

COST ACCOUNTING

Q.10. From the following information for August, 2012, prepare:

- (a) Statement of equivalent production.
 (b) Statement of cost, and
 (c) Process II account.

Opening stock 600 units: ₹ 1,050. Degree of completion: Material 80%, Labour 60%, overheads 60%. Transfer from process I: 11,000 units ₹ 5,500. Transfer to process III: 8,800 units. Direct materials added in process II ₹ 2,410. Direct labour ₹ 7,155, production overhead ₹ 9,540. Units scrapped: 1,200. Degree of completion: Materials 100%, labour and overhead 70% each. Closing stock 1,600 units: Degree of completion: Materials 70%, Labour 60% overheads 60%. There was a normal loss in the process of 10% production. Units scrapped realised at ₹ 0.50 per unit.

[Ans.: Cost per unit - Mat. (1) ₹ 0.50; Mat. (2) ₹ 0.25; Lab. ₹ 0.75; Overheads ₹ 1.00].

Q.11. The following data are available in respect of process 1:

Opening work-in-progress	: 900 units at ₹ 4,500
Degree of completion	: Materials 100%, Labour 60% and overheads 60%.
Input of materials	: 9,100 units at ₹ 27,300
Direct wages	: ₹ 8,200
Production overhead	: ₹ 16,400
Units scrapped	: 1,200 units
Degree of completion	: Materials 100%, Labour 70% and Overheads 70%.

Closing work-in-progress	: 1,000 units.
Degree of completion	: Materials 100%, Labour 80% and Overhead 80%.

Units transferred to next process : 7,800 units

Normal process loss is 10% of total input (Opening stock plus units put in) and scrap value is ₹ 3 per unit. You are required to follow FIFO method and compute:

(a) Equivalent production, (b) Cost per equivalent unit for each element and cost of abnormal loss, closing work-in-progress and units transferred to next process, and (c) To prepare statement of apportionment of cost.

[Ans.: Cost per unit Material ₹ 3; Labour ₹ 1 and Overheads ₹ 2].

Q.12. Following information is available regarding process A for the month of February, 2013:

Production Record :

Unit in process as on 1.2.2013	4,000
(All materials used, 25% complete for labour and overheads)	
New units introduced	16,000
Units completed	14,000
Units in process as on 28.2.2013	6,000
(all materials used and 33 1/3% complete for labour and overheads)	

Cost Records :

Work in process as on 1.2.2013	₹
Materials	6,000
Labour	1,000
Overheads	1,000
	<u>8,000</u>
Cost during the month	
Materials	25,600
Labour	15,000
Overheads	15,000
	<u>55,600</u>

Presuming that average method of inventory is used, prepare :

- (i) Statement of Equivalent production.
(Ans.: Material 20,000 units; Labour & Overheads 16,000 units)
- (ii) Statement showing cost of each element.
(Ans.: Material ₹ 1.58; Labour & Overheads ₹ 1 per unit)
- (iii) Statement of apportionment of cost.
- (iv) Process A Account.

Q.13. In a textile factory production of cloth passes through three processes – Spinning, Weaving and Printing. Opening Work-in-Process at the Printing Process is 2,000 metre of partly printed cloth valued at ₹ 50,000. Opening WIP is complete as follows :

Direct dyes and chemicals:	80% consumed;
Direct Labour :	60% work done; and
Factory overheads :	30% cost incurred.

During the month 24,000 metre of plain cloth was freshly introduced into the Printing Process at a cost of ₹ 2,33,000. Normal loss is 5% of the units processed during the month excluding WIP at the end. Spoiled cloth realises ₹ 3 per metre.

During the month 1,500 metre of cloth was destroyed due to fire when 60% of dyes and chemicals, 40% of labour cost and 20% of overhead cost had actually been incurred.

A total of 17,500 metre of printed cloth was produced at the process during the month.

Following were the costs incurred :

Direct dyes and chemicals	₹ 1,68,000
Direct Labour	₹ 1,04,000
Factory overheads at the process	₹ 56,100

Partly printed cloth at the end of the month was 6,000 metres upon which 70% of dyes and chemicals cost, 65% of labour cost, and 25% of overhead cost had been incurred. Stocks are valued on FIFO basis.

You are required to prepare the following :

- (i) Statement of Equivalent Production
- (ii) Statement of cost per unit,
- (iii) Statement of Apportionment of cost,
- (iv) Printing Process A/c.
- (v) Normal Loss A/c. and Abnormal Loss A/c.

[Ans.: Cost per unit = ₹ 10 (Plain cloth), ₹ 8 (Dyes & Chemicals), ₹ 5 (Labour and ₹ 3 (overheads)).

Q.14. Two products P and Q are obtained in a crude form and require further processing at a cost of ₹ 5 for P and ₹ 4 for Q per unit before sale. Assuming a net margin of 25 per cent on cost, their sale prices are fixed at ₹ 13.75 and ₹ 8.75 per unit respectively. During the period, the joint cost was ₹ 88,000 and output were :

P	8,000 units
Q	6,000 units.

Ascertain the joint cost per unit.

[Ans.: P (₹ 8 per unit) and Q (₹ 4 per unit)

Q.15. SUNMOON Ltd. produces 2,00,000; 30,000; 25,000; 20,000 and 75,000 units of its five products A, B, C, D and E respectively in a manufacturing process and sells them at ₹ 17, ₹ 13, ₹ 8, ₹ 10 and ₹ 14 per unit. Except product D remaining products can be further processed and then can be sold at ₹ 25, ₹ 17, ₹ 12 and ₹ 20 per unit in case of A, B, C and E respectively.

Raw material cost ₹ 35,90,000 and other manufacturing expenses cost ₹ 5,47,000 in the manufacturing process which are absorbed on the products on the basis of their net realisable value. The further processing cost of A, B, C and E are ₹ 12,50,000; ₹ 1,50,000; ₹ 50,000 and ₹ 1,50,000 respectively.

You are required to prepare the following in respect of the coming year:

- (a) Statement showing income forecast of the company assuming that none of its products are to be further processed. [Ans.: Profit ₹ 11,03,000]
- (b) Statement showing income forecast of the company assuming that products A, B, C and E are to be processed further. [Ans.: ₹ 17,73,000]

Can you suggest any other production plan whereby the company can maximise its profits. If yes, then submit a statement showing income forecast arising out of adoption of that plan. [Ans.: Sell A, C and E after further processing and B and D at split off point].

- Q.16.** In the course of manufacture of the main product 'P', by product 'A' and 'B' also emerge. The joint expenses of manufacture amount to ₹ 1,19,550. All the products are processed further after separation and sold as per details given below :

	Main Product		By Product	
	P (₹)	Q (₹)	R (₹)	
Sales	90,000	60,000	40,000	
Cost beyond split off stage	6,000	5,000	4,000	
Profit as percentage of sales	25%	20%	15%	

Selling and administration overheads are absorbed as percentage of cost of sales. Prepare a statement showing the apportionment of joint cost to the main product and by-product. Also prepare main product 'P' account.

[Ans.: (1) Share in joint cost

P	=	₹ 54,750
A	=	₹ 38,200
B	=	₹ 26,600

(2) Profit on main product P = ₹ 22,500.]

- Q.17.** A factory is engaged in the production of chemical Bomex and in the course of its manufacture, a by-product Brucil is produced, which after further processing has a commercial value. For the month of April, following are the summarised cost data :

	Joint Expenses	Separate Expenses	
		Bomex	Brucil
Materials	₹ 1,00,000	₹ 6,000	₹ 4,000
Labour	50,000	20,000	18,000
Overheads	30,000	10,000	6,000
Selling price per unit		98	34
Estimated profit per unit on sale of Brucil			4
No. of Units produced		2,000 units	2,000 units

The factory uses reverse cost method of accounting for determining the share of Brucil in total joint cost.

You are required to prepare statements showing :

- (i) The joint cost allocable to Bomex. [Ans.: ₹ 1,48,000]
 (ii) The product-wise and over all profitability of the factory for April.

[Ans.: Bomex = ₹ 12,000; Brucil = ₹ 8,000].

- Q.18.** The Sunshine Oil Company purchases crude vegetable oil. It does refining of the same. The refining process results in four products at the split-off point: M, N, O and P.

Product O is fully processed at the split-off point. Products M, N and P can be individually further refined into 'Super M', 'Super N' and 'Super P'. In the most recent month (October, 1999), the output at split-off point was :

Product M	3,00,000 gallons
Product N	1,00,000 gallons
Product O	50,000 gallons
Product P	50,000 gallons

The joint cost of purchasing the crude vegetable oil and processing it were ₹ 40,00,000. Sunshine had no beginning or ending inventories. Sales of Product O in October were ₹ 20,00,000. Total output of products M, N and P was further refined and then sold. Data related to October, 1999 are as follows :

	Further Processing Costs to make Super Products	Sales
'Super M'		
Super 'N'	₹ 80,00,000	₹ 1,20,000
'Super P'	₹ 32,00,000	₹ 40,000
	₹ 36,00,000	₹ 48,000

Sunshine had the option of selling products M, N and P at the split-off point. This alternative would have yielded the following sales for the October, 1999 production :

Product M	₹ 20,00,000
Product N	₹ 12,00,000
Product P	₹ 28,00,000

You are required to answer :

- (i) How the joint cost of ₹ 40,00,000 would be allocated between each product under each of the following methods : (a) Sales value at split-off; (b) physical output (gallons); and (c) estimated net realisable value ?
- (ii) Could Sunshine have increased its October, 1999 operating profits by making different decisions about the further refining of products M, N, or P ? Show the effect of any change you recommend on operating profits.

[Ans.: (i) Apportionment of Joint Cost

Product	(a)	(b)	(c)
M	10,00,000	24,00,000	20,00,000
N	6,00,000	8,00,000	4,00,000
O	10,00,000	4,00,000	10,00,000
P	<u>14,00,000</u>	<u>4,00,000</u>	<u>6,00,000</u>
	<u>40,00,000</u>	<u>40,00,000</u>	<u>40,00,000</u>

- (iii) If products N and P are sold without further processing, the operating profit of the company gets increased by ₹ 20,000.]

Q.19. Three joint products are produced by passing chemicals through two consecutive processes. Output from Process I is transferred to process II from which the three joint products are produced and immediately sold. The data regarding the processes are given below :

	Process I	Process II
Direct Material 2,500 kilos at ₹ 4 per kilo	₹ 10,000	—
Direct Labour	6,250	₹ 6,900
Overheads	₹ 4,500	₹ 6,900
Normal Loss	10% of input	Nil
Scrap Value of Loss	₹ 2 per kilo	—
Output	2,300 kilos	Joint products A : 900 kilos B : 800 kilos C : 600 kilos

There were no opening or closing stock in either process and the selling prices of the output from Process II were :

Joint Product A	₹ 24 per kilo
Joint Product B	₹ 18 per kilo
Joint Product C	₹ 12 per kilo

Required:

- (a) Prepare an account for Process I together with any Loss or Gain Account you consider necessary to record the month's activities.
- (b) Calculate the profit attributable to each of the Joint Products by apportioning the total costs from Process II :
 - (i) According to weight of output;
 - (ii) By the market value of production.

[Ans.: (a) Cost per unit = ₹ 9;
Amount transferred to P & L A/c. = ₹ 350.

(b) Product	Profit	
	(i)	(ii)
A	8,100	4,350
B	2,400	2,900
C	(1,800)	1,450
	<u>8,700</u>	<u>8,700</u>

20. The following information for the month of August 2000 has been ascertained from the costing books of a manufacturing company relating to a product which passes through two process X and Y:

	Process X	Process Y
Material used	₹ 16,000	₹ 6,000
Direct labour	24,000	16,000
Works expenses	3,344	2,780
Input at ₹ 8 per unit (units)	4,000	—
Output (units)	3,900	3,850
Stock on August 1 (unit)	400	600
Stock on August 31 (units)	300	800
Valuation of opening stock	₹ 19	₹ 26
Normal wastage on input	2%	5%
Scrap value of wastage per unit	₹ 1	₹ 4

Closing stocks are to be valued at current cost. Prepare Process Accounts for the month.

(Ans. Cost per unit at Process X ₹ 19.20 and at Process Y ₹ 26.50).

21. In a manufacturing unit, raw materials passes through four Process I, II, III and IV and the output of each process is the input of the subsequent processes. The loss in the four processes I, II, III and IV are respectively 25%, 20%, 20% and $16\frac{2}{3}$ % of the input. If the end product at the end of Process IV is 40,000 kg what is the quantity of raw material required to be fed at the beginning of Process I and the cost of same at ₹ 50 per kg.
(Ans. 1,00,000 kgs. and ₹ 125)

22. In an oil refinery, the product passes through three different process, viz. Crushing, Refining and Finishing. The following information is available for the month of January:

	Crushing Process	Refining Process	Finishing Process
Raw Material (500 tons Copra)	₹ 9,00,000	—	—
Wages	32,000	23,600	23,500
Power	4,800	4,000	6,000
Sundry Materials	2,000	7,600	—
Factory Expenses	2,400	4,000	3,800

Cost of drums for storing finished oil was ₹ 84,100. 200 tons of oil cake was sold for ₹ 60,000 and 275 tons of crude oil was obtained. Sundry by-product (25 tons) of the Crushing Process fetched ₹ 3,600. By-product after refining the oil was sold for ₹ 3,600 (20 tons) and 250 tons of refining oil was obtained. 240 tons of finished oil was stored in drums and 10 tons were sold for ₹ 4,800. The establishment expenses for the period amounted to ₹ 14,000 which is to be charged to the three processes in proportion of 3: 2: 2. Prepare accounts for all the processes.

- Q.23** In a concern engaged in process industry four products emerge from a particular process of operation. The total cost of input for the period ended 30th September is ₹ 2,53,500. The details of output, additional cost after "split-off point" and sales value of the product are appended below:

Products	Output	Additional processing cost after split-off point	Sales value
A	Kgs. 8,000	₹ 60,000	₹ 1,68,000
B	5,000	10,000	1,10,000
C	3,000	—	60,000
D	4,000	20,000	90,000

If the products are sold at "the split-off point" without further processing, the sales value would have been:

A ₹ 1,15,000; B ₹ 90,000; C ₹ 55,000; D ₹ 80,000.

You are required to prepare a statement of profitability based on the products being sold:

- (i) After further processing (ii) At the split-off point. [Ans. (i) ₹ 86,500; (ii) ₹ 84,500]

- Q.24** Tee Pee Ltd. in the course of refining crude oil obtains four joint products: A, B, C, and D. The total cost till the split-off point was ₹ 97,600. The output and sales during the year were:

Product	Output (Gallons)	Sales (₹)	Separate costs (₹)
A	5,00,000	1,15,000	30,000
B	10,000	10,000	6,000
C	5,000	4,000	—
D	9,000	30,000	1,000

You are required to :

- (i) Calculate the net income for each of the products if the joint costs are apportioned on the basis of sales value of different products. [Ans. Total Profit ₹ 24,400]
- (ii) What would be the net income of the company from each product if it decides to sell the products at split-off point itself A @ 15 paise; B @ 50 paise; C @ 80 paise and D @ ₹ 3 per gallon? [Ans. Total Profit ₹ 13,400]
- (iii) In case the company expects to operate at the same level of production and sales in the next year, could the company increase the net income by altering its processing decisions? If so, what would be the expected overall net income? Which products should be processed further and which should be sold at split-off? Assume that all costs incurred after the split-off are variable. [Ans. Total Profit ₹ 25,400]

- Q.25** A work order passes through two distinct processes. The product of the first process less wastages and by-product becomes the raw materials for the second process. All by-products are sold off direct from the factory. The following information is obtained from the factory records:-

	Ist Process	IInd Process
Raw Material	2000 tons at ₹ 30 per ton	—
Wages	₹ 50,000	₹ 40,000
Factory overhead	80% of wages	75% of wages
Wastage	20 tons	30 tons
Sale of by-product	380 tons at cost plus 20%	170 tons at cost plus 25%

Give the ledger accounts for two processes showing at each stage the cost of the product and the profit on the sale of by products.

- Q.26** The cost of 100 litres of crude oil and processing it into different products is ₹ 120 in XYZ Oil Refinery Ltd. The standard yields per 100 litres of crude oil and its market value per litre are indicated below. Compute the unit cost of each product.

	Standard yield per 100 litres of crude oil	Market value per litre ₹
Petrol	32.0	1.20
Lubricating oil	5.0	2.00
Fuel oil	50.0	.50
Kerosene	8.0	.75
Gas oil	3.0	.30
Loss	2.0	.00

- Q.27** A by-product 'Beta' is derived in the course of manufacturing a product Alpha. The by-product is further processed for sale. From the following data available from the records prepare an account showing the cost per kg. of the product 'Alpha' and the by-product 'Beta'.

	Joint Expenses ₹	Separate Expenses	
		'Alpha' ₹	'Beta' ₹
Materials	10,000	6,000	500
Labour	7,000	5,000	2,000
Overheads	2,500	1,500	600

The quantities produced during the period under consideration were : Alpha, 100 kg. and Beta 50 kg. The selling price of Beta was ₹ 120 per kg. on which the profit earned was at 30%.

- Q.28** In the course of manufacture of the main product 'P', by-products 'A' and 'B' also emerge. The joint expenses of manufacture amount to ₹ 1,19,550. All the three products are processed further after separation and sold as per details given:

	Main Product	By-Products	
	P	A	B
Sales	₹ 90,000	₹ 60,000	₹ 40,000
Costs incurred after separation	₹ 6,000	₹ 5,000	₹ 4,000
Profit as percentage on Sales%	25	20	15

Total fixed selling expenses are 10% of total cost of sales which are apportioned to the three products in the ratio of 20 : 40 : 40.

- Prepare a statement showing the apportionment of joint costs to the main product and the two-by-products.
- If the by-product 'A' is not subjected to further processing and is sold at the point of separation, for which there is a market, at ₹ 58,500 without incurring any selling expenses, would you advise its disposal at this stage? Show the workings.

- Q.29** A factory manufactures a commodity which passes through three processes A, B and C. The finished product of Process A becomes the raw material of Process B and the finished product of B forms the raw materials of Process C which delivers the end product. The by-products of Process A and B are sold direct from the factory.

	A ₹	B ₹	C ₹
Materials	1,000 tons @ ₹ 12 per ton	700	600
Wages	₹ 10,000	20,000	36,000
Factory overhead (Percentage on wages)	75%	60%	50%
Wastage (of no sale value)	2 tons	3 tons	2 tons
Sale proceeds of by-products	8 tons @ ₹ 25 per ton	5 tons @ ₹ 20 per ton	

Draw up Process Accounts.

Q.30 The following data are available in respect of Process I for the month of October, 2004:

Opening work-in-progress	2,250 Units at ₹ 11,250
<i>Degree of Completion:</i>	
Materials	100%
Labour	60%
Overheads	60%
Input of materials	
Direct wages	22,750 Units at ₹ 88,500
Production overheads	₹ 20,500
	₹ 41,000
Units scrapped	3,000 Units
<i>Degree of Completion:</i>	
Material	100%
Labour	70%
Production overheads	70%
Closing work-in-progress:	2,500 Units
<i>Degree of Completion:</i>	
Material	100%
Labour	80%
Production overheads	80%
Units transferred to the next process :	19,500 Units

Normal process loss is 10% of total input (opening stock plus units put in). Scrap value is ₹ 3.00 per unit. The company follows FIFO method of inventory valuation;

You are required to :

- (i) Prepare statement of equivalent production
- (ii) Prepare statement of cost per equivalent unit for each element and cost of abnormal loss, closing work-in-progress and units transferred to next process' and
- (iii) Prepare process I account.

Q.31 In an Oil Mill four products emerge from a refining process. The joint cost of input during the quarter ending March 2005 is ₹ 1,48,000. The output, sales and additional processing costs are as under:

Products	Output in Litres	Additional processing cost after split off	Sales value
AOXE	8,000	43,000	1,72,500
BOXE	4,000	9,000	15,000
COXE	2,000	-	6,000
DOXE	4,000	1,500	45,000

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

AOXE	BOXE	COXE	DOXE
15.00	6.00	3.00	7.50

Prepare a statement of profitability based on.

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

Q.32 From the following Information for the month ending October, 2005 prepare Process Cost accounts for Process III. Use First-out (FIFO) method to value equivalent production.

Opening WIP	2,000 units at ₹ 25,750
Transfer from Process II	53,000 units at ₹ 4,11,500
Transferred to Process IV	48,000
Closing stock of Process III	5,000 units
Units scrapped	2,000 units
Direct material added on Process III	₹ 1,97,600
Direct wages	₹ 97,600
Production Overheads	₹ 48,800

The normal loss in the process was 5% of production and scrap and sold at ₹ 3 per unit.

The degree of completion is :

	Opening WIP	Closing WIP	Scrap
Material	80%	70%	100%
Labour	60%	50%	80%
Overheads	60%	50%	60%

Q.33. A company manufactures a variety of liquids which pass through a number of processes. One of these products P, passes through processes 1, 2 and 3 before being transferred to the finished goods warehouse.

The following process 3 data is available for October :

	₹
Work-in-progress at 1 October is 6,000 units valued as :	
Transfer from Process 2	14,400
Materials added	2,160
Wages and overheads	<u>2,880</u>
	<u>19,440</u>
Transfer from Process 2 during October :	
48,000 units	1,10,400
Transferred to finished goods : 46,500 units	
Costs incurred :	
Material added	
Wages and overhead	27,180
Work-in-process at 31 st October : 4,000 units	54,720

Degree of completion

Materials added : 50%

Wages and overhead : 30%

Normal loss in Process : 6% of units in opening stock plus transfers from process 2 less closing stock.

Rejected products are sold for ₹ 0.80 per unit. The scrap has reached the following degree of completion :

Direct materials added	:	80%
Wages and overheads	:	60%

Requirements :

From the details given above, prepare account for the month of October for Process 3.

Solutions to Revisionary Problems

Answer to Q. No. 1 :

		Process I Account			
	Units	₹		Units	₹
Unit Introduced	500	2,000	By Normal Loss	50	100
Material		2,600	By Transferred to		
Direct Wages		2,250	Process II A/c	450	9,000
Production overhead		<u>2,250</u>			
	500	<u>9,100</u>		<u>500</u>	<u>9,100</u>
Cost per unit = $\frac{9100 - 100}{500 - 50}$	= $\frac{9,000}{450}$	= ₹ 20			

		Process II Account			
	Units	₹		Units	₹
Transfer from Process I A/c	450	9,000	By Normal Loss	90	360
Material		2,000	Abnormal Loss (@ 50 ₹)	20	1,000
Wages		3,680	By Transferred to		
Production overhead		<u>3,680</u>	Process III A/c	340	17,000
	450	<u>18,360</u>		<u>450</u>	<u>18,360</u>
Cost per unit = $\frac{18,360 - 360}{450 - 90}$	= ₹.50				

		Process III Account			
	Units	₹		Units	₹
To Transfer from Process II A/c	340	17,000	By Normal Loss	85	425
Material		1,025	By Transfer to finished goods A/c	270	21,600
Wages		1,400			
Production overhead		1,400			
Abnormal Gain	15	<u>1,200</u>			
	355	<u>22,025</u>		<u>355</u>	<u>22,025</u>
Cost per unit = $\frac{20825 - 425}{340 - 85}$	= $\frac{20400}{255}$	= ₹ 80			

		Abnormal Loss Account			
	Units	₹		Units	₹
To Process II A/c	20	1,000	By Sale of scrap @ ₹ 4	20	80
			By P&L A/c		<u>920</u>
	<u>20</u>	<u>1,000</u>		<u>20</u>	<u>1,000</u>

		Abnormal Gain A/c			
	Units	₹		Units	₹
To Normal loss @ ₹ 5	15	75	By Process II A/c	15	1200
To P&L A/c		<u>1,125</u>			
	<u>15</u>	<u>1,200</u>		<u>15</u>	<u>1,200</u>

Answer to Q. No.2.

		Process I Account			
	Units	₹		Units	₹
To Units issued	4000	20,000	By Normal loss (2%) (@ ₹ 13.50)	80	1,080
To Materials		40,000	By Abnormal loss	20	520
To Direct wages		22,500	By Process I stock	3,900	1,01,400
To Direct expenses		20,500			
	4,000	<u>1,03,000</u>		<u>4,000</u>	<u>1,03,000</u>

$$\text{Cost per unit} = \frac{\text{₹ } 1,03,000 - \text{₹ } 1,080}{4,000 \text{ units} - 80 \text{ units}} = \text{₹ } 26$$

Process I Stock Account

	Units	₹		Units	₹
To Balance b/d	600	14,700	By Process II A/c	4,000	1,03,200
To Process I A/c	3,900	1,01,400	(@ ₹ 25.80)	500	12,900
			By Balance c/d	4,500	116,100
	<u>4,500</u>	<u>1,16,100</u>			

Weighted average cost per unit =

$$\frac{\text{Total Cost}}{\text{Total number of units}} = \frac{116100}{4500 \text{ units}} = ₹ 25.80$$

Process II Account

	Units	₹		Units	₹
To Process I Stock A/c	4,000	1,03,200	By Normal wastage	200	3,250
Material		7,500	By Stock A/c @ 31.50	3,850	1,21,275
Wages		10,000	₹ per unit		
Expenses		2,250			
Abnormal Gain (@ ₹ 31.50)	50	1,575			
	<u>4,050</u>	<u>1,24,525</u>		<u>4,050</u>	<u>1,24,525</u>

$$\text{Cost per unit} = \frac{1,22,950 - 3250}{4000 - 200} = \frac{1,19,700}{3800} = ₹ 31.50$$

Process II Stock Account

	Units	₹		Units	₹
To Balance b/d	550	17,050	By Process III A/c	3,600	1,13,175
To Process II A/c	3,850	1,21,275	@ ₹ 31.4375*	800	25,150
			By Balance c/d	4,400	1,38,325
	<u>4,400</u>	<u>1,38,325</u>			

$$\text{Weighted average cost} = \frac{138325}{4400 \text{ units}} = 31.4375 \text{ per units}$$

Process III Account

	Units	₹		Units	₹
To Process II Stock	3,600	1,13,175	By Normal Wastage	360	7,560
Material		5,000	By Abnormal wastage	40	1,520
Wages		10,000	@ ₹ 38	3,200	1,21,600
Exp.		2,505	By stock A/c	3,600	1,30,680
	<u>3,600</u>	<u>1,30,680</u>			

$$\text{Cost per unit} = \frac{1,30,680 - 7,560}{3600 - 360 \text{ unit}} = \frac{1,23,120}{3,240} = ₹ 38$$

Process III Stock Account

	Units	₹		Units	₹
Balance b/d	800	29,600	By Cost of Sales A/c	4,000	1,51,200
Process III A/c	3,200	1,21,600			
	<u>4,000</u>	<u>1,51,200</u>		<u>4,000</u>	<u>1,51,200</u>

Weighted average cost per unit

$$\frac{1,51,200}{4,000 \text{ unit}} = ₹ 37.80$$

Normal Wastage Account

	Unit	₹		Unit	₹
To Process I A/c	80	1,080	By Cash A/c I	80	1,080
To Process II A/c	200	3,250	By Cash A/c II	150	2437.50
To Process III A/c	360	7,560	By Cash A/c III	360	7560
			By Abnormal Gain A/c	50	812.50
	<u>640</u>	<u>11,890</u>		<u>640</u>	<u>11,890</u>

Abnormal Wastage Account					
Process I A/c	20	520	By Cash A/c I	20	270
Process II A/c	40	1,520	By Cash A/c III	40	840
	—	—	Costing P/L A/c	—	930
	<u>60</u>	<u>2,040</u>		<u>60</u>	<u>2,040</u>

Abnormal Gain Account					
To Normal wastage (shortfall in sale)	50	812.50	By Process II A/c	50	1,575
To P/L A/c	—	<u>762.50</u>		—	—
	<u>50</u>	<u>1575</u>		<u>50</u>	<u>1575</u>

Answer to Q. No. 3 :

Process input = (850 + 50) × 100/90 = 1,000 units

$$\text{Cost per unit at Process A} = \frac{[(4 \times 1,000) + 500 + 200 + 450] - [10\% \text{ of } 1,000] \times \text{Rs.} 2}{1,000 - 10\% \text{ of } 1,000}$$

Selling price at $\frac{1}{6}$ th profit on sales or $\frac{1}{5}$ th profit on cost = 5.50 + 20% of 5.50 = ₹ 6.60

Process A A/c					
	Units	₹		Units	₹
Raw Material @ ₹ 4	1,000	4,000	Normal Loss A/c @ ₹ 2	100	200
Wages		500	Abnormal Loss A/c @ ₹ 5.50	50	275
Power		200	Bank (Sale) @ ₹ 6.60	340	2,244
General expenses		450	Process B A/c @ ₹ 5.50	510	2,805
P & L A/c (Profit on Sale)		374			
340 units @ ₹ 1.10					
	<u>1,000</u>	<u>5,524</u>		<u>1,000</u>	<u>5,524</u>
Normal Loss A/c					
Process A A/c @ ₹ 2	100	<u>200</u>	Bank @ ₹ 2	100	<u>200</u>
		<u>200</u>			<u>200</u>
Abnormal Loss A/c					
Process A A/c @ ₹ 5.50	50	275	Bank @ ₹ 3	50	150
		<u>275</u>	P & L A/c		<u>125</u>
					<u>275</u>

Statement of Profit :

Profit on sale 340 units @ ₹ 1.10 per unit	₹ 374
Less Abnormal loss	-125
Profit	₹ 249

Answer to Q. No. 4 :

$$\text{Cost per unit at Process I} = \frac{1,37,797 - 1008}{2,800 - 112 - 168} = ₹ 54.28135$$

Process I A/c				Units	Amount
	Units	Amount			
Materials	2,800	1,12,000	Normal Loss	112	-
Labour cost		20,608	→ Loss in weight	168	1,008
Administration cost		5,189	→ Scrap @ ₹ 6	840	45,596
			Transfer to warehouse	1,680	91,193
	<u>2,800</u>	<u>1,37,797</u>	Trans. to Process II A/c	<u>2,800</u>	<u>1,37,797</u>
			@ ₹ 54.28135		

$$\text{Cost per unit at Process II} = \frac{129,422 - 1,200}{[1,680 + 320] - 80 - 120} = ₹ 71.2344$$

COST ACCOUNTING

		Process II Account			
	Units	Amount	Normal Loss	Units	Amount
Transf. from Process I A/c	1,680	91,193	→ Loss in weight	80	-
Materials	320	20,480	→ Scrap @ ₹ 10	120	1,200
Labour cost		12,560	Transfer to warehouse	720	51,289
Administration cost		5,189	Transf. to Process III A/c	1,080	76,933
	<u>2,000</u>	<u>1,29,422</u>	@ ₹ 71.2344	<u>2,000</u>	<u>1,29,898</u>

$$\text{Cost per unit at Process III} = \frac{164,262 - 2,592}{(1,080 + 2,520) - 144 - 126} = ₹ 49.898$$

		Process III Account			
	Units	Amount	Normal Loss	Units	Amount
Transfer from Process II A/c	1,080	76,933	→ Loss in weight	144	-
Materials	2,520	70,560	→ Scrap @ ₹ 12	216	2,592
Labour cost		11,580	Transfer to warehouse	3,240	1,61,670
Administration		5,189	@ ₹ 49.898		
	<u>3,600</u>	<u>1,64,262</u>		<u>3,600</u>	<u>1,64,262</u>

Answer to Q. No. 5 :

PROCESS A

	Units	Amount		Units	Amount
To input	20,000	₹ 16,000	By Normal Wastage	400	₹ 40
To Materials		12,000	By Transfer To Process B A/c	19,600	37,960
To Labour		8,000			
To Expenses		2,000			
	<u>20,000</u>	<u>38,000</u>		<u>20,000</u>	<u>38,000</u>

PROCESS B

	Units	Amount		Units	Amount
To Process A	19,600	₹ 37,960	By Normal Wastage 5%	980	₹ 392
To Materials		4,000	By Abnormal Wastage	220	609
To Labour		6,000	By Process C	18,400	50,959
To Expenses		4,000			
	<u>19,600</u>	<u>51,960</u>		<u>19,600</u>	<u>51,960</u>

PROCESS C

	Units	Amount		Units	Amount
To Process B	18,400	₹ 50,959	By Normal Wastage	1,840	₹ 392
To Materials		4,000	By Finished Goods A/c	16,700	63,120
To Direct Labour		6,000			
To Expenses		2,000			
To Abnormal Effectives	140	529			
	<u>18,540</u>	<u>63,488</u>		<u>18,540</u>	<u>63,488</u>

NORMAL WASTAGE ACCOUNT

	Units	Amount		Units	Amount
To Process A	400	₹ 40	By Sale Proceeds of Waste Units :	1,840	₹ 392
To Process B	980	392	Process A	400	₹ 40
To Process C	1,840	368	Process B	980	392
			Process C	1,700	340
			By Abnormal Effec. A/c	140	28
	<u>3,220</u>	<u>800</u>		<u>3,220</u>	<u>800</u>

ABNORMAL WASTAGE ACCOUNT.

	Units	Amount		Units	Amount
To Process B	220	₹ 609	By Sale Proceeds of Waste Units	220	₹ 88
			By P. & L. A/c		521
	220	609		220	609

ABNORMAL EFFECTIVES ACCOUNT

	Units	Amount		Units	Amount
To Normal Wastage A/c	140	₹ 28	By Process C	140	₹ 529
To P & L A/c		501			
	140	529		140	529

Answer to Q. No. 6 :

PROCESS I ACCOUNT

	Units (Nos.)	Amount ₹		Units (Nos.)	Amount ₹
To Units introduced	40,000	3,20,000	By Normal Loss (5% @ 70p. per unit)	2,000	1,400
To Materials used	-	1,20,000	By Transfer to Process II (@ ₹ 14.70 per unit)	38,000	5,58,600
To Direct Labour	-	80,000			
To Production Exp.	-	40,000			
	40,000	5,60,000		40,000	5,60,000

PROCESS II ACCOUNT

	Units (Nos.)	Amount ₹		Units (Nos.)	Amount ₹
To Transfer from Process I A/c	38,000	5,58,600	By Normal Loss (7% @ 80 paise per unit)	2,660	2,128
To Materials used	-	40,000	By Normal Loss (WN1)	740	14,584
To Direct Labour	-	60,000	By Transfer to Process III @ ₹ 19.7078	34,600	6,81,888
To Production Exp.	-	40,000			
	38,000	6,98,600		38,000	6,98,600

PROCESS III ACCOUNT

	Units (Nos.)	Amount ₹		Units (Nos.)	Amount ₹
To Transfer from Process II Account	34,600	6,81,888	By Normal Loss @ 10% at ₹ 1 per unit	3,460	3,460
To Materials used	-	40,000	By Transfer to Finished Stock A/c @ 25.8969 per unit)	32,000	8,28,700
To Direct Materials used	-	40,000			
To Direct Labour	-	60,000			
To Production Exp.	-	28,000			
To Abnormal Effectives A/c (@ ₹ 25.8969 (WN 2))	860	22,272			
	35,460	8,32,160		35,460	8,32,160

Working Notes

1. Amount of Abnormal Loss in Process II

$$= \frac{\text{Normal Cost} \times \text{Abnormal Loss in units}}{\text{Normal Output}}$$

$$= \frac{6,98,600 - 2,128 \times 740}{18,000 - 2,600} = ₹ 14,584$$

2. Amount of Abnormal Effectives in Process III

$$= \frac{8,09,888 - 3,460 \times 860}{34,600 - 3,460}$$

Answer to Q. No. 7 :**Statement of Equivalent Production**

	Units	Material		Labour		Overheads	
		Qty.	%	Qty	%	Qty	%
Normal loss	100	—	—	—	—	—	—
Abnormal loss	50	50	100	50	100	50	100
Finished units	600	600	100	600	100	600	100
WIP	<u>250</u>	<u>200</u>	80	<u>150</u>	60	<u>150</u>	60
	<u>1,000</u>	<u>850</u>		<u>800</u>		<u>800</u>	

Statement of Cost per unit

	Cost ₹	Equivalent Production Units	Cost per Unit ₹
Unit introduced	6,000		
Others direct Materials	<u>2,700</u>		
	8,700		
-Value of normal loss	<u>200</u>		
	<u>8,500</u>	850	10
Labour	3,200	8.00	4
Overhead	1,600	800	2

Statement of Apportionment of Process Cost

Item	Element	Equivalent Units	Cost per unit ₹	Total Cost
Units completed	Material	600	10	6,000
	Labour	600	4	2,400
	Overhead	600	2	<u>1,200</u>
Abnormal Loss	Material	50	10	<u>9,600</u>
	Labour	50	4	500
	Overhead	50	2	200
Closing WIP	Material	200	10	<u>800</u>
	Labour	150	4	2,000
	Overhead	150	2	600
				<u>300</u>
				<u>2,900</u>

Process I Account

	Units	₹		Unit	₹
To Unit introduced	1,000	6,000	Normal loss	100	200
Material		2,700	Abnormal Loss	50	800
Wages		3,200	Closing WIP	250	2,900
Production overhead		1,600	Process II A/c (Transfer)	600	9,600
	<u>1,000</u>	<u>13,500</u>		<u>1,000</u>	<u>13,500</u>

Abnormal Loss Account

Process I A/c	50	800	Sale of Scrap	50	100
	<u>50</u>	<u>800</u>	Costing P/L A/c	-	700
				<u>50</u>	<u>800</u>

Answer to Q. No. 8 :

Statement of Equivalent of Production (Average Cost)

Particulars	Output Units	Material		Labour		Overhead	
		Unit	%	Unit	%	Units	%
Opening stock							
Units introduced	28,000	100	28,000	100	28,000	1,000	28,000
units completed	<u>12,000</u>	100	12,000	33 1/3	4,000	33 1/3	4,000
closing WIP							
Equivalent Production (units)	<u>40,000</u>		<u>40,000</u>		<u>32,000</u>		<u>32,000</u>

Statement of Cost per unit

	Material	Labour	Overhead
Opening WIP	29,600	6,600	5,800
Additional Cost	<u>1,12,400</u>	<u>33,400</u>	<u>30,200</u>
(A) Total Cost	1,42,000	40,000	36,000
(B) Equivalent Production (units)	40,000	32,000	32,000
Cost per units (A/B)	3.55	1.25	1.125
Total Cost per completed units	3.55 + 1.25 + 1.125		
	= 5.925 ₹		

Statement of value of Equivalent Production

Particulars	Type	Eq. Units	Cost p.u.	Cost	Total Cost
Units Completed	Mat.	28,000	3.55	99,400	1,65,900
	Lab.	28,000	1.25	35,000	
	OH	28,000	1.125	31,500	
Closing WIP	Mat.	12,000	3.55	42,600	52,100
	Lab.	4,000	1.25	5,000	
	OH	4,000	1.125	4,500	

Process Account

	Unit	₹	Unit	₹	
To Opening WIP (29,600 + 6600+ 5800)	8,000	42,000	Units completed	28,000	1,65,900
Material	32,000	1,12,400	Closing WIP	12,000	52,100
Wages		33,400			
Overhead		30,200			
	<u>40,000</u>	<u>2,18,000</u>		<u>40,000</u>	<u>2,18,000</u>

COST ACCOUNTING

Answer to Q. No. 9 :

	<u>Process Costing</u>		=	
Total sales value	A	500 × 18	=	9,000
	B	900 × 8	=	7,200
	C	400 × 4	=	1,600
	D	200 × 11	=	2,200
	Total		=	20,000 ₹

(a) Maximum price that may be paid for the raw material :

Sales value			20,000 ₹
- Conversion Cost :		1,000	
Carriage inwards		3,000	
Wages		20,000	
Manufacturing Overhead		2,000	
Administration Overhead		8,000	
Total		<u>2,000</u>	<u>10,000</u>
+ Desired Profit, 10% on sales			<u>10,000</u>
Amount available as maximum which may be paid for buying raw material			<u>10,000</u>

(b) (i) Comprehensive Statement of allocation Costs (Units)

Costs	Joint Products				Total
	A	B	C	D	
	500	900	400	200	
	₹	₹	₹	₹	₹
Materials	2,500	4,500	2,000	1,000	10,000
Wages	750	1,350	600	300	3,000
Carriage Inwards	250	450	200	100	1,000
Manufacture overhead	500	900	400	200	2,000
Admini. Over	<u>500</u>	<u>900</u>	<u>400</u>	<u>200</u>	<u>2,000</u>
Total Cost	<u>4,500</u>	<u>8,100</u>	<u>3,600</u>	<u>1,800</u>	<u>18,000</u>

(ii) Comprehensive statement of allocation of Costs (sales value)

Sales Value	<u>9,000</u>	<u>7,200</u>	<u>1,600</u>	<u>2,200</u>	<u>20,000</u>
Material	4,500	3,600	800	1,100	10,000
Wages	1,350	1,080	240	330	3,000
Carriage Inwards	450	360	80	110	1,000
Manufacture overhead	900	720	160	220	2,000
Administration	<u>900</u>	<u>720</u>	<u>160</u>	<u>220</u>	<u>2,000</u>
Total Cost	<u>8,100</u>	<u>6,480</u>	<u>1,440</u>	<u>1,980</u>	<u>18,000</u>

Answer to Q. No. 10 :

Input	Output	Statement of Equivalent Production								
		Units	%	Units	%	Units	%	Units	%	Units
600	Opening Stock	600	-	-	20	120	40	240	40	240
11,000	Normal Loss	1,000	-	-	-	-	-	-	-	-
	Abnormal Loss	200	100	200	100	200	70	140	70	140
	Finished Prodc.	8,200	100	8,200	100	8,200	100	8,200	100	8,200
	Closing Stock	1,600	100	1,600	70	1,120	60	960	60	960
<u>11,600</u>		<u>11,600</u>		<u>10,000</u>		<u>9,640</u>		<u>9,540</u>		<u>9,540</u>

Statement of Cost

Elements	Cost	Equivalent Production	Cost Per unit
Material :			
Material I	5,500		
- Scrap values	<u>500</u>		
Add in Material II	5,000	10,000	0.50
Labour	2,410	9,640	0.25
Overhead	7,155	9,540	0.75
Total Cost	<u>9,540</u>	9,540	<u>1.00</u>
	24,105		2.50

<u>Opening Stocks</u>		<u>Statement of Evaluation</u>		
Material I		?		
Material II		120 units × .25	30	
Labour		240 units × 0.75	180	
Overhead		240 units × 1.00	<u>240</u>	450
<u>Abnormal Loss</u>				
Material I		200 units × .50	100	
Material II		2000 × .25	50	
Labour		140 × .75	105	
Overhead		140 × 1.00	<u>140</u>	395
<u>Finished Production</u>				
Material I		8,200 units × .50	4,100	
Material II		8,200 × .25	2,050	
Labour		8,200 × .75	6,150	
Overhead		8,200 × 1.00	<u>8,200</u>	20,500
<u>Closing Stock</u>				
Material I		1,600 × .50	800	
Material II		1,120 × .25	280	
Labour		960 × .75	720	
Overhead		960 × 1.00	<u>960</u>	<u>2,760</u>
		Total Cost		<u>24,105</u>

Process II Account

	Units	Amt.		Units	Amt.
WIP	600	1,050	By Normal Loss	1,000	500
Process I	11,000	5,500	Abnormal loss	200	395
Material		2,410	Transfer to Process III		
Labour		7,155	(Finished Production +		
Overhead		9,540	Opening stock)	8,800	22,000
			WIP	1,600	2,760
	<u>11,600</u>	<u>25,655</u>		<u>11,600</u>	<u>25,655</u>

Answer to Q. No. 11 :

<u>Input Output</u>		<u>Material</u>		<u>Labour</u>		<u>Overhead</u>	
	Units	Units	%	Units	%	Units	
900	Open. WIP	-	-	40	360	40	360
	Normal Loss	-	-	-	-	-	-
	Abnormal Loss	100	200	70	140	70	140
9,100	Finished goods	100	6,900	100	6,900	100	6,900
	Closing WIP	100	1,000	80	800	80	800
	<u>10,000</u>		<u>8,100</u>		<u>8,200</u>		<u>8,200</u>

Statement of Cost

<u>Elements</u>	<u>Cost</u>	<u>Equivalent Production</u>	<u>Cost per unit</u>	
Materials	27,300			
- Scrap				
1,000 units × 3 ₹	<u>3,000</u>	24,300	8,100	3
Labour		8,200	8,200	1
Overhead		<u>16,400</u>	8,200	<u>2</u>
		<u>48,900</u>		<u>6</u>

Statement of value of Equivalent Production

Particulars	Type	Eq. Units	Cost p.u.	Cost	Total Cost
Abnormal Loss	Material	200	3	600	1,020
	Labour	140	1	140	
	Overheads	140	2	280	
Closing WIP	Material	1,000	3	3,000	5,400
	Labour	800	1	800	
	Overhead	800	2	1,600	
Op. WIP, completed	Material	—	3	—	1,080
	Labour	360	1	360	
	Overheads	360	2	720	
Issued, completed	Material	6,900	3	20,700	41,400
	Labour	6,900	1	6,900	
	Overhead	6,900	2	13,800	

Total cost of 7,800 units T/F to Process II

900 units out of opening WIP

→ Cost already incurred

4,500

→ Cost now incurred

1,080

5,580

6,900 units out of issued units

41,400

46,980

Process No.-I Account

Opening WIP	900	4,500	By Normal Loss	1,000	3,000
Material	9,100	27,300	Abnormal Loss	200	1,020
Labour		8,200	Process II	7,800	46,980
Overhead		<u>16,400</u>	Closing WIP	<u>1,000</u>	<u>5,400</u>
	<u>10,000</u>	<u>56,400</u>		<u>10,000</u>	<u>56,400</u>

Answer to Q. No. 12 :

Statement of Equivalent Production (Average Cost Method)

Particulars	Units	%	Units	%	Units	%	Units
Completed units	14,000	100	14,000	100	14,000	100	14,000
Closing WIP	6,000	100	6,000	33 $\frac{1}{3}$	2,000	33 $\frac{1}{3}$	2,000
	<u>20,000</u>		<u>20,000</u>		<u>16,000</u>		<u>16,000</u>

Statement of Cost per Unit

Particulars	Material	Labour	Overhead
Cost of opening WIP	₹ 6,000	1,000	1,000
Cost now incurred	<u>25,600</u>	<u>15,000</u>	<u>15,000</u>
Total cost	<u>31,600</u>	<u>16,000</u>	<u>16,000</u>
Equivalent units	20,000	16,000	16,000
Cost per unit	₹ 1.58	₹ 1	₹ 1

Statement of value of equivalent production

Completed units	Type of cost	Units	Cost/unit	Cost	Total Cost
Completed units	Material	14,000	1.58	22,120	50,120
	Labour	14,000	1	14,000	
	Overheads	14,000	1	14,000	
Closing WIP	Material	6,000	1.58	9,480	13,480
	Labour	2,000	1	2,000	
	Overheads	2,000	1	<u>2,000</u>	

Process A Account					
	Units	₹		Units	₹
To Opening WIP	4,000	8,000	By Completed units	14,000	50,120
To Materials	16,000	25,600	By closing WIP	6,000	13,480
To Labour		15,000			
To Overheads		15,000			
		<u>15,000</u>			
	<u>20,000</u>	<u>63,600</u>		<u>20,000</u>	<u>63,600</u>

Answer to Q. No. 13 : Statement of Equivalent Production during the month

Input Units	Particulars	Output Units	Plain Cloth		Equivalent Production Dyes & Chemicals		Labour		Overheads	
			%	Units	%	Units	%	Units	%	Units
2,000	Opening WIP completed during the month	2,000	-	-	20%	400	40	800	70%	1,400
24,000	Fresh input of plain cloth									
	Normal Loss 5% = 5/100 (2,000 + 24,000-6,000)	1,000	-	-	-	-	-	-	-	-
	Fresh output fully produced During the month (17,500-2,000)	15,500	100	15,500	100	15,500	100	15,500	100	15,500
	Abnormal Loss	1,500	100	1,500	60	900	40	600	20	300
	WIP at the end	<u>6,000</u>	100	<u>6,000</u>	70	4,200	65	3,900	25	1,500
		<u>26,000</u>		<u>26,000</u>		<u>21,000</u>		<u>20,800</u>		<u>18,700</u>
	Equivalent Production			<u>23,000</u>		<u>21,000</u>		<u>20,800</u>		<u>18,700</u>

Statement of Per Unit Cost of Each Input Item

Input Item	₹	Total Cost (₹)	Equivalent unit	Cost per Unit (₹)
Plain Cloth		2,33,000		
Less : Realisation from Normal				
Scrap 1,000 × ₹ 3	-3,000	2,30,000 +	23,000 =	₹ 10
Dyes & Chemicals		1,58,000 +	21,000 =	₹ 8
Direct Labour		1,04,000 +	20,800 =	₹ 5
Overheads		56,100 +	18,700 =	₹ 3
Total				<u>₹ 26</u>

Statement of Apportionment of Total Cost Incurred During the Month

Output Item	Input Item	Equivalent Units	Cost per unit (₹)	Total (₹)	Grand Total (₹)
Opening Working in Progress					
	Plain Cloth	-			
	Dyes & Chemicals	400	x 8	= 3,200	
	Direct Labour	800	x 5	= 4,000	
	Overheads	1,400	x 3	= 4,200	11,400
Abnormal Loss :					
	Plain Cloth	1,500	x 10	= 15,000	
	Dyes & Chemicals	900	x 8	= 7,200	
	Direct Labour	600	x 5	= 3,000	
	Overheads	300	x 3	= 900	26,100

Finished Output (Printed Cloth) :

Fully completed afresh during the month								
Plain Cloth	15,500	x	10	=	1,55,000			
Dyes & Chemicals	15,500	x	8	=	1,24,000			
Direct Labour	15,500	x	5	=	77,500			
Overheads	15,500	x	3	=	46,500	4,03,000		
Closing Work in Progress :								
Plain Cloth	6,000	x	10	=	60,000			
Dyes & Chemicals	4,200	x	8	=	33,600			
Direct Labour	3,900	x	5	=	19,500			
Overhead	1,500	x	3	=	4,500	1,17,600		
								5,58,100

Printing Process Account

	Units	Amount		Units	Amount
Opening WIP	2,000	50,000	Normal Loss A/c	1,000	3,000
Input	24,000	2,33,000	Abnormal Loss A/c		
Dyes & Chemical		1,68,000	@ ₹ 3	1,500	26,100
D. Labour		1,04,000	Finished output		
Factory overheads		56,100	transferred to Finished		
			Goods A/c	17,500	4,64,400
			Closing WIP	6,000	1,17,600
	<u>26,000</u>	<u>6,11,100</u>		<u>26,000</u>	<u>6,11,100</u>

Normal Loss Account		Units		Amount	
Units	Amount	Units	Amount	Units	Amount
Printing Process A/c	<u>1,000</u>	Bank (sale of scrap)	<u>1,000</u>	<u>1,000</u>	<u>3,000</u>
	<u>1,000</u>		<u>1,000</u>		<u>3,000</u>

Abnormal Loss Account		Costing P & L A/c	
Printing Process A/c	<u>1,500</u>		<u>26,100</u>
	<u>1,500</u>		<u>26,100</u>

Computation of Cost of Transfer of 17,500 units of Finished output :

	₹	₹
Cost already incurred on opening WIP	50,000	
Costs incurred on completing opening WIP	<u>11,400</u>	
Total cost of opening 2,000 units		61,400
Cost of fresh output of 15,500 units		4,03,000
Total cost of 17,500 units of completed		
Output transferred to Finished Goods A/c		<u>4,64,400</u>

- Notes : (i) Realisable value of normal scrap has been deducted from the cost of plain cloth because scrapped cloth has saleable value due to cloth content only.
- (ii) Since abnormal loss is due to fire, it has no saleable value. Hence entire value of output abnormally lost, i.e., ₹ 26,100 has been debited to P & L A/c.

Answer to Q. No. 14 :

Particulars	P	Q	Total
Final Sales Value	8,000 x 13.75 = 1,10,000	6,000 x 8.75 = 52,500	1,62,500
(-) Expected Profit	(22,000)	(10,500)	(32,500)
$\left(\frac{1}{4} \text{ of cost} = \frac{1}{5} \text{ of sales}\right)$			
(-) Separate Cost	8,000 x 5 = 40,000	6,000 x 4 = 24,000	(64,000)
Net Realisable Value	<u>48,000</u>	<u>18,000</u>	<u>66,000</u>

Share in Joint Cost :-

$$P = 88,000 \times \frac{8}{11} = ₹ 64,000.$$

$$Q = 88,000 \times \frac{3}{11} = ₹ 24,000$$

₹ 88,000

Answer to Q. No. 15 : Total Joint Cost

Raw Materials cost	₹ 35,90,000
Manufacturing expenses	<u>5,47,000</u>
	<u>41,37,000</u>

Apportionment of Total Joint Cost (on the basis of net realisable value)

Product	Sales Value (₹)	Post-separation Cost (₹)	Net realisable Value (₹)	Joint Cost (₹)
A	2,00,000 units × ₹ 25 = ₹ 50,00,000	12,50,000	37,50,000	26,25,000
B	30,000 × 17 = 5,10,000	1,50,000	3,60,000	2,52,000
C	25,000 × 12 = 3,00,000	50,000	2,50,000	1,75,000
D	20,000 × 10 = 2,00,000	-	2,00,000	1,40,000
E	75,000 × 20 = 15,00,000	1,50,000	<u>13,50,000</u>	<u>9,45,000</u>
			<u>59,10,000</u>	<u>41,37,000</u>

(a) Statement of profit if none of the Products are to be further processed

	A	B	C	D	E	Total
Sales Value (units × S.P. per unit at split-off point)	₹ 34,00,000	3,90,000	2,00,000	2,00,000	10,50,000	52,40,000
Less : Joint Cost	26,25,000	2,52,000	1,75,000	1,40,000	9,45,000	41,37,000
Profit	<u>7,75,000</u>	<u>1,38,000</u>	<u>25,000</u>	<u>60,000</u>	<u>1,05,000</u>	<u>11,03,000</u>

(b) Statement showing profit or loss if all the products are sold after further processing

Product	Joint cost	Separate cost	Total cost	Sales	Profit
A	26,25,000	12,50,000	38,75,000	50,00,000	11,25,000
B	2,52,000	1,50,000	4,02,000	5,10,000	1,08,000
C	1,75,000	50,000	2,25,000	3,00,000	75,000
D	1,40,000	—	1,40,000	2,00,000	60,000
E	9,45,000	1,50,000	10,95,000	15,00,000	<u>4,05,000</u>
					<u>17,73,000</u>

(c) If Products B and D are sold at split-off point and products A, C and E are sold after further processing, the company will to achieve maximum profit which is computed below:

	₹
A	11,25,000
B	1,38,000
C	75,000
D	60,000
E	<u>4,05,000</u>
	<u>18,03,000</u>

COST ACCOUNTING

Statement of Apportionment of Cost

Answer to Q. No. 16 :

	Main Product		By-Products		Total
	P ₹	A ₹	B ₹	₹	
Sales	90,000	60,000	40,000	1,90,000	
Less Profit 2.5%, 20%, 15% on Sales	<u>-22,500</u>	<u>-12,000</u>	<u>-6,000</u>	<u>-40,000</u>	
Cost of Sales	67,500	48,000	34,000	1,49,500	
Less : Selling & Distribution Expenses	<u>-6,750</u>	<u>-4,800</u>	<u>-3,400</u>	<u>-14,950</u>	
(Balance figure in the ratio of cost of sales)	60,750	43,200	30,600	1,34,500	
Less Cost beyond split off	<u>-6,000</u>	<u>-5,000</u>	<u>-4,000</u>	<u>-15,000</u>	
Share in Joint Costs	54,750	38,200	26,600	1,19,950	

	Main Product P A/c		₹
Share in Joint Costs	54,750	Sales	90,000
Costs after split off	6,000		
Selling & Distribution expenses	6,750		
Profit	<u>22,500</u>		<u>90,000</u>
	90,000		

Answer to Q. No. 17 : Statement of Apportionment of Joint Costs (Share of Brucil)

(i) Sales value of Brucil 2,000 units @ ₹ 34	₹ 68,000
Less : Estimated profit (2,000 × 4)	<u>-8,000</u>
Total cost	60,000
Less : Post-separation expenses (4,000 + 18,000 + 6,000)	<u>-28,000</u>
Share of Brucil in Joint expenses	32,000
Total Joint expenses (1,00,000 + 50,000 + 30,000)	1,80,000
Less Share of Brucil in Joint expenses	<u>32,000</u>
Joint Cost apportioned to Bomex	<u>1,48,000</u>

(ii) Statement of Profitability for the month of April

	Main Product Bomex (₹)	By-Product Brucil (₹)	Total ₹
Share in Joint Expenses	1,48,000	32,000	1,80,000
Separate Expenses	<u>36,000</u>	<u>28,000</u>	<u>64,000</u>
Total Cost	1,84,000	60,000	2,44,000
Sales	<u>1,96,000</u>	<u>68,000</u>	<u>2,64,000</u>
Profit	<u>12,000</u>	<u>8,000</u>	<u>20,000</u>

Answer to Q. No. 18 :

(a)

STATEMENT OF APPORTIONMENT OF JOINT COSTS
(according to sales value at split-off method)

Products	Sales value at the Split-off points (₹)	₹	Joint cost allocated
M	20,00,000	₹ 20,00,000 × 40,00,000/80,00,000	= 10,00,000
N	12,00,000	₹ 12,00,000 × 40,00,000/80,00,000	= 6,00,000
O	20,00,000	₹ 20,00,000 × 40,00,000/80,00,000	= 10,00,000
P	<u>28,00,000</u>	₹ 28,00,000 × 40,00,000/80,00,000	= <u>14,00,000</u>
	80,00,000		40,00,000

(b) STATEMENT OF APPORTIONMENT OF JOINT COSTS
(according to physical output (gallons) method)

Products	Physical output (in gallons)	Joint Cost Allocated	₹
M	3,00,000	$3,00,000 \times 40,00,000 / 5,00,000$	= 24,00,000
N	1,00,000	$1,00,000 \times 40,00,000 / 5,00,000$	= 8,00,000
O	50,000	$50,000 \times 40,00,000 / 5,00,000$	= 4,00,000
P	<u>50,000</u>	$50,000 \times 40,00,000 / 5,00,000$	= <u>4,00,000</u>
Total	5,00,000		40,00,000

(c) STATEMENT OF APPORTIONMENT OF JOINT COSTS
(according to estimated net realisable value method)

Products	Sales Revenue after further processing (₹)	Sales revenue at the split-off point (₹)	Further processing costs (₹)	Net realisable value (₹)	Joint Cost Allocated (₹)
'Super M'	1,20,00,000		80,00,000	40,00,000	20,00,000 $\left(₹ 40,00,000 \times \frac{₹ 40,00,000}{₹ 80,00,000} \right)$
'Super N'	40,00,000	-	32,00,000	8,00,000	4,00,000 $\left(₹ 8,00,000 \times \frac{₹ 40,00,000}{₹ 80,00,000} \right)$
O	-	20,00,000	-	20,00,000	10,00,000 $\left(₹ 20,00,000 \times \frac{₹ 40,00,000}{₹ 80,00,000} \right)$
'Super P'	48,00,000	-	36,00,000	12,00,000	6,00,000 $\left(₹ 12,00,000 \times \frac{₹ 40,00,000}{₹ 80,00,000} \right)$
Total				80,00,000	40,00,000

ii) DECISION ABOUT THE FURTHER REFINING OF PRODUCTS M, N OR P

Products	M ₹	N ₹	P ₹
1. Sales Revenue after further processing	1,20,00,000	40,00,000	48,00,000
2. Sales Revenue at the split-off point	20,00,000	12,00,000	28,00,000
3. Incremental Sales Revenue [(1) - (2)]	1,00,00,000	28,00,000	20,00,000
4. Further Processing Cost	80,00,000	32,00,000	36,00,000
5. Profit (Loss) arising due to Further Processing [(3) - (4)]	20,00,000	(4,00,000)	(16,00,000)

Decision : The above table shows that further processing of products N and P results in the decrease of the operating profit by ₹ 20,00,000. Hence, M/s Sunshine should not go for further processing of its N and P products. If these products are not processed further, it would increase the operating profits of the company for the month of October, 1999 by ₹ 20,00,000

Answer to Q. No. 19 :

(a) PROCESS I ACCOUNT

	Kgs.	₹		Kgs.	₹
To Direct Materials	2,500	10,000	By Normal Loss	250	500
To Direct Labour		6,250	By Process II	2,300	20,700
To Overhead		4,500	(@ ₹ 9)		
To Abnormal Gain (@ ₹ 9)	50	450			
	<u>2,550</u>	<u>21,200</u>		<u>2,550</u>	<u>21,200</u>

$$\text{Cost Per Kg.} = \frac{10,000 + 6,250 + 4,500 - 500}{2,500 \text{ kgs.} - 250 \text{ kgs.}}$$

NORMAL LOSS ACCOUNT

	Kgs.	₹		Kgs.	₹
To Process I	250	500	By Bank	200	400
			By Abnormal Gain	50	100
	<u>250</u>	<u>500</u>		<u>250</u>	<u>500</u>

ABNORMAL GAIN ACCOUNT

	Kgs.	₹		Kgs.	₹
To Normal Loss	50	100	By Process I	50	450
To P & L A/c.		350			
	50	450		50	450

(b)

STATEMENT OF PROFIT

(attributable to each of the Joint Products according to weight of output and market value of production)

Joint Prod	Output	Selling Price per Unit	Sales Value	Joint Cost Apportionment according to:	Profit (Loss)	Profit (Loss)
	Kg.	₹	₹	Weight of output	Weight of output	Market value of production
				₹	₹	₹
1	2	3	2 × 3 = 4	5	6	4-5 = 7
A	900	24	21,600	13,500*	17,250**	8,100
B	800	18	14,400	12,000	11,500	2,400
C	600	12	7,200	9,000	5,750	(1,800)
	2,300		43,200	34,500	34,500	8,700
						8,700

Working Notes :

(1) Joint Cost of three products under Process 2 :

Transfer of output from Process I	₹ 20,700
Add : Direct Labour	6,900
Overhead	<u>6,900</u>
Total	<u>34,500</u>

(2) Apportionment of Joint Cost on the basis of weight of output

Joint Products.	Output In kg.	S.P. (per unit)	Sales Revenue	Share of Joint Costs
A 900	24	21,600	₹ 34,500/6 × 3	= ₹ 17,250
B 800	18	14,400	₹ 35,500/6 × 2	= ₹ 11,500
C 600	12	7,200	₹ 34,500/6 × 1	= ₹ 5,750
		<u>43,200</u>		<u>₹ 34,500</u>

(3) Apportionment of Joint Cost on the basis of weight of output

Product	Output (Kgs.)	Share of Joint Cost
A	900	34,500 × 900/2,300 = 13,500
B	800	34,500 × 800/2,300 = 12,000
C	600	34,500 × 600/2,300 = 9,000
	<u>2,300</u>	<u>34,500</u>

Answer to Q. No. 20 : Cost per unit at Process X = $\frac{75,344 - 80}{4,000 - 80} = ₹ 19.20$

Process X Account

	Units	Amount		Units	Amount
Input Materials	4,000	32,000	Normal Wastage A/c @ ₹ 1	80	80
Direct labour		16,000	Abnormal Wastage @ ₹ 19.20	20	384
Works expenses		24,000	Process X Stock A/c @ ₹ 19.20	3,900	74,880
		3,344			
	<u>4,000</u>	<u>75,344</u>		<u>4,000</u>	<u>75,344</u>

Process X Stock Account

	Units	Amount		Units	Amount
Opening Stock @ ₹ 19	400	7,600	Process Y A/c-transfer	4,000	76,720
Transfer from Process X A/c	3,900	74,880	Closing stock @ ₹ 19.20	300	5,760
	<u>4,300</u>	<u>82,480</u>		<u>4,300</u>	<u>82,480</u>

Cost per unit at Process Y = $\frac{1,01,500 - 800}{4,000 - 200} = ₹ 26.50$

Process Y Account

	Units	Amount		Units	Amount
Transfer from Process X A/c	4,000	76,720	Normal Wastage A/c	200	800
Materials		6,000	Process Y Stock A/c @ ₹ 26.50 per unit	3,850	1,02,025
Direct labour		16,000			
Works expenses		2,780			
Abnormal gain A/c @ ₹ 26.50	50	1,325			
	<u>4,050</u>	<u>1,02,825</u>		<u>4,050</u>	<u>1,02,825</u>

Process Y Stock A/c

	Units	Amount		Units	Amount
Opening stock	600	15,600	Closing stock @ ₹ 26.50	800	21,200
Transfer from Process Y A/c	3,850	1,02,025	Cost of goods sold A/c	3,650	96,425
	<u>4,450</u>	<u>1,17,625</u>		<u>4,450</u>	<u>1,17,625</u>

Answer to Q. No. 21 Let the quantity of raw material introduced in Process I be 100 kg. The output and input in the four processes then is as follows:

	Process I	Process II	Process III	Process IV
Input (kg.)	100	75	60	48
Less: Loss (kg.)	25% = <u>25</u>	20% = <u>15</u>	20% = <u>12</u>	16 2/3% = <u>8</u>
Output (kg.)	<u>75</u>	<u>60</u>	<u>48</u>	<u>40</u>

Thus if the end output is 40 kg. the input in Process I is 100 kg. If output of process IV is 40,000 kg. the input in Process I will be $40,000 \times (100/40) = 1,00,000$ kg. Thus, for 1 kg. of output 2.5 kg. of materials is required. If costs of material increases or decreases by ₹ 1, the cost of output will increase or decrease by $100/40 = ₹ 2.50$ per kg.

Total cost of initial input for 40,000 kg. of output = $1,00,000 \text{ kg.} \times ₹ 50 = ₹ 50,00,000$

Input cost per kg. of output = $₹ 50 \times 2.5 \text{ kg.} = ₹ 125$.

Answer to Q. No. 22

Crushing Process Account (for January)

	Tons	₹		Tons	₹
Raw Materials	500	9,00,000	Bank (Sale of oil cakes)	200	60,000
Wages		32,000	Bank (Sundry by-product)	25	3,600
Power		4,800	Crude Oil transfer to Refining		
Sundry Materials		2,000	Process @ ₹ 3213.09	275	8,83,600
Factory Expenses		2,400			
Establishment Expenses		6,000			
	500	9,47,200		500	9,47,200

Refining Process A/c (for January)

	Tons	₹		Tons	₹
Crude oil transferred from Crushing Process	275	8,83,600	Bank (Sale of by-product)	20	3,600
Sundry Materials		7,600	Loss in weight	5	-
Wages		23,600	Refined Oil transfer to		
Power		4,000	Finishing Process		
Factory Expenses		4,000	@ ₹ 3,692.80	250	9,23,200
Establishment Expenses		4,000			
14,000 × (2÷7)	275	9,56,800		275	9,26,800

Finishing Processes A/c (for January)

	Tons	₹		Tons	₹
Refined oil transferred from Refining Process	250	9,23,200	Bank (Sundry Sales)	10	4,800
Wages		23,500			
Power		6,000			
Factory Expenses		3,800			
Establishment Expenses		4,000			
14,000 × (2÷7)					
Cost of Drums		84,100	Cost of Sales (@ ₹ 4,332.50)	240	10,39,800
	240	10,39,800		240	10,39,800

Answer to Q. No. 23

Statement of Profitability at the Split-off point

Products (i)	Sales Value at Split-off point (ii)	Joint Costs Apportioned (iii)	Profit (ii) - (iii) = (iv)
A	₹ 1,15,000	₹ 85,743	₹ 29,257
B	90,000	67,103	22,897
C	55,000	41,007	13,993
D	80,000	59,647	20,353
Total	3,40,000	2,53,500	86,500

Note : Joint cost has been apportioned in the ratio of sales at split-off point.

Statement of Profitability after Further Processing

Product (i)	Sales Value after Further Processing (ii)	Additional Processing Cost (iii)	Net Sale Value (ii) - (iii) = (iv)	Joint cost (v)	Profit (iv) - (v) = (vi)
A	₹ 1,68,000	₹ 60,000	₹ 1,08,000	₹ 85,743	₹ 22,257
B	1,10,000	10,000	1,00,000	67,103	32,897
C	60,000	-	60,000	41,007	18,993
D	90,000	20,000	70,000	59,647	10,353
Total	4,28,000	90,000	3,38,000	2,53,500	84,500

Statement of Incremental Cost and Revenue

Product	Incremental Processing Cost	Incremental Revenue (₹)	Gain or Loss (₹)
A	60,000	1,68,000 - 1,15,000 = 53,000	-(7,000)
B	10,000	1,10,000 - 90,000 = 20,000	10,000
C	-	60,000 - 55,000 = 5,000	5,000
D	20,000	90,000 - 80,000 = 10,000	-(10,000)
Total	90,000	88,000	-(2,000)

Incremental total revenue is greater than additional processing cost in case of B and C. Therefore B and C should be sold after further processing. It is less in case of A and D. Therefore A and D may be sold at the split-off point. This will maximize profit as shown below:

Statement Showing Maximum Profit with Appropriate Decisions

Product	Profit (₹)	
A	29,257	If sold at split-off point.
B	32,897	If sold after additional processing.
C	18,993	If sold after additional processing.
D	20,353	If sold at split-off point.
Total Maximum Profit	₹ 1,01,500	

Answer to Q. No. 24

(i) Statement of Net Income for Individual Products (Sale after Further Processing)

Products (i)	Sale value (ii)	Joint Cost (iii)	Separate cost (iv)	Total cost (iii) + (iv) = (v)	Profit (ii) - (v) = (vi)
A	₹ 1,15,000	₹ 70,592	₹ 30,000	₹ 1,00,592	₹ 14,408
B	10,000	6,138	6,000	12,138	(-) 2,138
C	4,000	2,455	-	2,445	1,545
D	30,000	18,415	1,000	19,415	10,585
Total	1,59,000	97,600	37,000	1,34,600	24,400

Note : 1. Joint cost has been apportioned to products in proportion to Sales Value. For A it will be $\frac{97,600 \times 1,15,000}{1,59,000} = 70,592$. In the same way calculations are made for B, C and D.

2. Joint cost can also be apportioned in the ratio of sales at split off point.

(ii) Statement of Net Income (sale at split off)

Products (i)	Sales Value at Split-off Point (ii)	Joint Cost (iii)	Profit (ii) - (iii) = (iv)
A	5,00,000 × 0.15 = ₹ 75,000	₹ 70,592	₹ 4,408
B	10,000 × 0.50 = 5,000	6,138	(-) 1,138
C	5,000 × 0.80 = 4,000	2,455	1,545
D	9,000 × 3.00 = 27,000	18,415	8,585
Total	1,11,000	97,600	13,400

	A	B	C	D
Incremental Sales Value (for A = 1,15,000-75,000)	40,000	5,000	4,000	3,000
Separate Costs	30,000	6,000	4,000	1,000
Incremental Gains	10,000	-(1,000)	Nil	2,000

In case of A and D there is incremental gain after further processing. Therefore A and D should be processed further but B and C should be sold at split-off point.

Statement showing Income with A and D
Further Processed but B and C Sold at Split off

Products (i)	Sales Value (ii)	Joint Cost (iii)	Separate Cost (iv)	Total Cost (iii) + (iv) = (v)	Profit (ii) - (v) = (vi)
A	₹ 1,15,000	₹ 70,592	₹ 30,000	₹ 1,00,592	₹ 14,408
B	5,000	6,138	-	6,138	(-) 1,138
C	4,000	2,455	-	2,455	1,545
D	30,000	18,415	1,000	19,415	10,585
Total	1,54,000	97,600	31,000	1,28,600	25,400

Thus, by altering the processing decisions, the overall net income will increase by ₹ 12,000 and will be ₹ 25,400.

Answer to Q. No. 25

Process I A/c

Particulars	Units	Amount	Particulars	Units	Amount
To Raw material introduced	2,000	60,000	By Wastage	20	-
To Wages		50,000	By Sale of By-product	380	34,545
To Factory overhead		40,000	By Transfer to Process II	1600	1,21,212
To Profit & Loss A/c (By-product)		5,757			
	2,000	1,55,757		2,000	1,55,757
Cost of By-product					(₹)
= $\frac{\text{Rs. 1,50,000}}{2,000 \text{ tonnes} - 20 \text{ tonnes}} \times 380 \text{ tonnes}$					28,788
Add: Profit (20% on cost)					5,757
Sale value of By-product					34,545

Process II A/c

Particulars	Units	Amount	Particulars	Units	Amount
To Transfer from Process I A/c	1600	1,21,212	By Wastage	30	-
To Wages		40,000	By Sale of By-product	170	25,881
To Factory overhead		30,000	By Transfer to Finished product	1400	1,70,507
To Profit & Loss A/c (By-product)		5,176			
	1600	1,96,388		1600	1,96,388

Cost of By-product	(₹)
Rs.1,91,212	20,705
= $\frac{1,91,212}{1600 \text{ tonnes} - 30 \text{ tonnes}} \times 170 \text{ tonnes}$	
Add : Profit (25% on cost)	5,176
Sale value of By-product	25,881

Answer to Q. No. 26

Product	Units (litres)	Market Value per litre ₹	Total Market Value ₹	Apportioned Costs ₹	Cost per Unit ₹
Petrol	32.0	1.20	38.4	57.4	1.80
Lubricating Oil	5.0	2.00	10.0	15.0	3.00
Fuel Oil	50.0	0.50	25.0	37.3	0.75
Kerosene	8.0	0.70	6.0	9.0	1.12
Gas Oil	3.0	0.30	0.9	1.3	0.43
	98.0		80.3	120.0	

Note: Costs are apportioned on the basis of market value (quantity × value per unit).

Answer to Q. No. 27**ALPHA ACCOUNT (MAIN PRODUCT)**

		₹			₹
To Materials :			By Beta Account (By-product)		1,100
Joint	10,000		By Cost of Production of Alpha		30,900
Separate	<u>6,000</u>	16,000			
To Labour:					
Joint	7,000				
Separate	<u>5,000</u>	12,000			
To Overheads:					
Joint	2,500				
Separate	<u>1,500</u>	4,000			
		32,000			32,000

BETA ACCOUNT (BY-PRODUCT)

		₹			₹
To Alpha Account (Bal. Fig.)			By Bank (Sale)		6,000
(Portion of Joint Expenses)		1,100*			
To Materials		500			
To Labour		2,000			
To Overheads		600			
To Profit		1,800			
		6,000			6,000

Answer to Q. No. 28 (i) STATEMENT SHOWING THE APPORTIONMENT OF JOINT COSTS

	Main Product P ₹	By Products		Total ₹
		A ₹	B ₹	
Sales	90,000	60,000	40,000	1,90,000
Less: Profit	22,500	12,000	6,000	40,500
Cost of Sales	67,500	48,000	34,000	1,49,500
Less: Selling Expenses (10% of ₹ 1,49,500)	2,990	5,980	5,980	14,950
Apportioned in the ratio of 2:4:4	64,510	42,020	28,020	1,34,550
Cost of Production	6,000	5,000	4,000	15,000
Less: Cost after separation	58,510	37,020	24,020	1,19,550
Value at split off point				

(ii) STATEMENT SHOWING THE ECONOMICS OF PRODUCT A

	Sales at split off stage ₹	Sales after further processing ₹
Sales	58,500	60,000
Less: Costs	37,020	(37,020 + 5,000) 42,020
Profit	21,480	17,980

Product A should be disposed at split off point.

Answer to Q. No. 29

PROCESS A ACCOUNT

	Tons	₹		Tons	₹
To Materials	1,000	12,000	By Wastage	2	-
To Wages		10,000	By By-products (sale)	8	200
To Factory Overheads (75% on wages)		7,500	By Cost of Products Transferred to Process B	990	29,300
	1,000	29,500		1,000	29,500

PROCESS B ACCOUNT

	Tons	₹		Tons	₹
To Transfer from Process	990	29,300	By Wastage	3	-
To Materials		700	By By-products (sale)	5	100
To Wages		20,000	By Cost of production Transferred to Process C	982	61,900
To Factory Overheads (60% on wages)		12,000		990	62,000
	990	62,000		990	62,000

PROCESS C ACCOUNT

	Tons	₹		Tons	₹
To Transfer from Process B	982	61,900	By Wastage	2	-
To Materials		600	By Cost of production to Finished Goods	980	1,16,500
To Wages		36,000		982	1,16,500
To Factory Overheads (50% on wages)		18,000			
	982	1,16,500		982	1,16,500

Answer to Q. No. 30 (i)

Statement of Equivalent Production
(FIFO Method)

Input				Material	Labour		Overheads		
				%	Units	%	Units	Units	
Opening W.I.P.	2,250 units	Completed	2,250 units	-	-	40	900	40	900
Introduced	22,750 units	Completed	17,250 units	100	17,250	100	17,250	100	17,250
		Normal loss	2,500 units						
		Abnormal Loss	500 Units	100	500	70	350	70	350
		Closing W.I.P.	2,500 units	100	2,500	80	2,000	80	2,000
	<u>25,000</u>				<u>20,250</u>		<u>20,250</u>		<u>20,500</u>

(ii)

Statement of Cost per unit

Item of Cost	Amount (₹)	Equivalent production	(Unit)	Cost per unit (₹)
Material	88,500			
Less: Revenue from sale of normal loss (2,500 units × ₹ 3)	7,500	81,000	20,500	4
Direct wages		20,500	20,500	1
Production overheads		41,000	20,500	2
Cost of completing one unit				7

Statement of Evaluation

	Type of Cost	Eq. Units	Cost/Unit	Cost	Total Cost
Abnormal Loss	Material	500	4	2,000	
	Labour	350	1	350	
	Overheads	350	2	700	3,050
Closing WIP	Material	2,500	4	10,000	
	Labour	2,000	1	2,000	
	Overheads	2,000	2	4,000	16,000
Opening WIP, now completed	Material	—	4	—	
	Labour	900	1	900	
	Overheads	900	2	1,800	2,700
Introduced and completed	Material	17,250	4	69,000	
	Labour	17,250	1	17,250	
	Overheads	17,250	2	34,500	1,20,750

Computation of Total cost of 19,500 units transferred to Process II :

2,250 units of opening WIP			₹
→ Cost already incurred	11,250		13,950
→ Cost now incurred	<u>2,700</u>		<u>1,20,750</u>
17,250 units out of introduced units			<u>1,34,700</u>

Process I Account

Particulars	Units	₹	Particulars	Units	₹
To Opening WIP	2,250	11,250	By Normal Loss	2,500	7,500
To Material	22,750	88,500	By Unit completed and transferred to Process II	19,500	1,34,700
To Wages		20,500	By Abnormal loss	500	3,050
To Production overheads		41,000	By Closing WIP	2,500	16,000
	25,000	1,61,250		25,000	1,61,250

Answer to Q. No. 31 (i) Statement of profitability of an Oil Mill (after carrying out further processing) for the quarter ending 31st March 2005.

Products	Sales Value after further processing	Share of Joint cost	Additional processing cost	Total cost after processing	Profit (loss)
AOXE	1,72,500	98,567	43,000	1,41,667	30,833
BOXE	15,000	19,733	9,000	28,733	(13,733)
COXE	6,000	4,933	—	4,933	1,067
DOXE	45,000	24,667	1,500	26,167	18,833
	2,38,500	1,48,000	53,500	2,01,500	37,000

(ii) Statement of profitability at the split off point

Products name	Selling price of split off	Output in units	Sales value at split off point	Share of joint cost	Profit at split off point
AOXE	15	8,000	1,20,000	98,667	21,333
BOXE	6	4,000	24,000	19,733	4,267
COXE	3	2,000	6,000	4,933	1,067
DOXE	7.50	4,000	30,000	24,667	5,333
			1,80,000	1,48,000	32,000

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

Answer to Q. No. 32 :

Process III A/c

	Units	₹		Units	₹
To Opening W.I.P.	2,000	25,750	By Normal Loss	2,500	7,500
To Process II A/c	53,000	4,11,500	By Process IV	48,000	7,19,750
To Direct Materials		1,97,600	By Closing WIP	5,000	61,500
To Direct Wages		97,600			
To Production Overheads		48,800			
To Abnormal Gain	500	7,500			
	55,500	7,88,750		55,500	7,88,750

$$\text{Normal Loss} = \frac{5}{100} [\text{Op. WIP} + \text{Units from Process II} - \text{Closing WIP}]$$

$$= \frac{5}{100} (2,000 + 53,000 - 5,000) = 2,500 \text{ units}$$

Statement of Equivalent Production (FIFO)

Units In	Particulars	Units Out	Equivalent Units							
			Mat. (1)		Mat. (2)		Lab		OH	
			%	Qty.	%	Qty.	%	Qty.	%	Qty.
2,000	Op. WIP, completed	2,000	—	—	20	400	40	800	400	800
53,000	Introduced and completed	46,000	100	46,000	100	46,000	100	46,000	100	46,000
	Transferred	48,000								
	Normal Loss	2,500	—	—	—	—	—	—	—	—
	Closing WIP	5,000	100	5,000	70	3,500	50	2,500	50	2,500
	Abnormal Gain	(500)	100	(500)	100	(500)	100	(500)	100	(500)
55,000		55,000		50,500		49,400		48,800		48,800

Statement of Cost per unit

Type of Cost	Amount	Equivalent Units	Cost per unit
Material (1)	4,11,500		
(-) Normal loss	<u>7,500</u>		
	4,04,000	50,500	8
Material (2)	1,97,600	49,400	4
Labour	97,600	48,800	2
Overheads	48,800	48,800	1

Statement of Value of Equivalent Production

Op. WIP, now Completed	Mat (1)	-	8	-	
	Mat (2)	400	4	1,600	
	Lab.	800	2	1,600	
Introduced & Completed	OH	800	1	800	4,000
	Mat (1)	46,000	8	3,68,000	
	Mat (2)	46,000	4	1,84,000	
	Lab.	46,000	2	92,000	
Abnormal Gain	OH	46,000	1	46,000	6,90,000
	Mat (1)	500	8	4,000	
	Mat (2)	500	4	2,000	
	Lab.	500	2	1,000	
Closing WIP	OH	500	1	500	7,500
	Mat (1)	5,000	8	40,000	
	Mat (2)	3,500	4	14,000	
	Lab.	2,500	2	5,000	
	OH	2,500	1	2,500	61,500

Computation of Total Cost of 48,000 units transferred to Process IV

2,000 units of Oping WIP			
- Cost already incurred	25,750		
- Cost now incurred	4,000	29,750	
46,000 Units out of introduced units		6,90,000	
		<u>7,19,750</u>	

Answer to Q. No. 33 :

Process III Account

	Units	₹		Units	₹
To Opening WIP	6,000	19,440	By Normal Loss	3,000	2,400
To Process 2	48,000	1,10,400	By Abnormal Loss	500	1,800
To Materials		27,180	By Finished Goods Stock A/c	46,500	1,95,300
To Wages & Overheads		54,70	By Closing WIP	4,000	12,240
	54,000	2,11,740		54,000	2,11,740

Quantity of Normal Loss

$$= \frac{6}{100} [6,000 \text{ units} + 48,000 \text{ units} - 4,000 \text{ units}]$$

$$= 3,000 \text{ units}$$

Statement of Equivalent Production

Particulars	Units Out	Equivalent Units					
		Material (1)		Material (2)		Wages & OH	
		%	Qty.	%	Qty.	%	Qty.
Units completed	46,500	100	46,500	100	46,500	100	46,500
Normal Loss	3,000	--	--	--	--	--	--
Abnormal Loss	500	100	500	80	400	60	300
Closing WIP	4,000	100	4,000	50	2,000	30	1,200
	54,000		51,000		48,900		48,000

Statement of Cost per unit

Particulars	Material (1)	Material (2)	Wages & OH
Cost in opening WIP	14,400	2,160	2,880
Cost now incurred	1,10,400	27,180	54,720
Sale Value of N Loss	(24,400)	--	--
Total Cost	1,22,400	29,340	57,600
Equivalent Units	51,000	48,900	48,000
Cost per unit	₹ 2.4	₹ 0.6	₹ 1.2

Statement of Value of Equivalent Production

	Type of Cost	Eq. Units	Cost/Unit	Cost	Total Cost
Abnormal Loss	Mat.(1)	500	2.4	1,200	1,800
	Mat. (2)	400	0.6	240	
	Wages & OH	300	1.2	360	
Units completed	Mat. (1)	46,500	2.4	1,11,600	1,95,300
	Mat. (2)	46,500	0.6	27,900	
	Wages & OH	46,500	1.2	55,800	
Closing WIP	Mat. (1)	4,000	2.4	9,600	12,240
	Mat. (2)	2,000	0.6	1,200	
	Wages & OH	1,200	1.2	1,440	

MATERIALS COST

Q.1. A consignment consisting of four grades of material was purchased for ₹ 2,40,000. The storekeeper sorted them out and recorded the following :

Grade 1	4,000 units	Grade 3	10,000 units
Grade 2	8,000 units	Grade 4	12,000 units

The total sales of grade 1 amounted to ₹ 32,000 (the rate of profit being 33 1/3 % of cost) and those of grade 2 at a unit price of 1.5 times that of grade 1 (the rate of profit was 33 1/3% of sales). Similarly, the grade 3 material was sold for ₹ 1,00,000 yielding a profit of 20% on sales.

Calculate the purchase price of each grade on the basis of the above information.

Q.2. After inviting tenders, two quotations are received as follows :

Supplier A – ₹ 2.20 per unit

Supplier B – ₹ 2.10 per unit plus ₹ 2,000 fixed charges irrespective of units ordered.

Calculate the order quantity for which the total purchase price will be the same. Considering all factors regarding production requirements and availability of finance, the purchase officer wants to place an order for 15,000 units, which supplier should he select ?

Q.3. A manufacturer of Surat purchased the Chemicals A, B and C from Mumbai. The Invoice gave the following :

			₹
Chemical A : 3,000 kg.	@ ₹ 4.20 per kg.		12,600
Chemical B : 5,000 kg.	@ ₹ 3.80 per kg.		19,000
Chemical C : 2,000 kg.	@ ₹ 4.75 per kg.		9,500
VAT (Credit document not received)			2,055
Railway Freight			<u>1,000</u>
Total Cost			<u>44,155</u>

A shortage of 200 kg. in Chemical A, of 280 kg. in Chemical B and of 100 kg. in Chemical C was noticed due to breakages. At Surat, the manufacturer paid Octroi Duty @ ₹ 0.10 per kg. He also paid Cartage ₹ 22 for Chemical A, ₹ 63.12 for Chemical B and ₹ 31.80 for Chemical C. Calculate the rate of material cost per kg. that you would suggest for pricing issue chemicals assuming a provision of 5% towards further deterioration as storage loss.

Q.4. At what price per unit would Part No. A32 be entered in stores ledger, if the following invoice was received from a supplier :

		₹
Invoice		
200 units of Part No. A32 @ ₹ 5 per unit		1,000
Less: 20% Discount		<u>200</u>
		800
Add: excise duty @ 15%		<u>120</u>
		920
Add: Packing charges		<u>50</u>
		<u>970</u>

Notes:

1. 2% discount will be given for payment in 30 days.
2. Documents substantiating payment of excise duty is enclosed for claiming MODVAT CREDIT.

COST ACCOUNTING

Q.5. Raw materials 'X' costing ₹ 100 per kilogram and 'Y' costing ₹ 60 per kilogram are mixed in equal proportions for making product 'A'. The loss of materials in processing works out to 25% of the output. The production expenses are allocated at 50% of direct material cost, the end product is priced with a margin of 33 1/3% over the total cost. Material 'Y' is not easily available and substitute raw material 'Z' has been found for 'Y' costing ₹ 50 per kilogram. It is desired to maintain the selling price of the end product at existing levels and ensure the same quantum of profit as at present.
To compute what should be the ratio of mix of the raw materials X and Z ?

Q.6. A manufacturer has the option to procure raw material from following two sources :
Source I assures that the defectives will not exceed 2% of the supplied quantity.
Source II does not give any assurance, but on the basis of past experience, it is observed that the defective percentage is 2.8%.

The material is supplied in lots of 1,000 units by both sources. Source II supplies the lot at a price which is lower by ₹ 100 as compared to source I. The defective material units can be rectified at cost of ₹ 5 per unit. Which of the two sources is more economical ?

Q.7. A timber merchant purchased 1,000 c.ft. of timber logs on 1st April, 2013 @ ₹ 100 per c.ft. and stored them in his timber yard for six months for seasoning. In the timber yard the following items of expenses were incurred during the period of seasoning :

- (i) Rent ₹ 1,250 p.m.
- (ii) Salaries of 4 Guards @ ₹ 250 p.m. per guard
- (iii) Incidental Expenditure for Maintenance, Power, Lighting, etc. ₹ 750 p.m.
- (iv) Annual Administration Overhead ₹ 10,000.

50% of the floor area of the godown and other connected operations were incurred for stocking the seasoned timber. Normal loss due to seasoning should be taken at 10%.

Calculate the selling price of the seasoned timber per c.ft. on 1st October, 2013 assuming that the profit margin on cost was 15%.

Q.8. A supplier quotes for Material A as follows:

Lot price	1 to	100 units	₹ 10 each.
Lot price	101 to	500 units	₹ 9 each.
Lot price	501 to	1,000 units	₹ 8 each.

Trade discount 20%. Cash discount 2.5% in seven days. Containers charged at ₹ 20 each, ₹ 14 credited on return. 1 container required for every 100 units. The purchaser decides to buy 600 units. Transport charges amounting to ₹ 20 and storage ₹ 4 were charged by the supplier. Calculate purchase price per unit of Material A.

Q.9. XYZ Ltd. has capacity to produce 5000 tons of a product in a year. The product passes through two departments P and Q. The sales forecast for the next year is full utilization of production capacity in the following customer mix :

- Mr. X : 3000 tons at ₹ 1,80,000 per ton
Mr. Y : 2000 tons at ₹ 2,00,000 per ton

The company has option to buy raw material from any one or more of the following three suppliers:

- (a) Supplier L is prepared to supply 3800 tons of material @ ₹ 65,000 per ton.
- (b) Supplier M offers to supply 4000 tons of material @ ₹ 60,000 per ton.
- (c) Supplier N offers to supply @ ₹ 70,000 per ton and agrees to give a discount of 5% and also bear entire transport cost subject to the condition that the entire input requirement is purchased from him.

The cost of transporting materials from suppliers premises to XYZ Ltd. is ₹ 3,000 per ton in case of purchases from L and ₹ 5,000 per ton in case of M.

Average scrap in production Department P is 5% and in Department Q 10% of the final output. The scrap of Department P realises ₹ 20,000 per ton and that of Department Q ₹ 25,000 per ton.

Budgeted costs for the two departments for the next year are.

	Departments	
	P	Q
Direct Labour	₹ 20,00,000	₹ 50,00,000
Overheads	₹ 60,00,000	₹ 1,50,00,000

Calculate : (a) The gross quantity of material input to be purchased; (b) the selection of the source of procurement and net per ton cost of procurement; and (c) the total profit for the next year assuming that the distribution cost is 10% of cost of production.

Q.10. The following figures are taken from the records of a Co. for the year 2013.

	Opening Stock	Purchases	Closing Stock
Material X	₹ 1,400	₹ 23,000	₹ 400
Material Y	₹ 2,000	₹ 3,600	₹ 2,400

Calculate the material turnover ratio of the above two materials and express in number of days the average inventory is held. Also determine which of the two materials is fast moving.

Q.11. From the following figures, calculate the Economic Order Quantity :

Annual consumption of material -	1,20,000 units
Cost of placing one order -	₹ 80
Cost per unit -	₹ 1.50.
Cost of storage & carrying -	20% per annum of purchase price.

Q.12. From the following particulars, calculate the Economic Order Quantity :

Annual requirement	1,600 units
Cost of materials per unit	₹ 40
Cost of placing and receiving one order	₹ 50
Inventory carrying cost:	10% p.a. of purchase price.

Q.13. From the following information calculate Economic Order Quantity.

(i) Quarterly consumption of materials	2,000 kg.
(ii) Cost of placing one order	₹ 50
(iii) Cost per unit	₹ 40
(iv) Storage and carrying Cost	8% per annum

Q.14. Following information relating to a type of raw material is available:

Annual requirement	2,400 units
Unit price	₹ 2.4
Ordering cost per order	₹ 4
Storage cost	2% per annum
Interest rate	10% per annum

Calculate Economic Order Quantity and total amount of inventory cost in respect of the particular raw material.

Q.15. A company manufactures a product having monthly demand of 2000 units. For one unit of the finished product, 2 kgs of a particular raw material is needed. The purchase price of the material is ₹ 20 per kg. The ordering cost is ₹ 120 per order and holding cost is 10% per annum. Calculate

- Economic Order Quantity (EOQ)
- Ordering and holding cost

COST ACCOUNTING

- Q.16. JP Limited manufacturer of a special product, follows the policy of EOQ (Economic Order Quantity) for one of its components. The component's details are as follows :
- | | |
|---|-----------------------|
| Purchase Price Per Components | ₹ |
| Cost of an order | 200 |
| Annual Cost of Carrying One Unit in Inventory | 100 |
| Total Cost of ordering and storage & carrying | 10% of Purchase Price |
| | 4,000 |

The company has been offered a discount of 2% on the price of the component provided the lot size is 2,000 components at a time.

You are required to :

- Compute the EOQ
- Advise whether the quantity discount offer can be accepted. (Assume that the inventory carrying cost does not vary according to discount policy).
- Would your advise differ if the company is offered 5% discount of a single order ?

- Q.17. PQR Limited produces a product which has a monthly demand of 52,000 units. The product requires a component X which is purchased at ₹ 15 per kg. For every finished product, 2 kgs. of Component X are required. The Ordering cost is ₹ 350 per order and the Carrying cost is 12% p.a.

Required:

- Calculate the economic order quantity for Component X.
- What is the minimum ordering and carrying cost, the Company has to incur ?
- If the minimum lot size to be supplied is 52,000 kgs., what is the extra cost, the company has to incur?

- Q.18. A Company uses 75,000 valves per year and the usage is fairly constant at 6,250 valves per month, the valves cost ₹ 1.50 per unit and the carrying cost is estimated to be 20% of inventory investment on the annual basis. The cost to place an order and process the delivery is ₹ 18. It takes 45 days to receive delivery from the date of an order and a safety stock of 3,200 valves is desired.

You are required to determine :

- the most economical order quantity and frequency of orders;
- the Re-order level.

- Q.19. A company manufactures a product for which the raw material is purchased at ₹ 60 per kg. The company incurs handling cost of ₹ 360 plus freight of ₹ 390 per order. The carrying cost of inventory of raw material is ₹ 0.50 per kg. per month. In addition, the cost of working capital finance on investment in inventory of raw material is ₹ 9 per kg. per annum. The annual production is 1,00,000 units and 2.5 units are obtained from one kg. of raw material.

Required :

- Calculate EOQ of raw material.
- How frequently the orders should be placed.
- If the company is proposed to place orders on quarterly basis, what percentage of discount in the price of raw material should be negotiated.

- Q.20. A manufacturing company uses 50,000 kgs. materials per year. The purchase price is ₹ 1 per kg. The administration cost per purchase order is ₹ 50, and carrying cost is 20% of the purchase price. The company currently has an optimum purchasing policy but has been offered a 0.4 per cent discount if they purchase five times per year. Should the offer be accepted? If not, what counter offer should be made?

- Q.21. EXE Limited has received an offer of quantity discounts on its order of materials as under
- | | |
|------------------------|---------------------------|
| <i>Price per tonne</i> | <i>Ordering Qty.</i> |
| 1,200 | Less than 500 |
| 1,180 | 500 and less than 1,000 |
| 1,160 | 1,000 and less than 2,000 |
| 1,140 | 2,000 and less than 3,000 |
| 1,120 | 3,000 and above. |

The annual requirement for the material is 5,000 tonnes. The ordering cost per order is ₹ 1,000 and the stock-holding cost is estimated at 20% of material cost per annum. You are required to compute the most economical purchase level. What will be your answer to the above question if there are no discounts offered and the price per tonne is ₹ 1,500 ?

- Q.22. Assume that the following quantity discount schedule for a particular bearing is available to a retail store :

<i>Order Size (Units)</i>	<i>Discount</i>
Below 50	0%
50 or more, Below 100	5%
100 or more, Below 200	10%
200 or more	12%

The cost of a single bearing with no discount is ₹ 30. The annual demand is 250 units. Ordering cost is ₹ 20 per order and annual inventory carrying cost is 10% of purchase price.

Determine the optimal order quantity and the associated minimal total cost of inventory and purchasing costs.

- Q.23. The quarterly production of a company's product is 20,000 units. Each unit of product requires 0.5 kg. of raw material. The cost of placing one order is ₹ 100 and inventory carrying cost of one kg. is ₹ 2 per annum. The lead time for procurement of order is 36 days and safety stock of 1,000 kgs. of raw material is maintained by the company. The company has been able to negotiate following discount structure with the raw material supplier :

<i>Order Quantity (kgs.)</i>	<i>Total Discount (₹)</i>
Upto 6,000	NIL
6,000 - 8,000	400
8,000 - 16,000	2,000
16,000 - 30,000	3,200
30,000 - 45,000	4,000

You are required to :

- Calculate the re-order level taking 30 days in a month.
- Prepare a statement showing total cost of ordering and storage of raw material after considering the discount if the company elects to place one, two, four or six orders in a year.
- State the number of orders which the company should place to minimize the cost after taking EOQ into consideration.

- Q.24. Two components A and B are used as follows :

Normal Usage	50 units per week each.
Minimum Usage	25 units per week each.
Maximum Usage	75 units per week each.
Re-order Quantity :	
A : 300 units	B : 500 units
Re-order Period :	
A : 4 to 6 weeks	B : 3 to 4 weeks

Calculate for each components :
(1) minimum Level; (2) Maximum Level; and (3) Average Stock Level.

COST ACCOUNTING

Q.25. A company uses three raw materials A, B and C for a particular product for which the following data apply :

Raw material	Usage per Unit Kgs.	Re-Order Quantity Kgs.	Price per Kg.	Delivery Period (in weeks)			Re-Order Level	Minimum Level (kg)
				Mini.	Avrg.	Max.		
A	10	10,000	0.10	1	2	3	8,000	
B	4	5,000	3.30	3	4	5	4,750	2,000
C	6	10,000	0.15	2	3	4		

Weekly production varies from 175 to 225 units, averaging 200 units of the said product. What would be the following quantities :

1. Minimum Stock of A ?
2. Maximum Stock of B ?
3. Re-order Level of C ?

Q.28. The following information is known about a group of items. Classify these materials items in A, B and C categories.

Code No.	Annual consumption (pieces)	Unit price (in ₹)
201	600	5
202	350	120
203	300	1
204	275	20
205	200	1
206	550	40
207	250	3
208	400	10
209	900	10
210	400	2

Q.27. A chemical manufacturing unit uses ingredient A as basic raw material. The cost of raw material is ₹ 20 per kg. and input-output ratio is 120%. Due to a sudden shortage in the market, the material becomes non-available and the manufacturing unit is considering the use of any of the following substitutes available :

Material	I - O Ratio	Purchase price per kg.
B ₁	135%	₹ 26
B ₂	110%	₹ 30

You are required to recommend which of the above substitutes is to be used. Also indicate additional cost required to be incurred.

Q.28. The experience of the firm being out of stock is summarised below :

<u>Demand (Units) during lead time</u>	<u>No. of times (%)</u>
500	
400	1%
250	2%
100	3%
50	4%
0	10%
	80%

2. The stock out cost is ₹ 80 per unit.
 3. Carrying cost of inventory is ₹ 12 per unit.
- Determine the optimum level of inventory during lead time.

Q.29. A company uses EOQ model to determine the optimum number of units to be ordered. It is now desired to determine how much safety stock to hold. (Presently there is no safety stock).

The company estimates annual demand (360 working days) to be 36,000 units. Using EOQ model, the company orders 3,600 units at a time. The lead time for the order is 6 days. The annual carrying cost of one unit is ₹ 450. The stock-out cost is estimated to be ₹ 900 per unit.

The company has analysed the demand during 200 past re-order periods. The records indicate the following patterns :

Demand during lead time	Number of times the quantity was demanded
540	6
560	12
580	16
600	130
620	20
640	10
660	6
	<u>200</u>

Required :

- (1) Determine the level of re-order under existing situation.
- (2) Determine the level of safety stock that the company should maintain in order to minimise expected stock-out cost and carrying cost (consider safety stock level of 0, 20, 40 and 60 units)

Q.30. Following information is provided to you –

1. Annual requirement = 54,000 units.
2. Purchase Price = ₹ 360 per unit.
3. Total 360 days in a year.
4. Cost of one order = ₹ 9,000.
5. Inventory carrying cost per unit per annum = ₹ 300
6. Lead time is generally 6 days but it can be upto 10 days in the following manner :-

Delivery days	6	7	8	9	10
% of occurrence	75	10	5	5	5

Required :

- (i) EOQ and how frequently the orders to be placed.
- (ii) If the firm is willing to assume 15% risk of being out of stock, what would be the re-order point and safety stock.
- (iii) If the firm is willing to assume 5% risk of being out of stock, what would be the re-order point and safety stock.
- (iv) If stock out risk is 5%, what would be ordering cost and carrying cost.
- (v) Suppose, the ordering cost, becomes ₹ 600 and inventory carrying cost becomes ₹ 720 per unit per year, compute EOQ and how frequently the orders should be placed.

Q.31. A & Co. has projected the following for a product P.

Annual requirement	10,400 units
Economic Order quantity	1,040 units
Expected usage per week	200 units
Re-order period	2 weeks

COST ACCOUNTING

6.8

The probability distribution of usage of P over a two week period is as follows :

Usage (units)	150	250	310	400	460	500	560
Probability	.05	.05	.10	.50	.10	.15	.05

The stock out cost is ₹ 4 per unit and carrying cost of ₹ 5.20 per unit per annum.
Calculate Safety Stock and Re-order point.

Q.32. Oil India is a bulk distributor of Octane Petrol. The following summary of information is available of June, 2008 :

Sales	₹ 9,45,000
Selling Overheads	25,000
Opening Stock : 1,00,000 litres @ ₹ 3 per litre	3,00,000
Purchases	
June 1 2,00,000 litres @ ₹ 2.85 per litre	
June 30 1,00,000 litres @ ₹ 3.03 per litre	
Closing Stock on June 30 : 1,30,000 litres.	

Compute the following data by first-in and first-out, weighted average and last in and first out method of inventory costing :

- Value of inventory on June 30.
- Amount of the cost of goods sold for June.
- Profit or Loss for June.

Q.33. Prepare Stores Ledger as per First in First out method of pricing of issue of materials :

Date	Description	Units	Rate
April 1, 1998	Opening Balance	1,000	₹ 5
April 3, 1998	Received	5,000	₹ 6
April 4, 1998	Issued	3,000	
April 6, 1998	Issued	2,000	
April 8, 1998	Received	3,000	₹ 5
April 9, 1998	Issued	2,000	

The weekly physical stock taking on April 7, 1998 showed a shortage of 100 units.

SOLUTION

Stores Ledger Account (FIFO)

Date	Receipts			Issues			Balance		
	Qty. Units	Rate ₹	Amt. ₹	Qty. Units	Rate ₹	Amt. ₹	Qty. Units	Rate ₹	Amt. ₹
1	-	-	-	-	-	-	1,000	5	5,000
3	5,000	6	30,000	-	-	-	1,000	5	5,000
4	-	-	-	3,000			5,000	6	30,000
				1,000	5	5,000	3,000	6	18,000
6	-	-	-	2,000	6	12,000			
7	-	-	-	2,000	6	12,000	1,000	6	6,000
				100	6	600	900	6	5,400
8	3,000	5	15,000	(Shortage)					
9							900	6	5,400
				2,000			3,000	5	15,000
				900	6	5,400	1,900	5	9,500
				1,100	5	5,500			

Q.34. The following are the figures about the receipt and issue of materials in Z Ltd., during January, 1998 :

January 1, 1998, received 500 units @ ₹ 2.00 each
 January 18, 1998, received 350 units @ ₹ 2.10 each
 January 19, 1998, issued 600 units
 January 24, 1998, received 600 units @ ₹ 2.20 each
 January 25, 1998, issued 450 units
 January 26, 1998, received 500 units @ ₹ 2.30 each
 January 29, 1998 issued 510 units.

Prepare Stores Ledger Accounts using LIFO method.

SOLUTION.

Stores Ledger Account (LIFO)

Date	Receipts			Issues			Balance			
	Jan. 1998	Qty. Units	Rate ₹	Amt. ₹	Qty. Units	Rate ₹	Amt. ₹	Qty. Units	Rate ₹	Amt. ₹
1		500	2.00	1,000	-	-	-	500	2.00	1,000
18		350	2.10	735				500 350	2.00 2.10	1,000 735
19		-	-	-	600			250	2.00	500
					350	2.10	735			
					250	2.00	500			
24		600	2.20	1,320				250 600	2.00 2.20	500 1,320
25		-	-	-	450	2.20	990	250 150	2.00 2.20	500 330
26		500	2.30	1,150				250 150 500	2.00 2.20 2.30	500 330 1,150
29		-	-	-	510			250 10 140	2.00 2.20 2.20	500 22 308

~~Q.35.~~ At the beginning of October 1998, Quality Brush Company had in stock 10,000 brushes valued at ₹ 10 each.

Further purchases were made during the month as follows :

- 7th October 4,000 brushes @ ₹ 12.50
- 14th October 6,000 brushes @ ₹ 15.00
- 24th October 8,000 brushes @ ₹ 16.50

Issues to shop floor were as follows :

- 16th October 16,000 brushes
- 28th October 10,000 brushes.

You are required :

- (a) to prepare a Stores Ledger Card for the month of October on the assumption that materials were issued on the first in first out principle; and
- (b) to state the value of closing stock at the end of October if issues are priced by the weighted average method.

COST ACCOUNTING

6.10

SOLUTION. (a) FIFO

				Stores Ledger Account			Balance		
Date	Receipts			Issues			Qty. Units	Rate ₹	Amt. ₹
1998	Qty. Units	Rate ₹	Amt. ₹	Qty. Units	Rate ₹	Amt. ₹			
Oct. 1	--	--	--	--	--	--	10,000	10.00	1,00,000
Oct. 7	4,000	12.50	50,000	--	--	--	10,000	10.00	1,00,000
Oct. 14	6,000	15.00	90,000	--	--	--	4,000	12.50	50,000
Oct. 16	--	--	--	--	--	--	10,000	10.00	1,00,000
							4,000	12.50	50,000
							2,000	15.00	30,000
Oct. 24	8,000	16.50	1,32,000	--	--	--	4,000	15.00	60,000
Oct. 28	--	--	--	--	--	--	8,000	16.50	1,32,000
							2,000	16.50	33,000

(b) Weighted Average Method.

				Stores Ledger Account			Balance		
Date	Receipts			Issues			Qty. Units	Rate ₹	Amt. ₹
1998	Qty. Units	Rate ₹	Amt. ₹	Qty. Units	Rate ₹	Amt. ₹			
Oct. 1	--	--	--	--	--	--	10,000	10.00	1,00,000
Oct. 7	4,000	12.50	50,000	--	--	--	14,000	10.71	1,50,000
Oct. 14	6,000	15.00	90,000	--	--	--	20,000	12.00	2,40,000
Oct. 16	--	--	--	16,000	12.00	1,92,000	4,000	12.00	48,000
Oct. 24	8,000	16.50	1,32,000	--	--	--	12,000	15.00	1,80,000
Oct. 28	--	--	--	10,000	15.00	1,50,000	2,000*	15.00	30,000

*Closing stock 2000 units @ ₹ 15 = ₹ 30,000.

Q.36. The following were the receipts and issues of material 'Zed' during March, 1998.

- March 1 Opening balance 1100 units ₹ 60 per unit.
- March 3 Issues 140 units
- March 4 Issue 250 units
- March 8 Issue 210 units
- March 13 Received from vendor 400 units at ₹ 59 per unit.
- March 14 Refund of surplus from a work order 30 units at ₹ 58 per unit.
- March 16 Issue 350 units
- March 20 Received from vendor 480 units at ₹ 62 per unit
- March 24 Issue 608 units
- March 25 Received from vendor 640 units at ₹ 60 per unit
- March 26 Issue 524 units
- March 28 Refund of surplus from a work order 24 units (Issued on 3rd March 1998)
- March 31 Received from vendor 150 units at ₹ 64 per unit.

From the above, write the Stores Ledger Account on 'Simple Average Basis'.

SOLUTION.

Stores Ledger Account (Simple Average Method)

Date	Receipts			Issues			Balance		
	Qty. Units	Rate ₹	Amt. ₹	Qty. Units	Rate ₹	Amt. ₹	Qty. Units	Rate ₹	Amt. ₹
March 1998									
1	--	--	--	--	--	--	1,100	60	66,000
3	--	--	--	140	60	8,400	960	60	57,600
4	--	--	--	250	60	15,000	710	60	42,600
8	--	--	--	210	60	12,600	500	60	30,000
13	400	59	23,600	--	--	--	900	--	53,600
14	30	58	1,740	--	--	--	930	--	55,340
16	--	--	--	350	59	20,650	580	--	34,690
20	480	62	29,760	--	--	--	1,060	--	64,450
24	--	--	--	608	59.75	36,328	452	--	28,122
25	640	60	38,400	--	--	--	1,092	--	66,522
26	--	--	--	524	61	31,964	568	--	34,558
28	24	60	1,440	--	--	--	592	--	35,998
31	150	64	9,600	--	--	--	742	--	45,598

Working Note :

Calculation of issue prices :

$$\text{March 16} = \frac{60 + 59 + 58}{3} = ₹59$$

$$\text{March 24} = \frac{60 + 59 + 58 + 62}{4} = ₹59.75$$

$$\text{March 26} = \frac{62 + 60}{2} = ₹61$$

- Q.37.** A company is considering the possibility of purchasing from a supplier a component it now makes. The supplier will provide the components in the necessary quantities at a unit price of ₹ 9. Transportation and storage costs would be negligible. The company produces the component from a single raw material in economic lots of 2,000 units at a cost of ₹ 2 per unit. Average annual demand is 20,000 units. The annual holding cost is ₹ 0.25 per unit and the minimum stock level is set at 400 units. Direct labour costs for the component are ₹ 6 per unit, fixed overhead is charged at a rate of ₹ 3 per unit based on a normal activity of 20,000 units. The Company also hires the machine on which the components are produced at a rate of ₹ 200 per month. Should the company make the component ?

- Q.38.** A scrutiny of past records gives the following distribution for lead time and daily demand during lead time.

Lead Time (Days)	Lead Time Distribution							
	3	4	5	6	7	8	9	10
Frequency :	2	3	4	4	2	2	2	1
Demand / Day (Units)	Demand Distribution							
	0	1	2	3	4	5	6	7
Frequency :	2	4	5	5	4	2	1	2

Determine :

- the buffer stock; and
- the reorder level.

COST ACCOUNTING

- Q.39. A Company has a contract from the Department of Defence for 1,50,000 bushings a year. It orders the metals for the bushings in lots of 40,000 units from a supplier. It costs ₹ 400 to place an order and the estimated carrying charge is 20% of the unit cost which is ₹ 1.50. It wants to know what per cent their order quantity varies from optimal and what the variations is costing them, if any?

- Q.40. The following transactions are related to a component during the year 2012 – 13 :

Date	Purchases (Units)	Consumptions (Units)	Balance (Units)
			200
01:04:2012	200	—	100
18:04:2012	—	100	50
10:01:2013	—	50	250
16:03:2013	200	—	Nil
31:03:2013	—	250	
		400	
Total Consumption			

Calculate Material turnover ratio.

- Q.41. PQR Ltd. Manufactures a special product, 'ZED'. The following particulars were collected for the year 2011–12 :

(i) Monthly demand of Zed	7,500 units
(ii) Cost of placing an order	₹ 500
(iii) Re-order period	5 to 8 weeks
(iv) Cost per unit	₹ 60
(v) Carrying cost % p.a.	10%
(vi) Normal usage	500 units per week
(vii) Minimum usage	250 units per week
(viii) Maximum usage	750 units per week

Required:

- Re-order quantity
- Re-order level
- Minimum stock level
- Maximum stock level
- Average stock level

- Q.42. A company supplies plastic crockery to fast food restaurants in a metropolitan city. One of its products is a special bowl, disposable after initial use, for serving soups to its customers.

The demand for plastic bowl has been forecasted at a fairly steady rate of 40,000 packs every year. The Company purchases the bowl direct from manufacturer at ₹ 40 per pack within a three days lead time. The ordering and related cost is ₹ 8 per order. The Storage Cost is 10% per annum of purchase price.

Required :

- Calculate Economic Order Quantity.
- Calculate number of orders needed every year.
- Calculate the total cost of ordering and storage for the year.
- Determine when should the next order to be placed. (Assuming that the Company does not maintain a safety stock and that the present inventory level is 333 packs with a year of 360 working days).

- Q.43. A Company manufactures 5,000 units of a product per month. The cost of placing an order is ₹ 100. The purchase price of the raw material is ₹ 10 per kg. the re-order period is 4 to 8 weeks. The consumption of raw materials varies from 100 kg. to 450 kg. per week, the average consumption being 275 kg. the carrying cost of inventory is 20% per annum.
- (i) Re-order quantity
 - (ii) Re-order level
 - (iii) Maximum level
 - (iv) Minimum level
 - (v) Average stock level.
- Q.44. Re-order quantity of material 'X' is 5,000 kg. Minimum usage 50 kg per hour; minimum re-order period 4 days; daily working hours in the factory is 8 hours. You are required to calculate the re-order level of material 'X'. Maximum stock level is 8,000 kgs.

IMPORTANT THEORETICAL QUESTIONS

Q.1. What is inventory control ? Mention its objectives and various methods of inventory for proper control ?

Ans. Inventory comprises stock of raw materials, work-in-progress, finished goods, stores and components. The aim of inventory control is to achieve maximum efficiency in the management of inventory. Investment in inventory normally accounts for an important part of the total assets. Adequate and proper control of inventory, therefore, is an important feature of cost accounting system.

Objectives of Inventory Control :

1. Effective use of financial resources available to business, i.e. to maintain the investment in inventory at the lowest level consistent with operating requirements.
2. Avoidance of the "out of stock" danger, i.e. to provide a supply of required materials without any delay for efficient and uninterrupted operations.
3. Economy in purchasing as effected by quantity buying and favourable raw material market.
4. Service to customers i.e. maintaining sufficient stocks of finished products to meet reasonable expectations of customers for prompt delivery of their orders.
5. Accurate and regular material reports to management by keeping perpetual inventory and other up-to-date records.

The various techniques used for inventory control are as follows :

1. ABC of analysis.
2. Level setting.
3. Economic purchase quantity.
4. Proper purchase procedure.
5. Proper storage.
6. Perpetual inventory system.
7. Establishment of a system of budgets.
8. Review of slow and non-moving items.
9. Use of ratios, e.g. inventory turnover.

Q.2. What do you understand by ABC Analysis ? What are its advantages ?

Ans. The ABC method is an analytical method of stock control which aims at concentrating efforts on those items where attention is needed most. It is based on the premise that a small number of the items in inventory may typically represent the bulk money value of the total materials used in production process, while a relatively large number of items may represent a small portion of the money value of stores used and that small number of items should be subject to the greatest degree of continuous control.

Under this system, the materials stocked may be classified into a number of categories according to their importance, i.e. their value and frequency of replenishment during a period. The first category, we may call it the group of 'A' items, may consist of only a small percentage of total items handled but its combined value may be a large portion of the total stock value. The second category, naming it as group of 'B' items, may be relatively less important. In the third category, consisting of 'C' items, all the remaining items of stock may be included which are quite large in number but their value is not high.

The advantages of ABC analysis are :

1. Closer and strict control on those items which represent a major portion of total stock value.
2. Investment in inventory can be regulated and funds can be utilised in the best possible manner.
3. Savings in stock carrying costs.
4. Helps in maintaining enough safety stock for C category of items.
5. Scientific and selective control helps in the maintenance of high stock turnover rate.

Q.3. What is meant by 'maximum level', and 'ordering level' with regard to maintenance of stocks? What are the factors that govern the fixing of levels?

Ans. The following factors help in the fixation of these levels:

1. Rate of consumption of materials.
2. Lead time, i.e. time lag.
3. Storage capacity.
4. Availability of funds for investment in inventories.
5. Cost of storage.
6. Risks of loss due to deterioration, theft, fire, etc.
7. Seasonal factors - certain materials are cheaply available during certain seasons.

TYPES OF STOCK LEVELS :

1. **Maximum Level** : The maximum level is that quantity of material above which the stock of any item should not generally be allowed to go.

The formula for computing maximum level is as follows :

$$\text{Maximum Level} = \text{Re-order level} + \text{Re-order quantity} - (\text{Minimum consumption} \times \text{Minimum Re-order period})$$

2. **Minimum Level** : The minimum level is that level of stock below which it should not normally be allowed to fall.

Minimum Level is compound as under :

$$\text{Minimum Level} = \text{Re-order level} - (\text{Normal consumption} \times \text{Normal Re-order Period}).$$

3. **Ordering Level or Re-order Level** : This is that level of materials at which a new order for materials is to be placed. In other words, this is the level at which a purchase requisition is made out.

The formula is as follows :

$$\text{Re-order level} = (\text{Maximum consumption} \times \text{Maximum Re-order period}).$$

4. **Average Stock Level** : This is computed with the help of the following formula :

$$\text{Average Stock level} = \text{Minimum Level} + 1/2 \text{ of Re-order quantity.}$$

or

$$\text{Average Stock level} = (\text{Minimum Level} + \text{Maximum Level})/2$$

5. **Danger Level** : It is the level below which stock should not be allowed to fall except under emergency conditions. When stock reaches this level, urgent action for purchase is initiated.

Q.4. What procedure should you follow to direct, locate and prevent slow and non-moving materials?

Ans.: Material is an important constituent of total cost and as such a proper system of material control leads to a significant economy in the total cost of production. Proper system, therefore, should be enforced to detect and control slow-moving materials, obsolete materials and dormant stocks. *Slow-moving materials* refer to those items which are moving at a slow rate. *Dormant materials* are those items which are not moving temporarily, may be because of seasonable production. Obsolete materials, on the other hand, are those items which have become useless due to change in design, method of manufacture, product or process, etc. In order to direct slow and non-moving items, the following steps may be taken :

1. **Periodic Report** : Monthly or quarterly reports on such stocks should be prepared for presentation to the management. These reports should show purchase, consumption and stock of these slow and non-moving items in quantities as well as in values.
2. **Turnover Ratios** : In order to isolate slow moving, dormant and dead stock, turnover ratios may be calculated periodically. These ratios will show the turnover of these items for presentation to the management.
3. **Obsolete Items** : Many of the slow and non-moving items may become useless with the passage of time. A well designed information system should be devised to locate these obsolete items so that further purchase of these items is stopped and existing items lying in the store are quickly identified. Obsolete stock may be used in some profitable product items or are disposed of, it thus have become useless.