

CHAPTER 5

Methods of Costing

Process Costing

CMAL2P8-C5-U5.3 • Rank 1 in chapter • Category A • 39.3% of chapter questions • 53 questions

Topic 1: Normal and Abnormal Losses

CMAL2P8-C5-U5.3-T01

FREQUENCY TABLE CORRECTED — the Scanner's table at page 462 counts 5 against this topic; the book carries 6 appearances — the questions printed under it and the earlier sittings listed against them. These notes follow the book.

Read first Read §5.4.1 Preparation of Process Account and 5.4.2 Losses in Process Costing, ICAI Study Material Module 5, pages 346–353 — the two sides of the process account and its elements of cost on pages 346–347, the definitions of normal loss, abnormal loss and abnormal gain with the valuation formula on page 348, and the four-step framework worked once for a loss and once for a gain on pages 349–351.

NOTES

What process costing is: process costing is a form of costing applicable to continuous processes where process costs are attributed to the number of units produced, and it may involve estimating the number of equivalent units in stock at the start and end of the period. It is used where there is a continuous flow of identical units — oil refining, soap manufacture, paint manufacture, food and drink. Four features define it: the output of one process becomes the input of the next until the finished product emerges from the final process; production is continuous, so there is usually closing work in progress to be valued; there is often a loss in process through spoilage, wastage or evaporation; and the output may be a single product, joint products or by-products. It is the process that is costed, not the job, and the method is to take the total cost of the process and average it over the units of production.

The two sides of the process account: the debit side records the inputs and their cost — units introduced or received from the preceding process, sundry or additional materials, labour, direct expenses and overheads. The credit side records what became of those inputs — the units converted into finished goods or transferred to the next process, the units lost, and the units still in process at the end. Each side carries two columns, one for quantity and one for cost. Materials are charged at the price at which the issues are priced; wages are charged to a process where they can be identified with it and otherwise apportioned on a basis such as time spent; direct expenses such as power and depreciation are charged where identifiable; and overheads, being indirect, are

apportioned on a suitable basis — most often a stated percentage of direct wages.

Dr. — the inputs and their cost	Cr. — what became of the inputs
To Units Introduced A/c (units × rate) or To Preceding Process A/c (units × transfer rate)	By Normal Loss A/c (normal loss units × scrap value per unit)
To Sundry / Additional Materials A/c	By Abnormal Loss A/c (abnormal loss units × cost per unit)
To Direct Labour (Wages) A/c	By Closing Stock / Work-in-Progress A/c
To Direct Expenses A/c	By Next Process A/c, or By Finished Stock A/c (good units × cost per unit)
To Production Overheads A/c (on the stated basis — commonly a percentage of direct wages)	By Profit and Loss A/c (where part of the output is sold instead of being transferred on)
To Abnormal Gain A/c (gain units × cost per unit) — entered only where the actual loss falls short of the normal loss	The two sides agree in quantity as well as in value; the quantity columns must be balanced before the value columns are

The cost per unit — one formula: $\text{Cost per unit} = (\text{Total cost incurred in the process} - \text{Scrap value of normal loss units}) \div (\text{Input units} - \text{Normal loss units})$. The numerator is every debit of the process less what the normal loss will fetch as scrap; the denominator is the **expected output**, not the actual output. **The same rate is applied to the good output, to the abnormal loss and to the abnormal gain alike** — whether there is an abnormal loss or an abnormal gain makes no difference to it. Write the fraction out in the working — $\text{₹}(10,46,000 - 1,000) \div (10,000 - 500) = \text{₹}110$ — and only then post the account.

Normal loss: the loss which is **unavoidable on account of the inherent nature of the production process**, capable of being estimated in advance from past experience or available data. It is **recorded only in terms of quantity** and is **given no share of the cost**, so the cost per unit of the usable production rises and **the cost of the normal loss is borne by the good units**. Where the scrap has a value as a waste product or as raw material for an earlier process, **that value is credited to the process account**, which reduces the cost of the normal output. Unless the question directs otherwise, normal loss is a percentage of the **input** of that process — 5% of 10,000 units introduced is 500 units in Process A, and 15% of the 6,200 units received is 930 units in Process B.

Abnormal loss and abnormal gain — one definition each and one arithmetic: abnormal loss is **any loss in excess of the normal loss allowance**, caused by plant breakdown, sub-standard materials, carelessness or accident; abnormal gain is the **improvement on the accepted or normal loss**, arising where the actual loss is **less** than expected. **Abnormal loss (or gain) = Total loss - Normal loss**. Both are valued at $(\text{Total cost incurred} - \text{Scrap value of normal loss units}) \div (\text{Input units} -$

Normal loss units) × the abnormal units. An abnormal **loss** is a credit in the process account, being a sort of output; an abnormal **gain** is a **debit**, being a sort of unexpected extra input, and it makes the quantity column of the debit side exceed the input.

Account	Debit
Normal Loss A/c	To Process A/c — normal loss units at the scrap value per unit
Abnormal Loss A/c	To Process A/c — abnormal loss units at the cost per unit
Abnormal Gain A/c	To Normal Loss A/c — gain units at the scrap value; To Costing Profit and Loss A/c — the balance

Why the Abnormal Gain Account is debited with the normal-loss scrap: when the actual loss is smaller than expected there is **less scrap to sell**, so the Abnormal Gain Account is **debited with the loss of income on account of the smaller quantity of scrap** and the **Normal Loss Account is credited** with it; only the balance is transferred to the Costing Profit and Loss Account as abnormal gain. On a gain of 36 units whose scrap would have realised ₹10 each, ₹360 goes to Normal Loss and only ₹2,736 – ₹360 = **₹2,376** reaches the Costing Profit and Loss Account. The mirror point on the loss side: the abnormal loss units are **sold as scrap at the normal scrap rate**, and only the shortfall is written off. Where the scrap value is **nil**, nothing is recovered and **the whole value of the abnormal loss is written off**, which is the sense in which a process account is credited with the full value of the loss when the scrap value is zero.

The four-step framework — work every loss question in this order: **Step 1**, determine output and losses: actual loss, then normal loss as the stated percentage of input, then the difference as abnormal loss or abnormal gain. **Step 2**, calculate the cost per unit of output and of the losses, on **expected output**. **Step 3**, calculate the total cost of the output and of the losses, remembering that **normal loss is assigned no cost**. **Step 4**, prepare the necessary accounts — the process account first, then the Normal Loss, Abnormal Loss and Abnormal Gain Accounts. On an input of 1,000 units costing ₹4,500 with a 10% normal loss, the rate is ₹4,500 ÷ 900 = **₹5** whether the output is 860 units (40 units of abnormal loss at ₹200) or 920 units (20 units of abnormal gain at ₹100).

Where part of a process output is sold instead of being transferred on: the units sold are credited to the process at the **same cost per unit** as the units transferred, the contra being the Profit and Loss Account, and the sale proceeds are credited to that account at the selling price per unit given for the process. So of 9,300 units of Process A output at ₹110, the 6,200 units passed to Process B are credited at ₹6,82,000 and the 3,100 units sold at ₹3,41,000, against sales of 3,100 × ₹120. Management and selling expenses that are **not allocable to the processes** are charged in that same Profit and Loss Account, and the abnormal loss and abnormal gain balances are carried there

too.

Working backwards to a missing wastage percentage — algebra, not accounting: where the final product sells at ₹10 with a profit of 20% on sales, the **cost price per unit is ₹8**. Let the normal loss units be x , the scrap of that process realising **₹1 per unit** so that the scrap is worth ₹ x ; then **Total cost of the process = Value of scrap + (Units introduced – Normal loss units) × cost per unit**, so $68,088 = x + (9,120 - x) \times 8$, giving $7x = 4,872$, $x = 696$ units and a normal loss of $696 \div 9,120 = 7.63\%$. Set the equation out in full before solving it.

Where a process account has to be built up in two halves: where the closing figure of a process is not known until the loss is settled, the account is balanced down — **By Balance c/d** at the derived rate, then **To Balance b/d** on the second half, against which the transfer to the next process, the abnormal loss or the abnormal gain is set. The cost per unit is fixed in the **first** half, on the expected output, and is then applied unchanged to whatever the second half shows. That is why an abnormal gain never disturbs the rate: on ₹34,200 for 855 expected units the rate is ₹40, and the 840 units transferred and the 15 units of abnormal loss both go out at ₹40.

OBJECTIVE recognise the right answer — Section A of the Scanner, 1 and 2 marks • 7 questions

- Seven objectives sit on this topic and four of them turn on a single sentence about loss. Learn those four facts verbatim: **abnormal** is the loss for which a process account is credited with value when the scrap value is zero; **abnormal gain** is the name for the difference when the actual loss is less than the normal loss; an abnormal gain arises **when actual loss is less than the expected loss**, not when output exceeds plan; and the cost of **normal** loss is borne by the good units while the cost of **abnormal** loss is not.
- The other three are computations. The 1,200-unit question is answered by subtraction alone — normal loss 120, expected output 1,080, actual output 900, so there is an **abnormal loss of 180 units** and no gain. The two-mark December 2025 question passes 75 units into process B at ₹1,310, adds ₹190 of process expense, loses 20 per cent normally at a ₹4 scrap and gets 70 units out: $(₹1,500 - ₹60) \div 60 = ₹24$ a unit, so the output transferred on is **₹1,680**.
- The 10,000 kg question asks for the **value of the abnormal loss** and the key prints ₹200. Note what that figure is: $₹0.20 \times 1,000$ kg is the value of the **normal** loss scrap. On the Study Material's own formula the abnormal loss is $(₹8,000 - ₹200) \div 9,000 \times 600$ kg = **₹520**, which is not among the first three options. In the examination hall answer as the key does; in your own practice, work the formula, because that is what a descriptive question will mark.
- Keep the two directions of the entry straight, because an option list will offer both: abnormal **loss** is credited in the process account and abnormal **gain** is debited in it.

OQ • PYQ 2017-Jun [1] (d) (xxiii) • 1M • Pg 466

OQ
Objective

Easy

OQ • PYQ 2021-Dec [1] • 1M • Pg 468

OQ
Objective

Easy

OQ • PYQ 2021-Dec [4] • 1M • Pg 468

OQ
Objective

Easy

OQ • MQP 2023-Dec S2 [1] (ix) • 2M • Pg 469	OQ Objective	Easy
OQ • MQP 2024-Jun S1 [1] (vi) • 2M • Pg 470	OQ Objective	Easy
OQ • MQP 2024-Dec S2 [1] (viii) • 2M • Pg 471	OQ Objective	Easy
OQ • PYQ 2025-Dec [1] (x) {C} • 2M • Pg 472	OQ Objective	Easy

APPLYING take the provision to the facts • 6 questions

- All six questions here are the same question with different figures: a product passing through two or three processes, a normal loss percentage and a scrap rate for each, and a requirement for the **Process Accounts, the Normal Loss, Abnormal Loss and Abnormal Gain Accounts**. Work them in the four-step order every time, and set the cost-per-unit fraction out in the body of the account as the Study Material does — the fraction is worth more than the figure it produces.
- Two of the six — the seven-mark 2024 December question on wastage in Process C and the seven-mark 2025 December question on the same pattern — end in the **percentage of wastage** algebra rather than in an account. Take the cost per unit from the selling price first (₹10 less 20% profit on sales gives ₹8), then form the equation total cost = scrap + (input – x) × cost per unit. Candidates lose these marks by trying to balance the account instead of solving for x.
- Read what the overheads sentence says before you touch the account. **Other manufacturing expenses to be charged on the basis of labour cost** means apportioning one total between the processes in the ratio of their wages; **overheads recovered at 100% of wages or 160% of direct labour** means a separate figure in each process. Getting that apportionment wrong changes every subsequent figure, and it is the first working note the examiner looks for.
- Where the question adds that part of the output was sold and the processes are **not responsibility centres**, a Profit and Loss Account is expected as well as the process accounts, carrying the units sold at cost, the sales at the given selling price, the unallocable management and selling expenses, and the abnormal loss and gain balances. The seven-mark 2024 December question asks for exactly this and prints the profit requirement as a separate sub-part.

PQ 1.2 • PYQ 2017-Jun [4] (b) • 7M • Pg 475	PRAC Practical	Medium
PQ 1.3 • PYQ 2023-Dec [5] (a) • 7M • Pg 476	PRAC Practical	Medium
PQ 1.4 • MQP 2024-Dec S2 [4] (b) • 7M • Pg 477	PRAC Practical	Medium
PQ 1.5 • PYQ 2024-Dec [5] (a) • 7M • Pg 479	PRAC Practical	Medium
PQ 1.6 • PYQ 2025-Dec [5] (a) • 7M • Pg 481	PRAC Practical	Medium
PQ 1.1 • PYQ 2015-Dec [2] (b) (iii) • 8M • Pg 473	PRAC Practical	Hard

Topic 2: Equivalent Production

CMAL2P8-C5-U5.3-T02

FREQUENCY TABLE CORRECTED — the Scanner's table at page 462 counts 2 against this topic; the book carries 3 appearances — the questions printed under it and the earlier sittings listed against them. These notes follow the book.

Read first Read the Equivalent Production section, ICAI Study Material Module 5, pages 357–377 — the definition and the five-step procedure of evaluation on page 357, the average cost and FIFO methods on page 358, and Illustrations 31 to 37, which show the statement of equivalent production with opening work in progress, normal loss, abnormal loss and abnormal gain.

NOTES

Equivalent production, defined: equivalent units are **notional whole units representing uncompleted work, used to apportion costs between work in progress and completed output, and in performance assessment.** The term equivalent production represents a **technique through which incomplete units are expressed notionally as completed units:** incomplete units do not bear the same cost as completed units, so they must be converted into their equivalent completed units before the cost of the process — finished and unfinished together — can be found. Of 3,000 units of closing stock, 1,000 at the 100% stage and 2,000 at the 50% stage are **2,000 equivalent units**, not 3,000.

The five steps of evaluation, and the four statements they produce: (i) ascertain the number of units introduced and finished; (ii) convert the production into equivalent units, taking into account the process losses and the opening and closing work in progress with their degrees of completion; (iii) find the total cost of material, labour and overheads; (iv) determine the cost per unit of equivalent production **separately element-wise**, by dividing each element of cost by its own equivalent units; (v) ascertain the cost of production including the cost of work in progress. The answer is therefore built as the **statement of equivalent production**, the **statement of cost per unit**, the **statement of evaluation (apportionment of cost)** and finally the **process account**. Head each of the four.

Inputs — Items and Units	Output — Items and Units
Opening WIP	Opening WIP completed in this period
Units introduced or transferred in	Normal loss
	Finished goods introduced and completed
	Closing WIP
	Add: Abnormal loss

	Less: Abnormal gain
--	---------------------

The two methods, and how the question tells you which to use: under the **average (weighted average) cost method** the cost of the opening inventory is **combined with the costs incurred in the current period**, work done in an earlier period is disregarded, and all units finished during the period are treated as though they had been started and completed within it; the closing work in progress of the preceding period is added to the current period's cost to give an **average rate**. It is the method **useful when prices are fluctuating**. Under **first-in first-out** the work that commenced first is assumed to be completed first, so the **opening work in progress is completed and transferred before the current period's production**, the cost of the opening stock and the cost of the units started and completed are calculated **separately**, and the closing work in progress contains **only units of the current period's production**.

Point	FIFO
Opening WIP in the statement	A separate output row, carrying only the work still to be done on it
Costs divided	The current period's costs only
What the rate represents	The cost of this period's work
Closing WIP contains	Units of the current period only
Transfer value	Opening stock cost + cost of completing it + cost of the units introduced and completed

Normal loss inside a statement of equivalent production: it is shown as an output row with **no equivalent units against any element**, so it absorbs no cost, and its **scrap realisation is deducted from the cost of one element before that element's rate per equivalent unit is struck**. Which element it comes out of follows the illustration: overheads of ₹16,670 less ₹1,100 of scrap gives ₹15,570 in the illustration where the scrap realises ₹1 a unit, while in the weighted average illustration Material I of ₹2,750 less ₹50 gives ₹2,700. Read the base of the loss carefully: it is a **percentage of input** where the question says input, but where it is expressed as a percentage of **production** the illustrations take that percentage of **(Opening WIP + Units introduced – Closing WIP)** — 10% of 800 + 12,000 – 1,800 giving 1,100 units, and 5% of 1,000 + 6,000 – 2,000 giving 250 units.

Abnormal loss and abnormal gain in the statement: abnormal loss is **added** as a further output row at its own degrees of completion — commonly 100% for material and 50% or 80% for labour and overheads, because the units were scrapped part-way — and is then valued element by element at the cost per equivalent unit. Abnormal gain is **deducted** from the totals, at **100% of**

every element, since the units that were not lost are complete. The abnormal loss row is often the **balancing figure** of the quantity column: input less normal loss, less units transferred, less closing work in progress.

The statement of cost per unit — element-wise, and never in total: each element's cost is divided by **its own** equivalent units, so material at $\text{₹}44,550 \div 9,900 = \text{₹}4.50$, labour at $\text{₹}21,148 \div 9,715 = \text{₹}2.1768$ and overheads at $\text{₹}42,000 \div 9,715 = \text{₹}4.3232$, giving a total of **₹11 per completed unit**. Material and labour rarely share a denominator, because material is usually complete before labour and overheads have been fully applied. Where the material is introduced in two stages, carry **Material I** and **Material II** as separate elements with separate percentages and separate rates.

The statement of evaluation — three valuations and no more: closing work in progress, at its own equivalent units times each element rate; **abnormal loss**, on the same basis; and the **transfer to the next process**. Under FIFO the transfer is built in three pieces — **the cost already carried on the opening stock, plus the cost of the work done this period to complete it, plus the full cost of the units introduced and completed**: $\text{₹}800 + \text{₹}720 + \text{₹}8,100 = \text{₹}9,620$. Under the average method it is simply the units transferred at the total rate per equivalent unit. Show the three pieces, not the total alone.

The process account that closes the answer: debit the opening stock at its brought-forward value, the units introduced or transferred in, and the material, labour and overheads of the period; credit the normal loss at scrap value, the closing stock at the value computed in the statement of evaluation, the abnormal loss at its computed value, and the finished stock or next process with the balance. **The quantity column must agree** — opening plus introduced against normal loss plus abnormal loss plus closing plus transferred — and the rate shown against the transfer is the value divided by the units, which will not equal the total cost per equivalent unit where there was opening stock.

The one rule that settles a short equivalent-production computation: where a question gives units introduced, a normal loss percentage, completed units transferred and a closing work in progress at a stated percentage, the equivalent production asked for is **completed units transferred + (closing WIP units × its percentage of completion)**. The units introduced and the normal loss percentage are there to be discarded. On 4,900 completed and 800 units 60% complete the answer is $4,900 + 480 = \text{5,380}$; on 7,500 and 1,500 units 70% complete it is $7,500 + 1,050 = \text{8,550}$; on 9,900 and 1,500 units 60% complete it is **10,800**; and 1,000 units 60% complete in all respects are **600** equivalent units.

Where the opening stock is expressed as a percentage already done: under FIFO the equivalent units of the opening work in progress are the **balance**, not the percentage given. Opening stock 70% complete for material and 60% for labour contributes **30%** of material and **40%** of labour; opening stock 100% complete for material and 40% for labour and overheads contributes **nothing** for material and **60%** for labour and overheads. Reversing that is the single commonest error in the topic, and it moves every figure in the statement.

OBJECTIVE recognise the right answer — Section A of the Scanner, 1 and 2 marks • 9 questions

- Nine objectives sit here, the largest group in the unit, and five of them are the same computation with new figures. Apply the rule — **completed units transferred plus the completed portion of the closing work in progress** — and move on; every one of the five has been answered by it, and the input figure and the loss percentage in the stem are distractors.
- Three more are single recall statements and they contradict each other unless you learn them exactly. **Weighted average** is the method used when **prices are fluctuating**; the statement that **FIFO** is used when prices are fluctuating is **false**, and both have been set in the same series of papers. **Equivalent production** means production **in terms of completed units**, not the value of closing inventory.
- For the 1,000-units-60%-complete question the answer is **600**. Read 'complete in all respects' as meaning the same percentage against material, labour and overheads, so no element-wise working is needed.

OQ • PYQ 2018-Jun [1] (a) (vii) {C} • 1M • Pg 466	OQ Objective	Easy
OQ • PYQ 2018-Dec [1] (a) (vii) {C} • 1M • Pg 467	OQ Objective	Easy
OQ • PYQ 2019-Jun [1] (a) (vii) • 1M • Pg 467	OQ Objective	Easy
OQ • PYQ 2019-Jun [1] (c) (iii) • 1M • Pg 467	OQ Objective	Easy
OQ • MQP 2023-Jun S2 [1] (a) (ix) • 1M • Pg 468	OQ Objective	Easy
OQ • PYQ 2023-Dec [1] (xi) {C} • 2M • Pg 469	OQ Objective	Easy
OQ • PYQ 2024-Jun [1] (vi) {C} • 2M • Pg 470	OQ Objective	Easy
OQ • PYQ 2024-Jun [1] (xiv) {C} • 2M • Pg 470	OQ Objective	Easy
OQ • MQP 2024-Dec S2 [1] (xiv) • 2M • Pg 471	OQ Objective	Easy

REMEMBERING recall and reproduce • 1 question

- The two-mark question that gives 8,800 units transferred out, opening stock of 400 units 75% complete and closing stock of 800 units 50% complete, and names **FIFO**, is a three-line answer: opening stock at the **25% still to be done** is 100 units, the units introduced and completed are $8,800 - 400 = 8,400$, closing stock is 400, and the total is **8,900**.
- Two marks means three lines. Do not draw the full statement of equivalent production or a statement of cost; write the three rows with the percentage against each and total them.

PQ 2.1 • PYQ 2014-Dec [1] (c) • 2M • Pg 483	PRAC Practical	Easy
---	-------------------	------

APPLYING take the provision to the facts • 2 questions

- Both questions here name the statements they want. The eight-mark question asks for **equivalent production, a statement of apportionment of cost and the process account**; the seven-mark 2026 June question asks for **equivalent production, statement of cost, statement of valuation of work-in-process and the Process Y Account**. Produce each under its own heading, in the order named. An answer that arrives at the right closing work in progress without showing the statement of cost per unit loses the marks allotted to that statement.
- The eight-mark question is Illustration 32 of the Study Material almost figure for figure — 200 units of opening stock at ₹4, 1,050 introduced, 1,100 transferred, 150 in closing stock. Work that illustration until the four statements come without hesitation and the question is already answered; note in particular that the opening stock is 100% complete for material, so it earns **no material equivalent units** and 60% for labour and overheads.
- Where there is no opening work in progress, as in the 2026 June question, FIFO and the average method give the same answer and no election need be discussed. Say so in one line rather than working both.
- Carry the rate to four decimals where it does not divide cleanly and round only the final valuation, as the Study Material does with ₹2.1768 and ₹4.3232. Rounding the rate first throws the process account out of balance, and a process account that does not balance is marked as if the closing figures were wrong.

PQ 2.3 • PYQ 2026-Jun [5] (a) • 7M • Pg 485

PRAC
Practical**Medium**

PQ 2.2 • MQP 2023-Jun S2 [6] (a) • 8M • Pg 483

PRAC
Practical**Hard****Topic 3: Joint and By Products**

CMAL2P8-C5-U5.3-T03

FREQUENCY TABLE CORRECTED — the Scanner's table at page 462 counts 12 against this topic; the book carries 13 appearances — the questions printed under it and the earlier sittings listed against them. These notes follow the book.

Read first Read §5.4.4 Joint Product and By-Product, ICMAI Study Material Module 5, pages 377–395 — the two definitions and the five features of a joint product on pages 377–378, the contrast table on pages 378–379, the four methods of apportioning joint cost and the four treatments of by-product income on pages 379–380, and Illustrations 38 to 49, which work the reverse cost, net realisable value and further-processing decisions.

NOTES

Joint products, defined: two or more products produced by the same process and separated in processing, each having a sufficiently high saleable value to merit recognition as a main product. They are output from the **same processing operation** and are **indistinguishable from each other up to their point of separation**. The five features that complete the definition: **common inputs**; **simultaneous production**, not sequential; an **independent identity**, each saleable as a distinct

product; **separable and marketable**, capable of being identified and quantified independently; and **common costs up to the split-off point**, beyond which any further processing cost is specific to one product. Crude oil giving gasoline, diesel, jet fuel, lubricants and petroleum gas is the example given.

By-product, defined: output of some value produced incidentally while manufacturing the main product — an incidental product of a process which has an **insignificant value compared with the main product**, produced at the same time and from the same common process. Sawdust, small offcuts and bark from the timber industry are the examples given. The **distinguishing feature is the relatively low sales value**, not the process; that is the whole of the difference between a by-product and a joint product.

Feature	Joint product
Definition	Two or more products derived from a common input or production process
Simultaneous production	Produced at the same time within the same production process
Independence of identity	Each product has its own identity and can be sold separately
Separability	Separable, and identifiable and quantifiable independently
Value independence	The value of one product is independent of the quantities of the others
Examples	Gasoline, diesel and jet fuel from oil refining

Split-off point, joint cost and post-separation cost: the point at which the joint and by-products become separately identifiable is the **split-off point** or **separation point**; the costs incurred **up to** that point are the **common costs** or **joint costs**, and they must be **apportioned** among the products because they cannot be identified with any of them; the costs incurred **after** it are the **subsequent** or **post-separation costs** and can be identified easily. The total cost of production of a joint product is therefore **the apportioned share of joint cost plus its own post-separation cost**. There may be more than one split-off point in a chain of processes.

Method	The basis on which the joint cost is divided
Physical quantity (physical unit) method	The volume of production — units, kilograms, litres, tonnes, gallons — so every product carries the same cost per unit of weight or volume

Average unit cost method	Total manufacturing cost ÷ total number of units produced of all products, applied to each product's units
Weighted average method	Weights assigned to each unit for size, type of labour employed, material consumption, market share or effort required, and the joint cost divided in the weighted ratio
Selling price (market value at split-off) method	The sales value of each product at the split-off point
Net realisable value method	Final sales value after further processing less the post-separation cost, in the resulting ratio
Marginal cost and contribution method	The marginal cost of the process on physical quantities, and the fixed cost on the contribution made by each product

The four treatments of by-product income: (a) the income from the sale of the by-product, less any post-separation processing or selling cost, may be **added to the sales of the main product**, increasing the revenue of the period; (b) the sale of the by-product may be treated as a **separate, incidental source of income** against which only its own post-separation costs are set, recorded as **other income**; (c) the sales income of the by-product may be **deducted from the cost of production or cost of sales** of the main product; (d) the **net realisable value** of the by-product — its final saleable value less any post-separation cost — may be **deducted from the cost of production** of the main product. The choice is influenced by the circumstances of production and the ease of calculation as much as by conceptual correctness, and **the most common method is net realisable value**.

The reverse cost method — the by-product's share of joint cost worked backwards from its selling price, in a fixed order of subtraction: Sales value, less the estimated profit at the stated percentage of sales, less the selling expenses at the stated percentage of sales, less the post-separation cost, and what remains is that product's **share of the joint cost**. The main product then takes **the total joint cost less the shares so computed**. On sales of ₹16,000 with a profit of 20% and selling expenses of 20%, the by-product's total cost is ₹12,800, its cost before selling expenses ₹9,600, and after post-separation cost of ₹4,800 its share of joint cost is **₹4,800**; on a joint cost of ₹68,000 the main product therefore takes ₹68,000 – (₹4,800 + ₹4,800) = **₹58,400**. Where the question gives **no** separate selling expenses, the deduction is simply sales less profit less separate expenses.

Where selling expenses are given as a percentage of the cost of sales rather than of sales: build the cost of sales first for all the products together — **Sales less profit** — then take the stated percentage of that total and **apportion it in the given ratio** before the post-separation costs are

deducted. On a total cost of sales of ₹1,49,500 the fixed selling expense is 10%, that is ₹14,950, split 20 : 40 : 40 as ₹2,990, ₹5,980 and ₹5,980. The order of the deductions never changes: **sales, profit, selling expenses, post-separation cost, share of joint cost.**

The net realisable value method: for each product, **Sales after further processing, less post-separation cost**, gives the **net realisable value**; the joint cost is then apportioned in the ratio of those net realisable values, and the profit of each product is its net realisable value less its share of joint cost. On a joint cost of ₹8,29,600 and net realisable values of ₹6,80,000, ₹32,000, ₹32,000 and ₹2,32,000 totalling ₹9,76,000, product A takes $6,80,000 \div 9,76,000 \times 8,29,600 = \text{₹}5,78,000$. Under this method the **selling and distribution cost is deducted from the sales value**, never added to the joint cost.

The further-processing decision — an incremental question, and the joint cost is irrelevant to it: compute **incremental sales** (sales after further processing less sales at the split-off point) and **incremental cost** (the additional material, labour and variable overheads of the further process), and process further **only where the incremental profit is positive**. The apportioned joint cost is the same under either course and must not be allowed to decide it; where the answer is set out as two full profit statements, the recommendation must still be justified on the **difference** between them. Where the question asks what the overall profit would be after acting on the decision, add the higher of the two profits for each product — $\text{₹}17,000 + \text{₹}1,800 + \text{₹}800 + \text{₹}5,800 = \text{₹}25,400$ in the illustration.

Apportionment by weight: where a tonne of coal yields 1,420 kg of coke, 120 kg of coal tar, 22 kg of benzol, 26 kg of sulphate of ammonia and 412 kg of gas, each product takes its **percentage of the 2,000 kg recovered** — 71%, 6%, 1.1%, 1.3% and 20.6% — and that same percentage is applied to **each element of cost separately**: material ₹80, labour ₹40 and overheads ₹60 per tonne. Coke therefore carries ₹56.80 of material, ₹28.40 of labour and ₹42.60 of overheads, ₹127.80 in all. Where the ratio of absorption differs between elements — one unit of C needing half the raw material of B, and A one and a half times B — build a **separate ratio for material, for labour and for overheads**, weight each by the units produced, and apportion element by element.

Where the by-product's own share is found from its profit percentage: take the sales of the by-product, deduct the stated profit percentage, deduct its separate (post-separation) expenses, and the balance is its **share of the joint expenses**; the main product takes the rest. On joint expenses of ₹8,200 with A, B and C selling at ₹6,000, ₹4,000 and ₹2,500 at profits of 33⅓%, 25% and 15%, the total costs are ₹4,000, ₹3,000 and ₹2,125, the separate expenses ₹450, ₹325 and ₹150, and the shares of joint cost **₹3,550, ₹2,675 and ₹1,975**, which add back to ₹8,200. Always check that the three shares total the joint cost given; that check is the quickest way to find an arithmetic slip.

OBJECTIVE recognise the right answer — Section A of the Scanner, 1 and 2 marks • 8 questions

- Eight objectives sit here and they are pure recall of definitions and method names. The four that recur: the **main purpose** of accounting for joint products and by-products is to **determine the profit or loss on each product line**; joint cost accounting is suitable for the **oil industry**; **by-products may undergo**

further processing before sale is true; and **edible oils and oil cakes** is the by-product pairing, whereas diesel and petrol, and curd and butter, are joint products.

- Two turn on the method name. Apportioning joint cost on the basis of the **output of each joint product at the point of split-off** is the **physical unit method**. Under the **net realisable value** method the selling and distribution cost is **deducted from the sales value** — it is not added to the joint cost and not deducted from the further-processing cost.
- Two are trick statements about the split-off point. Costs incurred **prior** to split-off are **joint costs**, not incremental costs; costs incurred **after** it are the subsequent or post-separation costs. Split-off is the point **up to which** the input factors are commonly used and **beyond which** the products gain their individual identity; a statement that reverses those two prepositions is false, and one has been keyed false on exactly that ground.

OQ • PYQ 2017-Dec [1] (c) (i) {C} • 1M • Pg 466	OQ Objective	Easy
OQ • PYQ 2018-Dec [1] (a) (i) {C} • 1M • Pg 467	OQ Objective	Easy
OQ • PYQ 2019-Dec [1] (a) (vii) {C} • 1M • Pg 467	OQ Objective	Easy
OQ • MQP 2023-Jun S2 [1] (a) (vii) • 1M • Pg 469	OQ Objective	Easy
OQ • PYQ 2023-Jun [1] (b) (vii) {C} • 1M • Pg 469	OQ Objective	Easy
OQ • PYQ 2023-Dec [1] (ix) {C} • 2M • Pg 469	OQ Objective	Easy
OQ • PYQ 2024-Dec [1] (iii) {C} • 2M • Pg 470	OQ Objective	Easy
OQ • PYQ 2025-Jun [1] (iv) {C} • 2M • Pg 471	OQ Objective	Easy

UNDERSTANDING explain with reasons • 1 question

- The six-mark question on **apportioning the joint expenses** of a product A yielding by-products B and C is a single statement in three columns and one total column. Rows in this order: **Sales, less Profit at the stated percentage, Total cost, less Separate expenses, Share of joint expenses** — and the share column must total the joint expenses given, ₹9,000 in the question set.
- The percentages of profit are **on sales**, not on cost, wherever the question says 'profits on each product as a percentage of sales'. Reading 33⅓% as a mark-up on cost changes every figure. Where a question does say the profit is on **cost price**, as in the Study Material's own by-product illustration, take the fraction of cost instead — ₹10,000 of sales at a profit of 33⅓% on cost gives a profit of ₹2,500, not ₹3,333.
- Six marks buys a statement and a one-line conclusion. Do not open with a paragraph defining joint products; the question asked you to apportion.

PQ 3.2 • PYQ 2017-Dec [4] (b) • 6M • Pg 488

PRAC
Practical**Medium****APPLYING** take the provision to the facts • 10 questions

- Ten of the topic's thirteen Section B questions sit at this level and they fall into three shapes, so identify the shape before you write. **Reverse cost** questions give profit and selling expenses as percentages of sales and ask you to work backwards to the joint cost. **Net realisable value** questions give output, sales and separate costs and ask for the net income of each product, usually with a second part on selling at split-off. **Process account** questions — the oil-mill copra questions and the crude-oil chain — ask for the accounts themselves with by-product realisations credited.
- In a reverse cost question, keep the deduction order fixed and label each row: **Sales — Profit — Selling expenses — Post-separation cost — Share of joint cost**. Where the selling expenses are a percentage of the **cost of sales** they must be computed on the total and then apportioned in the given ratio before the post-separation cost comes out. The seven-mark 2025 June question and the seven-mark 2024 December question are the same problem on different figures.
- In the copra oil-mill questions, remember three treatments that the marks hang on: the **sale of sacks, of copra residue and of by-products is credited to the process in which it arises**; the **loss in weight is carried at nil value** as a balancing quantity; and the **factory expenses are apportioned on the basis of wages** before any of that. The transfer to the next process is then the balancing figure, and the rate per ton is worth quoting under the account.
- Where the question asks for **product-wise and overall profitability** as well as the allocation, a second statement is expected: sales, joint cost, post-separation cost, selling expenses, total cost and profit, product by product with a total column. Half the marks in the ten-mark 2015 question sit in that second statement, and it cannot be written until the first one balances.

PQ 3.4 • PYQ 2018-Dec [4] (b) • 7M • Pg 490

PRAC
Practical**Medium**

PQ 3.5 • PYQ 2019-Jun [4] (b) • 7M • Pg 492

PRAC
Practical**Medium**

PQ 3.6 • PYQ 2019-Dec [4] (a) • 7M • Pg 493

PRAC
Practical**Medium**

PQ 3.7 • PYQ 2022-Dec [4] (b) • 7M • Pg 494

PRAC
Practical**Medium**

PQ 3.8 • PYQ 2023-Jun [6] (a) • 7M • Pg 496

PRAC
Practical**Medium**

PQ 3.10 • PYQ 2024-Jun [5] (a) • 7M • Pg 499

PRAC
Practical**Medium**

PQ 3.11 • MQP 2024-Jun S1 [5] (a) • 7M • Pg 500

PRAC
Practical**Medium**

PQ 3.12 • MQP 2024-Dec S2 [5] (a) • 7M • Pg 501

PRAC
Practical**Medium**

PQ 3.13 • PYQ 2025-Jun [5] (a) • 7M • Pg 503

PRAC
Practical**Medium**

PQ 3.1 • PYQ 2015-Jun [2] (a) (i) • 10M • Pg 486

PRAC
Practical

Hard

EVALUATING judge and justify • 2 questions

- Both questions at this level are the same one — the seven-mark CBA Ltd question with the main product M and by-products B1 and B2 — and both put the judgement in the second half: if B1 is not processed further but sold at separation for ₹1,00,440 without selling expenses, **would you advise its disposal at this stage.** The apportionment in the first half is only the means to it.
- The comparison must be made on the same footing. Profit after further processing is the ₹24,000 already computed at 20% of sales; profit at separation is the **₹1,00,440 offer less B1's apportioned share of joint cost of ₹68,440**, that is ₹32,000. The advice is to sell at separation, and the **₹8,000 improvement** is the sentence that earns the evaluation mark. An answer that stops at the two profit figures without stating the difference and the recommendation is not answering the question asked.
- Do not re-apportion the joint cost for the alternative course. B1's share of ₹68,440 stands whichever way it is sold, which is precisely why the incremental comparison works.

PQ 3.3 • PYQ 2018-Jun [4] (b) • 7M • Pg 488

PRAC
Practical

Hard

PQ 3.9 • MQP 2023-Dec S2 [5] (a) • 7M • Pg 498

PRAC
Practical

Hard

Topic 4: Comprehensive Questions

CMAL2P8-C5-U5.3-T04

FREQUENCY TABLE CORRECTED — the Scanner's table at page 462 counts 8 against this topic; the book carries 5 appearances — the questions printed under it and the earlier sittings listed against them. These notes follow the book.

Read first Read §5.4.3 Inter Process Profits, ICAI Study Material Module 5, pages 353–357 — the reason for transferring at cost plus a profit, the three-column ledger form and the formula for the provision for unrealised profit on pages 353–354, Illustration 25 with the statement of provision on pages 354–356, and Illustration 26 on page 356 for working the input quantity back from the final output.

NOTES

Inter-process profit — what it is and why it complicates the accounts: the output of one process is normally transferred to the next **at cost price**, but it is sometimes transferred at **cost plus a certain percentage of profit**, so that each process is charged **not at the transferor's cost but at its market selling price** and can be treated as a **profit centre**. The gain is that the **profitability of each process can be judged**; the cost is that the **closing stock and the unrealised profit** become difficult to value. The difference between the two sides of such a process account is the profit or loss of that process and is transferred to the Profit and Loss Account.

Why a provision is needed: the stocks at the beginning and at the end **contain an element of unrealised profit**, which must be **written back**. **Profit is realised only on the goods sold**; if the profit element in the closing inventory exceeds that in the opening inventory the period's profit is **overstated**, and the reverse where it is smaller. The whole task is therefore to compute the profit element inside the inventories and provide against it, so as to arrive at the **net realised profit** for the period.

Dr. — Process II A/c	Cost ₹	Profit ₹	Total ₹
To Opening Stock	the cost element	the profit brought in with it	its transfer value
To Preceding Process A/c	the cost column of the transfer	the profit column of the transfer	the transfer price
To Direct Material and Direct Wages added in this process	in full	nil	the same figure
Less: Closing Stock	the cost element	the profit element, by the formula below	its valuation
= Prime Cost, then add Production Overheads	in full	nil	the same figure
= Total Cost, then add Profit at the stated percentage on cost	nil	the profit loaded on transfer	the profit loaded on transfer
Cr. — By Next Process A/c (or Finished Stock A/c)	total of the cost column	total of the profit column	the transfer price to the next process

The provision formula, and how it is applied: the provision for unrealised profit on the closing stock of a process is **Value of Closing Stock × (Total Profit on the Process ÷ Total Cost to the Process)**. In the worked solution the fraction taken is the **profit column total over the total column** — $\text{₹}40,000 \div \text{₹}2,40,000 \times \text{₹}12,000 = \text{₹}2,000$ for Process II, and $\text{₹}2,42,000 \div \text{₹}6,60,000 \times \text{₹}30,000 = \text{₹}11,000$ for the finished stock. State the fraction you are using in the working; the profit and total columns are taken **before** the closing stock is deducted.

The statement that closes the answer: set out the **provision to be made to offset the inter-process profits added**, process by process — Nil for Process I, because its stock carries no profit brought in, then the provision for each later process and for the finished stock, with a total. In the illustration that is Nil, ₹2,000, ₹2,000 and ₹11,000, a total of **₹15,000**. Where the question gives the **inter-process profit included in the opening stock**, that figure is entered in the profit column

of the opening stock row and needs no computation.

Stock valuation instructions must be read literally. Where the question says **stock in process is valued at prime cost and finished stock at the price at which it is received from the last process**, the closing stock is deducted **before** the production overheads are added, which is why the process accounts show 'Less: Closing Stock' between the wages line and the overheads line. Where the finished stock account is asked for, it takes the opening stock and the transfer from the last process in three columns, deducts the closing stock, and the balance of the profit column against sales is the **realised profit**.

Working the input quantity back from the final output, where only the finished quantity is given: assume a convenient input, run it through the stated loss percentages, and scale. On losses of 25%, 20%, 20% and 16⅔% an input of 100 kg gives **75, 60, 48 and 40 kg** through Processes I to IV; so an output of 40,000 kg needs $40,000 \times 100 \div 40 = 1,00,000$ kg of raw material, costing ₹5,00,000 at ₹5 per kg. State the multiplier — the input is **2.5 times** the final output — because it gives the sensitivity of the whole chain: **every rupee of variation in the raw material cost moves the final cost by ₹2.50**.

Process accounts carrying their own finished stock accounts: where a process has opening and closing stocks of finished product and the question says stocks are **valued and transferred at weighted average cost**, the process account is closed to a **Process Finished Stock Account**, not straight to the next process. That account is debited with the opening stock at its given value and with the period's output at the process rate, and the **weighted average rate is total value ÷ total units** — $₹55,950 \div 45,000 = ₹1.243$ — which is then applied both to the transfer to the next process and to the closing stock. Two extra accounts, and both belong in the answer.

Where the question ends in a selling price rather than a balance: the last process gives the **works cost per unit**, and the selling price is that cost plus the stated margin. Read whether the margin is **on cost** — 20% over works cost means multiplying by 1.20 — or **on selling price** — 20% on sales means dividing the cost by 0.80. The two are different sums, and every figure below the margin changes with it.

Finished stock held back inside a process: where a stated quantity of a process output is **held back** instead of being passed on, it is credited to the process account at the **same cost per unit** as the transfer, so that the quantity column still balances against the input, and it is the **transferred quantity** — not the total good output — that goes into the next process's debit. The cost per unit is still struck on **expected output**, that is input less normal loss, however much is held back.

Where a process account and an equivalent production statement have to be produced together: take them in the fixed order — **statement of equivalent production, statement of cost per equivalent unit, valuation of work in progress and of abnormal loss, then the process account** — even where the question numbers the requirements differently. Note the two treatments that comprehensive questions add to the ordinary equivalent production drill: **scrapped units are given their own degree of completion**, commonly 50% of labour and overheads, and the **scrap realisation of the normal loss is deducted from the cost of one element**

— from overheads or from material, as that illustration's working shows — before that element's rate is struck.

OBJECTIVE recognise the right answer — Section A of the Scanner, 1 and 2 marks • 2 questions

- Two objectives are carried here and neither belongs to the topic in substance. **Chemical works, soap making and milk dairy production are examples of process costing** is true, and is the industry list to memorise alongside oil refining, paint and food and drink.
- The second, on the basis of classification used by **marginal costing**, is a Chapter 6 question printed in this chapter's Section A. The answer is **behaviour-wise** — fixed against variable — as against element-wise, function-wise or identifiability-wise. Learn it where it stands rather than looking for a process-costing reading of it.

OQ • MQP 2023-Jun S2 [1] (a) (vi) • 1M • Pg 468

OQ
Objective

Easy

OQ • MQP 2023-Jun S2 [1] (b) (vi) • 1M • Pg 468

OQ
Objective

Easy

REMEMBERING recall and reproduce • 1 question

- The twelve-mark case-scenario question on the limestone crushing process is worth more than any other single question in the unit and is answered in four short parts, exactly as it asks: **equivalent production of material and of labour, cost per unit of each, the value of the closing work in progress, and the amount transferred to the next process.**
- Its whole difficulty is one line: with 288 tons put in and 15 tons still in process 40% complete, the equivalent units are **288 for material** because all the material was introduced, and **$(288 - 15) + (15 \times 40\%) = 279$ for labour and overheads**. Every later figure follows from those two, so write them out and label them before computing any rate.
- Twelve marks in four parts means three marks a part. Answer each in two or three lines with the arithmetic shown; there is no account to draw unless the last part asks for one.

PQ 4.2 • PYQ 2021-Dec [1] • 12M • Pg 506

PRAC
Practical

Hard

APPLYING take the provision to the facts • 4 questions

- Four questions sit here and they are the whole-chain questions of the unit — two copra oil-mill process accounts, a two-process account ending in a selling price, and a three-process account with stock held back. In each, the requirement names the accounts; produce all of them and nothing else.
- The two-process question that ends in **determine the selling price per unit of the end product** is worked from the last process's transfer rate: cost per unit of the warehouse transfer, then the price that yields **20% on selling price**, that is $\text{cost} \div 0.80$. The three-process question is the same shape but the margin is **20% over works cost**. Read the preposition — 'over its works cost' and 'on selling price' are different sums.

- In the process accounts that carry a normal loss with no realisable value, the normal loss units still appear in the quantity column at **nil value**, and the cost per unit is still struck on **input less normal loss**. Candidates who leave the loss out of the quantity column find their two sides disagreeing by exactly the loss.
- Where a comprehensive question mixes equivalent production with abnormal loss, keep the two rates apart: the **element-wise** rates come from the statement of cost, and it is those rates — not a single average — that value the closing work in progress and the abnormal loss. The eight-mark 2019 December question asks in terms for **equivalent production, cost per completed unit and the value of the work in progress** before it asks for the account.

PQ 4.4 • MQP 2023-Dec S1 [5] (a) • 7M • Pg 510	PRAC Practical	Medium
PQ 4.5 • MQP 2023-Dec S2 [4] (b) • 7M • Pg 511	PRAC Practical	Medium
PQ 4.1 • PYQ 2019-Dec [4] (b) • 8M • Pg 504	PRAC Practical	Hard
PQ 4.3 • MQP 2023-Jun S1 [6] (a) • 8M • Pg 508	PRAC Practical	Hard