

PYQ RTP COMPILER

Chp 11 Joint Product By Product

Costing CA Intermediate Regular Batch Jan 2025



Past Year Questions (PYQs)

May 2018 to May 2024

PYQ Analysis

Exam	Q No.	Marks	Requirement	Special Points
PYQ - May 24	1b	5	Joint Cost allocation using physical units and contribution method, check further processing	Basic Easy
PYQ - Nov 23	1c	5	JC Apportionment, Advice about further processing	Number of units sold in A is after 10% wastage, Effect of wastage in Part (ii)
PYQ - May 23	4a	10	JC Apportionment and Profit	Cal of Input Qty, Cal of Joint Cost, By Product is treated like a Joint Product,
PYQ - Nov 22	5c	5	Profit from L, Target SP	Easy but Unique Requirement
PYQ - May 22	5c	5	P&L for each product, Advice about further processing	Basic Easy
PYQ - Dec 21	6b	5	Narrate terms JP and BP with example	Theory

PYQ Analysis

Exam	Q No.	Marks	Requirement	Special Points
PYQ - Jul 21	2b	5	Identify which one to further process and give suggestions	Basic Easy
PYQ - Jan 21	4a	10	Schedule of JC Allocation, COGS, GP	Good Que to understand why we use production units in NRV Calculation and not sold units
PYQ - Nov 20	1c	5	Apportion Joint Costs, Total Costs of both products	No method is mentioned for apportionment of cost other than labour so physical unit method is used because no other data is given in que
PYQ - Nov 19	1c	5	Apportion Joint Costs, Profit and Loss	Negative Contribution Margin of B, so all FC allocation to A
PYQ - May 19	1c	5	Joint Cost Allocable, Product wise Profit	Inconsistency of solution with que, actual JC calculated by reverse method but que says NRV method
PYQ - Nov 18	6d	5	How are by products treated in Costing?	Theory

PYQ May 2024 – Q1b

- (b) A company produces two products, A and B, through a joint production process. The total joint production cost incurred is as under:

Material	₹ 20,000
Labour	₹ 10,000
Variable overheads	₹ 6,000
Fixed Overheads	₹ 24,000

Product A and B can be sold for ₹ 20 per unit and ₹ 15 per unit respectively at split off point. The produced quantities are Product A-2,000 units and Product B – 4,000 units.

- (i) You are required to calculate the joint production cost allocation for each product using the:
- (a) Physical unit method.
 - (b) Contribution margin method.
- (ii) Product B can be further processed by incurring expenditure of ₹ 12,000. Loss in further processing is 2%. It can be sold @ ₹ 18 per unit. Explain the impact on profitability if Product B is further processed.

PYQ May 2024 – Q1b

(b) Working

Calculation of joint cost

Description	Amount (₹)
Material	20,000
Labour	10,000
Variable overheads	6,000
Total variable cost	36,000
Fixed overheads	24,000
Total joint cost	60,000

(i) (a) Allocation of joint cost using physical unit method:

$$\text{Product A} = ₹60,000 \times 2,000/6,000 = ₹ 20,000$$

$$\text{Product B} = ₹60,000 \times 4,000/6,000 = ₹ 40,000$$

PYQ May 2024 – Q1b

(b) Allocation of joint cost using contribution margin method:

	Description	Product-A	Product-B
A.	Units produced	2,000	4,000
	Selling price per unit (₹)	20	15
B.	Sales value (₹)	40,000	60,000
B.	Allocation of joint variable cost on the basis of physical unit		
	$\text{₹}36,000 \times 2,000/6,000$	(12,000)	
	$\text{₹}36,000 \times 4,000/6,000$		(24,000)
C = A - B	Contribution	28,000	36,000
D	Allocation of fixed joint cost on the basis of contribution margin		
	$\text{₹}24,000 \times 28,000/64,000$	(10,500)	
	$\text{₹}24,000 \times 36,000/64,000$		(13,500)
C - D	Profit at split off point	17,500	22,500

PYQ May 2024 – Q1b

Allocation of Joint Cost on the basis of Contribution Margin Method:

Particulars	Product A	Product B
Allocation of Variable Cost	₹ 12,000	₹ 24,000
Allocation of Fixed Cost	₹ 10,500	₹ 13,500
Total Joint Cost	₹ 22,500	₹ 37,500

(ii) Profitability after further processing of Product B

Description	Amount (₹)
Units produced and sold 98% of 4,000 units	3,920
Selling price per unit (₹)	18
Sales value (₹)	70,560
Joint cost upto split off point	(37,500)
Further processing cost	(12,000)
Profit after further processing	21,060

PYQ May 2024 – Q1b

Calculation of the profitability after further processing of product B can also be done in the following manner:

Profitability after further processing of Product B

Description	Amount (₹)
Incremental revenue on further processing (3,920 x ₹18)- (4,000 x ₹15)	10,560
Further processing cost	(12,000)
Incremental loss after further processing	1,440

Impact on profitability on Product B

If Product B is sold at split off point it earns profit of ₹ 22,500, but after further processing the profit is reduced to ₹ 21,060/- i.e. an opportunity loss of ₹ 1,440/-.

PYQ Nov 2023 – Q1c

- (c) XYZ Limited manufactures three joint products A, B and C from a joint process. Product B is sold at split off point whereas product A and C are sold after further processing. 10% of the quantity of product A is lost in further processing. Data regarding these products for the year ending 31st March, 2023 are as follows:

	A	B	C
Number of units produced and sold	3,60,000	2,10,000	4,50,000
Selling price per unit at split off point	-	₹ 6	-
Selling price per unit after further processing	₹ 9.50	-	₹ 12
Further processing costs	₹ 8,60,000	-	₹ 10,40,000

The joint production cost upto the split off point at which A, B and C become separable products is ₹ 57,26,000.

Required:

- Prepare a statement showing apportionment of joint cost to the products using Net realizable value method.
- Assume XYZ Limited has received an offer from D Limited to purchase product 'A' at the split off point at ₹ 7 per unit and another company PQR Limited has offered to purchase product 'C' at split off point at 9 per unit.

Advise whether these offers should be accepted or not?

(5 Marks)

PYQ Nov 2023 – Q1c

- (c) (i) Statement showing apportionment of joint cost to the products using NRV method

Particulars	Product A (₹)	Product B (₹)	Product C (₹)
Sales value	34,20,000 (3,60,000 x ₹ 9.5)	12,60,000 (2,10,000 x ₹ 6)	54,00,000 (4,50,000 x ₹ 12)
Less: Further processing cost	8,60,000	-	10,40,000
Net Realisable Value	25,60,000	12,60,000	43,60,000
Apportionment of Joint cost of ₹ 57,26,000 in the ratio of 256:126:436	17,92,000	8,82,000	30,52,000

PYQ Nov 2023 – Q1c

(ii) Decision whether to Process further or not

Particulars	Product A (₹)	Product C (₹)
Incremental Revenue	9,00,000 (₹ 9.5-₹ 7) x 3,60,000	13,50,000 (₹ 12- ₹ 9) x 4,50,000
Less: Further processing cost	8,60,000	10,40,000
Less: wastage if further processed	2,80,000 ₹ 7 x (3,60,000*10%/90%)	-
Incremental profit/(loss)	(2,40,000)	3,10,000

On comparing incremental sales revenue with further processing cost, there is net loss of ₹ 2,40,000 in case of product A and profit of ₹ 3,10,000 in case of product C. Hence **offer of D Ltd should be accepted and Product A should be sold at split off point** Whereas product C should be **sold after further processing**.

PYQ May 2023 – Q4a

- (a) ABC Company produces a Product 'X' that passes through three processes: R, S and T. Three types of raw materials, viz., J, K, and L are used in the ratio of 40:40:20 in process R. The output of each process is transferred to next process. Process loss is 10% of total input in each process. At the stage of output in process T, a by-product 'Z' is emerging and the ratio of the main product 'X' to the by-product 'Z' is 80:20. The selling price of product 'X' is ₹60 per kg.

The company produced 14,580 kgs of product 'X'

Material price : Material J @ ₹ 15 per kg; Material K @ ₹ 9 per kg.

Material L @ ₹ 7 per kg Process costs are as follows:

Process	Variable cost per kg (₹)	Fixed cost of Input (₹)
R	5.00	42,000
S	4.50	5,000
T	3.40	4,800

PYQ May 2023 – Q4a

The by-product 'Z' cannot be processed further and can be sold at ₹ 30 per kg at the split-off stage. There is no realizable value of process losses at any stage.

Required:

*Present a statement showing the apportionment of joint costs on the basis of the sales value of product 'X' and by-product 'Z' at the split-off point and the profitability of product 'X' and by-product 'Z'.
(10 Marks)*

PYQ May 2023 – Q4a

(a) Working Notes:

1. Calculation of Input of Raw Material

Let assume total raw material in Process R be 100%

∴ Output of Process T will be equal to:

Input R	100%
- 10% Normal Loss	<u>₹ 10</u>
Input S	₹ 90%
- 10% Normal loss	<u>₹ 9</u>
Input T	81%
- 10% Normal loss	₹ 8.1
Output of T	72.9
Actual output of X	14,580 units
Which is 80% of the total output	

PYQ May 2023 – Q4a

∴ Output of Process T

$$= \frac{14580}{80\%} = 18,225$$

$$\therefore \text{Input of Process R} = \frac{18225}{72.9\%} = 25,000 \text{ kgs}$$

PYQ May 2023 – Q4a

2. Calculation of Joint Cost

Process	Inputs	Variable cost per kg	Variable cost	Fixed Cost	Total Cost
		₹	₹	₹	₹
R	25,000	5	1,25,000	42,000	1,67,000
S	22,500	4.5	1,01,250	5,000	1,06,250
T	20,250	3.4	68,850	4,800	<u>73,650</u>
					3,46,900

Raw material	J	10000 x 15	₹ 1,50,000
	K	10000 x 9	₹ 90,000
	L	5000 x 7	₹ <u>35,000</u>
			2,75,000
Add: Processing cost (as above)			₹ <u>3,46,900</u>
Total Joint Cost			<u>6,21,900</u>

PYQ May 2023 – Q4a

(i) Statement showing apportionment of Joint Cost

Particulars	Product X	By-Product Z	Total
Units	<u>14,580</u>	<u>3,645</u>	
Selling price (₹)	60	30	
Sales Value (₹)	8,74,800	1,09,350	9,84,150
(₹ 6,21,900 to apportioned in ratio of sales value at split off point)	5,52,800	69,100	6,21,900

(ii) Statement of Profitability

Particulars	Product X	By-Product Z	Total
Sales Value	8,74,800	1,09,350	9,84,150
Joint Cost	(5,52,800)	(69,100)	(6,21,900)
(As apportioned above)	<u> </u>	<u> </u>	<u> </u>
Profit	3,22,000	40,250	3,62,250

PYQ Nov 2022 – Q5c

- (c) ASR Ltd mainly produces Product 'L' and gets a by-Product 'M' out of a joint process. The net realizable value of the by-product is used to reduce the joint production costs before the joint costs are allocated to the main product. During the month of October 2022, company incurred joint production costs of ₹ 4,00,000. The main Product 'L' is not marketable at the split off point. Thus, it has to be processed further. Details of company's operation are as under:

Particulars	Product L	By- Product M
Production (units)	10,000	200
Selling price per kg	₹ 45	₹ 5
Further processing cost	₹ 1,01,000	-

You are required to find out:

- Profit earned from Product 'L'.
- Selling price per kg of product 'L', if the company wishes to earn a profit of ₹ 1,00,000 from the above production. **(5 Marks)**

PYQ Nov 2022 – Q5c

(c) (i) Calculation of profit on product 'L'

Particular	₹
Sales	4,50,000
Less: Further processing cost	(1,01,000)
	3,49,000
Less: Joint Production Cost*	(3,99,000)
loss	(50,000)

*Joint Production Cost = $[4,00,000 - (200 \times 5)] = 3,99,000$

(ii) Calculation of desired selling price of product 'L'

$$\begin{aligned}\text{Desired selling price} &= \frac{\text{Desired Profit} + \text{Total Cost}}{\text{units measured}} \\ &= \frac{1,00,000 + 1,01,000 + 3,99,000}{10,000} = ₹ 60 \text{ per kg.}\end{aligned}$$

PYQ May 2022 – Q5c

- (c) RST Limited produces three joint products X, Y and Z. The products are processed further. Pre-separation costs are apportioned on the basis of weight of output of each joint product. The following data are provided for the month of April, 2022.

Cost incurred up to separation point: ₹ 10,000

	Product X	Product Y	Product Z
Output (in Litre)	100	70	80
	₹	₹	₹
Cost incurred after separation point	2,000	1,200	800
Selling Price per Litre:			
After further processing	50	80	60
At pre-separation point (estimated)	25	70	45

You are required to:

- Prepare a statement showing profit or loss made by each product after further processing using the presently adopted method of apportionment of pre-separation cost.
- Advise the management whether, on purely financial consideration, the three products are to be processed further or not.

(5 Marks)

PYQ May 2022 – Q5c

(c) (i) Statement showing profit/loss by each product after further processing products

	Product X (in ₹)	Product Y (in ₹)	Product Z (in ₹)
Sales value after further processing	5,000	5,600	4,800
Less: Further processing cost	2,000	1,200	800
Less: Joint Cost* (as apportioned)	4,000	2,800	3,200
Profit/(loss)	(1,000)	1,600	800

* Statement showing apportionment of joint cost on the basis of physical units

	Product X (in ₹)	Product Y (in ₹)	Product Z (in ₹)	Total (₹)
Output (in litre)	100	70	80	250
Weight	0.4 (100/250)	0.28 (70/250)	0.32 (80/250)	
Joint cost apportioned	4,000	2,800	3,200	

PYQ May 2022 – Q5c

(ii)

Decision whether to process further or not

	Product X (in ₹)	Product Y (in ₹)	Product Z (in ₹)
Incremental Revenue	2,500 [(50-25) × 100]	700 [(80-70) × 70]	1,200 [(60-45) × 80]
Less: Further processing cost	2,000	1,200	800
Incremental profit /(loss)	500	(500)	400

	Product X (in ₹)	Product Y (in ₹)	Product Z (in ₹)	Total
Sales	2500	4900	3600	11000
Pre separation costs	4000	2800	3200	10000
Profit/(Loss)	(1500)	2100	400	1000

It is advisable to further process only product X and Z and to sale product Y at the point of separation.

PYQ Jul 2021 – Q2b

- (b) OPR Ltd. purchases crude vegetable oil. It does refining of the same. The refining process results in four products at the split-off point - S, P, N and A. Product 'A' is fully processed at the split-off point. Product S, P and N can be individually further refined into SK, PM, and NL respectively. The joint cost of purchasing the crude vegetable oil and processing it were ₹ 40,000. Other details are as follows:

Product	Further processing costs (₹)	Sales at split-off point (₹)	Sales after further processing (₹)
S	80,000	20,000	1,20,000
P	32,000	12,000	40,000
N	36,000	28,000	48,000
A	-	20,000	-

You are required to identify the products which can be further processed for maximizing profits and make suitable suggestions. **(5 Marks)**

PYQ Jul 2021 – Q2b

Decision for further processing of Product S, P and N

Products	S (₹)	P (₹)	N (₹)
Sales revenue after further processing	1,20,000	40,000	48,000
Less: sales value at split-off point	20,000	12,000	28,000
Incremental Sales Revenue	1,00,000	28,000	20,000
Less: Further Processing cost	80,000	32,000	36,000
Profit/ loss arising due to further processing	20,000	(-)4,000	(-)16,000

Suggested Product to be further processed for maximising profits:

On comparing the figures of "Profit if no further processing" and "Profits if further processing", one observes that OPR Ltd. is earning more after further processing of Product S only i.e. ₹ 20,000. Hence, for maximizing profits, only Product S should be further processed and Product P, N and A should be sold at split-off point.

PYQ Jul 2021 – Q2b

Suggested Product to be further processed for maximising profits:

On comparing the figures of "Profit if no further processing" and "Profits if further processing", one observes that OPR Ltd. is earning more after further processing of Product S only i.e. ₹ 20,000. Hence, for maximizing profits, only Product S should be further processed and Product P, N and A should be sold at split-off point.

Working Note:

Apportionment of joint costs on the basis of Sales Value at split-off point

$$\text{Apportioned joint cost} = \frac{\text{Total joint cost}}{\text{Total Sales value at split-off point}} \times \text{Sales value of each product}$$

PYQ Jan 2021 – Q4a

- (a) *Mayura Chemicals Ltd buys a particular raw material at ₹ 8 per litre. At the end of the processing in Department- 1, this raw material splits-off into products X, Y and Z. Product X is sold at the split-off point, with no further processing. Products Y and Z require further processing before they can be sold. Product Y is processed in Department-2, and Product Z is processed in Department-3. Following is a summary of the costs and other related data for the year 2019-20:*

Particulars	Department		
	1	2	3
<i>Cost of Raw Material</i>	₹ 4,80,000	-	-
<i>Direct Labour</i>	₹ 70,000	₹ 4,50,000	₹ 6,50,000
<i>Manufacturing Overhead</i>	₹ 48,000	₹ 2,10,000	₹ 4,50,000
	Products		
	X	Y	Z
<i>Sales (litres)</i>	10,000	15,000	22,500
<i>Closing inventory (litres)</i>	5,000	-	7,500
<i>Sale price per litre (₹)</i>	30	64	50

PYQ Jan 2021 – Q4a

There were no opening and closing inventories of basic raw materials at the beginning as well as at the end of the year. All finished goods inventory in litres was complete as to processing. The company uses the Net-realisable value method of allocating joint costs.

You are required to prepare:

- (i) Schedule showing the allocation of joint costs.*
- (ii) Calculate the Cost of goods sold of each product and the cost of each item in Inventory.*
- (iii) A comparative statement of Gross profit.*

(10 Marks)

PYQ Jan 2021 – Q4a

(a) (i) Statement of Joint Cost allocation of inventories of X, Y and Z

	Products			Total (₹)
	X (₹)	Y (₹)	Z (₹)	
Final sales value of total production (Working Note 1)	4,50,000 (15,000 x ₹ 30)	9,60,000 (15,000 x ₹ 64)	15,00,000 (30,000 x ₹ 50)	29,10,000
Less: Additional cost	--	6,60,000	11,00,000	17,60,000
Net realisable value (at split-off point)	4,50,000	3,00,000	4,00,000	11,50,000
Joint cost allocated (Working Note 2)	2,34,000	1,56,000	2,08,000	5,98,000

PYQ Jan 2021 – Q4a

(ii) Calculation of Cost of goods sold and Closing inventory

	Products			Total (₹)
	X (₹)	Y (₹)	Z (₹)	
Allocated joint cost	2,34,000	1,56,000	2,08,000	5,98,000
Add: Additional costs	--	6,60,000	11,00,000	17,60,000
Cost of goods sold (COGS)	2,34,000	8,16,000	13,08,000	23,58,000
Less: Cost of closing inventory (Working Note 1)	78,000 (COGS × 100/3%)	--	3,27,000 (COGS × 25%)	4,05,000
Cost of goods sold	1,56,000	8,16,000	9,81,000	19,53,000

PYQ Jan 2021 – Q4a

(iii) Comparative Statement of Gross Profit

	Products			Total (₹)
	X (₹)	Y (₹)	Z (₹)	
Sales revenue	3,00,000 (10,000 x ₹ 30)	9,60,000 (15,000 x ₹ 64)	11,25,000 (22,500 x ₹ 50)	23,85,000
Less: Cost of goods sold	1,56,000	8,16,000	9,81,000	19,53,000
Gross Profit	1,44,000	1,44,000	1,44,000	4,32,000

Working Notes:

1. Total production of three products for the year 2019-2020

Products	Quantity sold in litres	Quantity of closing inventory in litres	Total production	Closing inventory percentage (%)
(1)	(2)	(3)	(4) = [(2) + (3)]	(5) = (3)/ (4)
X	10,000	5,000	15,000	100/3
Y	15,000	--	15,000	--
Z	22,500	7,500	30,000	25

PYQ Jan 2021 – Q4a

2. Joint cost apportioned to each product:

$$= \frac{\text{Total Joint cost}}{\text{Total Net Realisable Value}} \times \text{Net Realisable Value of each product}$$

$$\text{Joint cost of product X} = \frac{\text{₹ 5,98,000}}{\text{₹ 11,50,000}} \times \text{₹ 4,50,000} = \text{₹ 2,34,000}$$

$$\text{Joint cost of product Y} = \frac{\text{₹ 5,98,000}}{\text{₹ 11,50,000}} \times \text{₹ 3,00,000} = \text{₹ 1,56,000}$$

$$\text{Joint cost of product Z} = \frac{\text{₹ 5,98,000}}{\text{₹ 11,50,000}} \times \text{₹ 4,00,000} = \text{₹ 2,08,000}$$

PYQ Nov 2020 – Q1c

- (c) A company's plant processes 6,750 units of a raw material in a month to produce two products 'M' and 'N'.

The process yield is as under:

Product M 80%

Product N 12%

Process Loss 8%

The cost of raw material is ₹ 80 per unit.

Processing cost is ₹ 2,25,000 of which labour cost is accounted for 66%. Labour is chargeable to products 'M' and 'N' in the ratio of 100:80.

Prepare a Comprehensive Cost Statement for each product showing:

- (i) Apportionment of joint cost among products 'M' and 'N' and
- (ii) Total cost of the products 'M' and 'N'.

PYQ Nov 2020 – Q1c

(c) Comprehensive Cost Statement

Particulars	Total Cost (₹)	Product-M (₹)	Product-N (₹)
No. of units produced *		5,400 units	810 units
Cost of raw material (₹ 80 × 6,750 units)	5,40,000		
Processing cost:			
- Labour cost (₹ 2,25,000 × 66%)	1,48,500		
- Other costs (₹ 2,25,000 - 1,48,500)	76,500		
Total joint cost	7,65,000		

PYQ Nov 2020 – Q1c

(i) Apportionment of joint costs between the joint products			
Labour cost in the ratio of 100:80	1,48,500	82,500	66,000
		$\left(\frac{1,48,500 \times 100}{180} \right)$	$\left(\frac{1,48,500 \times 80}{180} \right)$
Other joint costs (including material) in the ratio of output (5,400:810)	6,16,500	5,36,087	80,413
		$\left(\frac{6,16,500 \times 5,400}{6,210} \right)$	$\left(\frac{6,16,500 \times 810}{6,210} \right)$
(ii) Total product cost	7,65,000	6,18,587	1,46,413

* No. of units produced of Product M = 6750 units x 80% = 5400 units

No. of units produced of Product N = 6750 units x 12% = 810 units

PYQ Nov 2019 – Q1c

- (c) A Factory produces two products, 'A' and 'B' from a single process. The joint processing costs during a particular month are :

Direct Material ₹30,000

Direct Labour ₹ 9,600

Variable Overheads ₹ 12,000

Fixed Overheads ₹ 32,000

Sales: A- 100 units@ ₹ 600 per unit; B – 120 units @ ₹ 200 per unit.

- I. Apportion joints costs on the basis of:

(i) Physical Quantity of each product.

(ii) Contribution Margin method, and

- II. Determine Profit or Loss under both the methods.

PYQ Nov 2019 – Q1c

(c) Total Joint Cost

	Amount (₹)
Direct Material	30,000
Direct Labour	9,600
Variable Overheads	12,000
Total Variable Cost	51,600
Fixed Overheads	32,000
Total joint cost	83,600

Apportionment of Joint Costs:

			Product-A	Product-B
I.	(i)	Apportionment of Joint Cost on the basis of 'Physical Quantity'	₹ 38,000 $\left(\frac{₹ 83,600}{100 + 120 \text{ units}} \times 100 \right)$	₹ 45,600 $\left(\frac{₹ 83,600}{100 + 120 \text{ units}} \times 120 \right)$

PYQ Nov 2019 – Q1c

(ii)	Apportionment of Joint Cost on the basis of 'Contribution Margin Method':		
	- Variable Costs (on basis of physical units)	₹ 23,455 $\left(\frac{₹ 51,600}{100 + 120 \text{ units}} \times 100 \right)$	₹ 28,145 $\left(\frac{₹ 51,600}{100 + 120 \text{ units}} \times 120 \right)$
	Contribution Margin	36,545 (₹600×100 – 23,455)	-4,145 (₹200×120 – 28,145)
	Fixed Costs*	₹ 32,000	
	Total apportioned cost	₹ 55,455	₹ 28,145

PYQ Nov 2019 – Q1c

II.	(iii)	Profit or Loss:		
	When Joint cost apportioned on basis of physical units			
	A.	Sales Value	₹ 60,000	₹ 24,000
	B.	Apportioned joint cost on basis of 'Physical Quantity':	₹ 38,000	₹ 45,600
	A-B	Profit or (Loss)	22,000	(21,600)
	When Joint cost apportioned on basis of 'Contribution Margin Method'			
	C	Apportioned joint cost on basis of 'Contribution Margin Method'	₹ 55,455	₹ 28,145
	A-C	Profit or (Loss)	₹ 4,545	₹ (4,145)

* The fixed cost of ₹ 32,000 is to be apportioned over the joint products A and B in the ratio of their contribution margin but contribution margin of Product B is Negative so fixed cost will be charged to Product A only.

PYQ May 2019 – Q1c

- (c) A Factory is engaged in the production of chemical Bomex and in the course of its manufacture a by-product Cromex is produced which after further processing has a commercial value. For the month of April 2019 the following are the summarised cost data:

	Joint Expenses (₹)	Separate Expenses (₹)	
		Bomex	Cromex
Materials	1,00,000	6,000	4,000
Labour	50,000	20,000	18,000
Overheads	30,000	10,000	6,000
Selling Price per unit		100	40
Estimated profit per unit on sale of Cromex			5
Number of units produced		2,000 units	2,000 units

The factory uses net realisable value method for apportionment of joint cost to by-products.

You are required to prepare statements showing :

- Joint cost allocable to Cromex
- Product wise and overall profitability of the factory for April 2019.

PYQ May 2019 – Q1c

(c) (i) Statement Showing Joint Cost Allocation to 'Cromex'

Particulars	Cromex (₹)
Sales (₹ 40 × 2,000 units)	80,000
Less: Post Split Off Costs (4,000+18,000+6,000)	(28,000)
Less: Estimated Profit (₹ 5 × 2,000 units)	(10,000)
Joint cost allocable	42,000

(ii) Statement Showing Product Wise and Overall Profitability

Particulars	Bomex (₹)	Cromex (₹)	Total (₹)
Sales	2,00,000	80,000	2,80,000
Less: Share in Joint Expenses	(1,38,000)*	(42,000)	(1,80,000)
Less: Post Split Off Costs	(36,000)	(28,000)	(64,000)
Profit	26,000	10,000	36,000

(*) 1,80,000 – 42,000

Revision Test Papers (RTPs)

May 2018 to Sep 2024

RTP Analysis

Exam	Q No.	Requirement	Special Points
RTP Sep 2024	15	Joint Cost per unit, margin available as %	Allocation of JC ratio using anticipated margin, actual margin calculation
RTP May 2024	13d	How JC apportionment is done in MV at POS and NRV method	Theory
RTP Nov 2023	9	JC Apportionment, Cost of Production A and B	Cal of Selling Distribution Costs, JC share is calculated as a balancing figure (unique)
RTP May 2023	10	Similar to ICAI SM Exercise Que 2	Similar to ICAI SM Exercise Que 2
RTP Nov 2022	10	Similar to ICAI SM Exercise Que 4	Similar to ICAI SM Exercise Que 4
RTP May 2022	NA	No Question	No Question
RTP Nov 2021	10	JC Apportionment, Cost per kg, Profit, Decision to further process or not	Cal of Qty produced and accordingly the other statements
RTP May 2021	13b	JC POS and NRV Method	Theory

RTP Analysis

Exam	Q No.	Requirement	Special Points
RTP Nov 2020	10	JC Allocation using NRV, COGS	Similar to PYQ Jan 21
RTP May 2020	13d	Treatment of By Product in Cost Accounting	Theory
RTP Nov 2019	NA	No Question	No Question
RTP May 2019	9	Same as RTP May 2018	Same as RTP May 2018
RTP Nov 2018	10	Profit at both with further process and without further process	Method of Apportionment not mentioned so sales value at Split off Point is used
RTP May 2018	10	JC Apportionment, Cost per kg, Profit, Decision to further process or not	Similar to RTP Nov 2021

RTP Sep 2024 – Q15

15. Three products X, Y and Z alongwith a byproduct B are obtained again in a crude state which require further processing at a cost of ₹ 5 for X; ₹ 4 for Y; and ₹ 2.50 for Z per unit before sale. The byproduct is however saleable as such to a nearby factory. The selling prices for the three main products and byproduct, assuming they should yield a net margin of 25 percent of cost, are fixed at ₹ 13.75 ₹ 8.75 and ₹ 7.50 and ₹ 1.00 respectively – all per unit quantity sold.

During a period, the joint input cost including the material cost was ₹ 90,800 and the respective outputs were:

X	8,000 units
Y	6,000 units
Z	4,000 units
B	1,000 units

By product should be credited to the joint cost and only the net joint costs are to be allocated to the main products.

CALCULATE the joint cost per unit of each product and the margin available as a percentage on cost.

15. Working Notes:

(i) Computation of Allocation Ratio for Joint Costs

	Products		
	X ₹	Y ₹	Z. ₹
Selling Price	13.75	8.75	7.50
<i>Less: anticipated margin@ 25% on cost of 20% on sales</i>	2.75	1.75	1.50
Cost of sales	11.00	7.00	6.00
<i>Less: post split off cost</i>	5.00	4.00	2.50
Joint cost per unit	6.00	3.00	3.50
Output (units)	8,000	6,000	4,000
Total output cost	48,000	18,000	14,000
Allocation ratio for joint costs	24	9	7

(ii) Computation of net allocable joint costs

	₹	₹
Joint input cost including material cost		90,800
Less: Credit for realization from by-product B: Sales revenue (1,000 × Re. 1)	1,000	
Less: profit @ 25% on cost or 20% on sales	200	800
Net joint costs to be allocated		90,000

Determination of joint cost per unit of each product

Product	Net joint costs allocation ₹	Output (units) ₹	Joint cost per unit ₹
X	54,000 (Note: 1)	8,000	6.75
Y	20,250	6,000	3.38
Z	15,750	4,000	3.94
	90,000		

Profit margin available on each product as a percentage on cost

Product	Joint Cost ₹	Post spilt-off cost ₹	Total Cost ₹	Selling Price ₹	Margin ₹	Margin % on cost ₹
X	6.75	5.00	11.75	13.75	2.00	17.02
Y	3.38	4.00	7.38	8.75	1.37	18.56
Z	3.94	2.50	6.44	7.50	1.06	16.46

Note: 1

$$\begin{aligned} X &= \frac{24}{40} \times 90,000 &= 54,000 \\ Y &= \frac{9}{40} \times 90,000 &= 20,250 \end{aligned}$$

RTP Nov 2023 – Q9

9. A factory producing article A also produces a by-product B which is further processed into finished product. The joint cost of manufacture is given below:

Material	₹ 5,000
Labour	₹ 3,000
Overhead	<u>₹ 2,000</u>
	<u>₹ 10,000</u>

Subsequent cost in ₹ are given below:

	A	B
Material	3,000	1,500
Labour	1,400	1,000
Overhead	600	500
	5,000	3,000

Selling prices are A ₹ 16,000
 B ₹ 8,000

Estimated profit on selling prices is 25% for A and 20% for B.

Assume that selling and distribution expenses are in proportion of sales prices. Show how you would apportion joint costs of manufacture and prepare a statement showing cost of production of A and B.

9. Apportionment of Joint Costs

Particulars	A (₹)	B (₹)
Selling Price	16,000	8,000
Less: Estimated profit	4,000 (25% of ₹16,000)	1,600 (20% of ₹ 8,000)
Cost of sales	12,000	6,400
Less: Selling & Distribution exp. (Refer working note)	267 (₹ 400 × 2/3)	133 (₹ 400 × 1/3)
Less: Subsequent cost	5,000	3,000
Share of Joint cost	6,733	3,267

So, Joint cost of manufacture is to be distributed to A & B in the ratio of 6733 : 3267

Statement showing Cost of Production of A and B

Elements of cost	Joint Cost		Subsequent Cost		Total Cost	
	A	B	A	B	A	B
Material	3,367	1,633	3,000	1,500	6,367	3,133
Labour	2,020	980	1,400	1,000	3,420	1,980
Overheads	1,346	654	600	500	1,946	1,154
Cost of production					11,733	6,267

Working Note:

Calculation of Selling and Distribution Expenses

Particulars	(₹)
Total Sales Revenue (₹ 16,000 + ₹ 8,000)	24,000
Less: Estimated Profit (₹ 4,000 + ₹ 1,600)	(5,600)
Cost of Sales	18,400
Less: Cost of production:	
- Joint Costs	(10,000)
- Subsequent costs (₹ 5,000 + ₹ 3,000)	(8,000)
Selling and Distribution expenses (Balancing figure)	400

10. A company produces two joint products A and B from the same basic materials. The processing is completed in three departments.

Materials are mixed in Department I. At the end of this process, A and B get separated. After separation, A is completed in the Department II and B in Department III. During a period, 4,00,000 kg of raw material was processed in Department I at a total cost of ₹ 17,50,000, and the resultant 50% becomes A and 40% becomes B and 10% normally lost in processing.

In Department II, $\frac{1}{5}$ th of the quantity received from Department I is lost in processing. A is further processed in Department II at a cost of ₹ 2,60,000.

In Department III, further new material is added to the material received from Department I and weight mixture is doubled, there is no quantity loss in the department III. Further processing cost (with material cost) in Department III is ₹ 3,00,000.

RTP Nov 2021 – Q10

The details of sales during the said period are:

	Product A	Product B
Quantity sold (kg)	1,50,000	3,00,000
Sales price per kg (₹)	10	4

There were no opening stocks. If these products sold at split-off-point, the selling price of A and B would be ₹ 8 and ₹ 4 per kg respectively.

Required:

- (i) PREPARE a statement showing the apportionment of joint cost to A and B in proportion of sales value at split off point.
- (ii) PREPARE a statement showing the cost per kg of each product indicating joint cost, processing cost and total cost separately.
- (iii) PREPARE a statement showing the product wise profit for the year.
- (iv) On the basis of profits before and after further processing of product A and B, give your COMMENT that products should be further processed or not.

10.

Calculation of quantity produced

	Dept I (kg)	Dept II (kg)	Dept III (kg)
Input	4,00,000	2,00,000 (50% of 4,00,000 kg.)	1,60,000 (40% of 4,00,000 kg.)
Weight (lost) or added	(40,000) (10% of 4,00,000 kg.)	(40,000) (1/5 th of 2,00,000 kg.)	1,60,000
	3,60,000	1,60,000	3,20,000
Production of A	2,00,000	1,60,000	--
Production of B	1,60,000	--	3,20,000

(i)

Statement of apportionment of joint cost of dept I

	Product A	Product B
Output (kg)	2,00,000	1,60,000
Selling price per kg (₹)	8	4
Sales value (₹)	16,00,000	6,40,000
Share in Joint cost (5:2)	12,50,000 (₹ 17,50,000 × 5 ÷ 7)	5,00,000 (₹ 17,50,000 × 2 ÷ 7)

RTP Nov 2021 – Q10

(ii)

Statement of cost per kg

	Product A	Product B
Output (kg)	1,60,000	3,20,000
Share in joint cost (₹)	12,50,000	5,00,000
Joint Cost per kg (₹) (A)	7.8125	1.5625
Further processing cost (₹)	2,60,000	3,00,000
Further processing cost per kg (₹) (B)	1.625	0.9375
Total cost per kg (₹) {(A)+(B)}	9.4375	2.5000

RTP Nov 2021 – Q10

(iii)

Statement of profit

	Product A	Product B
Output (kg)	1,60,000	3,20,000
Sales (kg)	(1,50,000)	(3,00,000)
Closing stock (kg)	10,000	20,000
	(₹)	(₹)
Sales	15,00,000 (1,50,000 kg × ₹ 10)	12,00,000 (3,00,000 kg × ₹ 4)
Add: closing stock (at full cost)	94,375 (10,000 kg × ₹ 9.4375)	50,000 (20,000 kg × ₹ 2.5)
Value of production	15,94,375	12,50,000
Less: Share in joint cost	12,50,000	5,00,000
Further processing cost	2,60,000	3,00,000
Profit	84,375	4,50,000

(iv)

Profitability statement before and after processing

	Product A		Product B	
	Before (₹)	After (₹)	Before (₹)	After (₹)
Sales Value	16,00,000	84,375 (as per iii above)	6,40,000	4,50,000 (as per iii above)
Share in joint costs	12,50,000		5,00,000	
Profit	3,50,000		1,40,000	

Product A should be sold at split off point and product B after processing because of higher profitability.

RTP Nov 2018 – Q10

10. In an Oil Mill four products emerge from a refining process. The total cost of input during the quarter ending March 20X8 is ₹1,48,000. The output, sales and additional processing costs are as under:

Products	Output in Litres	Additional processing cost after split off (₹)	Sales value (₹)
ACH	8,000	43,000	1,72,500
BCH	4,000	9,000	15,000
CSH	2,000	—	6,000
DSH	4,000	1,500	45,000

In case these products were disposed-off at the split off point that is before further processing, the selling price per litre would have been:

ACH (₹)	BCH (₹)	CSH (₹)	DSH (₹)
15.00	6.00	3.00	7.50

PRODUCE a statement of profitability based on:

- (i) If the products are sold after further processing is carried out in the mill.
- (ii) If they are sold at the split off point.

RTP Nov 2018 – Q10

10. (i) Statement of profitability of the Oil Mill (after carrying out further processing) for the quarter ending 31st March 20X8.

Products	Sales Value after further processing	Share of Joint cost	Additional processing cost	Total cost after processing	Profit (loss)
ACH	1,72,500	98,667	43,000	1,41,667	30,833
BCH	15,000	19,733	9,000	28,733	(13,733)
CSH	6,000	4,933	--	4,933	1,067
DSH	45,000	24,667	1,500	26,167	18,833
	2,38,500	1,48,000	53,500	2,01,500	37,000

(ii) Statement of profitability at the split off point

Products	Selling price of split off	Output in units	Sales value at split off point	share of joint cost	profit at split off point
ACH	15.00	8,000	1,20,000	98,667	21,333
BCH	6.00	4,000	24,000	19,733	4,267
CSH	3.00	2,000	6,000	4,933	1,067
DSH	7.50	4,000	30,000	24,667	5,333
			1,80,000	1,48,000	32,000

Note: Share of Joint Cost has been arrived at by considering the sales value at split off point.

RTP May 2018 – Q10

10. A company processes a raw material in its Department 1 to produce three products, viz. A, B and X at the same split-off stage. During a period 1,80,000 kgs of raw materials were processed in Department 1 at a total cost of ₹ 12,88,000 and the resultant output of A, B and X were 18,000 kgs, 10,000 kgs and 54,000 kgs respectively. A and B were further processed in Department 2 at a cost of ₹ 1,80,000 and ₹ 1,50,000 respectively.

X was further processed in Department 3 at a cost of ₹1,08,000. There is no waste in further processing. The details of sales affected during the period were as under:

	A	B	X
Quantity Sold (kgs.)	17,000	5,000	44,000
Sales Value (₹)	12,24,000	2,50,000	7,92,000

There were no opening stocks. If these products were sold at split-off stage, the selling prices of A, B and X would have been ₹ 50, ₹ 40 and ₹ 10 per kg respectively.

RTP May 2018 – Q10

Required:

- (i) PREPARE a statement showing the apportionment of joint costs to A, B and X.
- (ii) PREPARE a statement showing the cost per kg of each product indicating joint cost and further processing cost and total cost separately.
- (iii) PREPARE a statement showing the product wise and total profit for the period.
- (iv) DECIDE with supporting calculations as to whether any or all the products should be further processed or not

RTP May 2018 – Q10

10. (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 of split off (₹)	9,00,000 (₹ 50 x 18,000)	4,00,000 (₹ 40 x 10,000)	5,40,000 (₹ 10 x 54,000)	18,40,000
Joint cost apportionment on the basis of sales value at the point of split off (₹)	6,30,000 $\left(\frac{₹ 12,88,000}{₹ 18,40,000} \times ₹ 9,00,000 \right)$	2,80,000 $\left(\frac{₹ 12,88,000}{₹ 18,40,000} \times ₹ 4,00,000 \right)$	3,78,000 $\left(\frac{₹ 12,88,000}{₹ 18,40,000} \times ₹ 5,40,000 \right)$	12,88,000

RTP May 2018 – Q10

(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)	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 Cost per kg. (₹)	10	15	2
	$\left(\frac{\text{₹ } 1,80,000}{18,000 \text{ kg}} \right)$	$\left(\frac{\text{₹ } 1,50,000}{10,000 \text{ kg}} \right)$	$\left(\frac{\text{₹ } 1,08,000}{54,000 \text{ kg}} \right)$
Total cost per kg (₹)	45	43	9

RTP May 2018 – Q10

(iii) Statement showing the product wise 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	
Value of production (₹)	12,69,000	4,65,000	8,82,000	26,16,000
Apportionment of joint cost (₹)	6,30,000	2,80,000	3,78,000	
Add: Further processing cost (₹)	1,80,000	1,50,000	1,08,000	
Total cost (₹)	8,10,000	4,30,000	4,86,000	17,26,000
Profit (₹)	4,59,000	35,000	3,96,000	8,90,000

Working Notes

1.

Products	A	B	X
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
	$\left(\frac{₹ 12,24,000}{17,000 \text{ kg}} \right)$	$\left(\frac{₹ 2,50,000}{5,000 \text{ kg}} \right)$	$\left(\frac{₹ 7,92,000}{44,000 \text{ kg}} \right)$

RTP May 2018 – Q10

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 (₹ 45 x 1,000 kg)	2,15,000 (₹ 43 x 5,000 kg)	90,000 (₹9x10,000 kg)	3,50,00