10 CHAPTER

Process Costing

Process Costing	• This method is used ascertain cost of a product at each process or stage of manufacture. • It is applied in case of industries where products are manufactured in stages, i.e. output of one process becomes the input of the subsequent process. • Costs are computed by preparing a process account for each process separately.
Normal Wastage	• It is the loss of material which is inherent in the nature of work and is unavoidable. • Such wastage can be estimated in advance on the basis of past experience or technical specifications. • The cost of normal wastage is absorbed by good production units of the process and the cost per unit of good production is increased accordingly. • It can be of three varieties: ➢ Normal loss in nature of weight loss ➢ Normal loss having some realizable value ➢ Normal loss requiring disposal cost to be incurred • Normal cost per unit $= \frac{\text{Total Cost} - \text{Scrap Value of Normal Loss (if any)}}{\text{Total Units} - \text{Normal Loss Units}}$
Abnormal Wastage	• It is a loss which is over and above the normal loss. • It is avoidable in nature and is not inherent in the manufacturing operations. • It may occur due to carelessness of workers, bad plant, design, etc. • The units of abnormal wastage are valued at normal cost per unit and debited to the separate account which is known as abnormal wastage account. • If the abnormal loss fetches some value, the same is credited to abnormal wastage account. • The balance of abnormal loss account is transferred to Costing P&L Account.

Abnormal Gain	• These are the units of goods produced over and above the normal output. • These are valued at normal cost per unit and credited to the abnormal gain account. • The loss of scrap of normal loss due to being converted into abnormal gain units of such products is debited to abnormal gain account. • The balance of abnormal gain account is transferred to Costing P&L Account.
Operation Costing	• It is refinement of process costing and is concerned with the determination of cost of each operation. • It is used in those industries where a process consist of distinct operations. • It offers better control and facilitates, the computation of unit operation cost at the end of each operation.
Equivalent Units	• It represents the incomplete production units expressed in terms of equivalent completed units. • It is calculated as follows: ➢ Compute the number of physical units of closing work in progress ➢ Estimate the percentage of completion of work in progress for various elements of cost viz. materials, labour and overheads ➢ Compute equivalent completed units = Physical units × Percentage of completion
Inter-Process Profit	• In some process the output of one process is transferred to the next not at cost but at market value or cost plus a percentage of profit and the difference between cost and the transfer price is known as inter-process profits. • **Advantages** ➢ Comparison between the cost and market price at the stage of completion is facilitated. ➢ Each process is made to stand by itself as to the profitability. • **Disadvantages** ➢ The use of inter-process profits involve complications. ➢ The system shows profits which are not realized because of stock not sold out.

PRACTICAL QUESTIONS

1. From the following data, prepare process accounts indicating the cost of each process and the total cost. The total units that pass through each process were 240 for the period. **[SM]**

	Process 1 (₹)	Process 2 (₹)	Process 3 (₹)
Material	1,50,000	50,000	20,000
Labour	80,000	2,00,000	60,000
Other expenses	26,000	72,000	25,000

Indirect expenses amounting to ₹85,000 may be apportioned on the basis of wages. There was no opening or closing stock.

Ans. ₹2,76,000; ₹6,48,000; ₹7,68,000.

2. A product passes from Process–I and Process-II. Materials issued to Process-I amounted to ₹40,000, Wages ₹30,000 and manufacturing overheads were ₹27,000. Normal loss anticipated was 5% of input. 4,750 units of output were produced and transferred out from Process-I. There were no opening stocks. Input of raw material issued to Process-I were 5,000 units. Scrap has realisable value of ₹2 per unit. You are required to show Process-I account, value of normal loss and units transferred to Process-II. **[SM]**

3. A product passes from Process–I and Process-II. Materials issued to Process-I amounted to ₹40,000, Wages ₹30,000 and manufacturing overheads were ₹27,000. Normal loss anticipated was 5% of input. 4,550 units of output were produced and transferred out from Process-I. There were no opening stocks. Input of raw material issued to Process-I were 5,000 units. Scrap has realisable value of ₹2 per unit. You are required to show Process-I account, value of normal loss, value of abnormal loss/gain and units transferred to Process-II. **[SM]**

4. A product passes from Process–I and Process-II. Materials issued to Process-I amounted to ₹40,000, Wages ₹30,000 and manufacturing overheads were ₹27,000. Normal loss anticipated was 5% of input. 4,850 units of output were produced and transferred out from Process-I. There were no opening stocks. Input of raw material issued to Process-I were 5,000 units. Scrap has realisable value of ₹2 per unit. You are required to show Process-I account, value of normal loss, value of abnormal loss/gain and units transferred to Process-II. **[SM]**

5. A product passes through three processes, A, B and C. The normal wastage of each process is as follows:

Process A – 3 per cent

Process B – 5 per cent

Process C – 8 per cent

Wastage of process A was sold at 25 paise per unit, that of process B at 50 paise per unit and that of Process C at ₹1 per unit. 10,000 units were issued to Process A in the beginning of October at a cost of ₹1 per unit. The other expenses were as follows:

	Process A	Process B	Process C
	₹	₹	₹
Sundry Materials	1,000	1,500	500
Labour	5,000	8,000	6,500
Direct expenses	1,050	1,188	2,009

Actual output was:

Process A	9,500 units
Process B	9,100 units
Process C	8,100 units

Prepare the Process Accounts, assuming that there was no opening or closing stocks. Also give the Abnormal Wastage and Abnormal Effective Accounts.

Ans. ₹1.75; ₹3; ₹4.25.

6. A product passes through three processes – A, B and C. The details of expenses incurred on the three processes during the year were as under:

Process	A	B	C
Units issued/introduced cost per unit ₹100	10,000		
	₹	₹	₹
Sundry Materials	10,000	15,000	5,000
Labour	30,000	80,000	65,000
Direct Expenses	6,000	18,150	27,200
Selling price per unit of output	120	165	250

Management expenses during the year were ₹80,000 and selling expenses were ₹50,000. These are not allocable to the processes.

Actual output of the three processes was:

A – 9,300 units, B – 5,400 units and C – 2,100 units. Two thirds of the output of Process A and one – half of the output of Process B was passed on to the next process and the balance was sold. The entire output of Process C was sold.

The normal loss of the three process, calculated on the input of every process was: Process A – 5%, Process B – 15% and Process C – 20%. The loss of Process A was sold at ₹2 per unit, that of B at ₹5 per unit and of Process C at ₹10 per unit.

Prepare the three processes accounts and the Profit and Loss Account.

Ans. Loss ₹32,450.

7. The input to a purifying process was 16,000 kgs of basic material purchased @ ₹1.20 per kg. Process wages amounted to ₹720 and overhead was applied @ 240% of the labour cost. Indirect materials of negligible weight were introduced into the process at cost of ₹336. The actual output from the process weighed 15,000 kgs. The normal yield of the process is 92%. Any difference in weight between the input of basic material and output of purified material (product) is sold @ ₹0.50 per kg. The process is prepared under a license which provides for the royalty @ ₹0.15 per kg of the purified material produced. Prepare:

(a) Purifying process account
(b) Normal wastage account
(c) Abnormal wastage/yield account
(d) Royalty payable account

Ans. ₹1.60.

8. The following data are available pertaining to a product after passing through two processes A and B:

Output transferred to process C from Process B 9,120 units for ₹49,263

Expenses incurred in Process C:

Sundry Materials ₹1,480

Direct labour ₹6,500

Direct Expenses ₹1,605

The wastage of process C is sold at ₹1.00 per unit. The overhead charges were 168% of direct labour. The final product was sold at ₹10.00 per unit fetching a profit of 20% on sales. Find the percentage of wastage in process C and prepare Process C Account.

Ans. 5%.

9. An article passes through three successive operations from the raw material to the finished product stage. The following data are available from the production records of a particular month:

Operation No. Input	No. of Pcs. Input	No. of Pcs. Rejected	No. of Pcs. Output
1	60,000	20,000	40,000
2	66,000	6,000	60,000
3	48,000	8,000	40,000

(i) Determine the input required in the first operation in number of pieces in order to obtain finished output of 100 pieces after the last operation.

(ii) Calculate the cost of raw material required to produce one piece of finished product, given that weight of the finished piece is 0.10 kg and the price of raw material is ₹20 per kg.

Ans. (i) 198 units; (ii) ₹3.96.

10. The following information is extracted from the cost accounts of a factory producing a commodity in the manufacture of which three processes are involved. Prepare process accounts showing the cost of the output and the cost per unit at each stage of manufacture. You may presume that there is no WIP.

	Process 1	Process 2	Process 3
	(₹)	(₹)	(₹)
Direct wages	2,500	5,000	6,500
Machine Expenses	1,400	1,200	1,200
Factory Overheads	1,100	1,550	900
Raw materials consume	8,000	—	—
	Units	**Units**	**Units**
Production (Gross)	2,750	—	—
Wastage	150	210	200
Opening stock of raw materials	—	250	500
Closing stock of raw materials	—	440	100

Ans. ₹5; ₹9; ₹13.33.

11. The product of a company passes through three different processes – A, B and C. It is ascertained from past experience that wastage in each process is incurred as under:

Process A : 2%
Process B : 5%
Process C : 10%

The percentage of wastage in each case is computed on the basis of number of units entering the process concerned.

The wastage of each process has a scrap value. The wastage of process A and B is sold at ₹1 per unit and that of process C at ₹4 per unit. The company gives you the following information for the month of July:

2,000 units of crude material were introduced in process A at a cost of ₹8 per unit. Besides this the following were other expenses:

	Process A ₹	Process B ₹	Process C ₹
Material consumed	8,000	3,000	2,000
Direct Labour	12,000	8,000	6,000
Work Expenses	2,000	1,000	3,000
	Units	**Units**	**Units**
Output	1,950	1,925	1,590
Stock : July 1	200	300	500
July 31	150	400	
Stock valuation on July 1 per unit	19	27	36.5

Stocks on 31st July are to be valued at cost as shown by months' production accounts. Prepare the Process Accounts.

Ans. ₹19.36734; ₹26.61105; ₹35.90134.

12. A product passes through two processes A and B. From the following particulars relating to process A, find out equivalent production and prepare the relevant accounts.

Units introduced in process A – 2,000 valued at ₹5,800

Amount spent as labour and production overhead: ₹3,340 and ₹1,670 respectively

Direct materials introduced during the process – ₹1,440

1,400 completed units were produced in process A and transferred to process B. Incomplete units 460. Units scrapped 140 and sold at ₹1 per unit. The normal process loss was estimated at 5% on input. It was estimated that incomplete units had reached a stage in production as follows:

Materials (including units introduced)	75% completed
Labour	50% completed
Overhead	50% completed

13. With the help of the following information, prepare Process Account, giving full working notes:

[Nov 2011]

Opening stock of work in progress: 1,000 units at ₹10,000
Degree of completion: Material 100%, Labour 50%, Overhead 40%
Introduced during the process: 10,000 units at ₹37,800
Wages: ₹17,840
Overheads: ₹8,840
Scrap 1,500 units
Degree of Completion: Materials 100%, Labour 80%, Overheads 60%
Closing work in progress: 1,000 units
Degree of completion: Materials 100%, Labour 60%, Overheads 50%
Normal loss 10% of total input
Scrap value ₹2 per unit

14. A Company manufacturing chemical solution that passes through a number of processes uses FIFO method to value Work-in-Process and Finished Goods. At the end of month of September, a fire occurred in the factory and some papers containing records of the process' operations for the month were destroyed. The Company desires to prepare process accounts for the month during which the fire occurred. Some information could be gathered as to operating activities as under:

- Opening Work-in-process at the beginning of the month of 1,100 litres - 40% complete for labour and 60% complete for Overheads. Opening Work-in-Process was valued at ₹48,260.
- Closing Work-in-Process at the end of the month was 220 litres, 40% complete for Labour and 30% complete for Overheads.
- Normal loss is 10% of input and total losses during the month were 2,200 litres partly due to firm, damage. Assume degree of completion of abnormal losses is 100%.
- Output sent to Finished Goods Warehouse was 5,900 litres
- Losses have a scrap value of ₹20 per litre.
- All Raw Materials are added at the commencement of the process.
- The Cost per equivalent Unit (litre) is ₹53 for the month consisting:

	₹
Raw Material	35
Labour	8
Overheads	10
Total	53

You are required to:

(i) Calculate the quantity (in litres) of Raw Material input during the month.

(ii) Calculate the quantity (in litres) of Normal Loss and Abnormal loss/Gain experienced in the month.

(iii) Calculate the values of Raw Materials, Labour and Overheads added to the process during the month.

(iv) Prepare the Process Account for the month.

15. From the following data related to Process X, prepare process X account:

(a) Opening work in progress: 800 units valued as under:
Material = ₹3,200
Labour = ₹960
Overhead = ₹320

(b) Input of material = 9200 units

(c) Current cost: Material = ₹36,800
Labour = ₹16,740
Overhead = ₹7,930

(d) Normal loss = 8% of total input

(e) Scrap realized ₹40 per 10 units

(f) Closing work in progress = 900 units

(g) Transfer to next process = 7,900 units

(h) Degree of completion:

	Closing Stock	Scrap
Material	100%	100%
Labour	70%	80%
Overhead	30%	20%

16. The following data relate to Process Q:

(i) Opening work in process 4,000 units
Degree of completion:

Materials	100%	₹24,000
Labour	60%	₹14,400
Overheads	60%	₹7,200

(ii) Received during the month of April from Process P: 40,000 units for ₹1,71,000

(iii) Expenses incurred in Process Q during the month:

Material	₹79,000
Labour	₹1,38,230
Overheads	₹69,120

(iv) Closing work in process 3,000 units
Degree of completion: Material 100%; Labour & Overheads 50%

(v) Units scrapped 4,000 units
Degree of completion: Material 100%; Labour & Overheads 80%

(vi) Normal Loss: 5% of current input

(vii) Spoiled goods realized ₹1.50 each on sale

(viii) Completed units are transferred to warehouse

You are required to prepare:

(*a*) Equivalent units statement

(*b*) Statement of cost per equivalent unit and total costs

(*c*) Process Q Account

(*d*) Any other account necessary

17. A company produces a component, which passes through two processes. During the month of April, materials for 40,000 components were put into Process I of which 30,000 were completed and transferred to Process II. Those not transferred to Process II were 100% complete as to materials cost and 50% complete as to labour and overheads cost. The Process I cost incurred were as follows: **[SM]**

Direct Materials	₹15,000
Direct Wages	₹18,000
Factory Overheads	₹12,000

Of those transferred to Process II, 28,000 units were completed and transferred to finished goods stores. There was a normal loss with no salvage value of 200 units in Process II. There were 1,800 units, remained unfinished in the process with 100% complete as to materials and 25% complete as regard to wages and overheads.

No further process material costs occur after introduction at the first process until the end of the second process, when protective packing is applied to the completed components. The process and packing costs incurred at the end of the Process II were:

Packing Material	₹4,000
Direct Wages	₹3,500
Factory Overheads	₹4,500

Required:

(a) Prepare statement of equivalent production, cost per unit and Process I A/c.

(b) Prepare statement of equivalent production, cost per unit and Process II A/c.

18. SK Ltd. produces a product which passes through two processes before it is completed and transferred to finished stock. The following data relate to the month of December: **[SM]**

	Process I	Process II	Finished Stock
Opening stock	₹7,500	₹9,000	₹22,500
Direct materials	15,000	15,750	
Direct wages	11,200	11,250	
Factory overheads	10,500	4,500	

Closing stock	3,700	4,500	11,250
Inter process profit included in opening stock	—	1,500	8,250

Output of process I is transferred to Process II at 25% profit on the transfer price. Output of Process II is transferred to finished stock at 20% profit on the transfer price. Stocks in process are valued at prime cost. Finished stock is valued at the price at which it is received from Process II. Sales during the period are ₹1,40,000. Prepare process accounts and finished stock account showing the profit element at each stage.

PRACTICE QUESTIONS

19. A product passes through three process. The output of each process is treated as the raw material of the next process to which it is transferred and output of the third process is transferred to finished stock. **[SM]**

	Process – I (₹)	Process – II (₹)	Process – III (₹)
Materials issued	40,000	20,000	10,000
Labour	6,000	4,000	1,000
Manufacturing overhead	10,000	10,000	15,000

10,000 units have been issued to the Process-I and after processing, the output of each process is as under:

Process	Output	Normal loss
Process – I	9,750 units	2%
Process – II	9,400 units	5%
Process – III	8,000 units	10%

No stocks of material or of work-in-process was left at the end. Calculate the cost of the finished articles.

Ans. ₹5.7142; ₹9.6862; ₹13.8358.

20. SK Ltd. processes product Z through two distinct processes – Process I and process II. On completion , it is transferred to finished stock. From the following information for the current year, prepare Process I and Process II and Finished Stock A/c. **[SM, Nov 2019]**

Particulars	Process – I	Process - II
Raw materials used	7,500 units	-
Raw materials cost per unit	₹60	-
Transfer to next process/finished stock	7,050 units	6,525 units
Normal loss (on inputs)	5%	10%

Direct wages	₹1,35,750	₹,129,250
Direct expenses	60% of direct wages	65% of direct wages
Manufacturing overheads	20% of direct wages	15% of direct wages
Realisable value of scrap per unit	₹12.50	₹37.50

6,000 units of finished goods were sold at a profit of 15% on cost. Assume that there was no opening or closing stock of work-in-process.

Ans. ₹96.7947; ₹140.0496; Profit = ₹1,38,182.

21. SK Pvt. Ltd. produces a product "SKY" which passes through two processes, viz. Process-A and Process-B. The details for the year ending 31st March are as follows:

	Process A	Process B
40,000 Units introduced at a cost of	₹3,60,000	-
Material Consumed	₹2,42,000	2,25,000
Direct Wages	₹2,58,000	1,90,000
Manufacturing Expenses	₹1,96,000	1,23,720
Output in Units	37,000	27,000
Normal Wastage of Input	5%	10%
Scrap Value (per unit)	₹15	20
Selling Price (per unit)	₹37	61

Additional Information:

(a) 80% of the output of Process-A, was passed on to the next process and the balance was sold. The entire output of Process- B was sold.

(b) Indirect expenses for the year was ₹4,48,080.

(c) It is assumed that Process-A and Process-B are not responsibility centre.

Required:

(i) Prepare Process-A and Process-B Account.

(ii) Prepare Profit & Loss Account showing the net profit or net loss for the year.

Ans. (a) ₹27; ₹48; (b) loss ₹25,000.

22. The product of a manufacturing concern passes through two processes A and B and then to finished stock. It is ascertained that in each process normally 5% of the total weight is lost and 10% is scrap which from processes A and B realizes ₹80 per tonne and ₹200 per tonne respectively. The following are the figures relating to both the processes:

	Process A	Process B
Material in tonnes	1,000	70
Cost of Materials in rupees per tonne	125	200

Wages in rupees	28,000	10,000
Manufacturing expenses in rupees	8,000	5,250
Output in tonnes	830	780

Prepare Process Cost Accounts showing cost per tonne of each process. There was no stock or work-in-progress in any process.

Ans. ₹180; ₹210.

23. M Ltd. produces a product-X, which passes through three processes, I, II and III. In Process-III a by-product arises, which after further processing at a cost of ₹85 per unit, product Z is produced. The information related for the month of August 2020 is as follows: **[RTP Nov 2020]**

	Process-I	Process-II	Process-III
Normal loss	5%	10%	5%
Materials introduced (7,000 units)	1,40,000	-	-
Other materials added	62,000	1,36,000	84,200
Direct wages	42,000	54,000	48,000
Direct expenses	14,000	16,000	14,000

Production overhead for the month is ₹2,88,000, which is absorbed as a percentage of direct wages.
The scrapes are sold at ₹10 per unit
Product-Z can be sold at ₹135 per unit with a selling cost of ₹15 per unit
No. of units produced:
Process-I- 6,600; Process-II- 5,200, Process-III- 4,800 and Product-Z- 600
There is not stock at the beginning and end of the month.
You are required to PREPARE accounts for:

(i) Process-I, II and III
(ii) By-product process.

Ans. ₹50.9022; ₹10.3089; ₹108.3089.

24. A Manufacturing unit manufactures a product 'XYZ' which passes through three distinct Processes – X, Y and Z. The following data is given: **[July 2021]**

	Process X	Process Y	Process Z
Material consumed (in ₹)	2,600	2,250	2,000
Direct wages (in ₹)	4,000	3,500	3,000

The total production overhead of ₹15,750 was recovered @ 150% of direct wages.

- 15,000 units at ₹2 each were introduced to process 'X'.
- The output of each process passes to the next process and finally, 12,000 units were transferred to Finished Stock Account from Process 'Z'.
- No stock of materials or work in progress was left at the end.

The following additional information is given:

Process	% of wastage to normal input	Value of Scrap per unit (₹)
X	6%	1.10
Y	?	2.00
Z	5%	1.00

You are required to:

(i) Find out the percentage of wastage in process 'Y', given that the output of process 'Y' is transferred to Process 'Z' at ₹4 per unit.

(ii) Prepare Process accounts for the three processes X, Y and Z.

Ans. (i) 13.44%; (ii) ₹2.95106; ₹4; ₹4.97715.

25. Following details have been provided by M/s AR Enterprises: **[Nov 2018]**

(i) Opening works-in-progress - 3,000 units (70% complete)

(ii) Units introduced during the year - 17,000 units

(iii) Cost of the process (for the period) - ₹33,12,720

(iv) Transferred to next process - 15,000 units

(v) Closing works-in-progress - 2,200 units (80% complete)

(vi) Normal loss is estimated at 12% of total input (including units in process in the beginning). Scraps realize ₹50 per unit. Scraps are 100% complete.

Using FIFO method, compute:

(i) Equivalent production

(ii) Cost per equivalent unit

26. Opening work-in-process 1,000 units (60% complete); Cost ₹1,10,000. Units introduced during the period 10,000 units; cost ₹19,30,000. Transferred to next process – 9,000 units. **[SM]**

Closing work-in-process – 800 units (75% complete), normal loss is estimated at 10% of total input including units in process at the beginning. Scraps realise ₹10 per unit. Scraps are 100% complete.

Using FIFO method, compute equivalent production and cost per equivalent unit. Also evaluate the output.

27. SK Ltd. uses process costing to manufacture water density sensors for hydro sector. The following information pertains to operations for the month of May.

Particulars	Units
Beginning WIP, May 1	16,000
Started in production during May	1,00,000
Completed production during May	92,000
Ending work in progress, May 31	24,000

The beginning work in progress was 60% complete for materials and 20% complete for conversion costs. The ending inventory was 90% complete for material and 40% complete for conversion costs.

Costs pertaining to the month of May are as follows:

Beginning inventory costs are material ₹27,670, direct labour ₹30,120 and factory overheads ₹12,720.

Cost incurred during May are material used ₹4,79,000, direct labour ₹1,82,880, factory overheads ₹3,91,160.

Calculate:

(a) Using the FIFO method, the equivalent units of production for material.

(b) Cost per equivalent unit for conversion cost.

28. A company who manufactures cricket bat buys wood as its direct material. The forming department processes the cricket bats and the cricket bats are then transferred to the finishing department where stickers are applied. The forming department began manufacturing 10,000 initial bats during the month of December for the first time and their cost is as follows:

Direct material	₹33,000
Conversion cost	₹17,000
Total	₹50,000

A total of 8,000 cricket bats were completed and transferred to the finishing department, the rest 2,000 were still in the forming process at the end of the month. All of the forming departments direct material were placed, but on average, only 25% of the conversion costs was applied to the ending work in progress inventory.

Calculate:

(a) Equivalent units of production for each cost.

(b) The conversion cost per equivalent units

(c) Cost of closing work in process (WIP) and finished products.

29. A product is manufactured in two sequential processes, namely Process-1 and Process-2. The following information relates to Process-1. At the beginning of June 2019, there were 1,000 WIP goods (60% completed in terms of conversion cost) in the inventory, which are valued at ₹2,86,020 (Material cost ₹2,55,000 and Conversion cost ₹31,020). Other information relating to Process-1 for the month of June 2019 is as follows: **[RTP Nov 2019]**

Cost of materials introduced – 40,000 units (₹)	96,80,000
Conversion cost added (₹)	18,42,000
Transferred to Process – 2 (units)	35,000
Closing WIP (Units) (60% completed in terms of conversion cost)	1,500

100% of materials are introduced to Process-1 at the beginning. Normal loss is estimated at 10% of input materials (excluding opening WIP). Loss is 60% completed in terms of Conversion cost.

Required:

(a) Prepare a statement of equivalent units using the weighted average cost method

(b) Calculate the value of output transferred to Process-2 and closing WIP.

30. ABC Ltd. produces an item which is completed in three processes – X, Y and Z. The following information is furnished for process X for the month of March, 2018: **[May 2018]**

Opening work-in-progress (5,000 units):

Materials	₹35,000

Labour	₹13,000
Overheads	₹25,000
Units introduced into process X (55,000 units):	
Materials	₹20,20,000
Labour	₹8,00,000
Overheads	₹13,30,000
Units scrapped: 5,000 units	
Degree of completion:	
Materials	100%
Labour & Overheads	60%
Closing work-in-progress (5,000 units):	
Degree of completion:	
Materials	100%
Labour & Overheads	60%

Units finished and transferred to Process Y: 50,000 units

Normal loss: 5% of total input (including opening works-in-progress) Scrapped units fetch ₹20 per unit.

Presuming that average method of inventory is used, prepare:

(i) Statement of Equivalent production

(ii) Statement of Cost for each element

(iii) Statement of distribution of cost

(iv) Abnormal loss account

31. Following information is available regarding Process-I for the month of February:

Production Record:	
Units in process as on 1st February	4,000
(All materials used, 25% complete for labour and overhead)	
New units introduced	16,000
Units completed	14,000
Units in process as on 28th February	6,000
(all materials used, 33-1/3% complete for labour and overheads)	
Cost Records:	
Work-in-process as on 1st February	(₹)
Materials	6,000
Labour	1,000
Overheads	1,000
	8,000
Cost during the month:	
Materials	25,600
Labour	15,000
Overheads	15,000
	55,600

Presuming that average method of inventory is used, prepare:

(a) Statement of equivalent production

(b) Statement showing cost for each element

(c) Statement of apportionment of cost

(d) Process cost account for Process-I

32. Following details are related to the work done in Process-I by SK Company during the month of March:

Opening work-process (2,000 units)	(₹)
Material	80,000
Labour	15,000
Overheads	45,000
Materials introduced in Process-I (38,000 units)	14,80,000
Direct Labour	3,59,000
Overheads	10,77,000
Units scrapped: 3,000 units	
Degree of completion:	
Materials	100%
Labour and overheads	80%
Closing work-in-process: 2,000 units	
Degree of completion:	
Materials	100%
Labour and overheads	80%

Units finished and transferred to Process-II: 35,000 units

Normal loss:

5% of total input including opening work-in-process.

Scrapped units fetch ₹20 per piece.

You are required to prepare using average method

(a) Statement of equivalent production

(b) Statement of cost

(c) Statement of distribution cost, and

(d) Process-I Account, Normal Loss Account and Abnormal Loss Account.

33. 'Healthy Sweets' is engaged in the manufacturing of jaggery. Its process involves sugarcane crushing for juice extraction, then filtration and boiling of juice along with some chemicals and then letting it cool to cut solidified jaggery blocks.

The main process of juice extraction (Process – I) is done in conventional crusher, which is then filtered and boiled (Process – II) in iron pots. The solidified jaggery blocks are then cut, packed and

dispatched. For manufacturing 10 kg of jaggery, 100 kg of sugarcane is required, which extracts only 45 litres of juice.

Following information regarding Process- I has been obtained from the manufacturing department of Healthy Sweets for the month of January:

	(₹)
Opening work-in-process (4,500 litre)	
Sugarcane	50,000
Labour	15,000
Overheads	45,000
Sugarcane introduced for juice extraction (1,00,000 kg)	5,00,000
Direct labour	2,00,000
Overheads	6,00,000
Abnormal loss: 1,000 kg	
Degree of completion:	
Sugarcane	100%
Labour and overheads	80%
Closing Work-in-Process: 9,000 litres	
Sugarcane	100%
Labour and overheads	80%
Extracted juice transferred for filtering and boiling: 39,500 litre	

(Consider mass of 1 litre of juice equivalent to 1 kg)

You are required to prepare using average method:

(a) Statement of equivalent production
(b) Statement of cost
(c) Statement of distribution cost, and
(d) Process – I Account

34. Following details are related to the work done in Process-I by ABC Ltd. during the month of May 2019: **[Nov 2020]**

	(₹)
Opening work-in-process (3,000 units)	
Materials	1,80,500
Labour	32,400
Overheads	90,000
Material introduced in Process-I (42,000 units)	36,04,000
Labour	4,50,000
Overheads	15,18,000

Units scrapped : 4,800 units

Degree of completion:

Materials : 100%

Labour & Overheads : 70%

Closing work-in-progress : 4,200 units

Degree of completion:

Materials : 100%

Labour & Overheads : 50%

Units finished and transferred to Process-II: 36,000 units

Normal loss:

4% of total input including opening work-in-process

Scrapped units fetch ₹62.50 per piece

Prepare:

(i) Statement of equivalent production

(ii) Statement of cost per equivalent unit

(iii) Process-I A/c

(iv) Normal loss account and

(v) Abnormal loss account

35. STG Limited is a manufacturer of chemical 'GK', which is required for industrial use. The complete production operation requires two processes. The raw material first passes through Process I, where chemical 'G' is produced. Following data is furnished for the month of April, 2022:

Particulars	(in kgs)
Opening work-in-progress quantity (Material 100% and conversion 50% complete)	9,500
Material input quantity	1,05,000
Work completed quantity	83,000
Closing work-in-progress quantity (Material 100% and conversion 60% complete)	16,500

You are further provided that:

Particulars	(in ₹)
Opening work-in-progress cost	
Material cost	29,500
Processing cost	14,750
Material input cost	3,34,500
Processing cost	2,53,100

Normal process loss may be estimated at be 10% of material input. It has no realizable value. Any loss over and above normal loss is considered to be 100% complete in material and processing.

The company transfers 60,000 kgs of output (Chemical G) from Process I to Process II for producing Chemical 'GK'. Further materials are added in Process II which yield 1.20 kg. of chemical 'GK' for every kg of chemical 'G' introduced. The chemicals transferred to Process II for further processing are then sold as chemical 'GK' for ₹10 per kg. Any quantity of output completed in Process I, are sold as chemical 'G' @ ₹9 per kg.

The monthly costs incurred in Process II (other than the cost of chemical 'G') are:

Input 60,000 kg of chemical 'G'

Material Cost	₹85,000
Processing costs	₹50,000

You are required:

(i) Prepare statement of Equivalent production and determine the cost per kg of chemical 'G' in Process I using the weighted average cost method.

(ii) Prepare a statement showing cost of Chemical 'G' transferred to Process II, cost of abnormal loss and cost of closing work-in-progress.

(iii) STG is considering the option to sell 60,000 kg of chemical 'G' of Process I without processing it further in Process-II. Will it be beneficial for the company over the current pattern of processing 60,000 kg in process-II?

(Note: You are not required to prepare Process Account)

36. Aditya Agro Ltd. mixes powdered ingredients in two different processes to produce one product. The output of Process-I becomes the input of Process-II and the output of Process-II is transferred to the Packaging department. **[MTP Nay 2019]**

From the information given below, you are required to prepare accounts for Process-I, Process-II and Abnormal loss / gain to record the transactions for the month of February 2019.

Process-I

Input	
Material A	6,000 kilograms at ₹50 per kilogram
Material B	4,000 kilograms at ₹100 per kilogram
Labour	430 hours at ₹50 per hour
Normal Loss	5% of inputs. Scrap are disposed off at ₹16 per kilogram
Output	9,200 kilograms

There is no work-in-progress at the beginning or end of the month.

Process-II

Input	
Material C	6,600 kilograms at ₹125 per kilogram
Material D	4,200 kilograms at ₹75 per kilogram
Flavoring Essence	₹3,300

Labour	370 hours at ₹50 per hour
Normal Loss	5% of inputs with no disposal value
Output	18,000 kilograms

There is no work-in-process at the beginning of the month but 1,000 kilograms in process at the end of the month and estimated to be only 50% complete so far as labour and overhead were concerned.

Overheads of ₹92,000 incurred to be absorbed on the basis of labour hours.

37. KT Ltd. produces a product EMM which passes through two processes before it is completed and transferred to finished stock. The following data relate to May 2019. **[May 2019]**

Particulars	Process A	Process B	Finished Stock
Opening stock	₹5,000	₹5,500	₹10,000
Direct materials	9,000	9,500	
Direct wages	5,000	6,000	
Factory overheads	4,600	2,030	
Closing stock	2,000	2,490	5,000
Inter process profit included in opening stock	--	1,000	4,00

Output of Process A is transferred to Process B at 25% profit on the transfer price and output of Process B is transferred to finished stock at 20% profit on the transfer price. Stock in process is valued at prime cost. Finished stock is valued at the price at which it is received from Process B. Sales during the period are ₹75,000.

Prepare the process cost accounts and Finished stock account showing the profit element at each stage.

38. The product of a manufacturing concern passes through two processes A and B and then to finished stock. The details of expenses incurred on the two processes during the year were as under:

Particulars	Process A (₹)	Process B (₹)
Material	40,000	-
Labour	40,000	56,000
Overheads	16,000	40,000

On completion, the output of Process A is transferred to Process B at a price calculated to give a profit of 20% on the transfer price and the output of Process B is charged to finished stock at a profit of 25% on the transfer price. The finished stock department realized ₹ 4,00,000 for the finished goods received from Process B. You are asked to show process accounts and total profit, assuming that there was no opening or closing work-in-progress. **[MTP May 2024]**

Ans. Total Profit = ₹ 2,08,000

39. A product passes through Process-I. Input raw material issued were 8,000 units. Normal loss anticipated was 10% of input with realisable value of ₹ 5 per unit. 7,600 units of output were produced and transferred to next process. If the total cost incurred under Process-I was ₹ 40,000, then amount of abnormal gain/(loss) is:

(a) ₹ 2,000 (b) (₹ 5,000) (c) (₹ 2,500) (d) ₹ 2,000

Ans. (d) ₹ 2,000

40. Arnav Ltd. manufactures chemical solutions used in paint and adhesive products. Chemical solutions are produced in different processes. Some of the processes are hazardous in nature which may results in fire accidents.

At the end of the last month, one fire accident occurred in the factory. The fire destroyed some of the paper files containing records of the process operations for the month.

You being an associate to the Chief Manager (Finance), are assigned to prepare the process accounts for the month during which the fire occurred. From the documents and files of other sources, following information could be retrieved:

Opening work-in-process at the beginning of the month was 500 litres, 80% complete for labour and 60% complete for overheads. Opening work-in-process was valued at ₹ 2,78,000.

Closing work-in-process at the end of the month was 100 litres, 20% complete for labour and 10% complete for overheads.

Normal loss is 10% of input (fresh) and total losses during the month were 800 litres partly due to the fire damage.

Output transferred to finished goods was 3,400 litres.

Losses have a scrap value of ₹ 20 per litre.

All raw materials are added at the commencement of the process.

The cost per equivalent unit is ₹ 660 for the month made up as follows:

Raw Material ₹ 300 Labour ₹ 200 Overheads ₹ 160

The company uses FIFO method to value work-in-process and finished goods.

The following information are required for managerial decisions:

(i) How much quantity of raw material introduced during the month?

(a) 4,300 Litres (b) 3,500 Litres (c) 4,200 Litres (d) 3,800 Litres

(ii) The Quantity of normal loss and abnormal loss are:

(a) Normal loss- 380 litres & Abnormal loss- 420 litres

(b) Normal loss- 350 litres & Abnormal loss – 450 litres

(c) Normal loss- 430 litres & Abnormal loss – 370 litres

(d) Normal loss- 420 litres & Abnormal loss – 380 litres.

(iii) Value of raw material added to the process during the month is:

(a) ₹ 10,10,000 (b) ₹ 10,33,600 (c) ₹ 10,18,400 (d) ₹ 10,20,000

(iv) Value of labour and overhead in closing Work-in-process are:

(a) A. ₹ 4,000 & ₹ 1,600 respectively (b) ₹ 20,000 & ₹ 16,000 respectively

(c) ₹ 16,000 & ₹ 9,000 respectively (d) ₹ 13,200 & ₹ 6,600 respectively

(v) Value of output transferred to finished goods is:

(a) ₹ 22,57,200 (b) ₹ 20,06,400

(c) ₹ 22,44,000 (d) ₹ 19,27,200

Ans. (i) - (d), (ii) - (a), (iii) - (b), (iv) - (a), (v) - (c)

19.

Process - I Account

Particulars	Units	Amount	Particulars	Units	Amount
To Material	10,000	40,000	By Normal Loss A/c	200	-
To Labour	-	6,000	(10,000 × 2%)		
To Manufacturing OHs	-	10,000	By Abnormal loss A/c	50	286
			(50 × 5.7142)		
			By Process II A/c	9,750	55,714
			(9,750 × 5.7142)		
	10,000	56,000		10,000	56,000

Normal cost per unit = $\frac{56,000-0}{10,000-200} = \frac{56,000}{9,800}$ = ₹5.742

Process - II Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process I A/c	9,750	55,714	By Normal Loss A/c	488	-
To Material	-	20,000	(9,750× 5%)		
To Labour	-	4,000	By Process III A/c	9,400	91,051
To Direct Manufacturing OHs	-	10,000	(9,400 × 9.6862)		
To Abnormal gain A/c	138	1,337			
(138 × 9.6862)					
	9,888	91,051		9,888	91,051

Normal cost per unit = $\frac{89,714-0}{9,750-488}$ = ₹9.6862

Process - III Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process II A/c	9,400	91,051	By Normal Loss A/c	940	-
To Material	-	10,000	(9,400 × 10%)		
To Labour	-	1,000	By Abnormal loss A/c	460	6,364
To Manufacturing OHs	-	15,000	(460 × 13.8358)		
			By Finished Goods A/c	8,000	1,10,687

			(8,000 × 13.8358)		
	9,400	1,17,051		9,400	1,17,051

Normal cost per unit = $\frac{1,17,051-0}{9,400-940}$ = ₹13.8358

20.

Process - I Account

	Qty.	Amount		Qty.	Amount
To Raw material	7,500	4,50,000	By Normal Loss	375	4.688
To Direct wages		1,35,750	(5%×7,500 ₹12.5)		
To Direct expenses		81,450	By Abnormal Loss	75	7,259
(60% of direct wages)			(75 × 96.7947)		
To Manufacturing OHs		27,150	By Process II A/c	7,050	6,82,403
(20% of direct wages)			(7,050 × 96.7947)		
	7,500	6,94,350		7,500	6,94,350

Planned output – Process I = 7,500 – 375 = 7,125 units
Actual output = 7,050 units
Abnormal loss = (7,125 units – 7,050 units) 75 units.

Cost per unit = $\frac{6,94,350-4,688}{7,125}$ = ₹96.7947

Process - II Account

	Qty.	Amount		Qty.	Amount
To Process I	7,050	6,82,403	By Normal loss (10%)	705	26,438
To Direct wages		1,29,250	(7,050 × 10% × 37.5)		
To Direct Expenses		84,013	By Finished Stock A/c	6,525	9,13,824
(65% of direct wages)			(6,525 × 140.096		
To Manufacturing OHs		19,387			
To Abnormal gain	180	25,209			
(180 × 140.096)	7,230	9,40,262		7,230	9,40,262

Planned output of Process II = 7,050 – 705 = 6,345 units

Cost per unit = $\frac{9,15,053-26,438}{6,345}$ = ₹140.096

Abnormal gain = Actual output – Planned output = 6,525 – 6,345 = 180 units

Finished Stock Account

	Qty.	Amount		Qty.	Amount
To Process II	6,525	9,13,824	By Cost of Sales A/c	6,000	8,40,298
			By Balance c/d	525	73,526
	6,525	9,13,824		6,525	9,13,824

Income Statement

	Amount		Amount
To Cost of Sales	8,40,298	By Abnormal Gain	18,459
(6,000 × 140.096)		[180 × (140.0496 – 37.5)]	
To Abnormal loss	6,322	By Sales	9,66,343
[75 × (96.7947 – 12.50)]		(8,40,298 × 115%)	
To Net Profit	1,38,182		
	9,84,802		9,84,802

21.

Process- A Account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Input	40,000	3,60,000	By Normal Wastage (2,000 units × ₹15)	2,000	30,000
To Material	—	2,42,000	By Abnormal loss A/c (1,000 units × ₹27)	1,000	27,000
To Direct Wages	—	2,58,000	By Process B A/c (29,600 units × ₹27)	29,600	7,99,200
To Manufacturing Exp.	—	1,96,000	By Profit and Loss A/c (7,400 units × ₹27)	7,400	1,99,800
	40,000	10,56,000		40,000	10,56,000

Cost per unit = $\frac{10,56,000-30,000}{40,000-2,000}$ = ₹27

Process- B Account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Process- A A/c	29,600	7,99,200	By Normal wastage (2,960 units × ₹20)	2,960	59,200
To Material	—	2,25,000	By Profit & Loss A/c (27,000 units × ₹48)	27,000	12,96,000
To Direct Wages	—	1,90,000			

To Manufacturing Exp.	—	1,23,720			
To Abnormal Gain A/c (360 units × ₹48)	360	17,280			
	29,960	13,55,200		29,960	13,55,200

Cost per unit = $\frac{13,37,920 - 59,200}{29,600 - 2,960} = ₹48$

(i) **Profit & Loss Account**

Particulars	Amount (₹)	Particulars	Amount (₹)
To Process A A/c	1,99,800	By Sales:	
To Process B A/c	12,96,00	- Process A (7,400 units × ₹37)	2,73,800
To Abnormal loss A/c	12,000	- Process B (27,000 units × ₹61)	16,47,00
To Indirect Exp.	4,48,080	By Abnormal gain	10,080
		By Net loss	25,000
	19,55,880		19,55,880

Working notes:

Normal wastage (Loss) account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Process A A/c	2,000	30,000	By Abnormal Gain A/c (360units × ₹20)	360	7,200
To Process B A/c	2,960	59,200	By Bank (Sales)	4,600	82,000
	4,960	89,200		4,960	89,200

Abnormal loss account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Process A A/c	1,000	27,000	By Bank A/c (1,000 units × ₹15)	1,000	15,000
			By Profit & Loss A/c	—	12,000
	1,000	27,000		1,000	27,000

Abnormal Gain Account

Particulars	Units	Amount (₹)	Particulars	Units	Amount (₹)
To Normal Loss A/c (360 units × ₹20)	360	7,200	By Process B A/c	360	17,280
To Profit & Loss A/c		10,080			
	360	17,280		360	17,280

22. **Process - A Account**

Particulars	Units	Amount	Particulars	Units	Amount
To Material	1,000	1,25,000	By Normal loss A/c	50	-
To Wages	-	28,000	(Weight loss) (1,000 × 5%)		
To Manufacturing expenses	-	8,000	By Normal loss A/c	100	8,000
			(1,000 × 10% × 80)		
			By Abnormal loss A/c	20	3,600
			(20 × 180)		
			By Process B A/c	830	1,49,400
			(830 × 180)		
	1,000	1,61,000		1,000	1,61,000

Normal cost per unit = $\frac{1,61,000-8,000}{1,000-50-100} = \frac{1,53,000}{850} = ₹180$

Process - B Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process A A/c	830	1,49,400	By Normal loss A/c	45	-
To Material	70	14,000	(Weight loss) (900 × 5%)		
To Wages	-	10,000	By Normal loss A/c	90	18,000
To Manufacturing expenses	-	5,250	(900 × 10% × 200)		
To Abnormal Gain A/c	15	3,150	By Finished Goods A/c	780	1,63,800
(15 × 210)			(780 × 210)		
	915	1,81,800		915	1,81,800

Normal cost per unit = $\frac{1,78,650-18,000}{830+70-45-90} = \frac{1,60,650}{765} = ₹210$

23. (i) Process - I Account

Particulars	Units	Amount(₹)	Particulars	Units	Amount(₹)
To Material	7,000	1,40,000	By Normal loss (7,000 × 5% × ₹10)	350	3,500
To Other Material	--	62,000	By Abnormal loss A/c (50 × ₹50.9022)	50	2,545
To Direct Wages	--	42,000	By Process II A/c (6,600 × ₹50.9022)	6,600	3,35,955

To Direct Exp.	--	14,000			
To Prod. OHs (200% × ₹42,000)	--	84,000			
	7,000	3,42,000		7,000	3,42,000

$$\text{Cost per unit} = \frac{3,42,000 - 3,500}{7,000 - 350} = \frac{3,38,500}{6,650} = ₹50.9022$$

Process - II Account

Particulars	Units	Amount(₹)	Particulars	Units	Amount(₹)
To Process-I A/c	6,600	3,35,955	By Normal loss (6,600 × 10% × ₹10)	660	6,600
To Other Material	--	1,36,000	By Abnormal loss A/c (740 × ₹108.3089)	740	80,149
To Direct Wages	--	54,000	By Process III A/c (5,200 × ₹108.3089)	5,200	5,63,206
To Direct Exp.	--	16,000			
To Prod. OHs (200% × ₹54,000)	--	1,08,000			
	6,600	6,49,955		6,600	6,49,955

$$\text{Cost per unit} = \frac{6,49,955 - 6,600}{6,600 - 660} = \frac{6,43,355}{5,940} = ₹108.3089$$

Process - III Account

Particulars	Units	Amount(₹)	Particulars	Units	Amount(₹)
To Process-II A/c	5,200	5,63,206	By Normal loss (5,200 × 5% × ₹10)	260	2,600
To Other Material	--	84,200	By Product X A/c (4,800 × ₹180.1396)	4,800	8,64,870
To Direct Wages	--	48,000	By Product Z A/c [600 × (135-85-15)]	600	21,000
To Direct Exp.	--	14,000			
To Prod. OHs (200% × ₹48,000)	--	96,000			
To Ab. Gain (460 × ₹180.1396)					
	5,660	8,88,270		5,660	8,88,270

$$\text{Cost per unit} = \frac{8,05,406 - 2,600 - 21,000}{5,200 - 260 - 600} = \frac{7,81,806}{4,340} = ₹180.1396$$

(ii) By-Product Process Account

Particulars	Units	Amount(₹)	Particulars	Units	Amount(₹)
To Process-III A/c	600	21,000	By Product Z A/c	600	81,000
To Processing cost	--	51,000			
To Selling exp.	--	9,000			
	600	81,000		600	81,000

24.

(i) Let normal loss units in process Y = y

$$\text{Normal cost per unit of Process Y} = \frac{\text{Total Cost-Scrap value of normal loss}}{\text{Total units-Normal loss unit}}$$

$$4 = \frac{52,610 - 2y}{14,100 - y}$$

$$56,400 - 4y = 52,610 - 2y$$

$$2y = 3,790$$

$$y = 1,895$$

$$\text{Thus, Normal loss \% of process Y} = \frac{1,895}{14,100} \times 100 = 13.44\%$$

(ii) Process X Account

Particulars	Units	Amount	Particulars	Units	Amount
To Units Introduced	15,000	30,000	By Normal loss A/c	900	990
To Material consumed	-	2,600	(15,000 × 6% × 1.10)		
To Labour	-	4,000	By Process Y A/c	14,100	41,610
To Overheads	-	6,000			
(4,000 × 150%)	15,000	42,600		15,000	42,600

$$\text{Normal cost per unit} = \frac{42,600 - 990}{15,000 - 900} = \frac{41,610}{14,100} = ₹2.95106$$

Process Y Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process X A/c	14,100	41,610	By Normal loss A/c	1,895	3,790
To Material consumed	-	2,250	(Part (i))		
To Labour	-	3,500	By Process Z A/c	12,205	48,820
To Overheads	-	5,250			
(3,500 × 150%)	14,100	52,610		14,100	52,610

Process Z Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process Y A/c	12,205	48,820	By Normal loss A/c	610	610
To Material consumed	-	2,000	(12,205 × 5% × 1)		
To Labour	-	3,000	By Finished Stock A/c	12,000	59,725
To Overheads	-	4,500	(12,000 × 4.97715)		
(3,000 × 150%)					
To Abnormal Gain A/c	405	2,015			
(405 × 4.97715)	12,610	60,335		12,610	60,335

Normal cost per unit = $\frac{58,320-610}{12,205-610} = \frac{57,710}{11,595}$ = ₹4.97715

25.

Statement of Equivalent Production

Input		Output		Material	
				%	Units
Op. WIP	3,000	Op. WIP	3,000	30	900
Input	17,000	Introduced & Complete	12,000	100	12,000
		Transferred	15,000		
		Normal Loss (20,000×12%)	2,400	-	-
		Abnormal Loss (Bal. fig.)	400	100	400
		Closing WIP	2,200	80	1,760
	20,000		20,000		15,060

Statement of cost per equivalent production unit:

Cost of the Process	₹33,12,720
Less: Scrap value of normal loss (₹50 × 2,400)	(₹1,20,000)
Total Process Cost	₹31,92,720
Total equivalent units	15,060
Cost per equivalent production unit	₹212

26. **Statement of Equivalent Production**

Input		Output		Material	
				%	Units
Op. WIP	1,000	Op. WIP	1,000	40	400
Input	10,000	Introduced & Complete	8,000	100	8,000
		Transferred	9,000		
		Normal Loss (11,000×10%)	1,100	-	-
		Abnormal Loss (Bal. fig.)	100	100	100
		Closing WIP	800	75	600
	11,000		11,000		9,100

Statement of cost per equivalent production unit:

Cost of the Process	₹19,30,000
Less: Scrap value of normal loss (₹10 × 1,100)	(₹11,000)
Total Process Cost	₹19,19,000
Total equivalent units	9,100
Cost per equivalent production unit	₹210.88

Statement of Evaluation

Particulars	Equivalent Units	Cost per EU (₹)	Amount (₹)
Opening WIP completed during the period	400	210.88	84,352
Add: WIP at beginning	-	-	1,10,000
Completed cost of 1,000 units of Op. WIP	1,000	194.35	1,94,352
Completely processed units	8,000	210.88	16,87,040
Abnormal loss	100	210.88	21,088
Closing WIP	600	210.88	1,26,528

27.

(i) Statement of Equivalent Production

Input		Output		Material		Conversion cost	
				%	Units	%	Units
Op. WIP	16,000	Op. WIP	16,000	40	6,400	80	12,800
Input	1,00,000	Introduced & Complete	76,000	100	76,000	100	76,000

	Transferred	92,000				
	Closing WIP	24,000	90	21,600	40	9,.600
1,16,000		1,16,000		1,04,000		98,400

(ii) Statement of cost per equivalent unit for conversion costs

Direct labour	₹1,82,880
Factory overheads	₹3,91,160
Total	₹5,74,040
Equivalent units	98,400
Cost per equivalent unit	₹5.83

28.

(i) Statement of Equivalent Production

Input		Output		Material		Conversion cost	
				%	Units	%	Units
Input	10,000	Introduced & Complete	8,000	100	8,000	100	8,000
		Closing WIP	2,000	100	2,000	25	500
10,000			10,000		10,000		8,500

(ii) Calculation of cost per equivalent unit

Particulars	Direct Material	Conversion Costs
Total Cost (₹)	33,000	17,000
Equivalent units	10,000	8,500
Cost per equivalent unit (₹)	3.30	2.00

(iii) Cost of closing WIP = (2,000 × 3.30) + (500 × 2.00) = ₹7,600
Cost of finished product = (8,000 × 3.30) + (8,000 × 2.00) = ₹42,400

29.

(a) Statement of Equivalent Production

Input		Output		Material		Conversion cost	
				%	Units	%	Units
Op. WIP	1,000	Op. WIP	1,000	100	1,000	100	1,000
Input	40,000	Introduced & Complete	34,000	100	34,000	100	34,000

	Transferred	35,000				
	Normal Loss (10%×40,000)	4,000	-	-	-	-
	Abnormal Loss	500	100	500	60	300
	Closing WIP	1,500	100	1,500	60	900
41,000		41,000		37,000		36,200

(b) Calculation of value of output transferred to Process-2 and Closing WIP

Value of units completed and transferred

- Material (35,000 × 268.51) = 93,97,850
- Conversion cost (35,000 × 51.74) = 18,10,900

1,12,08,750

Value of closing WIP

-
- Material (1,500 × 268.51) = 4,02,765
- Conversion cost (900 × 51.74) = 45,566

4,49,331

Working Note:

Calculation of cost of each element

Particulars	Material	Conversion Cost
Cost incurred during the month	96,80,000	18,42,000
Cost of Opening WIP	2,55,000	31,020
Total Cost (A)	99,35,000	18,73,020
Equivalent Units (B)	37,000	36,200
Cost per equivalent unit (A ÷ B)	**268.51**	**51.74**

30. Statement of Equivalent Production

Input		Output		Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Op. WIP	5,000	Op. WIP	5,000	100	5,000	100	5,000	100	5,000
Input	55,000	Introduced & Complete	45,000	100	45,000	100	45,000	100	45,000
		Transferred	50,000						

	Normal Loss	3,000	-	-	-	-	-	-
	(60,000×5%) Abnormal Loss (Bal. Fig.)	2,000	100	2,000	60	1,200	60	1,200
	Closing WIP	5,000	100	5,000	60	3,000	60	3,000
60,000		60,000		57,000		54,200		54,200

Statement of Cost per Equivalent Unit

Particulars	Material	Labour	Overheads
Cost	20,20,000	8,00,000	13,30,000
Add: Cost of Opening WIP	35,000	13,000	25,000
Less: Normal Scrap (3,000 × 20)	(60,000)	-	-
Total	19,95,000	8,13,000	13,55,000
Equivalent Units	57,000	54,200	54,200
Cost per equivalent unit	35	15	25

Statement of distribution of cost

Particulars	Element of Cost	Equivalent units	Cost per unit	Cost	Total Cost
Opening WIP	Material	5,000	35	1,75,000	
	Labour	5,000	15	75,000	
	Overheads	5,000	25	1,25,000	3,75,000
Introduced & Complete	Material	45,000	35	15,75,000	
	Labour	45,000	15	6,75,000	
	Overheads	45,000	25	11,25,000	33,75,000
Abnormal Loss	Material	2,000	35	70,000	
	Labour	1,200	15	18,000	
	Overheads	1,200	25	30,000	1,18,000
Closing WIP	Material	5,000	35	1,75,000	
	Labour	3,000	15	45,000	
	Overheads	3,000	25	75,000	2,95,000

Abnormal Loss Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process – X A/c	2,000	1,18,000	By Cash A/c (2,000 × 20)	2,000	40,000
			By Costing P&L A/c (bal. fig)	-	78,000
	2,000	1,18,000		2,000	1,18,000

31.

(i) Statement of Equivalent Production

Input		Output		Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Op. WIP	4,000	Op. WIP	4,000	100	4,000	100	4,000	100	4,000
Input	16,000	Introduced & Complete	10,000	100	10,000	100	10,000	100	10,000
		Transferred	14,000						
		Closing WIP	6,000	100	6,000	33-1/3	2,000	33-1/3	2,000
	20,000		20,000		20,000		16,000		16,000

(ii) Statement of Cost per Equivalent Unit

Particulars	Material	Labour	Overheads
Current Cost	25,600	15,000	15,000
Add: Cost of Opening WIP	6,000	1,000	1,000
Total	31,600	16,000	16,000
Equivalent Units	20,000	16,000	16,000
Cost per equivalent unit	1.58	1	1

Statement of apportionment of cost

Particulars	Element of Cost	Equivalent units	Cost per unit	Cost	Total Cost
Opening WIP	Material	4,000	1.58	6,320	
	Labour	4,000	1	4,000	
	Overheads	4,000	1	4,000	14,320
Introduced & Comp.	Material	10,000	1.58	15,800	
	Labour	10,000	1	10,000	
	Overheads	10,000	1	10,000	35,800

Closing WIP	Material	6,000	1.58	9,480	
	Labour	2,000	1	2,000	
	Overheads	2,000	1	2,000	13,480

(iii) Process - I Account

Particulars	Units	Amount	Particulars	Units	Amount
To Opening WIP	4,000	8,000	By Process -II A/c	14,000	50,120
To Material	16,000	25,600	By Closing WIP	6,000	13,480
To Labour	-	15,000			
To Overheads	-	15,000			
	20,000	63,600		45,000	58,74,900

32.

(i) Statement of Equivalent Production

Input		Output		Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Op. WIP	2,000	Op. WIP	2,000	100	2,000	100	2,000	100	2,000
Input	38,000	Introduced & Complete	33,000	100	33,000	100	33,000	100	33,000
		Transferred	35,000						
		Normal Loss (40,000×5%)	2,000	-	-	-	-	-	-
		Abnormal Loss (Bal. fig.)	1,000	100	1,000	80	800	80	800
		Closing WIP	2,000	100	2,000	80	1,600	80	1,600
	40,000		40,000		38,000		37,400		37,400

(ii) Statement of Cost

Details	Cost at the beginning of process	Cost added	Total cost	Equivalent Units	Cost per unit
Material	80,000	14,80,000	15,60,000		
Less: Value of Nr. loss			(20×2,000=40,000)	38,000	40
			15,20,000		
	15,000	3,59,000	3,74,000	37,400	10
Labour	45,000	10,77,000	11,22,000	37,400	30
Overheads					80

(iii) Statement of distribution of cost:

(*a*) Completed and transferred to process 'B' = 35,000 units @ ₹80 = 28,00,000

(*b*) Abnormal loss: 1,000 units:

Material 1,000 units @ 40	= ₹40,000
Labour and Overheads 800 units @ 40	= ₹32,000
	= ₹72,000

(*c*) Closing WIP: 2,000 units

Materials 2,000 units @ 40	= ₹80,000
Labour and Overheads 1,600 units @ 40	= ₹64,000
	₹1,44,000

(iv) Process 'A' Account

Particulars	Units	Amount	Particulars	Units	Amount
To Opening WIP	2,000	1,40,000*	By Normal Loss	2,000	40,000
Put & processed	38,000	14,80,000	By Abnormal Loss	1,000	72,000
Direct labour		3,59,000	By Process 'B' A/c	35,000	28,00,000
Overheads		10,77,000	By Closing WIP	2,000	1,44,000
	40,000	30,56,000		40,000	30,56,000

* Materials + Labour + Overheads = ₹(80,000 + 15,000 + 45,000) = ₹1,40,000

Normal Loss Account

To process 'A' A/c	2,000	40,000	By Bank A/c (Sale of scrap)	2,000	40,000
	2,000	40,000		2,000	40,000

Abnormal Loss Account

To process 'A' A/c	1,000	72,000	By Bank A/c (Sale of scrap)	1,000	20,000
			By Costing Profit and Loss A/c		52,000
	1,000	72,000		1,000	72,000

33.

(i) Statement of Equivalent Production

Input		Output		Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Op. WIP	4,500	Complete and Transfer	39,500	100	39,500	100	39,500	100	39,500
Input	1,00,000	Normal Loss	55,000	-	-	-	-	-	-

	(1,00,000×55%)							
	Abnormal Loss	1,000	100	1,000	80	800	80	800
	Closing WIP	9,000	100	9,000	80	7,200	80	7,200
1,04,500		1,04,500		49,500		47,500		47,500

*100 kg sugarcane extracts only 45 litre of juice, thus, normal loss = 100 – 45 = 55%

(ii) Statement of Cost per Equivalent Unit

Particulars	Material	Labour	Overheads
Current Cost	5,00,000	2,00,000	6,00,000
Add: Cost of Opening WIP	50,000	15,000	45,000
Total	5,50,000	2,15,000	6,45,000
Equivalent Units	49,500	47,500	47,500
Cost per equivalent unit	11.111	4.526	13.579

Statement of apportionment of cost

Particulars	Element of Cost	Equivalent units	Cost per unit	Cost	Total Cost
Complete and transfer	Material	39,500	11.111	4,38,845	
	Labour	39,500	4.526	1,78,777	
	Overheads	39,500	13.579	5,36,370	11,54,032
Abnormal Loss	Material	1,000	11.111	11,000	
	Labour	800	4.526	3,621	
	Overheads	800	13.579	10,863	25,595
Closing WIP	Material	9,000	11.111	99,999	
	Labour	7,200	4.526	32,587	
	Overheads	7,200	13.579	97,769	2,30,355

(iii) Process - I Account

Particulars	Units	Amount	Particulars	Units	Amount
To Opening WIP	4,500	1,10,000	By Normal loss A/c	55,000	-
To Sugarcane	1,00,000	5,00,000	By Abnormal loss A/c	1,000	25,613
To Direct Labour	-	2,00,000	By Process - II A/c	39,500	11,54,032
To Overheads	-	6,00,000	By Closing WIP	9,000	2,30,355
	1,04,500	14,10,000		1,04,500	14,10,000

***Abnormal loss = 25,595 + 18 = ₹25,613**

₹18 are added due to approximation difference in total value

34.

(i) Statement of Equivalent Production

Input		Output		Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Op. WIP	3,000	Op. WIP	3,000	100	3,000	100	3,000	100	3,000
Input	42,000	Introduced & Complete	33,000	100	33,000	100	33,000	100	33,000
		Transferred	36,000						
		Normal Loss (45,000×4%)	1,800	-	-	-	-	-	-
		Abnormal Loss (4,800 - 1,800)	3,000	100	3,000	70	2,100	70	2,100
		Closing WIP	4,200	100	4,200	50	2,100	50	2,100
	45,000		45,000		43,200		40,200		40,200

(ii) Statement of Cost per Equivalent Unit

Particulars	Material	Labour	Overheads
Current Cost	36,04,000	4,50,000	15,18,000
Add: Cost of Opening WIP	1,80,500	32,400	90,000
Less: Normal Scrap (1,800 × 62.50)	(1,12,500)	-	-
Total	36,72,000	4,82,400	16,08,000
Equivalent Units	43,200	40,200	40,200
Cost per equivalent unit	85	12	40

Statement of apportionment of cost

Particulars	Element of Cost	Equivalent units	Cost per unit	Cost	Total Cost
Opening WIP	Material	3,000	85	2,55,000	
	Labour	3,000	12	36,000	
	Overheads	3,000	40	1,20,000	4,11,000
Introduced & Comp.	Material	33,000	85	28,05,000	
	Labour	33,000	12	3,96,000	
	Overheads	33,000	40	13,20,000	45,21,000

Abnormal Loss	Material	3,000	85	2,55,000	
	Labour	2,100	12	25,200	
	Overheads	2,100	40	84,000	3,64,200
Closing WIP	Material	4,200	85	3,57,000	
	Labour	2,100	12	25,200	
	Overheads	2,100	40	84,000	4,66,200

(iii) Process - I Account

Particulars	Units	Amount	Particulars	Units	Amount
To Opening WIP	3,000	3,02,900	By Normal loss A/c	1,800	1,12,500
To Material	42,000	36,04,000	By Abnormal loss A/c	3,000	3,64,200
To Labour	-	4,50,000	By Process - II A/c (bal. fig)	36,000	49,32,000
To Overheads	-	15,18,000	By Closing WIP	4,200	4,66,200
	45,000	58,74,900		45,000	58,74,900

(iv) Normal Loss Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process-I A/c	1,800	1,12,500	By Bank A/c	1,800	1,12,500
	1,800	1,12,500		1,800	1,12,500

(v) Abnormal Loss Account

Particulars	Units	Amount	Particulars	Units	Amount
To Process-I A/c	3,000	3,64,200	By Bank A/c (3,000 × 62.50)	3,000	1,87,500
			By Costing P&L A/c (Bal. fig.)	-	1,76,700
	3,000	3,64,200		3,000	3,64,200

35.

(i) Statement of Equivalent Production

Input		Output		Material		Overheads	
				%	Units	%	Units
Op. WIP	9,500	Op. WIP	9,500	100	9,500	100	9,500
Input	1,05,000	Introd. & Complete	73,500	100	73,500	100	73,500
		Transferred	83,000		83,000		83,000
		Normal Loss	10,500	-	-	-	-

	(1,05,000×10%)					
	Abnormal Loss (Bal. fig)	4,500	100	4,500	100	4,500
	Closing WIP	16,500	100	16,500	60	9,900
1,14,500		1,14,500		1,04,000		97,400

Statement of Cost per Equivalent Unit

Particulars	Material	Conversion Cost
Current Cost	3,34,500	2,53,100
Add: Cost of Opening WIP	29,500	14,750
Total	3,64,000	2,67,850
Equivalent Units	1,04,000	97,400
Cost per equivalent unit	3.50	2.75

Thus, cost per kg of Chemical G = 3.50 + 2.75 = ₹6.25

(ii) Statement of cost

Particulars	Element of Cost	Equivalent units	Cost per unit	Cost	Total Cost
Cost of Chemical G transferred	Material	83,000	3.50	2,90,500	
	Conversion cost	83,000	2.75	2,28,250	5,18,750
Abnormal Loss	Material	4,500	3.50	15,750	
	Conversion cost	4,500	2.75	12,375	28,125
Closing WIP	Material	16,500	3.50	57,750	
	Conversion cost	9,900	2.75	27,225	84,975

(iii) Statement of Evaluation of Offer

Particulars	Amount (₹)
Sale as chemical GK (60,000 × 1.20 × 10)	7,20,000
Less: Sale as chemical G (60,000 × 9)	5,40,000
Incremental sales revenue	1,80,000
Less: further processing cost (85,000 + 50,000)	1,35,000
Incremental Benefit	45,000

Since, there is incremental benefit in further processing, thus, it is recommended to continue Chemical 'G' in process II and sell as chemical 'GK'.

36. **Process 1 A/c**

Particulars	Kg.	Amount	Particulars	Kg.	Amount
To Material A	6,000	3,00,000	By Normal Loss	500	8,000
To Material B	4,000	4,00,000	By Abnormal loss	300	24,093
To Labour	-	21,500	(300×80.3105)		
To Production OHs $\left(\frac{92,000\times430}{800}\right)$	-	49,450	By Process 2 (9,200×80.3105)	9,200	7,38,857
	10,000	7,70,950		10,000	7,70,950

Normal cost per unit = $\frac{7,70,950-8,000}{10,000-500}$ = Rs. 80.3105

Process 2 A/c

Particulars	Kg.	Amount	Particulars	Kg.	Amount
To Process 1	9,200	7,38,857	By Normal loss	1,000	—
To Material C	6,600	8,25,000	By WIP A/c	1,000	1,00,711
To Material D	4,200	3,15,000	By Packing Dept.	18,000	18,42,496
To Flavoring essence		3,300			
To labour		18,500			
To Overhead		42,550			
$\left(\frac{92,000\times370}{800}\right)$	20,000	19,43,207		20,000	19,43,207

Abnormal Loss Account

Particulars	Kg.	Amount	Particulars	Kg.	Amount
To Process 1	300	24,093	By Bank	300	4,800
			By P & L A/c	-	19,293
	300	24,093		300	24,093

Note-1: **Statement of Equivalent Production**

Particulars	Output Units	Equivalent Production					
		Process-I	%	Mat. C & D	%	Lab & OHs	%
Normal wastage	1,000	-	-	-		-	
Packing Dept.	18,000	18,000	100	18,000	100	18,000	100
Closing WIP	1,000	1,000	100	1,000	100	1,000	50
	20,000	19,000		19,000		18,500	

Note-2: **Statement of Cost per unit**

Material	Total cost	Equivalent units	Cost per unit ₹
Process 1	7,38,857		
Material C	8,25,000		
Material D	3,15,000		
Flavouring essence	3,300		
	18,82,157	19,000	99.0609
Labour cost	18,500	18,500	1.0000
Production overhead	42,550	18,500	2.3000
			102.3609

Cost of units transferred to Packing Dept. = 18,000 units × ₹102.3609 = ₹18,42,496

Cost of WIP

Element	Equivalent units	Cost per unit	Total cost (₹)
Material	1,000	99.0609	99,061
Labour	500	1.0000	500
Overhead	500	2.3000	1,150
			1,00,711

37.

Process A Account

Particulars	Cost	Profit	Total	Particulars	Cost	Profit	Total
To Opening stock	5,000	-	5,000	By Process B A/c	28,800	7,200	21,600
To Direct material	9,000	-	9,000				
To Direct wages	5,000	-	5,000				
	19,000	-	19,000				
(-) Closing stock	(2,000)	-	(2,000)				
	17,000	-	17,000				
To Factory OHs	4,600	-	4,600				
	21,600	-	21,600				
To Profit	-	7,200	7,200				
	21,600	7,200	28,800		21,600	7,200	28,800

Process B Account

Particulars	Cost	Profit	Total	Particulars	Cost	Profit	Total
To Opening stock	4,500	1,000	5,500	By F. Stock A/c	41,550	20,125	61,675
To Process A A/c	21,600	7,200	28,800				
To Direct material	9,500	-	9,500				
To Direct wages	6,000	-	6,000				

Particulars	Cost	Profit	Total	Particulars	Cost	Profit	Total
	41,600	8,200	49,800				
(-) Closing stock	(2,080)	(410)	(2,490)				
	39,520	7,790	47,310				
To Factory OHs	2,030	-	2,030				
	41,550	7,790	49,340				
To Profit	-	12,335	12,335				
	41,550	20,125	61,675		41,550	20,125	61,675

Profit element in closing stock = $\frac{8,200}{49,800} \times 2,490 = ₹410$

Finished Stock Account

Particulars	Cost	Profit	Total	Particulars	Cost	Profit	Total
To Opening stock	6,000	4,000	10,000	By Costing P&L A/c	44,233	30,767	75,000
To Process B A/c	41,550	20,125	61,675				
	47,550	24,125	71,675				
(-) Closing stock	(3,317)	(1,683)	(5,000)				
	44,233	22,442	66,675				
To Profit (Bal. fig)	-	8,325	8,325				
	44,233	30,767	75,000		44,233	30,767	75,000

Profit element in closing stock = $\frac{24,125}{71,675} \times 5,000 = ₹1,683.$

38. **Process A Account**

Particulars	₹	Particulars	₹
To Material	40,000	To Transfer to Process B A/c	1,20,000
To Labour	40,000	(96,000 ÷ 80%)	
To Overheads	16,000		
	96,000		
To Profit (1,20,000 × 20%)	24,000		
	1,20,000		1,20,000

Process B Account

Particulars	₹	Particulars	₹
To Process A A/c	1,20,000	To Transfer to Process B A/c	2,88,000
To Labour	56,000	(2,16,000 ÷ 75%)	
To Overheads	40,000		
	2,16,000		
To Profit (2,88,000 × 25%)	72,000		
	2,88,000		2,88,000

Statement of Total Profit

Particulars	₹
Profit from Process A	24,000
Profit from Process B	72,000
Profit on sales (4,00,000 – 2,88,000)	1,12,000
Total Profit	2,08,000

39. Abnormal gain units = 7,600 – (8,000 – 800) = 400 abnormal gain

Abnormal gain = $\left[\frac{40,000-(800\times5)}{7,200}\right]\times 400\,\text{units} = ₹2,000.$

40. (i) (d)

Inflow into process	Litres	Outflow from process	Litres
Opening WIP	500	Transferred to finished goods	3,400
Quantity introduced (Balancing figure)	3,800	Total loss	800
		Closing WIP	100
	4,300		4,300

(ii) (a)

Total loss	800 litres
Normal loss (10% of fresh input i.e. 3,800)	380 litres
Abnormal loss	420 litres

(iii) B

Calculation of Equivalent production units

Input Details	Units	Output Particulars	Units	Equivalent Production					
				Material		Labour		Overheads	
				%	Units	%	Units	%	Units
Opening WIP	500	From Opening WIP	500	-	-	20	100	40	200
Fresh inputs	3,800	From fresh units	2900	100	2900	100	2900	100	2900
		Normal loss	380	-		-			
		Closing WIP	100	100	100	20	20	10	10
		Abnormal	420	100	420	100	420	100	420
	4,300		4,300		3,420		3,440		3,530

Value of raw materials introduced during the month

	Equivalent units	Cost per EU (₹)	Total cost (₹)
Total value of raw material	3420	300	10,26,000
Add: Scrap value of normal	380	20	7,600
loss			
Value of raw material introduced			10,33,600

(iv) A

Value of labour and overhead in closing Work in process

Cost elements	Equivalent units	Cost per EU (₹)	Total cost (₹)
Labour	20	200	4,000
Overheads	10	160	1,600

(v) C

Value of output transferred to finished goods

Output transferred (Units) × Equivalent cost per unit

3,400 Litres × ₹660 – ₹22,44,000.

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