CHAPTER-6 JOINT PRODUCTS & BY PRODUCTS

Ans.1. (i) Statement showing the apportionment of joint costs to A, B and X

Products	A	B	X	Total
Output (kg)	18,000	10,000	54,000	—
Sales value at the point	9,00,000	4,00,000	5,40,000	18,40,000
of split off (₹)	(₹50 x 18,000)	(₹40 x 10,000)	(₹10 x 54,000)	—
Joint cost apportionment	6,30,000	2,80,000	3,78,000	12,88,000
on the basis of sales value at the point of split off (₹)	$\frac{₹12,88,000}{₹18,40,000} \times ₹9,00,000$	$\frac{₹12,88,000}{₹18,40,000} \times ₹4,00,000$	$\frac{₹12,88,000}{₹18,40,000} \times ₹5,40,000$	—

(ii) Statement showing the cost per kg. of each product

(indicating joint cost; further processing cost and total cost separately)

Products	A	B	X
Joint costs apportioned (₹) : (I) [Refer to a(i)]	6,30,000	2,80,000	3,78,000
Production (kg) : (II)	18,000	10,000	54,000
Joint cost per kg (₹): (I / II)	35	28	7
Further processing	10	15	2
Cost per kg. (₹)	$\frac{₹ 1,80,000}{18,000 \text{ kg}}$	$\frac{₹ 1,50,000}{10,000 \text{ kg}}$	$\frac{₹ 1,08,000}{54,000 \text{ kg}}$
Total cost per kg (₹)	45	43	9

(iii) Statement showing the productwise and total profit for the period

Products	A	B	X	Total
Sales value (₹)	12,24,000	2,50,000	7,92,000	
Add : Closing stock value (₹) (Refer to Working note 2)	45,000	2,15,000	90,000	
(I) Value of production (₹)	12,69,000	4,65,000	8,82,000	26,16,000
Apportionment of joint cost (₹) [Refer to a(i)]	6,30,000	2,80,000	3,78,000	
Add : Further processing cost (₹)	1,80,000	1,50,000	1,08,000	
(II) Total cost (₹)	8,10,000	4,30,000	4,86,000	17,26,000
Profit (₹) : (I – II)	4,59,000	35,000	3,96,000	8,90,000

Working Notes :

1.

Products	A	B	X	Total
Sales value (₹)	12,24,000	2,50,000	7,92,000	----
Quantity sold (Kgs.)	17,000	5,000	44,000	----
Selling price ₹ / kg	72	50	18	----
	$\frac{₹ 12,24,000}{17,000 \text{ kg}}$	$\frac{₹ 2,50,000}{5,000 \text{ kg}}$	$\frac{₹ 7,92,000}{44,000 \text{ kg}}$	

2. **Valuation of closing stock :**

Since the selling price per kg of products A, B and X is more than their total costs, therefore closing stock will be valued at cost.

Products	A	B	X	Total
Closing stock (kgs.)	1,000	5,000	10,000	
Cost per kg (₹)	45	43	9	
Closing stock value (₹)	45,000	2,15,000	90,000	3,50,000
	(₹ 45x1,000 kg)	(₹ 43x5,000 kg)	(₹ 9x10,000 kg)	

(iv) **Calculations for processing decision**

Products	A	B	X
Selling price per kg at the point of split off (₹)	50	40	10
Selling price per kg after further processing (₹) (Refer to working Note I)	72	50	18
Incremental selling price per kg (₹)	22	10	8
Less : Further processing cost per kg (₹)	10	15	2
Incremental profit (loss) per kg (₹)	12	(-5)	6

Since product B does not give any profit on further processing ; it should not be further processed.

Ans.2. (i) (a) **Statement of joint cost allocated between each product by using sales value at split – off method**

Products	Sales value of the point of split off (₹)	Joint cost allocated (₹)
M	20,00,000	10,00,000 $\left(\frac{₹\ 40,000}{₹\ 80,000}\right)$ x ₹ 20,00,000
N	12,00,000	6,00,000 $\left(\frac{₹\ 40,000}{₹\ 80,000}\right)$ x ₹ 12,00,000
O	20,00,000	10,00,000 $\left(\frac{₹\ 40,000}{₹\ 80,000}\right)$ x ₹ 20,00,000
P	28,00,000	14,00,000 $\left(\frac{₹\ 40,000}{₹\ 80,000}\right)$ x ₹ 28,00,000
Total	**80,00,000**	**40,00,000**

(b) **Statement of joint cost allocated between each product by using physical output (gallons) method**

Products	Physical output (in gallons)	Joint cost allocated (₹)
M	3,00,000	24,00,000
N	1,00,000	8,00,000
O	50,000	4,00,000
P	50,000	4,00,000
Total	**5,00,000**	**40,00,000**

(c) **Statement of joint cost allocated between each product by using estimated net realizable value method**

Products	Sales revenue after further processing	Sales revenue at the point of split off	Further processing costs	Net realizable value	Joint cost allocated
(a)	(₹) (b)	(₹) (c)	(₹) (d)	(₹) (e)=[(b)–(d)] or (c)	(₹)
'Super M'	1,20,00,000	----	80,00,000	40,00,000	20,00,000 ₹ (40,00,000 / ₹ 80,00,000) x ₹ 40,00,000
'Super N'	40,00,000	----	32,00,000	8,00,000	4,00,000 (₹ 40,00,000 / ₹ 80,00,000) x ₹ 8,00,000
O	----	20,00,000	----	20,00,000	10,00,000 (₹ 40,00,000 / ₹ 80,00,000) x ₹ 20,00,000
'Super P'	48,00,000	----	36,00,000	12,00,000	6,00,000 (₹ 40,00,000 / ₹ 80,00,000) x ₹ 12,00,000
Total				**80,00,000**	**40,00,000**

(ii) **Decision about the further refining of Product M, N or P.**

Products	M	N	P
	₹	₹	₹
Sales revenue after further processing : (A)	1,20,00,000	40,00,000	48,00,000
Sales revenue at the point of split off : (B)	20,00,000	12,00,000	28,00,000
Incremental sales revenue : (C)={(A) - (B)}	1,00,00,000	28,00,000	20,00,000
Further processing cost : (D)	80,00,000	32,00,000	36,00,000
Profit (Loss) arising due to further processing : {(C) – (D)}	20,00,000	(4,00,000)	(16,00,000)

Decision

It is apparent from above that further processing of products N and P results in the decrease of the operating profit by ₹ 20,00,000. Hence M/s. Sunshine should not resort to further processing of its N and P products. This decision on adoption would increase the operating profits of the company for the month of October 1999 by ₹ 20,00,000.

Ans.3. Working Notes

(i) **Total Sales Value :**

Joint Products	No of Units ₹	Selling price per unit ₹	Sales value
A	500	18	9,000
B	900	8	7,200
C	400	4	1,600
D	200	11	2,200
		Total	**20,000**

(ii) **Joint Products Cost :**

= Total Sales Value – Budgeted profit (10% of sales value)

= ₹ 20,000 – ₹ 2,000

= ₹ 18,000

(a) **Maximum Price for the Raw Material**

	₹	₹
Joint products cost		18,000
(Refer to Working Notes (I) & (ii)		
Less : Other Costs		
Carriage inwards	1,000	
Direct Wages	3,000	
Manufacturing Overhead	2,000	
Administration Overhead	2,000	8,000
Maximum price to be paid for the raw material		10,000

(b) (i) **Comprehensive Cost Statement (Based on Units)**

Joint products :

Units :	**A 500**	**B 900**	**C 400**	**D 200**	**Total**
	₹	₹	₹	₹	₹
Raw Material	2,500	4,500	2,000	1,000	10,000
Carriage	250	450	200	100	1,000
Direct wages	750	1,350	600	300	3,000
Manufacturing Overhead	500	900	400	200	2,000
Administration Overhead	500	900	400	200	2,000
Total Cost	**4,500**	**8,100**	**3,600**	**1,800**	**18,000**

(ii) **Comprehensive Cost Statement (Based on Sales Value)**

Joint products :

	A	B	C	D	Total
	₹	₹	₹	₹	₹
Sales Value	9,000	7,200	1,600	2,200	20,000
Raw Material	4,500	3,600	800	1,100	10,000
Carriage	450	360	80	110	1,000
Direct wages	1,350	1,080	240	330	3,000
Manufacturing Overhead	900	720	160	220	2,000
Administrative Overhead	900	720	160	220	2,000
Total Cost	**8,100**	**6,480**	**1,440**	**1,980**	**18,000**

Ans.4. Working Note

Yield per 5,000 input units

	Yield in Percentage	Yield in Units
Main product	80%	4,000
By product	15%	750
Process loss	5%	250

Statement Showing the Cost of the By-Product

	₹
Cost of Material	18,750
(5,000 x ₹ 23.75) x $\frac{750}{4,750}$	
Other Charges (except power)	1,500
(₹ 14,250 x 66 $\frac{2}{3}$ %) x $\frac{750}{4,750}$	
Power	2,250
(₹ 14,250 x 33 $\frac{1}{3}$ %) x $\frac{9}{19}$	
Total Cost	**22,500**