RAHUL SHIKHA ACADEMY
RSA
Quest For Excellence

CA INTER

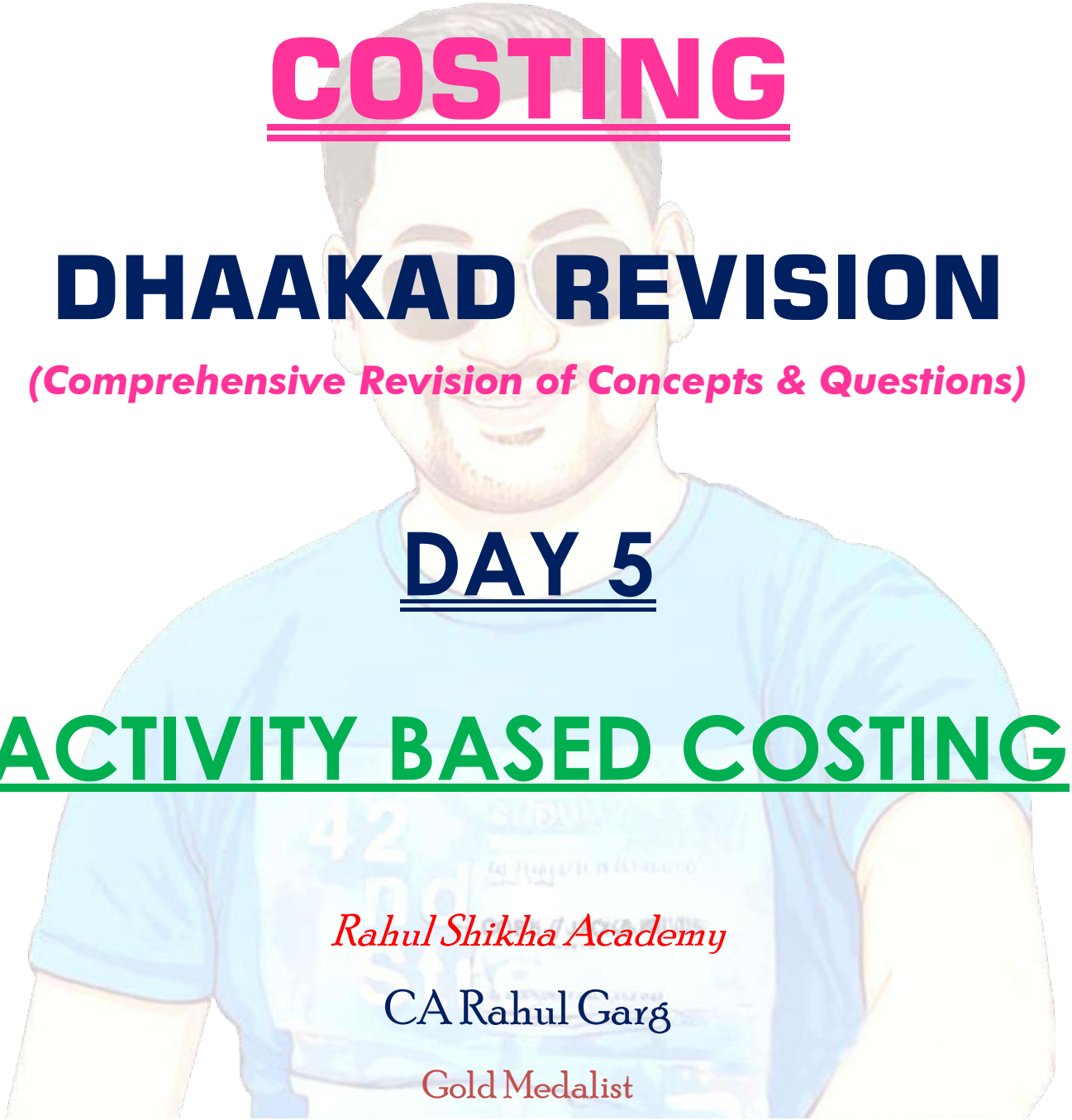
COSTING

DHAAKAD REVISION

(Comprehensive Revision of Concepts & Questions)

DAY 5

ACTIVITY BASED COSTING



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ACTIVITY BASED COSTING

CONCEPT	TRADITIONAL METHOD

Particulars	P1	P2	P3
Direct Material			
Direct Labour			
Overheads			
Total			

A single base is taken to distribute the amount of overheads over various products.

Recovery Rate = Amt. of OHs / Base --------> Single
labo hrs | Machine hrs.

CONCEPT	ABC METHOD

Particulars	P1	P2	P3
Direct Material			
Direct Labour			
Overheads : Activity 1			
: Activity 2			
: Activity 3			
Total			

It attempts to break the amount of overheads into various distinct activities, then to find cost driver rate for each such activity and accordingly distributing overheads over various products activity wise.

CONCEPT	COST DRIVER RATE

Activity	Cost Pool	Cost Driver	Cost Driver Capacity	Cost Driver Rate
a	b	c	D	e = b / d
1	30000	Pur order	1000	30/-
2	25000	Set Ups	500	50/-
3	45000	Quality Insp	100	450/-

CQ 1

PQR Pens Ltd. manufactures two products - 'Gel Pen' and 'Ball Pen'. It furnishes the following data for the year 2017 :

Product	Annual Output (Units)	Total Machine Hours	Total number of Purchase orders	Total number of set-ups
Gel Pen	5,500	24,000	240	30
Ball Pen	24,000	54,000	448	56

The annual overheads are as under:

Particulars	₹
Volume related activity costs	4,75,020
Set up related costs	5,79,988
Purchase related costs	5,04,992

Calculate the overhead cost per unit of each Product - Gel Pen and Ball Pen on the basis of:

1. Traditional method of charging overheads
2. Activity based costing method and
3. Find out the difference in cost per unit between both the methods.

CQ 2

The following budgeted information relates to N Ltd. for the year 2021:

	Products		
	X	Y	Z
Production and Sales (units)	1,00,000	80,000	60,000
	₹	₹	₹
Selling price per unit	90	180	140
Direct cost per unit	50	90	95
	Hours	Hours	Hours
Machine department (machine hours per unit)	3	4	5
Assembly department (direct labour hours per unit)	6	4	3

The estimated overhead expenses for the year 2021 will be as below:

Machine Department ₹ 73,60,000

Assembly Department ₹ 55,00,000

Overhead expenses are apportioned to the products on the following basis:

Machine Department On the basis of machine hours

Assembly Department On the basis of labour hours

After a detailed study of the activities the following cost pools and their respective cost drivers are found:

Cost Pool	Amount (₹)	Cost Driver	Quantity
Machining services	64,40,000	Machine hours	9,20,000 hours
Assembly services	44,00,000	Direct labour hours	11,00,000 hours
Set-up costs	9,00,000	Machine set-ups	9,000 set-ups
Order processing	7,20,000	Customer orders	7,200 orders
Purchasing	4,00,000	Purchase orders	800 orders

As per an estimate the activities will be used by the three products:

	Products		
	X	Y	Z
Machine set-ups	4,500	3,000	1,500
Customer orders	2,200	2,400	2,600
Purchase orders	300	350	150

You are required to prepare a product-wise profit statement using :

1. Absorption costing method;
2. Activity-based method

CQ 3

Family Store wants information about the profitability of individual product lines: Soft drinks, Fresh produce and Packaged food. Family store provides the following data for the current year for each product line:

	Soft Drinks	Fresh Produce	Packaged Food
Revenues	₹ 39,67,500	₹ 1,05,03,000	₹ 60,49,500
Cost of goods sold	₹ 30,00,000	₹ 75,00,000	₹ 45,00,000
Cost of bottles returned	₹ 60,000	0	0
Number of purchase orders placed	360	840	360
Number of deliveries received	300	2,190	660

Hours of shelf-stocking time	540	5,400	2,700
Items sold	1,26,000	11,04,000	3,06,000

Family store also provides the following information for the current year :

Activity	Description of activity	Total Cost	Cost-allocation base
Bottles returns	Returning of empty bottles	₹ 60,000	Direct tracing to soft drink line
Ordering	Placing of orders for purchases	₹ 7,80,000	1,560 purchase orders
Delivery	Physical delivery and receipt of goods	₹ 12,60,000	3,150 deliveries
Shelf stocking	Stocking of goods on store shelves and on-going restocking	₹ 8,64,000	8,640 hours of shelf-stocking time
Customer Support	Assistance provided to customers including check-out	₹ 15,36,000	15,36,000 items sold

Required:

1. Family store currently allocates support cost (all cost other than cost of goods sold) to product lines on the basis of cost of goods sold of each product line. Calculate the operating income and operating income as a % of revenues for each product line.
2. If Family Store allocates support costs (all costs other than cost of goods sold) to product lines using the activity based costing system, Calculate the operating income and operating income as a % of revenues for each product line.

HQ 4

CDE Ltd. is following Activity based costing. Budgeted overheads, cost drivers and volume are as follows :

Cost pool	Budgeted overheads (₹)	Cost driver	Budgeted volume
Material procurement	18,42,000	No. of Orders	1,200
Material handling	8,50,000	No. of movement	1,240
Maintenance	24,56,000	Maintenance Hours	17,550
Set-up	9,12,000	No. of Set-ups	1,450
Quality Control	4,42,000	No. of Inspection	1,820

The company has produced a batch of 7,600 units, its material cost was ₹ 24,62,000 and wages ₹ 4,68,500. Usage activities of the said batch are as follows :

Material orders	56
Material movements	84
Maintenance hours	1,420
Set-ups	60
No. of inspections	18

Required:

(i) Calculate cost driver rates.

(ii) Calculate the total and unit cost for the batch.

HQ 5

Star Limited manufacture three products using the same production methods. A conventional product costing system is being used currently. Details of the 3 products for a typical period are:

Product	Labour Hrs. per unit	Machine Hrs. per unit	Material Cost per Unit	Volume in Units
AX	1.00	2.00	35	7,500
BX	0.90	1.50	25	12,500
CX	1.50	2.50	45	25,000

Direct Labour costs ₹ 20 per hour and production overheads are absorbed on a machine hour basis. The overhead absorption rate for the period is ₹ 30 per machine hour.

Management is considering using Activity Based Costing system to ascertain the cost of the products. Further analysis shows that the total production overheads can be divided as follows:

Particulars	%
Cost relating to set-ups	40
Cost relating to machinery	10
Cost relating to material handling	30
Costs relating to inspection	20
Total production overhead	100

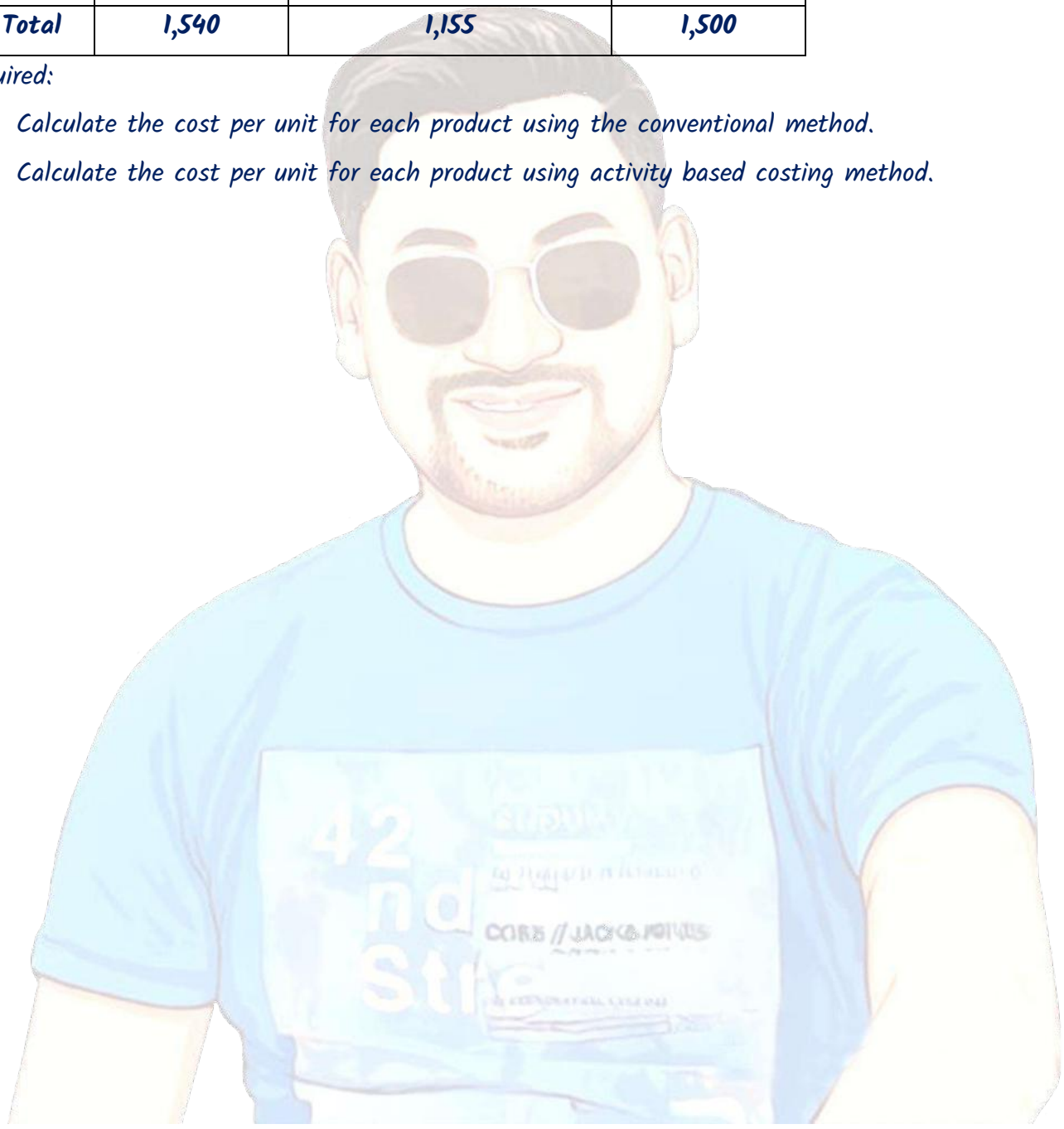
The following activity volumes are associated with the product line for the period as a whole. Total activities for the period:

Product	No. of set-ups	No. of movements of Materials	No. of inspections
AX	350	200	200
BX	450	280	400
CX	740	675	900
Total	**1,540**	**1,155**	**1,500**

Required:

(1) Calculate the cost per unit for each product using the conventional method.

(2) Calculate the cost per unit for each product using activity based costing method.



CQ - 1

1. Traditional Method

- We will take Machine Hours as base
- Overhead Absorption Rate = $\frac{\text{Total Overheads Incurred}}{\text{Total Machine Hours}}$

$$= \frac{475020 + 579988 + 504992}{24000 + 54000}$$

$$= \frac{1560000}{78000}$$

$$= 20 ₹ / \text{Machine hour}$$

Statement of Cost

S.No.	Particulars	Gel Pen	Ball Pen
1.	Overheads	24000 x 20 = 4,80,000	54000 x 20 = 10,80,000
2.	Annual O/P (units)	5500	24000
3.	Overheads / unit (1. ÷ 2.)	₹ 7.27	45

2. Activity Based Costing Method

Computation of Cost Driver Rate

Activity (a)	Cost Pool (b)	Cost Driver (c)	Cost Driver Capacity (d)	Cost Driver Rate (e) = b/d
• Volume related costs	4,75,020	Machine Hours	78000	6.09
• Set up related costs	5,79,988	No. of Set Ups	86	6744.0465
• Purchase related costs	5,04,992	No. of Purchase Orders	688	734

Statement of Cost

S.No.	Particulars	Gel Pen	Ball Pen
1.	Volume related costs	24000 × 6.09 = 1,46,160	54000 × 6.09 = 3,28,860
2.	Set up related costs	30 × 6744.0465 = 2,02,321	56 × 6744.0465 = 3,77,667
3.	Purchase related Costs	240 × 734 = 1,76,160	448 × 734 = 3,28,832
4.	Total Cost	5,24,641	10,35,359
5.	Annual O/P (Units)	5500	24000
6.	Overheads /Unit (4 ÷ 5.)	95.39	43.14

3. Statement showing Difference in Cost / Unit

S.No.	Particulars	Gel Pen	Ball Pen
1.	OH cost/unit as per Traditional Method	87.27	45
2.	OH cost/unit as per ABC Method	95.39	43.14
3.	Difference	8.12 Under costed	1.86 Over costed

CQ – 2

1. Absorption costing Method

a. Absorption Rate for Machine Department

$$= \frac{7360000}{920000} = ₹\ 8 \text{ - Machine hour}$$

Total Machine hours :

X	Y	Z
100000 x 3	80000 x 4	60000 x 5
= 300000	= 320000	= 300000

920000

b. Absorption Rate for Assembly Department

$$= \frac{55,00,000}{11,00,000} = ₹\ 5 \text{ - labour hour}$$

Total labour hours :

X	Y	Z
100000 x 6	80000 x 4	60000 x 3
= 600000	= 320000	= 180000

11,00,000

c. Statement showing Product - wise Profit

S.No.	Particulars	X	Y	Z
1.	Sales	100000 x 90 = 90,00,000	80000 x 180 = 1,44,00,000	60000 x 140 = 84,00,000
2.	Direct Cost	100000 x 50 = 50,00,000	80000 x 90 = 72,00,000	60000 x 95 = 57,00,000
3.	Overheads			
a.	Machine Dep.	300000 x 8 = 24,00,000	320000 x 8 = 25,60,000	300000 x 8 = 24,00,000
b.	Assembly Dep.	600000 x 5 = 30,00,000	320000 x 5 = 16,00,000	180000 x 5 = 9,00,000
4.	Profit / (loss) (1-2-3)	(14,00,000)	30,40,000	(6,00,000)

2. Activity Based costing Method

a. Computation of Cost Driver Rate

Activity	Cost Driver Rate	
. Machining Services	6440000 / 92,0000	= 7/-
. Assembly Services	4400000 / 11,00,000	= 4/-
. Set Up Costs	900000 / 9000	= 100/-
. order processing	720000 / 7200	= 100/-
. Purchasing	400000 / 800	= 500/-

b. Statement showing Product Wise Profit

S.No.	Particulars	X	Y	Z
1.	Sales	90,00,000	144,00,000	84,00,000
2.	Direct Cost	50,00,000	72,00,000	57,00,000
3.	Overheads			
a.	Machining services	300000 x 7 = 21,00,000	320000 x 7 = 22,40,000	300000 x 7 = 21,00,000
b.	Assembly services	600000 x 4 = 24,00,000	320000 x 4 = 12,80,000	180000 x 4 = 7,20,000
c.	Set Up Cost	4500 x 100 = 4,50,000	3000 x 100 = 3,00,000	1500 x 100 = 1,50,000
d.	order Processing	2200 x 100 = 2,20,000	2400 x 100 = 2,40,000	2600 x 100 = 2,60,000
e.	Purchasing	300 x 500 = 1,50,000	350 x 500 = 1,75,000	150 x 500 = 75,000
4.	Profit / (loss) (1-2-3)	(13,20,000)	29,65,000	(6,05,000)

CQ - 3

1. (A) Computation of Total Support Costs

Particulars	Amount (₹)
Bottles Returns	60,000
Ordering	7,80,000
Delivery	12,60,000
Shelf stocking	8,64,000
Customer support	15,36,000
	45,00,000

(B) Overhead Absorption Rate

$$= \frac{\text{Total support costs}}{\text{Total COGS}} \times 100$$

$$= \frac{45,00,000}{1,50,00,000} \times 100$$

30,00,000
+ 75,00,000
+ 45,00,000

= 30%

(C) Statement of operating Income and operating Income as a % of Revenue for each product line

S.No.	Particulars	Soft Drinks	Fresh Produce	Packaged Food	Total
1.	Revenue	39,67,500	1,05,03,000	60,49,500	2,05,20,000
2.	Cost of Goods Sold	30,00,000	75,00,000	45,00,000	1,50,00,000
3.	Support Cost (COGS x 30%)	9,00,000	22,50,000	13,50,000	45,00,000
4.	Total Cost (2. + 3.)	39,00,000	97,50,000	58,50,000	1,95,00,000
5.	Operating Income (1 - 4)	67,500	7,53,000	1,99,500	10,20,000
6.	Operating Income as a % of Revenue $\left(\frac{5}{1} \times 100\right)$	1.70%	7.17%	3.30%	4.97%

(2.) (A) Computation of Cost Driver Rate

Activity (a)	Cost Pool (b)	Cost Driver (c)	Cost Driver Capacity (d)	Cost Driver Rate (e) = b/d
· Bottles Returns	60000	· Direct tracing to soft drinks	N.A.	N.A.
· ordering	780000	· Purchase orders	1560	500
· Delivery	1260000	· Deliveries	3150	400
· Shelf stocking	864000	· Hrs. of shelf stocking time	8640	100
· Customer Support	1536000	· Items sold	1536000	1

(B) Statement of operating Income and operating Income as a % of Revenues for each Product line

S.No.	Particulars	Soft Drinks	Fresh Produce	Packaged food	Total
1.	Revenues	39,67,500	1,05,03,000	60,49,500	2,05,20,000
2.	COGS	30,00,000	75,00,000	45,00,000	1,50,00,000
3.	Support Costs				
a.	Bottles Returns	60,000	–	–	60,000
b.	ordering	360 × 500 180000	840 × 500 420000	360 × 500 180000	7,80,000
c.	Delivery	300 × 400 120000	2190 × 400 876000	660 × 400 264000	12,60,000
d.	Shelf stocking	540 × 100 54000	5400 × 100 540000	2700 × 100 270000	8,64,000
e.	Customer support	126000 × 1 126000	1104000 × 1 1104000	306000 × 1 306000	15,36,000
	Total (3)	540000	2940000	1020000	45,00,000
4.	Total Cost (2. + 3.)	35,40,000	1,04,40,000	55,20,000	1,95,00,000
5.	operating Income (1 – 4)	4,27,500	63,000	5,29,500	10,20,000
6.	operating Income as a % of Revenue $\left(\frac{5.}{1.} \times 100\right)$	10.78%	0.60%	8.75%	4.97%

(i) **Computation of Cost Driver Rates**

Activity	Cost Pool	Cost Driver	Cost Driver Capacity	Cost Driver Rate
• Material Procurement	18,42,000	No. of Orders	1,200	1,535
• Material Handling	8,50,000	No. of Movement	1,240	685.48
• Maintenance	24,56,000	Maintenance Hrs	17,550	139.94
• Set UP	9,12,000	No. of Setups	1,450	628.97
• Quality Control	4,42,000	No. of Inspection	1,820	242.86

(ii) **Statement of Cost**

Particulars	Computation	Amount (₹)
a. Material Cost	-	24,62,000
b. Wages	-	4,68,500
c Overheads		
: Material Procurement	56 x 1,535 = 85,960	
: Material Handling	84 x 685.48 = 57,580.32	
: Maintenance	1,420 x 139.94 = 1,98,714.80	
: Set Up	60 x 628.97 = 37,738.20	
: Quality Control	18 x 242.86 = 4,371.48	3,84,364.80
d. Total Cost		33,14,864.80
e. No. of Units		7,600
f. Cost / Unit (d/e)		436.17

HQ - 5

(1.) Statement showing cost per Unit Using Conventional Method

S.No.	Particulars	AX	BX	CX
a.	Material cost	35	25	45
b.	Labour cost	1 x 20 = 20	.90 x 20 = 18	1.5 x 20 = 30
c.	Production overheads	2 x 30 = 60	1.5 x 30 = 45	2.5 x 30 = 75
d.	Cost / Unit	115	88	150

(2.) (A) Computation of Total Production Overheads

S.No.	Particulars	AX	BX	CX
a.	Volume (in units)	7500	12500	25000
b.	Machine Hrs. / Unit	2	1.50	2.50
c.	Total Machine Hrs (b x c)	15000	18750	62500

So, Total Machine hours = 96250

Overhead Rate / Hour = 30 ₹

So, Total Production overheads = 96250 x 30 = 28,87,500 ₹

(B) Computation of Activity Costs

S.No.	Activity	Cost
a.	cost relating to set ups	2887500 x 40% = 11,55,000
b.	cost relating to machinery	2887500 x 10% = 2,88,750
c.	cost relating to material handling	2887500 x 30% = 8,66,250
d.	cost relating to inspection	2887500 x 20% = 5,77,500

(C) Computation of Cost Driver Rate

Activity (a)	Cost Pool (b)	Cost Driver (c)	Cost Driver Capacity (d)	Cost Driver Rate (e) = b/d
• Set Up Costs	11,55,000	No. of Set Ups	1540	750
• Machine Costs	2,88,750	No of Machine Hours	96250	3
• Material handling Costs	8,66,250	No. of Movement of Materials	1155	750
• Inspection Costs	5,77,500	No. of Inspections	1500	385

(D) Statement showing Cost Per Unit as per ABC Method

S.No.	Particulars	AX	BX	CX
a.	Material Cost	7500 x 35 = 262500	12500 x 25 = 312500	25000 x 45 = 1125000
b.	Labour Cost	7500 x 1 x 20 = 150000	12500 x .90 x 20 = 225000	25000 x 1.50 x 20 = 750000
c.	Overheads			
	(i) Set Up Costs	350 x 750 = 262500	450 x 750 = 337500	740 x 750 = 555000
	(ii) Machine Costs	15000 x 3 = 45000	18750 x 3 = 56250	62500 x 3 = 187500
	(iii) Material handling Costs	200 x 750 = 150000	280 x 750 = 210000	675 x 750 = 506250
	(iv) Inspection Cost	200 x 385 = 77000	400 x 385 = 154000	900 x 385 = 346500
d.	Total Cost (a+b+c)	9,47,000	12,95,250	34,70,250
e.	No. of Units	7500	12500	25000
f.	Cost / Unit (d/e)	126.27	103.62	138.81