60% Capacity
		60,000 units	72,000 units
		Amount (₹)	Amount (₹)
Sales (A)	200.00	1,20,00,000	1,44,00,000
Less: Variable Costs:			
- Direct Material	82.50	49,50,000	59,40,000
- Direct Wages	27.50	16,50,000	19,80,000
- Variable Overheads	27.50	16,50,000	19,80,000
- Direct Expenses	16.50	9,90,000	11,88,000
- Variable factory expenses (75% of ₹ 20 p.u.)	16.50	9,90,000	11,88,000
- Variable Selling & Dist. exp. (80% of ₹ 10 p.u.)	8.80	5,28,000	6,33,600
Total Variable Cost (B)	179.30	1,07,58,000	1,29,09,600
Contribution (C) = (A – B)	20.70	12,42,000	14,90,400
Less: Fixed Costs:			
- Office and Admin. exp. (100%)	--	3,45,000	3,45,000
- Fixed factory exp. (25%)	--	3,45,000	3,45,000
- Fixed Selling & Dist. exp. (20%)	--	1,38,000	1,38,000
Total Fixed Costs (D)	--	8,28,000	8,28,000
(C – D)	--	4,14,000	6,62,400

(b) Effective Machine hour for four-week period

= Total working hours – unproductive set-up time

= {(48 hours × 4 weeks) – {(4 hours × 4 weeks)}

= (192 – 16) hours = 176 hours.

(i) Computation of cost of running one machine for a four week period

		(₹)	(₹)
<b>(A)</b>	<b>Standing charges (per annum)</b>		
	Rent	5,400.00	
	Heat and light	9,720.00	
	Forman's salary	12,960.00	
	Other miscellaneous expenditure	18,000.00	
	Standing charges (per annum)	46,080.00	
	Total expenses for one machine for four week period ( $\frac{₹ 46,080}{3 \text{ machines} \times 13 \text{ four-week period}}$ )		1,181.54
	Wages (48 hours × 4 weeks × ₹ 20 × 3 operators)		11,520.00
	Bonus {(176 hours × ₹ 20 × 3 operators) × 10%}		1,056.00
	Total standing charges		13,757.54
<b>(B)</b>	<b>Machine Expenses</b>		
	Depreciation = $\left( ₹ 52,000 \times 10\% \times \frac{1}{13 \text{ four-week period}} \right)$		400.00
	Repairs and maintenance (₹ 60 × 4 weeks)		240.00
	Consumable stores (₹ 75 × 4 weeks)		300.00
	Power (176 hours × 20 units × ₹ 0.80)		2,816.00
	Total machine expenses		3,756.00
<b>(C)</b>	<b>Total expenses (A) + (B)</b>		17,513.54

(ii) Machine hour rate =  $\frac{₹ 17,513.54}{176 \text{ hours}} = ₹ 99.51$

4. (a) **Stores Ledger Control A/c**

Particulars	(₹)	Particulars	(₹)
To Balance b/d	1,08,000	By Work in Process A/c	5,76,000
To General Ledger Adjustment A/c	5,76,000	By Overhead Control A/c	72,000
To Work in Process A/c	2,88,000	By Overhead Control A/c (Deficiency)	21,600*
		By Balance c/d	3,02,400
	9,72,000		9,72,000

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

**Work in Process Control A/c**

Particulars	(₹)	Particulars	(₹)
To Balance b/d	2,16,000	By Stores Ledger Control a/c	2,88,000
To Stores Ledger Control A/c	5,76,000	By Costing P/L A/c (Balancing figures being Cost of finished goods)	14,40,000
To Wages Control A/c	2,16,000	By Balance c/d	1,44,000
To Overheads Control A/c	8,64,000		
	18,72,000		18,72,000

**Overheads Control A/c**

Particulars	(₹)	Particulars	(₹)
To Stores Ledger Control A/c	72,000	By Work in Process A/c	8,64,000
To Stores Ledger Control A/c	21,600	By Balance c/d (Under absorption)	1,65,600
To Wages Control A/c (₹ 2,52,000- ₹ 2,16,000)	36,000		
To Gen. Ledger Adjust. A/c	9,00,000		
	10,29,600		10,29,600

**Costing Profit & Loss A/c**

Particulars	(₹)	Particulars	(₹)
To Work in process	14,40,000	By Gen. ledger Adjust. A/c (Sales) (₹ 14,40,000 × 115%)	16,56,000
To Gen. Ledger Adjust. A/c (Profit)	2,16,000		
	16,56,000		16,56,000

**(b) Working Notes:**

Input output ratio of material processed in Department X = 100:90

Particulars	Quantity (Kg)
Material input	9,00,000
Less: Loss of material in process @ 10% of 9,00,000 kgs	(90,000)
Output	8,10,000

Output of department X is product 'P<sub>1</sub>' and 'P<sub>2</sub>' in the ratio of 60 : 40.

$$\text{Output 'P}_1\text{' = } \frac{60 \times 8,10,000}{100} = 4,86,000 \text{ kgs.}$$

$$\text{Output 'P}_2\text{' = } \frac{40 \times 8,10,000}{100} = 3,24,000 \text{ kgs.}$$

Statement showing ratio of net sales

Product	P <sub>1</sub>	P <sub>2</sub>	Total
Quantity (kgs)	4,86,000	3,24,000	8,10,000
Selling price per kg (₹)	110.00	325.00	
Sales Value (₹ in lakhs)	534.60	1,053.00	1587.60
Less: Selling Expenses (₹ in lakhs)	(28.38)	(25.00)	(53.38)
Net Sales (₹ in lakhs)	506.22	1,028.00	1,534.22
Ratio	33%	67%	100.00

Computation of Joint Costs

Particulars	Amount (₹ Lakhs)
Raw Material input 9,00,000 kgs @ ₹ 95 per kg	855.00
Direct Materials	95.00
Direct Wages	80.00
Variable Overheads	100.00
Fixed Overheads	75.00
Total	1,205.00

(i) Statement showing apportionment of joint costs in the ratio of net sales

Particulars	Amount (₹ in lakhs)
Joint cost of P <sub>1</sub> – 33% of ₹ 1,205 lakhs	397.65
Joint cost of P <sub>2</sub> – 67% of ₹ 1,205 lakhs	807.35
Total	1,205.00

(ii) Statement showing profitability at split off point

Product	P <sub>1</sub>	P <sub>2</sub>	Total
Net Sales Value (₹ in lakhs) – [A]	506.22	1,028.00	1,534.22
Less: Joint costs (₹ in lakhs)	(397.65)	(807.35)	(1,205.00)
Profit (₹ in lakhs) [A] – [B]	108.57	220.65	329.22

Alternative Presentation

Product	P <sub>1</sub>	P <sub>2</sub>	Total
Sales Value (₹ in lakhs) – [A]	534.60	1,053.00	1,587.60
Less: Joint costs (₹ in lakhs)	397.65	807.35	1,205.00
Selling Expenses	28.38	25.00	53.38
Total Cost [B]	426.03	832.35	1,258.38
Profit (₹ in lakhs) [A] – [B]	108.57	220.65	329.22

(iii) Statement of profitability of product 'YP<sub>1</sub>'

Particulars	YP <sub>1</sub>
Sales Value (₹ in lakhs) (Refer working note) [A]	629.55
Less: Cost of P <sub>1</sub>	397.65
Cost of Department Y	128.00
Selling Expenses of Product 'YP <sub>1</sub> '	19.00
Total Costs [B]	544.65
Profit (₹ in lakhs) [A] – [B]	84.90

**Working Note:**Computation of product 'YP<sub>1</sub>'Quantity of product P<sub>1</sub> input used = 4,86,000 kgs

Input output ratio of material processed in Department Y = 100 : 95

Particulars	Quantity (Kg)
Material input	4,86,000
Less: Loss of material in process @ 5% of 4,86,000	(24,300)
Output	4,61,700

Sales Value of YP<sub>1</sub> = 4,61,700 kgs @ ₹ 150 per kg = ₹ 692.55 lakhs(iv) Determination of profitability after further processing of product P<sub>1</sub> into product YP<sub>1</sub>:

Particulars	(₹ in lakhs)
Profit of Product 'P <sub>1</sub> ' {refer (ii) above}	108.57
Profit of Product 'YP <sub>1</sub> ' {refer (iii) above}	84.90
Decrease in profit after further processing	23.67

Based on the above profitability statement, further processing of product P<sub>1</sub> into YP<sub>1</sub> should not be recommended.**5. (a) Work produced by the gang 1,800 standard labour hours, i.e.,**

$$\frac{1,800}{32 + 12 + 6} \text{ or } 36 \text{ gang hours}$$

Standard hours of Skilled Labour	(36 × 32)	1,152 hours
Standard hours of Semi-skilled Labour	(36 × 12)	432 hours
Standard hours of Un-skilled Labour	(36 × 6)	<u>216</u> hours
Total		<u>1,800</u> hours
Actual hours of Skilled Labour	(40 × 28)	1,120 hours
Actual hours of Semi-skilled Labour	(40 × 18)	720 hours
Actual hours of Un-skilled Labour	(40 × 4)	<u>160</u> hours
Total		<u>2,000</u> hours

**Revised Standard hours (actual hours worked expressed in standard ratio)**

Skilled Labour	$\frac{1,152}{1,800} \times 2,000$	1,280 hours
Semi-skilled Labour	$\frac{432}{1,800} \times 2,000$	480 hours
Unskilled Labour	$\frac{216}{1,800} \times 2,000$	<u>240</u> hours
		<u>2,000</u> hours

<b>Standard Cost for Actual Output:</b>		₹
Skilled Labour	1,152 hours @ ₹ 30	34,560
Semi-skilled Labour	432 hours @ ₹ 20	8,640
Unskilled Labour	<u>216 hours @ ₹ 10</u>	<u>2,160</u>
	<u>1,800 hours</u>	<u>45,360</u>
<b>Actual Cost:</b>		
Skilled Labour	1,120 hours @ ₹ 34	38,080
Semi-skilled Labour	720 hours @ ₹ 23	16,560
Unskilled Labour	<u>160 hours @ ₹ 12</u>	<u>1,920</u>
	<u>2,000 hours</u>	<u>56,560</u>

(i) **Total Labour Cost Variance**

Standard Cost- Actual Cost	₹
₹ 45,360 - ₹ 56,560	<u>11,200 (A)</u>

(ii) **Labour Yield Variance:**

(Standard hours for Actual Output - Revised Standard hours) × Standard Rate

Skilled	(1,152 - 1,280) × ₹ 30	3,840 (A)	
Semi -skilled	(432 - 480) × ₹ 20	960 (A)	
Un-skilled	(216 - 240) × ₹ 10	<u>240 (A)</u>	
		<u>5,040 (A)</u>	5,040 (A)

(iii) **Labour Mix Variance:**

(Revised Standard Hours - Actual Hours) × Standard Rate

Skilled	(1,280 - 1,120) × ₹ 30	4,800 (F)	
Semi-skilled	(480-720) × ₹ 20	4,800(A)	
Un-skilled	(240-160) × ₹ 10	<u>800 (F)</u>	
		<u>800(F)</u>	800 (F)

(iv) **Labour Wage Rate Variance:**

(Standard Rate - Actual Rate) × Actual Hours

Skilled	(₹ 30 - ₹ 34) × 1,120	4,480 (A)	
Semi-skilled	(₹ 20 - ₹ 23) × 720	2,160 (A)	
Un-skilled	(₹ 10 - ₹ 12) × 160	<u>320 (A)</u>	
		<u>6,960 (A)</u>	<u>6,960 (A)</u>

Check : Total Labour Cost Variance = Yield + Mix + Rate 11,200 (A)

(b) Operating cost statement of 'RP' Resort (P) Limited

Particulars	Cost per annum (₹ in lakhs)
Staff Salaries	680.00
Room Attendant's Wages (refer W.N-3)	286.20
Lighting, Heating & Power	300.00

Repairs, Maintenance & Renovation	180.00
Linen	30.00
Laundry charges	24.00
Interior Decoration	75.00
Sundries	30.28
Depreciation (refer W.N- 4):	
- Building	45.00
- Furniture & Fixture	9.00
- Air Conditioners	7.50
Total cost for the year	1,666.98

### Computation of profit:

Let ₹ x be the rent for deluxe from.

Equivalent deluxe room days are 90,720 (refer W.N- 2)

Total takings = ₹ 90,720x

Profit is 25% of total takings.

Profit = 25% of ₹ 90,720x = ₹ 22,680x

Total takings = Total Cost + Profit

₹ 90,720x = ₹ 16,66,98,000 + ₹ 22,680x

₹ 90,720x - ₹ 22,680x = ₹ 16,66,98,000

₹ 68,040x = ₹ 16,66,98,000

$$x = \frac{\text{₹ } 16,66,98,000}{\text{₹ } 68,040} = \text{₹ } 2,450$$

Rent to be charged for Deluxe room	₹ 2,450
Rent to be charged for Super deluxe room = Rent of deluxe room × 2 = ₹ 2,450 × 2	₹ 4,900
Rent to be charged for Luxury suite = Rent of Super Deluxe room × 1.5 = ₹ 4,900 × 1.5	₹ 7,350

### Working Notes:

#### 1. Computation of Room Occupancy

Type of Room	No. of rooms x no. of days x occupancy %	Room days
Deluxe Room	100 rooms x 360 days x 90% occupancy	32,400
Super Deluxe Room	60 rooms x 360 days x 75% occupancy	16,200
Luxury Suite	40 x 360 days x 60% occupancy	8,640
	Total	57,240

#### 2. Computation of equivalent deluxe room days:

Rent of 'super deluxe' room is to be fixed at 2 times of 'deluxe room' and luxury suite' is 3 times of 'deluxe room'. Therefore equivalent room days would be:

Type of Room	Room days	Equivalent deluxe room days
Deluxe Room	32,400 x 1	32,400
Super Deluxe Room	16,200 x 2	32,400
Luxury Suite	8,640 x 3	25,920
	Total	90,720

3. **Computation of room attendant's wages:**

Room occupancy days × ₹ 500 per day  
= 57,240 days × ₹ 500 = ₹ 286.20 lakhs

4. **Computation of Depreciation per annum:**

Particulars	Cost (₹)	Rate of Depreciation	Depreciation (₹)
Building	900,00,000	5%	45,00,000
Furniture & Fixtures	90,00,000	10%	9,00,000
Air Conditioners	75,00,000	10%	7,50,000

6. (a) **Cost classification based on variability**

(i) **Fixed Costs** – These are the costs which are incurred for a period, and which, within certain output and turnover limits, tend to be unaffected by fluctuations in the levels of activity (output or turnover). They do not tend to increase or decrease with the changes in output. For example, rent, insurance of factory building etc., remain the same for different levels of production.

(ii) **Variable Costs** – These costs tend to vary with the volume of activity. Any increase in the activity results in an increase in the variable cost and vice-versa. For example, cost of direct labour, etc.

(iii) **Semi-variable Costs** – These costs contain both fixed and variable components and are thus partly affected by fluctuations in the level of activity. Examples of semi variable costs are telephone bills, gas and electricity etc.

(b) **Single and Multiple Overhead Rates:**

*Single overhead rate:* It is one single overhead absorption rate for the whole factory.

It may be computed as follows:

$$\text{Single overhead rate} = \frac{\text{Overhead costs for the entire factory}}{\text{Total quantity of the base selected}}$$

The base can be total output, total labour hours, total machine hours, etc.

The single overhead rate may be applied in factories which produces only one major product on a continuous basis. It may also be used in factories where the work performed in each department is fairly uniform and standardized.

*Multiple overhead rate:* It involves computation of separate rates for each production department, service department, cost center and each product for both fixed and variable overheads. It may be computed as follows:

$$\text{Multiple overhead rate} = \frac{\text{Overhead allocated/ apportioned to each department/ cost centre or product}}{\text{Corresponding base}}$$

Under multiple overheads rate, jobs or products are charged with varying amount of factory overheads depending on the type and number of departments through which they pass. However, the number of overheads rate which a firm may compute would depend upon two opposing factors viz. the degree of accuracy desired and the clerical cost involved.

(c) Four different methods of costing along with their applicability to concerned industry have been discussed as below:

(i) **Job Costing:** The objective under this method of costing is to ascertain the cost of each job order. A job card is prepared for each job to accumulate costs. The cost of the job is determined by adding all costs against the job it has incurred. This method of costing is used in printing press, foundries and general engineering workshops, advertising etc.

(ii) **Batch Costing:** This system of costing is used where small components/ parts of the same kind are required to be manufactured in large quantities. Here batch of similar products is treated as a job and cost of such a job is ascertained as discussed under (1), above. If in a cycle manufacturing unit, rims are produced in batches of 2,500 units each, then the cost will be determined in relation to a batch of 2,500 units.

(iii) **Contract Costing:** If a job is very big and takes a long time for its completion, then method used for costing is known as Contract Costing. Here the cost of each contract is ascertained separately. It is suitable for firms engaged in the construction of bridges, roads, buildings etc.

(iv) **Operating Costing:** The method of Costing used in service rendering undertakings is known as operating costing. This method of costing is used in undertakings like transport, supply of water, telephone services, hospitals, nursing homes etc.

(d) In batch costing the most important problem is the determination of 'Economic Batch Quantity'

The determination of economic batch quantity involves two types of costs viz, (i) set up cost and (ii) carrying cost. With the increase in the batch size, there is an increase in the carrying cost but the set-up cost per unit of the product is reduced; this situation is reversed when the batch size is reduced. Thus there is one particular batch size for which both set up and carrying costs are minimum. This size of a batch is known as economic or optimum batch quantity.

Economic batch quantity can be determined with the help of a table, graph or mathematical formula. The mathematical formula usually used for its determination is as follows:

$$EBQ = \sqrt{\frac{2DC}{C}}$$

Where,

D = Annual demand for the product

S = Setting up cost per batch

C = Carrying cost per unit of production per annum