15. ACTIVITY BASED COSTING

ASSIGNMENT SOLUTIONS

PROBLEM NO. 1

i) Statement Showing Overhead Cost per unit "Traditional Method"

	Gel Pen (Rs.)	Ball Pen (Rs.)
Units	5,500	24,000
Overheads (Rs.) (Refer to W.N.)	4,80,000 (20 x 24,000 hrs.)	10,80,000 (20 x 54,000 hrs.)
Overhead Rate per unit (Rs.)	87.27 (Rs. 4,80,000 / 5,500 units)	45 (Rs. 10,80,000 /24,000 units)

Working Notes:

Overhead Rate per Machine Hour: $\frac{\text{Total Overhead incurred by the Company}}{\text{Total Machine Hours}}$

$$= \frac{4,75,020 + 5,79,988 + 5,04,992}{24,000\text{ hours} + 54,000\text{ hours}} = \frac{\text{Rs. } 15,60,000}{78,000\text{ hours}}$$

= Rs. 20 per machine hour

ii) Statement Showing "Activity Based Overhead Cost":

Activity Cost Pool	Cost Driver	Ratio	Total Amount (Rs.)	Gel Pen (Rs.)	Ball Pen (Rs.)
Volume Related Activity Costs	Machine hours	24:54	4,75,020	1,46,160	3,28,860
Setup Related Costs	No. of Setups	30:56	5,79,988	2,02,321	3,77,667
Purchase Related Costs	No. of Purchase Orders	240:448	5,04,992	1,76,160	3,28,832
Total Cost				5,24,641	10,35,359
Output (units)				5,500	24,000
Unit Cost (Overheads)				95.39	43.13

iii)

	Gel Pen (Rs.)	Ball Pen (Rs.)
Overheads Cost per unit (Rs.) (Traditional Method)	87.27	45
Overheads Cost per unit (Rs.) (ABC)	95.39	43.13
Difference per unit	-8.12	+1.87

(Volume related activity cost, set up related costs and purchase related cost can also be calculated under Activity Base Costing using Cost driver rate. However, there will be no changes in the final answer.)

PROBLEM NO. 2

The total production overheads are Rs.26,00,000:

Product A: 10,000 × Rs. 30 = Rs. 3,00,000

Product B: 20,000 × Rs. 40 = Rs. 8,00,000

Product C: 30,000 × Rs. 50 = Rs. 15,00,000

On the basis of ABC analysis this amount will be apportioned as follows:

Statement Showing "Activity Based Production Cost"

Activity Cost Pool	Cost Driver	Ratio	Total Amount (Rs.)	A (Rs.)	B (Rs.)	C (Rs.)
Stores Receiving	Purchase Requisition	6:9:10	2,96,000	71,040	1,06,560	1,18,400
Inspection	Production Runs	5:7:8	8,94,000	2,23,500	3,12,900	3,57,600
Dispatch	Orders Executed	6:9:10	2,10,000	50,400	75,600	84,000
Machine Setups	Setups	12:13:15	12,00,000	3,60,000	3,90,000	4,50,000
Total Activity Cost				7,04,940	8,85,060	10,10,000

Quantity Produces	10,000	20,000	30,000
Unit Cost (Overheads)	70.49	44.25	33.67
Add: Conversion Cost (Material + Labour)	80	80	90
Total	150.49	124.25	123.67

PROBLEM NO. 3

1. Customer Profitability Analysis, Customer Cost Hierarchy **(Amount in Rs.)**

Particulars	Wholesale Customers		Retail Customers	
Revenues:	W	H	R	T
Total Number of Suits ordered	44 x 400 = 17,600	62 x 200 = 12,400	212 x 30 = 6,360	250 x 25 = 6,250
Revenue at List Price	17,600 x 1,000 = 1,76,00,000	12,400 x 1,000 = 1,24,00,000	6,360 x 1,000 63,60,000	6,250x 1,000 = 62,50,000
Less: Discount	17,600 x (1,000 - 700) = 52,80,000	12,400x(1,000 - 800) = 24,80,000	6,360 x (1,000 - 850) = 9,54,000	6,250 x (1,000 - 900) = 6,25,000
Revenue at Actual Price	1,23,20,000	99,20,000	54,06,000	56,25,000
Less: Cost of Goods Sold	17,600 x 550 = 96,80,000	12,400x 550 = 68,20,000	6,360 x 550 = 34,98,000	6,250x 550 = 34,37,500
A. Gross Margin	**26,40,000**	**31,00,000**	**19,08,000**	**21,87,500**
Less: Customer - Level Costs				
Order Processing	44 x 1,225 = 53,900	62 x 1,225 = 75,950	212 x 1,225 = 2,59,700	250 x 1,225 = 3,06,250
Sales Visits	8 x 7,150 = 57,200	12 x 7,150 = 85,800	22 x 7,150 = 1,57,300	20 x 7,150 = 1,43,000
Delivery - Regular	41 x 1,500 = 61,500	48 x 1,500 = 72,000	166 x 1,500 = 2,49,000	190 x 1,500 = 2,85,000
Delivery - Rushed	3 x 4,250 = 12,750	14 x 4,250 = 59,500	46 x 4,250 = 1,95,000	60 x 4,250 = 2,55,000
B. Customer level Costs	**1,85,350**	**2,93,250**	**8,61,500**	**9,89,250**
C. Customer Level Operating Income (A - B)	**24,54,650**	**28,06,750**	**10,46,500**	**11,98,250**
Customer level operating income as a % on Revenues at Actual prices	**19.92%**	**28.29%**	**19.35%**	**21.30%**

2. Measures to increase Profits:

a) ABC System highlights that Customer Level Costs of R & T are high due to - (a) high number of orders, (b) high number of customer visits, and (c) high number of rushed deliveries. The CEO should consider whether this high level of activity can be reduced without reducing customer revenues.

b) The CEO should also consider reduction in the level of price discounting for the customers, especially.

3. Income statement of MNP suits **(in Rs.)**

Particulars	Wholesale customers	Retail customers	Total
Customer level operating income	52,61,400	22,44,750	75,06,150
Less: Distribution channel cost	17,50,000	10,50,000	28,00,000
Distribution channel level operating income	35,11,400	11,94,750	47,06,150
Less: Corporate sustaining costs			12,50,000
Operating Income			**34,56,150**

PROBLEM NO. 4

i) Calculation of cost driver rate:

Cost pool	Budgeted overheads (Rs.)	Cost driver	Cost driver rate (Rs.)
Material procurement	18,42,000	1,200	1,535.00
Material handling	8,50,000	1,240	685.48
Maintenance	24,56,000	17,550	139.94
Set-up	9,12,000	1,450	628.97
Quality control	4,42,000	1,820	242.86

ii) Calculation of cost for the batch:

Particulars	Amount (Rs.)	Amount (Rs.)
Material cost		24,62,000.00
Wages		4,68,500.00
Overheads:		

- Material procurement (Rs.1,535×56 orders)	85,960.00	
- Material handling (Rs.685.48×84 movements)	57,580.32	
- Maintenance (Rs.139.94×1,420 hours)	1,98,714.80	
- Set-up (Rs.628.97×60 set-ups)	37,738.20	
- Quality control (Rs.242.86×18 inspections)	4,371.48	3,84,364.80
Total Cost		33,14,864.80
No. of units		7,600
Cost per unit		**436.17**

PROBLEM NO. 5

i) Statement Showing "Activity Rate":

Activity	Activity Cost [a] (Rs.)	Activity Driver	No. of Units of Activity Driver [b]	Activity Rate [a] / [b] (Rs.)
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 (Rs.)	Personal Loans (Rs.)	Gold Visa (Rs.)
Providing ATM Service	90,000 (1,80,000 tr.× Rs. 0.50)	---	10,000 (20,000 tr. × Rs. 0.50)
Computer Processing	8,00,000 (20,00,000 tr. × Rs. 0.40)	80,000 (2,00,000 tr. × Rs. 0.40)	1,20,000 (3,00,000 tr. × Rs. 0.40)
Issuing Statements	4,80,000 (3,00,000 st. × Rs. 1.60)	80,000 (50,000 st. × Rs.1.60)	2,40,000 (1,50,000 st. × Rs. 1.60)
Customer Inquiries	2,10,000 (3,50,000 min. × Rs. 0.60)	54,000 (90,000 min. × Rs. 0.60)	96,000 (1,60,000 min. × Rs. 0.60)
Total Cost [a]	Rs. 15,80,000	Rs. 2,14,000	Rs. 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

PROBLEM NO. 6

i) Statement of cost allocation to each product from each activity

	Product			
	M (Rs.)	S (Rs.)	T (Rs.)	Total (Rs.)
Power (Refer to working note)	8,00,000 (10,000 kWh ×Rs.80)	16,00,000 (20,000 kWh × Rs.80)	12,00,000 (15,000 kWh × Rs.80)	36,00,000
Quality Inspections (Refer to working note)	21,00,000 (3,500 inspections × Rs.600)	15,00,000 (2,500 inspections × Rs.600)	18,00,000 (3,000 inspections × Rs.600)	54,00,000

Working Note:

Rate per unit of cost driver:

Power: (Rs. 40,00,000 ÷ 50,000 kWh) = Rs.80/kWh

Quality Inspection: (Rs.60,00,000 ÷ 10,000 inspections) = Rs.600 per inspection

ii) Calculation of cost of unused capacity for each activity:

Particulars	Amount (Rs.)
Power (Rs.40,00,000 - Rs.36,00,000)	4,00,000
Quality Inspections (Rs.60,00,000 - Rs.54,00,000)	6,00,000
Total cost of unused capacity	10,00,000

iii) Factors management consider in choosing a capacity level to compute the budgeted fixed overhead cost rate:

- Effect on product costing & capacity management
- Effect on pricing decisions.
- Effect on performance evaluation
- Effect on financial statements
- Regulatory requirements.
- Difficulties in forecasting for any capacity level.

THE END