PAPER – 3: COST AND MANAGEMENT ACCOUNTING

*Question No. **1** is compulsory.*

*Attempt any **four** questions out of the remaining **five** questions.*

In case, any candidate answers extra question(s)/ sub-question(s) over and above the required number, then only the requisite number of questions first answered in the answer book shall be valued and subsequent extra question(s) answered shall be ignored.

Working notes should form part of the answer

Question 1

Answer the following:

(a) A Ltd. is a pharmaceutical company which produces vaccines for diseases like Monkey Pox, Covid-19 and Chickenpox. A distributor had given an order for 1,600 Monkey Pox Vaccines. The company can produce 80 vaccines at a time. To process a batch of 80 Monkey Pox vaccines, the following costs would be incurred:

	₹
Direct Materials	*4,250*
Direct wages	*500*
Lab set-up cost	*1,400*

The Production Overheads are absorbed at a rate of 20% of direct wages and 20% of total production cost is charged in each batch for Selling, distribution and administration Overheads. The company is willing to earn profit of 25% on sales value.

You are required to determine:

(i) Total Sales value for 1,600 Monkey Pox Vaccines

(ii) Selling price per unit of the Vaccine.

(b) ABC Bank is having a branch which is engaged in processing of 'Vehicle Loan' and 'Education Loan' applications in addition to other services to customers. 30% of the overhead costs for the branch are estimated to be applicable to the processing of 'Vehicle Loan' applications and 'Education Loan' applications each.

Branch is having four employees at a monthly salary of ₹ 50,000 each, exclusively for processing of Vehicle Loan applications and two employees at a monthly salary of ₹70,000 each, exclusively for processing of Education Loan applications.

In addition to above, following expense are incurred by the Branch:

- *Branch Manager who supervises all the activities of branch, is paid at ₹ 90,000 per month.*
- *Legal charges, Printing & stationery and Advertising Expenses are incurred at ₹ 30,000, ₹ 12,000 and ₹ 18,000 respectively for a month.*
- *Other expenses are ₹ 10,000 per month.*

You are required to:

(i) Compute the cost of processing a Vehicle Loan application on the assumption that 496 Vehicle Loan applications are processed each month.

(ii) Find out the number of Education Loan Applications processed, if the total processing cost per Education Loan Application is same as in the Vehicle Loan Application as computed in (i) above.

(c) MM Ltd. uses 7500 valves per month which is purchased at a price of ₹ 1.50 per unit. The carrying cost is estimated to be 20% of average inventory investment on an annual basis. The cost to place an order and getting the delivery is ₹ 15. It takes a period of 1.5 months to receive a delivery from the date of placing an order and a safety stock of 3200 valves is desired.

You are required to determine:

(i) The Economic Order Quantity (EOQ) and the frequency of orders.

(ii) The re-order point.

(iii) The Economic Order Quantity (EOQ) if the valve cost ₹ 4.50 each instead of 1.50 each.

(Assume a year consists of 360 days)

(d) ABC Ltd sells its Product 'Y' at a price of ₹ 300 per unit and its variable cost is ₹ 180 per unit. The fixed costs are ₹ 16,80,000 per year uniformly incurred throughout the year. The Profit for the year is ₹ 7,20,000.

You are required to calculate:

(i) BEP in value (₹) and units.

(ii) Margin of Safety

(iii) Profits made when sales are 24,000 units.

(iv) Sales in value (₹) to be made to earn a net profit of ₹ 10,00,000 for the year.

(4 x 5 = 20 Marks)

Answer

(a) (i) & (ii) Calculation of Sales value and Selling price per unit of Monkey Pox vaccine

Particulars	Amount (₹) per Batch	Amount (₹) for 1600 units or 20 batches	Amount (₹) per unit
Direct materials	4,250	85,000	53.125
Direct wages	500	10,000	6.250
Lab set-up cost	1,400	28,000	17.500
Production overheads (20% of direct wages)	100	2,000	1.250
Production Cost	6,250	1,25,000	78.125
Selling, distribution and administration cost (20% of Production cost)	1,250	25,000	15.625
Total Cost	7,500	1,50,000	93.75
Add: Profit (1/3rd of Total cost or 25% of Sales value)	2,500	50,000	31.25
Sales value	10,000	2,00,000	125.00

(b)

Particulars	Vehicle loan Applications (₹)	Education loan Application (₹)	Total (₹)
Employee Cost	2,00,000 (₹ 50,000 × 4)	1,40,000 (₹ 70,000 × 2)	3,40,000
Apportionment of Branch manager's salary	27,000	27,000	54,000
Legal charges, Printing & stationery and Advertising expenses	18,000	18,000	36,000
Other expenses	3,000	3,000	6,000
Total cost	2,48,000	1,88,000	4,36,000

(i) Computation of cost of processing a vehicle loan application:

Total Cost ÷ No. of applications

₹ 2,48,000 ÷ 496 = ₹ 500

(ii) Computation of no. of Education loan Processed

Total Cost = No. of applications × Processing cost per application

₹ 1,88,000 = No. of applications × ₹ 500

No. of education loan applications = ₹1,88,000 ÷ ₹500 = 376 applications

(c) (i) Calculation of Economic Order Quantity

Annual requirement (A) = 7500×12= 90,000 Valves

Cost per order (O) = ₹ 15

Inventory carrying cost (i) = 20%

Cost per unit of spare (c) = ₹ 1.5

Carrying cost per unit (i × c) = ₹ 1.5 × 20% = ₹ 0.30

Economic Order Quantity (EOQ) $= \sqrt{\frac{2 \times A \times O}{i \times c}}$

$= \sqrt{\frac{2 \times 90,000 \times 15}{0.3}}$ = 3,000 Valves

Frequency of order or Number of Orders = 90,000/3,000 = 30 orders.

So Order can be placed in every 12 (360days/30) days

(ii) Re-order Quantity = {Maximum Consumption X Maximum lead time} + safety Stock

= {7500X1.5} + 3200 = 14,450 Valves

(iii) Calculation of Economic Order Quantity if valve costs ₹ 4.50

Carrying cost is 20% of ₹ 4.50 = ₹ 0.90

Economic Order Quantity (EOQ) $= \sqrt{\frac{2 \times A \times O}{i \times c}}$

$= \sqrt{\frac{2 \times 90,000 \times 15}{0.9}}$

= 1732.0508 units or 1733 Valves

(d) (i) Calculation of BEP in value

$$P/V\ ratio = \frac{Sales\ price - Variable\ Cost}{Sales} = \frac{300 - 180}{300} = 40\%$$

$$Break\ Even\ Point\ in\ Value\ (₹) = \frac{Fixed\ Cost}{P/V\ ratio} = \frac{16,80,000}{40\%} = ₹\ 42,00,000$$

$$Break\ Even\ Point\ in\ Units = \frac{Fixed\ Cost}{Contribution} = \frac{16,80,000}{120} = 14,000\ Units$$

(Alternatively, $\frac{₹\ 42,00,000}{300}$ = 14000 units)

(ii) Margin of safety (In Amount) = $\frac{\text{Profit}}{\text{P / V ratio}} = \frac{7,20,000}{40\%} = ₹\ 18,00,000$

Margin of safety may also be calculated by deducting BEP sales from present sale. Present sale is ₹ 60,00,000 i.e. (16,80,000 + 7,20,000)/40%.

Margin of safety (In units) = $\frac{\text{Profit}}{\text{Contribution per unit}} = \frac{7,20,000}{120} = 6,000 \text{ units}$

(iii) Profit when sales are 24,000 units

Particular	**(₹)**
Contribution (24,000 × 120)	28,80,000
Less: Fixed cost	16,80,000
Profit	12,00,000

(iv) Sales in value to earn a net profit of ₹10,00,000

$\frac{\text{Fixed Cost} + \text{Desired profit}}{\text{P / V Ratio}} = \frac{16,80,000 + 10,00,000}{40\%} = ₹\ 67,00,000$

Question 2

(a) USP Ltd. is the manufacturer of 'double grip motorcycle tyres'. In the manufacturing process, it undertakes three different jobs namely, Vulcanising, Brushing and Striping. All of these jobs require the use of a special machine and also the aid of a robot when necessary. The robot is hired from outside and the hire charges paid for every six months is ₹ 2,70,000. An estimate of overhead expenses relating to the special machine is given below:

- *Rent for a quarter is ₹ 18,000.*
- *The cost of the special machine is ₹ 19,20,000 and depreciation is charged @10% per annum on straight line basis.*
- *Other indirect expenses are recovered at 20% of direct wages.*

The factory manager has informed that in the coming year, the total direct wages will be ₹ 12,00,000 which will be incurred evenly throughout the year.

During the first month of operation, the following details are available from the job book:

Number of hours the special machine was used

Jobs	***Without the aid of the robot***	***With the of the robot***
Vulcanising	*500*	*400*

Brushing	*1000*	*400*
Striping	*-*	*1200*

You are required to :

(i) Compute the Machine Hour Rate for the company as a whole for a month (A) when the robot is used and (B) when the robot is not used.

(ii) Compute the Machine Hour Rate for the individual jobs i.e. Vulcanising, Brushing and Striping. ***(10 Marks)***

(b) A skilled worker, in PK Ltd., is paid a guaranteed wage rate of ₹ 15.00 per hour in a 48-hour week. The standard time to produce a unit is 18 minutes. During a week, a skilled worker -Mr. 'A' has produced 200 units of the product. The Company has taken a drive for cost reduction and wants to reduce its labour cost.

You are required to:

(i) Calculate wages of Mr. 'A' under each of the following methods:

(A) Time rate,

(B) Piece -rete with a guaranteed weekly wage,

(C) Halsey Premium Plan

(D) Rowan Premium Plan

(ii) Suggest which bonus plan i.e. Halsey Premium Plan or Rowan Premium Plan, the company should follow. ***(6 Marks)***

(c) XYZ Ltd. is engaged in manufacturing two products- Express Coffee and Instant Coffee. It furnishes the following data for a year:

Product	***Actual Output (units)***	***Total Machine hours***	***Total Number of Purchase orders***	***Total Number of set ups***
Express Coffee	*5,000*	*20,000*	*160*	*20*
Instant Coffee	*60,000*	*1,20,000*	*384*	*44*

The annual overheads are as under:

Particulars	***₹***
Machine Processing costs	*7,00,000*
Set up related costs	*7,68,000*
Purchase related costs	*6,80,000*

You are required to:

(i) Compute the costs allocated to each product – Express Coffee and Instant Coffee from each activity on the basis of Activity- Based Costing (ABC) method.

(ii) Find out the overhead cost per unit of each product – Express coffee and Instant coffee based on (i) above. ***(4 Marks)***

Answer

(a) Working notes:

(I)	Total machine hours use (500 + 1,000 + 400 + 400 + 1,200)	3,500
(II)	Total machine hours without the use of robot (500 + 1,000)	1,500
(III)	Total machine hours with the use of robot (400 + 400 + 1,200)	2,000
(IV)	Total overheads of the machine per month	
	Rent (₹ 18,000 ÷ 3 months)	6,000
	Depreciation [(₹ 19,20,000 x 10%) ÷ 12 months]	16,000
	Indirect expenses [(₹ 12,00,000 x 20%) ÷ 12 months]	20,000
	Total	42,000
(V)	Robot hire charges for a month (₹ 2,70,000 ÷ 6 months)	₹ 45,000
(VI)	Overheads for using machines without robot $= \frac{₹\ 42,000}{3,500\ hrs.} \times 1,500$ hrs. =	₹ 18,000
(VII)	Overheads for using machines with robot $= \frac{₹\ 42,000}{3,500\ hrs.} \times 2,000$ hrs. + ₹ 45,000 =	₹ 69,000

(i) Computation of Machine hour rate for the firm as a whole for a month.

(A) When the robot was used: $\frac{₹\ 69,000}{2,000\ hours}$ = ₹ 34.50 per hour

(B) When the robot was not used: $\frac{₹\ 18,000}{1,500\ hrs.}$ = ₹ 12 per hour

(ii) Computation of Machine hour rate for the individual job

	Rate per hour	Job					
		Vulcanising		Brushing		Striping	
	(₹)	Hrs.	(₹)	Hrs.	(₹)	Hrs.	(₹)
Overheads							
Without robot	12.00	500	6,000	1,000	12,000	-	-
With robot	34.50	400	13,800	400	13,800	1,200	41,400
Total		900	19,800	1,400	25,800	1,200	41,400
Machine hour rate			22		18.43		34.50

(b) (i) Calculation of wages of Mr. 'A' under different wage schemes:

A. Time rate

Wages = Time Worked × Rate for the time

= 48 hours x ₹ 15

= ₹ 720

B. Piece rate with a guaranteed weekly wage

Wages = Number of units produced × Rate per unit

= 200 units x ₹ 4.50*

= ₹ 900

*(₹ 15 / 60 minutes) x 18 minutes = ₹ 4.50

C. Halsey Premium Plan

Wages = Time taken × Time rate + 50% of time saved × Time rate

Wages = Time taken × Time rate + 50% (Standard time – Actual time) × Time rate

= (48 hours x ₹ 15) + 50% of (60 hours# – 48 hours) x ₹ 15

= ₹ 720 + ₹ 90

= ₹ 810

#(200 units x 18 minutes) / 60 minutes = 60 hours

D. Rowan Premium Plan

$$\text{Wages} = \text{Time taken} \times \text{Rate per hour} + \frac{\text{Time Saved}}{\text{Time Allowed}} \times \text{Time taken} \times \text{Rate per hour}$$

$$= (48 \text{ hours} \times ₹ 15) + \left(\frac{60 - 48 \text{ hours}}{60 \text{ hours}} \times 48 \text{ hours} \times ₹ 15\right)$$

$$= ₹ 720 + ₹ 144$$

$$= ₹ 864$$

(ii) The company may follow Halsey Premium Plan over Rowan Premium Bonus Plan as the total wages paid is lower than that of Rowan Premium Bonus Plan.

(c) (i) Estimation of Cost-Driver rate

Activity	Overhead cost (₹)	Cost-driver level	Cost driver rate (₹)
Machine processing	7,00,000	1,40,000 Machine hours	5
Set up Costs	7,68,000	64 Number of set up	12,000
Purchase related Costs	6,80,000	544 Number of purchase order	1250

Cost Allocation under Activity based Costing

	Express Coffee (₹)	Instant Coffee (₹)
Overhead Cost		
Machine processing (Cost Driver rate - ₹ 5) (or 20,000:1,20,000)	5 × 20,000 = 1,00,000	5 × 1,20,000 = 6,00,000
Set up Costs (Cost Driver rate - ₹ 12,000)) (or 20:44)	12,000 × 20 = 2,40,000	12,000 × 44 = 5,28,000
Purchase related Costs (Cost Driver rate - ₹ 1250) (or 160:384)	1,250 × 160 = 2,00,000	1,250 × 384 = 4,80,000
Total overhead cost	5,40,000	16,08,000

(ii) Overhead Cost per unit

Per unit Overhead cost	(₹)	(₹)
5,40,000 /5,000	108	
16,08,000/60,000		26.80

Question 3

(a) *XYZ Construction Ltd. has obtained a contract of ₹ 25,00,000 in the Financial Year 2021-22. The work on the contract commenced immediately and it is expected that the contract will be completed by 31st March,2023. Chief accountant of the company has provided following information related to the Contract:*

Particulars	***2021-22 (Actual) (in ₹)***	***2022-23 (Estimated) (in ₹)***
Material issued	*4,00,000*	*3,50,000*
Wages: Paid	*2,50,000*	*1,40,000*
- Prepaid at the end of the Year	*15,000*	*-*
Plant	*2,00,000*	*-*
Sundry Expenses: Paid	*50,000*	*35,000*
- Outstanding at the end of the year	*7,500*	*5,000*
Office Expenses: Paid	*65,000*	*55,000*
- Outstanding at the end of the year	*12,500*	*15,000*
Contingency Expenses	*-*	*1,25,000*

Following additional information is also available:

- *A part of plant costing ₹ 12,000 was scrapped and written off in the F.Y.2021-22.*
- *The value of Plant-at-Site on 31st March,2022 was ₹ 18,000.*
- *Company would have to spend an additional sum of ₹ 80,000 on the plant in FY. 2022-23 and the residual value of the plant on the completion of contract would be ₹ 10,000.*
- *A part of material costing ₹ 30,000 was scrapped and sold for ₹ 20,000 in F.Y. 2021-22.*
- *The value of Material-at-Site on 31st March, 2022 was ₹ 17,000.*
- *Cash received on account till 31st March,2022 was ₹ 13,50,000 representing 90% of the work certified.*
- *The cost of work uncertified on 31st March, 2022 was valued at 20% of work certified.*

You are required to:

(i) Prepare a Contract Account for the year ended 31st March, 2022

(ii) Calculate Estimated Total Profit on this Contract. ***(10 Marks)***

(b) *N Ltd. produces a product which passes through two processes – Process – I and Process-II. The company has provided following information related to the Financial Year 2021-22:*

	Process-I	*Process -II*
Raw Material @₹65 per unit	*6,500 units*	-
Direct Wages	*₹1,40,000*	*₹1,30,000*
Direct Expenses	*30% of Direct Wages*	*35% of Direct Wages*
Manufacturing Overheads	*₹21,500*	*₹24,500*
Realisable value of scrap per unit	*₹4.00*	*₹16.00*
Normal Loss	*250 units*	*500 units*
Units transferred to Process-II / finished stock	*6,000 units*	*5,500 units*
Sales	-	*5,000 units*

There was no opening or closing stock of work-in progress.

You are required to prepare:

(i) Process-I Account

(ii) Process -II Account

(iii) Finished Stock Account ***(10 Marks)***

Answer

(a) Contract Account (2021-22)

	Particulars		(₹)		Particulars		(₹)
To	Materials issued		4,00,000	By	Costing P & L A/c		12,000
To	Wages paid	2,50,000		By	Material sold		20,000
	Less: Prepaid	15,000	2,35,000	By	Plant at site c/d		18,000
To	Plant		2,00,000	By	Material at site c/d		17,000
To	Sundry Expenses	50,000		By	Costing P & L A/c (₹ 30,000 – ₹ 20,000)		10,000
	Add: Outstanding	7,500	57,500	By	Work-in-progress c/d		
To	Office Expenses	65,000			Work certified (13,50,000 ÷ 90%)	15,00,000	
	Add: Outstanding	12,500	77,500		Work uncertified (15,00,000 x 20%)	3,00,000	18,00,000
To	Notional profit (Profit for the year)		9,07,000				
			18,77,000				18,77,000

Calculation of Estimated Profit

			(₹)	(₹)
(1)	Material consumed	(4,00,000-10,000-20,000)	3,70,000	
	Add: Further consumption		3,50,000	7,20,000
(2)	Wages:		2,35,000	
	Add: Further cost	(1,40,000+15,000)	1,55,000	3,90,000
(3)	Plant used	(2,00,000-12,000)	1,88,000	
	Add: Further plant introduced		80,000	
	Less: Closing balance of plant		(10,000)	2,58,000
(4)	Sundry expenses		57,500	
	Add: Further expenses	(35,000-7,500)	27,500	
	Add: Outstanding		5,000	90,000
(5)	Office expenses		77,500	
	Add: Further expenses	(55,000 – 12,500)	42,500	
	Add: Outstanding		15,000	1,35,000
(6)	Reserve for contingencies			1,25,000
Estimated profit (balancing figure)				7,82,000
Contract price				25,00,000

Estimated Profit can also be calculated showing cost as per Contract Account for the year 2021-22 and estimated cost for the year 2022-23 in the following manner

Calculation of Estimated Profit

Cost as per contract A/c 2021-22 (A)		8,93,000
Estimated cost for 2022-23		
Material (3,50,000 +17,000)	3,67,000	
Wages (1,40,000 +15,000)	1,55,000	
Sundry Expenses (3,5000-7,500 +5,000)	32,500	
Contingency Expenses	1,25,000	
Office expenses (55,000 +15,000-12,500)	57,500	
Plant (80,000+18,000-10,000)	88,000	
Total estimated cost of 2022-23(B)		8,25,000
C=(A)+(B)		17,18,000

Estimated Profit (D)-(C)		7,82,000
Contract Price(D)		25,00,000

(b) **Process-I A/c**

Particulars	Units	(₹)	Particulars	Units	(₹)
To Raw material used (₹ 65 × 6,500 units)	6,500	4,22,500	By Normal loss (250 units × ₹ 4)	250	1,000
To Direct wages	--	1,40,000	By Process- II A/c (₹ 100 × 6,000 units)	6,000	6,00,000
To Direct expenses (30% of ₹ 1,40,000)	--	42,000	By Abnormal loss (₹ 100 × 250 units)	250	25,000
To Manufacturing overhead		21,500			
	6,500	6,26,000		6,500	6,26,000

Cost per unit of completed units and abnormal loss: $\frac{\text{Total Cost-Realisable value from normal loss}}{\text{Inputs Units-Normal loss units}}$

$= \frac{₹\ 6,26,000 - ₹\ 1,000}{6,500 \text{units} - 250 \text{ units}} = \frac{₹\ 6,25,000}{6,250 \text{ units}} = ₹\ 100$

Process- II A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Process - I A/c	6,000	6,00,000	By Normal loss (500 units × ₹16)	500	**8,000**
To Direct wages	--	1,30,000	By Finished Stock A/c (₹144 × 5,500 units)	5,500	7,92,000
To Direct expenses (35% of ₹ 1,30,000)	--	45,500			
To Manufacturing overhead	--	24,500			
	6,000	8,00,000		6,000	8,00,000

Cost per unit of completed units and abnormal loss:

$$\frac{\text{Total Cost - Realisable value from normal loss}}{\text{Inputs units - Normal loss units}}$$

$$= \frac{₹\ 8,00,000 - ₹\ 8,000}{6,000 \text{ units} - 500 \text{ units}} = \frac{₹\ 7,92,000}{5,500 \text{ units}} = ₹144$$

Finished Goods Stock A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Process II A/c	5,500	7,92,000	By Cost of Sales (₹144 × 5,000 units)	5,000	7,20,000
			By Balance c/d	500	72,000
	5,500	7,92,000		5,500	7,92,000

Question 4

(a) *An agriculture based company having 210 hectares of land is engaged in growing three different cereals namely, wheat, rice and maize annually. The yield of the different crops and their selling prices are given below:*

	Wheat	***Rice***	***Maize***
Yield (in kgs per hectare)	*2,000*	*500*	*100*
Selling Price (₹ per kg)	*20*	*40*	*250*

The variable cost data of different crops are given below:

(All figures in ₹ per kg)

Crop	***Labour charges***	***Packing Materials***	***Other variable expenses***
Wheat	*8*	*2*	*4*
Rice	*10*	*2*	*1*
Maize	*120*	*10*	*20*

The company has a policy to produce and sell all the three kinds of crops. The maximum and minimum area to be cultivated for each crop is as follows:

Crop	***Maximum Area (in hectares)***	***Minimum Area (in hectares)***
Wheat	*160*	*100*
Rice	*50*	*40*
Maize	*60*	*10*

You are required to:

(i) Rank the crops on the basis of contribution per hectare.

(ii) Determine the optimum product mix considering that all the three cereals are to be produced.

(iii) Calculate the maximum profit which can be achieved if the total fixed cost per annum is ₹ 21,45,000. ***(10 Marks)***

(Assume that there are no other constraints applicable to this company)

(b) PNME Ltd. manufactures two types of masks- 'Disposable Masks' and 'Cloth Masks'. The cost data for the year ended 31st March, 2022 is as follows:

	₹
Direct Materials	*12,50,000*
Direct Wages	*7,00,000*
Production Overhead	*4,00,000*
Total	*23,50,000*

It is further ascertained that:

- *Direct material cost per unit of Cloth Mask was twice as much of Direct material cost per unit of Disposable Mask.*
- *Direct wages per unit for Disposable Mask were 60% of those for Cloth Mask.*
- *Production overhead per unit was at same rate for both the types of the masks.*
- *Administration overhead was 50% of Production overhead for each type of mask.*
- *Selling cost was ₹ 2 per Cloth Mask.*
- *Selling Price was ₹ 35 per unit of Cloth Mask.*
- *No. of units of Cloth Masks sold- 45,000*
- *No. of units of Production of*

  Cloth Masks: 50,000

  Disposable Masks: 1,50,000

You are required to prepare a cost sheet for Cloth Masks showing:

(i) Cost per unit and Total Cost.

(ii) Profit per unit and Total Profit. ***(10 Marks)***

Answer

(a) (i) Statement showing Ranking of crops on the basis of Contribution per hectare

Sl. No	Particulars	Wheat	Rice	Maize
(I)	Sales price per kg (₹)	20	40	250
(II)	Variable cost* per kg (₹)	14	13	150
(III)	Contribution per kg (₹)	6	27	100
(IV)	Yield (in kgs per hectare)	2,000	500	100
(V)	Contribution per hectare (₹)	12,000	13,500	10,000
(VI)	Ranking	II	I	III

*Variable cost = Labour Charges +Packing Material+ Other Variable Expenses

Therefore, to maximize profits, the order of priority of production would be Rice, Wheat and Maize.

(ii) & (iii) Statement showing optimum product mix considering that all the three cereals are to be produced and maximum profit thereof

Sl. No.	Particulars	Wheat	Rice	Maize	Total
(i)	Minimum Area (in hectare)	100	40	10	150
(ii)	Remaining area (in hectare)				60
(iii)	Distribution of remaining area based on ranking considering Maximum area	50	10	-	60
(iv)	Optimum mix (in hectare)	150	50	10	210
(v)	Contribution per hectare (₹)	12,000	13,500	10,000	
(vi)	Total contribution (₹)	18,00,000	6,75,000	1,00,000	25,75,000
(vii)	Fixed cost (₹)				21,45,000
(viii)	Maximum Profit (₹)				4,30,000

Optimum Product Mix and calculation of maximum profit earned by company can also be presented as below

(ii) Optimum Product Mix:

Particular	Area (in hectares)	Yield (kg per hectare)	Total Production (in kgs)
(a) Maximum of Rice	50	500	25000
(b) Minimum of Maize	10	100	1000
(c) Balance of Wheat	150	2000	300000
	210		326000

(iii) Calculation of maximum profit earned by the company:

	Production (in kgs)	Contribution (₹ per kg)	Total contribution (₹)
(a) Rice	25,000	24	6,75,000
(b) Maize	1,000	100	1,00,000
(c) Wheat	3,00,000	6	18,00,000

Total contribution			25,75,000
Less: Total Fixed Cost per annum			(21,45,000)
Maximum profits earned by the company			4,30,000

(b) Preparation of Cost Sheet for Cloth Masks

No. of units produced = 50,000 units

No. of units sold = 45,000 units

Particulars	Per unit (₹)	Total (₹)
Direct materials (Working note- (i))	10.00	5,00,000
Direct wages (Working note- (ii))	5.00	2,50,000
Prime cost	15.00	7,50,000
Production overhead (Working note- (iii))	2.00	1,00,000
Factory Cost	17.00	8,50,000
Administration Overhead* (50% of Production Overhead)	1.00	50,000
Cost of production	18.00	9,00,000
Less: Closing stock (50,000 units – 45,000 units)	-	(90,000)
Cost of goods sold i.e. 45,000 units	18.00	8,10,000
Selling cost	2.00	90,000
Cost of sales/ Total cost	20.00	9,00,000
Profit	15.00	6,75,000
Sales value (₹ 35 × 45,000 units)	35.00	15,75,000

Working Notes:

(i) Direct material cost per unit of Disposable Mask = M

Direct material cost per unit of Cloth Mask = 2M

Total Direct Material cost = 2M × 50,000 units + M × 1,50,000 units

Or, ₹ 12,50,000 = 1,00,000 M + 1,50,000 M

Or, M $= \frac{₹\ 12,50,000}{2,50,000} = ₹\ 5$

Therefore, Direct material Cost per unit of Cloth Mask = 2 × ₹ 5 = ₹ 10

(ii) Direct wages per unit for Cloth Mask = W

Direct wages per unit for Disposable Mask= 0.6W

So, (W x 50,000) + (0.6W x 1,50,000) = ₹ 7,00,000

W = ₹5 per unit

Therefore, Direct material Cost per unit of Cloth Mask = ₹ 5

(iii) Production overhead per unit = $\frac{₹\ 4,00,000}{(50,000+1,50,000)}$ = ₹ 2

Production overhead for Cloth Mask = ₹ 2 × 50,000 units = ₹ 1,00,000

* Administration overhead is related to production overhead in the question and hence to be considered in cost of production only.

Question 5

(a) Y Lid manufactures "Product M" which requires three types of raw materials - "A", "B" & "C". Following information related to 1st quarter of the F.Y. 2022-23 has been collected from its books of accounts. The standard material input required for 1,000 kg of finished product 'M' are as under:

Material	*Quantity (Kg.)*	*Std. Rate per Kg. (₹)*
A	*500*	*25*
B	*350*	*45*
C	*250*	*55*
	1100	
Standard Loss	*100*	
Standard Output	*1000*	

During the period, the company produced 20,000 kg of product "M" for which the actual quantity of materials consumed and purchase prices are as under:

Material	*Quantity (Kg.)*	*Purchase price per Kg. (₹)*
A	*11,000*	*23*
B	*7,500*	*48*
C	*4,500*	*60*

You are required to calculate:

(i) Material Cost Variance

(ii) Material Price Variance for each raw material and Product 'M'

(iii) Material Usage Variance for each raw material and Product 'M'

(iv) Material Yield Variance ***(10 Marks)***

Note: Indicate the nature of variance i.e. Favourable or Adverse.

(b) *X Ltd. follows Non-Integrated Accounting System. Financial Accounts of the company show a Net Profit of ₹ 5,50,000 for the year ended 31st March, 2022. The chief accountant of the company has provided following information from the Financial Accounts and Cost Accounts:*

Sr. No	Particulars	(₹)
(i)	Legal Chargers Provided in Financial accounts	15,250
(ii)	Interim Dividend received credited in financial accounts	4,50,000
(iii)	Preliminary Expenses written off in financial accounts	25,750
(iv)	Over recovery of selling overheads in cost accounts	11,380
(v)	Profit on sale of capital asset credited in financial accounts	30,000
(vi)	Under valuation of closing stock in cost accounts	25,000
(vii)	Over recovery of production overheads in cost accounts	10,200
(viii)	Interest paid on Debentures shown in financial accounts	50,000

Required:

Find out the Profit (Loss) as per Cost Accounts by preparing a Reconciliation Statement.

(5 Marks)

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

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

You are required to find out:

(i) Profit earned from Product 'L'.

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

Answer

(a) Basic Calculations:

	Standard for 20,000 kg.			Actual for 20,000 kg.		
	Qty.	Rate	Amount	Qty.	Rate	Amount
	Kg.	(₹)	(₹)	Kg.	(₹)	(₹)
A	10,000	25	2,50,000	11,000	23	2,53,000
B	7,000	45	3,15,000	7,500	48	3,60,000
C	5,000	55	2,75,000	4,500	60	2,70,000
Total	22,000		8,40,000	23,000		8,83,000

Calculation of Variances:

(i) Material Cost Variance = Std. Cost for actual output–Actual cost

MCV=8,40,000– 8,83,000 = ₹ 43,000(A)

(ii) Material Price Variance = (SP–AP) × AQ

A = (25 - 23) x 11,000 = 22,000 (F)

B = (45 – 48) x 7,500 = 22,500 (A)

C = (55 – 60) x 4,500 = 22,500 (A)

23000 (A)

(iii) Material Usages Variance = (SQ–AQ) × SP

A = (10,000 – 11,000) x 25 = 25,000 (A)

B = (7,000 – 7,500) x 45 = 22,500 (A)

C = (5,000 – 4,500) x 55 = 27,500 (F)

20,000 (A)

(iv) Material Yield Variance = (SQ–RSQ*) × SP

A = (10,000 – 10,454.54) x 25 = 11,363.5(A)

B = (7,000 – 7,318.18) x 45 = 14,318.1(A)

C = (5,000 – 5,227.27) x 55 = 12,500(A)

38,181.6(A)

*Revised Standard Quantity (RSQ)

A = $\frac{10,000}{22,000} \times 23,000$ = 10,454.54

B = $\frac{7,000}{22,000} \times 23,000$ = 7,318.18

C $= \frac{5,000}{22,000} \times 23,000 = 5,227.27$

Material Yield Variance can also be Calculated as below

Material yield variance = Standard cost per unit (Actual yield – Standard yield)

Standard cost per unit = $\frac{₹\ 8,40,000}{20,000}$ = ₹ 42

New Standard Yield = $\frac{20,000}{22,000} \times 23,000$ = 20,909

Material yield variance = ₹ 42 (20,000 – 20,909)

= ₹ 38,178 (A)

(b) Reconciliation Statement

(Reconciliation the profit as per financial records with the profit as per costing records)

	Particulars	**(₹)**	**Total (₹)**
	Profit as per Financial Accounts		5,50,000
Add:	Legal Charges	15,250	
	Preliminary expenses written off	25,750	
	Interest paid	50,000	91,000
			6,41,000
Less:	Under-valuation of closing stock in cost book	25,000	
	Interim Dividend Received	4,50,000	
	Over recovery of selling overheads in cost accounts	11,380	
	Over recovery of production overhead in cost accounts	10,200	5,26,580
	Profit on sale of Assets	30,000	
	Profit as per Cost Accounts		1,14,420

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

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

*Joint Production Cost = [4,00,000 – (200 × 5)] = 3,99,000

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

$$\text{Desired selling price} = \frac{\text{Desired Profit + Total Cost}}{\text{units measured}}$$

$$= \frac{1,00,000+1,01,000+3,99,000}{10,000} = ₹\ 60 \text{ per kg.}$$

Question 6

Answer any four of the following:

(a) Which system of inventory management is known as 'Demand pull' or 'Pull through' system of production? Explain. Also, specify the two principles on which this system is based.

(b) Indicate, for following items, whether to be shown in the Cost Accounts or Financial Accounts:

(i) Preliminary expenses written off during the year

(ii) Interest received on bank deposits

(iii) Dividend, interest received on investments

(iv) Salary for the proprietor at notional figure though not incurred

(v) Charges in lieu of rent where premises are owned

(vi) Rent receivables

(vii) Loss on sale of Fixed Assets

(viii) Interest on capital at notional figure though not incurred

(ix) Goodwill written off

(x) Notional Depreciation on the assets fully depreciated for which book value is Nil.

(c) PP Limited is in the process of implementation of Activity Based Costing System in the organisation. For this purpose, it has identified the following Business Functions in its organisation:

(i) Research and Development

(ii) Design of Products, Services and Procedures

(iii) Customer Service

(iv) Marketing

(v) Distribution

You are required to specify two cost drivers for each Business Function Identified above.

(d) Define Budget Manual. What are the salient features of Budget Manual?

(e) Mention the cost units (physical measurements) for the following Industry/product:

(i) Automobile

(ii) Gas

(iii) Brick works

(iv) Power

(v) Steel

(vi) Transport (by road)

(vii) Chemical

(viii) Oil

(ix) Brewing

(x) Cement ***(4 x 5 = 20 Marks)***

Answer

(a) Just in Time (JIT) Inventory Management is also known as 'Demand pull' or 'Pull through' system of production. In this system, production process actually starts after the order for the products is received. Based on the demand, production process starts and the requirement for raw materials is sent to the purchase department for purchase.

It is a system of inventory management with an approach to have a zero inventories in stores. According to this approach material should only be purchased when it is actually required for production.

JIT is based on two principles

(i) Produce goods only when it is required and

(ii) the products should be delivered to customers at the time only when they want.

(b)

S. No.	Items	Accounts
(i)	Preliminary expenses written off during the year	Financial Accounts
(ii)	Interest received on bank deposits	Financial Accounts
(iii)	Dividend, interest received on investments	Financial Accounts
(iv)	Salary for the proprietor at notional figure though not incurred	Cost Accounts

(v)	Charges in lieu of rent where premises are owned	Cost Accounts
(vi)	Rent receivables	Financial Accounts
(vii)	Loss on the sales of Fixed Assets	Financial Accounts
(viii)	Interest on capital at notional figure though not incurred	Cost Accounts
(ix)	Goodwill written off	Financial Accounts
(x)	Notional Depreciation on the assets fully depreciated for which book value is nil	Cost Accounts

(c)

Business functions	Cost Driver
Research and Development	• Number of research projects • Personnel hours on a project • Technical complexities of the project
Design of products, services and procedures	• Number of products in design • Number of parts per product • Number of engineering hours
Customer Service	• Number of service calls • Number of products serviced • Hours spent on servicing products
Marketing	• Number of advertisements • Number of sales personnel • Sales revenue
Distribution	• Number of units distributed • Number of customers • Weight of items distributed

(Any two cost drivers of each business function)

(d) **Budget Manual:** The budget manual is a booklet specifying the objectives of an organisation in relation to its strategy. The budget is made to decide how much an organisation would earn and spend and in what manner. In the budget, the organisation sets its priorities too.

Effective budgetary planning relies on the provision of adequate information to the individuals involved in the planning process. Many of these information needs are contained in the budget manual. A budget manual is a collection of documents that contains key information for those involved in the planning process.

CIMA London defines budget manual as, 'A document which sets out the responsibilities of the persons engaged in, the routines of, and the forms and records required for, budgetary control'.

Contents of a budget manual: Typical budget manual may include the following:

(i) A statement regarding the objectives of the organisation and how they can be achieved through budgetary control;

(ii) A statement about the functions and responsibilities of each executive, both regarding preparation and execution of budgets;

(iii) Procedures to be followed for obtaining the necessary approval of budgets. The authority of granting approval should be stated in explicit terms. Whether, one two or more signatures are required on each document should be clearly stated;

(iv) A form of organisation chart to show who are responsible for the preparation of each functional budget and the way in which the budgets are interrelated.

(v) A timetable for the preparation of each budget.

(vi) The manner of scrutiny and the personnel to carry it out;

(vii) Reports, statements, forms and other record to be maintained.

(viii) The accounts classification to be employed. It is necessary that the framework within which the costs, revenue and other financial accounts are classified must be identical both in the accounts and budget department.

(ix) The reporting of the remedial action.

(x) The manner in which budgets, after acceptance and issuance, are to be revised or amended, these are included in budgets and on which action can be taken only with the approval of top management

(xi) This will prevent the formation of a 'bottleneck' with the late preparation of one budget holding up the preparation of all others.

(xii) Copies of all forms to be completed by those responsible for preparing budgets, with explanations concerning their completion.

(xiii) A list of the organization's account codes, with full explanations of how to use them.

(xiv) Information concerning key assumptions to be made by managers in their budgets, for example the rate of inflation, key exchange rates, etc.

(Any four points)

(e)

Industry or Product	Cost Units
Automobile	Number
Gas	Cubic feet
Brick works	1,000 bricks
Power	Kilo-watt hour (kWh)
Steel	Tonne
Transport (by road)	Passenger- kilometer or Tonne-kilometer
Chemical	Litre, gallon, kilogram, tonne etc.
Oil	Barrel, tonne, litre
Brewing	Barrel
Cement	Ton/ per bag etc.