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 answers.

Question 1

Answer the following:

(a) G Ltd. manufactures a single product for which market demand exists for additional quantity. Present sales of ₹ 6,00,000 utilises only 60% capacity of the plant. The following data are available:

(1)	*Selling price*	*:*	*₹ 100 per unit*
(2)	*Variable cost*	*:*	*₹ 30 per unit*
(3)	*Semi-variable expenses*	*:*	*₹ 60,000 fixed + ₹ 5 per unit*
(4)	*Fixed expenses*	*:*	*₹ 1,00,000 at present level, estimated to increase by 25% at and above 80% capacity.*

You are required to prepare a flexible budget so as to arrive at the operating profit at 60%, 80% and 100% levels.

(b) Moon Ltd. produces products 'X', 'Y' and 'Z' and has decided to analyse it's production mix in respect of these three products - 'X', 'Y' and 'Z'.

You have the following information :

	X	*Y*	*Z*
Direct Materials ₹ (per unit)	*160*	*120*	*80*
Variable Overheads ₹ (per unit)	*8*	*20*	*12*

Direct labour :

Departments:	*Rate per Hour (₹)*	*Hours per unit*	*Hours per unit*	*Hours per unit*
		X	*Y*	*Z*
Department-A	*4*	*6*	*10*	*5*
Department-B	*8*	*6*	*15*	*11*

From the current budget, further details are as below :

	X	Y	Z
Annual Production at present (in units)	*10,000*	*12,000*	*20,000*
Estimated Selling Price per unit (₹)	*312*	*400*	*240*
Sales departments estimate of possible sales in the coming year (in units)	*12,000*	*16,000*	*24,000*

There is a constraint on supply of labour in Department-A and its manpower cannot be increased beyond its present level.

Required:

(i) Identify the best possible product mix of Moon Ltd.

(ii) Calculate the total contribution from the best possible product mix.

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

The process yield is as under:

Product M 80%

Product N 12%

Process Loss 8%

The cost of raw material is ₹ 80 per unit.

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

Prepare a Comprehensive Cost Statement for each product showing:

(i) Apportionment of joint cost among products 'M' and 'N' and

(ii) Total cost of the products 'M' and 'N'.

(d) W Limited undertook a contract for ₹ 5,00,000 on 1st July, 2019. On 30th June, 2020 when the accounts were closed, the following details about the contract were gathered:

	Amount (₹)
Materials purchased	*1,00,000*
Wages paid	*45,000*
General expenses	*10,000*
Materials on hand (30-6-2020)	*25,000*
Wages accrued (30-6-2020)	*5,000*
Work certified	*2,00,000*

Cash received	*1,50,000*
Work uncertified	*15,000*

The above contract contained "Escalation clause" which read as follows :

"In the event of increase in the prices of materials and rates of wages by more than 5%, the contract price would be increased accordingly by 25% of the rise in the cost of materials and wages beyond 5% in each case."

It was found that since the date of signing the agreement, the prices of materials and wage rates increased by 25%. The value of the work certified does not take into account the effect of the above clause.

Calculate the 'value of work certified' after taking the effect of 'Escalation Clause' as on 30th June, 2020. ***(4 x 5 = 20 Marks)***

Answer

(a) **Flexible Budget**

Activity Level	**60%**	**80%**	**100%**
Production (units)	**6,000**	**8,000**	**10,000**
	(₹)	**(₹)**	**(₹)**
Sales @ ₹ 100 per unit	6,00,000	**8,00,000**	**10,00,000**
Variable Cost (@ ₹ 35 (₹ 30 + ₹ 5) per unit)	2,10,000	2,80,000	3,50,000
Contribution (A)	3,90,000	5,20,000	6,50,000
Fixed Cost (part of semi-variable cost)	60,000	60,000	60,000
Other Fixed Cost	1,00,000	**1,25,000**	**1,25,000**
Total Fixed Cost (B)	1,60,000	1,85,000	1,85,000
Operating Profit (A – B)	**2,30,000**	**3,35,000**	**4,65,000**

(b) (i) **Statement Showing "Calculation of Contribution/ unit"**

Particulars	**X (₹)**	**Y (₹)**	**Z (₹)**
Selling Price (A)	312	400	240
Variable Cost:			
Direct Material	160	120	80
Direct Labour			
Dept. A (Rate x Hours)	24	40	20

Dept. B (Rate x Hours)	48	120	88
Variable Overheads	8	20	12
Total Variable Cost (B)	240	300	200
Contribution per unit (A - B)	**72**	**100**	**40**
Hours in Dept. A	6	10	5
Contribution per hour	12	10	8
Rank	I	II	III

Existing Hours = 10,000 x 6hrs. + 12,000 x 10 hrs. + 20,000 x 5 hrs. = 2,80,000 hrs.

Best possible product mix (Allocation of Hours on the basis of ranking)

Produce 'X' = 12,000 units

Hours Required = 72,000 hrs (12,000 units × 6 hrs.)

Balance Hours Available = 2,08,000 hrs (2,80,000 hrs. – 72,000 hrs.)

Produce 'Y' (the Next Best) = 16,000 units

Hours Required = 1,60,000 hrs (16,000 units × 10 hrs.)

Balance Hours Available = 48,000 hrs (2,08,000 hrs. – 1,60,000 hrs.)

Produce 'Z' (balance) = 9,600 units (48,000 hrs./ 5 hrs.)

(ii) Statement Showing "Contribution"

Product	Units	Contribution/ Unit (₹)	Total Contribution (₹)
X	12,000	72	8,64,000
Y	16,000	100	16,00,000
Z	9,600	40	3,84,000
		Total	**28,48,000**

(c) Comprehensive Cost Statement

Particulars	Total Cost (₹)	Product-M (₹)	Product-N (₹)
No. of units produced *		5,400 units	810 units
Cost of raw material (₹ 80 × 6,750 units)	5,40,000		
Processing cost:			

- Labour cost (₹ 2,25,000 × 66%)	1,48,500		
- Other costs (₹ 2,25,000 - 1,48,500)	76,500		
Total joint cost	**7,65,000**		
(i) Apportionment of joint costs between the joint products			
Labour cost in the ratio of 100:80	1,48,500	**82,500** $\left(\frac{1,48,500\times100}{180}\right)$	**66,000** $\left(\frac{1,48,500\times80}{180}\right)$
Other joint costs (including material) in the ratio of output (5,400:810)	6,16,500	**5,36,087** $\left(\frac{6,16,500\times5,400}{6,210}\right)$	**80,413** $\left(\frac{6,16,500\times810}{6,210}\right)$
(ii) Total product cost	7,65,000	**6,18,587**	**1,46,413**

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

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

(d) Workings:

(i) Percentage of work certified:

$$\frac{\text{Value of work certified}}{\text{Contract price}}\times100 = \frac{₹\ 2,00,000}{₹\ 5,00,000}\times100 = 40\%$$

(ii) Value of material and labour used in the contract:

Particulars	Amount (₹)	Amount (₹)
Material purchased	1,00,000	
Less: Material on hand (30-06-2020)	(25,000)	75,000
Wages paid	45,000	
Add: Wages accrued (30-06-2020)	5,000	50,000
		1,25,000

Price of materials and wages has been increased by 25%, the value before price increase is:

$$\frac{₹\ 1,25,000}{125}\times100 = ₹\ 1,00,000$$

(iii) Calculation of Value of work certified:

The value of the contract would be increased by 25% of the price increased beyond 5%.

Price increased beyond 5% = ₹ 25,000 – 5% of ₹ 1,00,000 = ₹ 20,000

Value of contract would be increased by 25% of ₹ 20,000 = ₹ 5,000

Therefore, the revised contract value = ₹ 5,00,000 + ₹ 5,000 = ₹ 5,05,000

Calculation of the Value of work certified after taking the effect of escalation clause:

Revised contract value × Percentage of work certified

= ₹ 5,05,000 × 40% = ₹ 2,02,000

Question 2

(a) X Ltd. manufactures two types of pens 'Super Pen' and 'Normal Pen'.

The cost data for the year ended 30th September, 2019 is as follows:

	(₹)
Direct Materials	*8,00,000*
Direct Wages	*4,48,000*
Production Overhead	*1,92,000*
Total	*14,40,000*

It is further ascertained that :

(1) Direct materials cost in Super Pen was twice as much of direct material in Normal Pen.

(2) Direct wages for Normal Pen were 60% of those for Super Pen.

(3) Production overhead per unit was at same rate for both the types.

(4) Administration overhead was 200% of direct labour for each.

(5) Selling cost was ₹ 1 per Super pen.

(6) Production and sales during the year were as follow :

Production		*Sales*	
	No. of units		*No. of units*
Super Pen	*40,000*	*Super Pen*	*36,000*
Normal Pen	*1,20,000*		

(7) Selling price was ₹ 30 per unit for Super Pen.

Prepare a Cost Sheet for 'Super Pen' showing:

(i) Cost per unit and Total Cost

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

(b) TEE Ltd. is a manufacturing company having three production departments 'P', 'Q' and 'R' and two service departments 'X' and 'Y' details pertaining to which are as under :

	P	Q	R	X	Y
Direct wages (₹)	5,000	1,500	4,500	2,000	800
Working hours	13,191	7,598	14,995	-	-
Value of machine (₹)	1,00,000	80,000	1,00,000	20,000	50,000
H.P. of machines	100	80	100	20	50
Light points (Nos.)	20	10	15	5	10
Floor space (sq. ft.)	2,000	2,500	3,500	1,000	1,000

The expenses are as follows:

	(₹)
Rent and Rates	10,000
General Lighting	600
Indirect Wages	3,450
Power	3,500
Depreciation on Machines	70,000
Sundries (apportionment on the basis of direct wages)	13,800

The expenses of Service Departments are allocated as under :

	P	Q	R	X	Y
X	45%	15%	30%	-	10%
Y	35%	25%	30%	10%	-

Product 'A' is processed for manufacture in Departments P, Q and R for 6, 5 and 2 hours respectively.

Direct Costs of Product A are :

Direct material cost is ₹ 65 per unit and Direct labour cost is ₹ 40 per unit.

You are Required to:

(i) Prepare a statement showing distribution of overheads among the production and service departments.

(ii) Calculate recovery rate per hour of each production department after redistributing the service departments costs.

(iii) Find out the Total Cost of a 'Product A'. ***(10 Marks)***

Answer

(a) Preparation of Cost Sheet for Super Pen

No. of units produced = 40,000 units

No. of units sold = 36,000 units

Particulars	Per unit (₹)	Total (₹)
Direct materials (Working note- (i))	8.00	**3,20,000**
Direct wages (Working note- (ii))	4.00	**1,60,000**
Prime cost	12.00	4,80,000
Production overhead (Working note- (iii))	1.20	**48,000**
Factory Cost	13.20	5,28,000
Administration Overhead* (200% of direct wages)	8.00	**3,20,000**
Cost of production	21.20	8,48,000
Less: Closing stock (40,000 units – 36,000 units)	-	**(84,800)**
Cost of goods sold i.e. 36,000 units	21.20	7,63,200
Selling cost	1.00	**36,000**
Cost of sales/ Total cost	**22.20**	**7,99,200**
Profit	**7.80**	**2,80,800**
Sales value (₹ 30 × 36,000 units)	30.00	**10,80,000**

Working Notes:

(i) Direct material cost per unit of Normal pen = M

Direct material cost per unit of Super pen = 2M

Total Direct Material cost = 2M × 40,000 units + M × 1,20,000 units

Or, ₹ 8,00,000 = 80,000 M + 1,20,000 M

Or, M $= \frac{₹\ 8,00,000}{2,00,000} = ₹\ 4$

Therefore, Direct material Cost per unit of Super pen = 2 × ₹ 4 = ₹ 8

(ii) Direct wages per unit for Super pen = W

Direct wages per unit for Normal Pen = 0.6W

So, (W x 40,000) + (0.6W x 1,20,000) = ₹ 4,48,000

W = ₹ 4 per unit

(iii) Production overhead per unit = $\frac{₹\,1,92,000}{(40,000+1,20,000)}$ = ₹ 1.20

Production overhead for Super pen = ₹ 1.20 × 40,000 units = ₹ 48,000

* Administration overhead is specific to the product as it is directly related to direct labour as mentioned in the question and hence to be considered in cost of production only.

Assumption: It is assumed that in point (1) and (2) of the Question, direct materials cost and direct wages respectively is related to per unit only.

Note: Direct Material and Direct wages can be calculated in alternative ways.

(b) (i) Statement showing distribution of Overheads

Primary Distribution Summary

Item of cost	Basis of apportionment	Total (₹)	P (₹)	Q (₹)	R (₹)	X (₹)	Y (₹)
Direct wages	Actual	2,800	--	--	--	2,000	800
Rent and Rates	Floor area (4:5:7:2:2)	10,000	2,000	2,500	3,500	1,000	1,000
General lighting	Light points (4:2:3:1:2)	600	200	100	150	50	100
Indirect wages	Direct wages (50:15:45:20:8)	3,450	1,250	375	1,125	500	200
Power	Horse Power of machines used (10:8:10:2:5)	3,500	1,000	800	1,000	200	500
Depreciation of machinery	Value of machinery (10:8:10:2:5)	70,000	20,000	16,000	20,000	4,000	10,000
Sundries	Direct wages (50:15:45:20:8)	13,800	5,000	1,500	4,500	2,000	800
Total		**1,04,150**	**29,450**	**21,275**	**30,275**	**9,750**	**13,400**

Secondary Distribution using simultaneous equation method:

Overheads of service cost centres

Let, X be the overhead of service cost centre X

Y be the overhead of service cost centre Y

X = 9,750 + 0.10 Y

Y = 13,400 + 0.10 X

Substituting the value of Y in X we get

X = 9,750 + 0.10 (13,400 + 0.10 X)

X = 9,750 + 1,340 + 0.01 X

0.99 X = 11,090

∴ **X** = ₹ 11,202

∴ **Y** = 13,400 + 0.10 × 11,202

= ₹ 14,520.20

Secondary Distribution Summary

Particulars	**Total (₹)**	**P (₹)**	**Q (₹)**	**R (₹)**
Allocated and Apportioned over-heads as per primary distribution		29,450.00	21,275.00	30,275.00
X	11,202.00	5,040.90	1,680.30	3,360.60
Y	14,520.20	5,082.07	3,630.05	4,356.06
Total		39,572.97	26,585.35	37,991.66

(ii) Calculation of Overhead recovery rate per hour

	P (₹)	**Q (₹)**	**R (₹)**
Total overheads cost	**39,572.97**	**26,585.35**	**37,991.66**
Working hours	13,191	7,598	14,995
Rate per hour (₹)	**3**	**3.50**	**2.53**

(iii) Cost of Product A

	(₹)
Direct material	65.00
Direct labour	40.00
Prime cost	105.00
Production on overheads	

P 6 hours × ₹ 3 = ₹ 18	
Q 5 hours × ₹ 3.50 = ₹ 17.50	
R 2 hours × ₹ 2.53 = ₹ 5.06	40.56
Total cost	**145.56**

Note: Secondary Distribution can also be done using repeated distribution Method

Question 3

(a) ABC Ltd. has furnished the following information regarding the overheads for the month of June 2020 :

(i)	*Fixed Overhead Cost Variance*	*₹ 2,800 (Adverse)*
(ii)	*Fixed Overhead Volume Variance*	*₹ 2,000 (Adverse)*
(iii)	*Budgeted Hours for June, 2020*	*2,400 hours*
(iv)	*Budgeted Overheads for June,2020*	*₹ 12,000*
(v)	*Actual rate of recovery of overheads*	*₹ 8 Per Hour*

From the above given information

Calculate:

(1) Fixed Overhead Expenditure Variance

(2) Actual Overheads Incurred

(3) Actual Hours for Actual Production

(4) Fixed Overhead Capacity Variance

(5) Standard hours for Actual Production

(6) Fixed Overhead Efficiency Variance ***(10 Marks)***

(b) An automobile company purchases 27,000 spare parts for its annual requirements. The cost per order is ₹ 240 and the annual carrying cost of average inventory is 12.5%. Each spare part costs ₹ 50.

At present, the order size is 3,000 spare parts.

(Assume that number of days in a year = 360 days)

Find out:

(i) How much the company's cost would be saved by opting EOQ model?

(ii) The Re-order point under EOQ model if lead time is 12 days.

(iii) How frequently should orders for procurement be placed under EOQ model?

(10 Marks)

Answer

(a) (1) Fixed Overhead Expenditure Variance

= Budgeted Fixed Overheads – Actual Fixed Overheads

= ₹ 12,000 – ₹ 12,800 (as calculated below) **= ₹ 800 (A)**

(2) Fixed Overhead Cost Variance= Absorbed Fixed Overheads – Actual Fixed Overheads

2,800 (A) = ₹ 10,000 – Actual Overheads

Actual Overheads **= ₹ 12,800**

(3) Actual Hours for Actual Production = ₹ 12,800/ ₹8 **= 1,600 hrs**.

(4) Fixed Overhead capacity Variance

= Budgeted Fixed Overheads for Actual Hours– Budgeted Fixed Overheads

= ₹ 5 x 1600 hrs. – ₹ 12,000 **= ₹ 4,000 (A)**

(5) Standard Hours for Actual Production

= Absorbed Overheads/ Std. Rate

= ₹ 10,000/ ₹ 5 **= 2,000 hrs.**

(6) Fixed Overhead Efficiency Variance

= Absorbed Fixed Overheads – Budgeted Fixed Overheads for Actual Hours

= ₹ 10,000 – ₹ 5 x 1,600 hrs. **= ₹ 2,000 (F)**

Working Note:

(i) Fixed Overhead Volume Variance = Absorbed Fixed Overheads – Budgeted Fixed Overheads

2,000 (A) = Absorbed Fixed Overheads – ₹12,000

Absorbed Fixed Overheads = ₹ 10,000

(ii) Standard Rate/ Hour = ₹ 5 (₹ 12,000/2,400 hrs.)

(b) Working Notes:

Annual requirement (A)	= 27,000 units
Cost per order (O)	= ₹ 240
Inventory carrying cost (i)	= 12.5%
Cost per unit of spare (c)	= ₹ 50
Carrying cost per unit (i × c)	= ₹ 50 × 12.5% = **₹ 6.25**

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

$= \sqrt{\frac{2 \times 27,000 \times 240}{6.25}}$ **= 1440 units**

(i) Calculation of saving by opting EOQ:

	Existing Order policy	EOQ Model
No. of orders	9 $\left(\frac{27,000}{3,000}\right)$	**18.75 or 19** $\left(\frac{27,000}{1,440}\right)$
A. Ordering Cost (₹)	**2,160** (₹ 240 × 9)	**4,500** $\left\{₹ 240 \times \left(\frac{27,000}{1,440}\right)\right\}$
B. Carrying cost (₹)	**9,375** $\left(\frac{3,000 \times ₹ 6.25}{2}\right)$	**4,500** $\left(\frac{1,440 \times ₹ 6.25}{2}\right)$
Total cost (A+B) (₹)	**11,535**	**9,000**

Savings of Cost by opting EOQ Model = ₹ 11,535 – ₹ 9,000 = ₹ 2,535

(ii) Re-order point under EOQ:

Re-order point/ Re-order level = Maximum consumption × Maximum lead time

Consumption per day = $\frac{27,000 \text{ units}}{360 \text{ days}}$ **= 75 units**

Re-order point/ Re-order level = 75 units × 12 days **= 900 units**

(iii) Frequency of Orders (in days):

$\frac{360 \text{ days}}{\text{No. of orders a year}} = \frac{360 \text{ days}}{19}$ = 18.95 days or 19 days

Question 4

(a) Following details are related to the work done in Process-I by ABC Ltd. during the month of May 2019 :

	(₹)
Opening work in process (3,000 units)	
Materials	*1,80,500*

Labour	*32,400*
Overheads	*90,000*
Materials introduced in Process-I (42,000 units)	*36,04,000*
Labour	*4,50,000*
Overheads	*15,18,000*

Units Scrapped : 4,800 units

Degree of completion :

Materials : 100%

Labour & overhead : 70%

Closing Work-in-process : 4,200 units

Degree of completion :

Materials : 100%

Labour & overhead : 50%

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

Normal loss:

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

Scrapped units fetch ₹62.50 per piece.

Prepare:

(i) Statement of equivalent production.

(ii) Statement of cost per equivalent unit.

(iii) Process-I A/c

(iv) Normal Loss Account and

(v) Abnormal Loss Account ***(10 Marks)***

(b) Following are the particulars of two workers 'R' and 'S' for a month:

Particulars	*R*	*S*
(i) Basic Wages (₹)	*15,000*	*30,000*
(ii) Dearness Allowance	*50%*	*50%*
(iii) Contribution to EPF (on basic wages)	*7%*	*7.5%*
(iv) Contribution to ESI (on basic wages)	*2%*	*2%*
(v) Overtime (hours)	*20*	*-*

The normal working hours for the month are 200 hrs. Overtime is paid at double the total of normal wages and dearness allowance. Employer's contribution to State Insurance and Provident Fund are at equal rates with employees' contributions.

Both workers were employed on jobs A, B and C in the following proportions :

Jobs	*A*	*B*	*C*
R	*75%*	*10%*	*15%*
S	*40%*	*20%*	*40%*

Overtime was done on job 'A'.

You are required to :

(i) Calculate ordinary wage rate per hour of 'R' and 'S'.

(ii) Allocate the worker's cost to each job 'A', 'B' and 'C'. ***(6 Marks)***

(c) Discuss any four objectives of 'Time keeping' in relation to attendance and payroll procedures. ***(4 Marks)***

Answer

(a) (i) Statement of Equivalent Production (Weighted Average method)

Particulars	Input Units	Particulars	Output Units	Equivalent Production			
				Material		Labour & O.H.	
				%	Units	%	Units
Opening WIP	3,000	Completed and transferred to Process-II	36,000	100	36,000	100	36,000
Units introduced	42,000	Normal Loss (4% of 45,000 units)	1,800	--	--	--	--
		Abnormal loss (Balancing figure)	3,000	100	3,000	70	2,100
		Closing WIP	4,200	100	4,200	50	2,100
	45,000		45,000		**43,200**		**40,200**

(ii) Statement showing cost for each element

Particulars	Materials (₹)	Labour (₹)	Overhead (₹)	Total (₹)
Cost of opening work-in-process	1,80,500	32,400	90,000	3,02,900
Cost incurred during the month	36,04,000	4,50,000	15,18,000	55,72,000

Less: Realisable Value of normal scrap (₹ 62.50 × 1,800 units)	(1,12,500)	--	--	(1,12,500)
Total cost: (A)	**36,72,000**	**4,82,400**	**16,08,000**	57,62,400
Equivalent units: (B)	43,200	40,200	40,200	
Cost per equivalent unit: (C) = (A ÷ B)	**85.00**	**12.00**	**40.00**	137.00

Statement of Distribution of cost

	Particulars	Amount (₹)	Amount (₹)
1.	Value of units completed and transferred: (36,000 units × ₹ 137)		49,32,000
2.	Value of Abnormal Loss:		
	- Materials (3,000 units × ₹ 85)	2,55,000	
	- Labour (2,100 units × ₹ 12)	25,200	
	- Overheads (2,100 units × ₹ 40)	84,000	3,64,200
3.	Value of Closing W-I-P:		
	- Materials (4,200 units × ₹ 85)	3,57,000	
	- Labour (2,100 units × ₹ 12)	25,200	
	- Overheads (2,100 units × ₹ 40)	84,000	4,66,200

(iii) Process-I A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Opening W.I.P:					
– Materials	3,000	1,80,500	By Normal Loss (₹ 62.5 × 1,800 units)	1,800	1,12,500
– Labour	--	32,400			
– Overheads	--	90,000			
To Materials introduced	42,000	36,04,000	By Abnormal loss	3,000	**3,64,200**
To Labour		4,50,000	By Process-I A/c	36,000	49,32,000
To Overheads		15,18,000	By Closing WIP	4,200	**4,66,200**
	45,000	**58,74,900**		45,000	**58,74,900**

(iv) Normal Loss A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Process-I A/c	1,800	1,12,500	By Cost Ledger Control A/c	1,800	1,12,500
	1,800	**1,12,500**		1,800	**1,12,500**

(v) Abnormal Loss A/c

Particulars	Units	(₹)	Particulars	Units	(₹)
To Process-I A/c	3,000	3,64,200	By Cost Ledger Control A/c (₹ 62.5 × 3,000 units)	3,000	**1,87,500**
			By Costing Profit & Loss A/c (Bal. Figure)		**1,76,700**
	3,000	**3,64,200**		3,000	**3,64,200**

(b) (i) Calculation of Net Wages paid to Worker 'R' and 'S'

Particulars	R (₹)	S (₹)
Basic Wages	15,000.00	30,000.00
Dearness Allowance (DA) (50% of Basic Wages)	7,500.00	15,000.00
Overtime Wages (Refer to Working Note 1)	4,500.00	----
Gross Wages earned	27,000.00	45,000.00
Less: Provident Fund (7% × ₹ 15,000); (7.5% × ₹ 30,000)	(1,050.00)	(2,250.00)
Less: ESI (2% × ₹ 15,000); (2% × ₹ 30,000)	(300.00)	(600.00)
Net Wages paid	**25,650.00**	**42,150.00**

Calculation of ordinary wage rate per hour of Worker 'R' and 'S'

	R (₹)	S (₹)
Gross Wages (Basic Wages + DA) (excluding overtime)	22,500.00	45,000.00
Employer's contribution to P.F. and E.S.I.	1,350.00	2,850.00
	23,850.00	47,850.00
Ordinary wages Labour Rate per hour (₹ 23,850 ÷ 200 hours); (₹ 47,850 ÷ 200 hours)	**119.25**	**239.25**

(ii) Statement Showing Allocation of workers cost to each Job

	Total Wages	Jobs		
		A	B	C
Worker R				
Ordinary Wages (15:2:3)	23,850.00	17,887.50	2,385.00	3577.50
Overtime	4500.00	**4500.00**	-	--
Worker S				
Ordinary Wages (2:1:2)	47,850.00	19,140.00	9,570.00	19,140.00
	76,200.00	**41,527.50**	**11,955.00**	**22,717.50**

Working Note:

Normal Wages are considered as basic wages.

$$\text{Over time} = \frac{2 \times (\text{Basic wage} + \text{D.A.}) \times 20 \text{ hours}}{200 \text{ hours}}$$

$$= 2 \times \frac{₹22,500}{200} \times 20 \text{ hours}$$

$$= ₹ 4,500$$

(c) The objectives of time-keeping in relation to attendance and payroll procedures are as follows:

(i) For the preparation of payrolls.

(ii) For calculating overtime.

(iii) For ascertaining and controlling employee cost.

(iv) For ascertaining idle time.

(v) For disciplinary purposes.

(vi) For overhead distribution

Question 5

(a) SEZ Ltd. built a 120 km. long highway and now operates a toll road to collect tolls. The company has invested ₹ 900 crore to build the road and has estimated that a total of 120 crore vehicles will be using the highway during the 10 years toll collection tenure. The other costs for the month of "June 2020" are as follows:

(i) Salary:

- *Collection personnel (3 shifts and 5 persons per shift) - ₹ 200 per day per person.*

- *Supervisor (3 shifts and 2 persons per shift) - ₹ 350 per day per person.*
- *Security personnel (2 shifts and 2 persons per shift) - ₹ 200 per day per person.*
- *Toll Booth Manager (3 shifts and 1 person per shift) - ₹ 500 per day per person.*

(ii) Electricity - ₹ 1,50,000

(iii) Telephone - ₹ 1,00,000

(iv) Maintenance cost - ₹ 50 lakhs

(v) The company needs 30% profit over total cost.

Required:

(1) Calculate cost per kilometre.

(2) Calculate the toll rate per vehicle. ***(10 Marks)***

(b) ABC Ltd. is engaged in production of three types of Fruit Juices:

Apple, Orange and Mixed Fruit.

The following cost data for the month of March 2020 are as under:

Particulars	*Apple*	*Orange*	*Mixed Fruit*
Units produced and sold	*10,000*	*15,000*	*20,000*
Material per unit (₹)	*8*	*6*	*5*
Direct Labour per unit (₹)	*5*	*4*	*3*
No. of Purchase Orders	*34*	*32*	*14*
No. of Deliveries	*110*	*64*	*52*
Shelf Stocking Hours	*110*	*160*	*170*

Overheads incurred by the company during the month are as under :

	(₹)
Ordering costs	*64,000*
Delivery costs	*1,58,200*
Shelf Stocking costs	*87,560*

Required:

(i) Calculate cost driver's rate.

(ii) Calculate total cost of each product using Activity Based Costing. ***(6 Marks)***

(c) Describe the various levels of activities under 'ABC' methodology. ***(4 Marks)***

Answer

(a) **Statement of Cost**

Particulars		**(₹)**
A. Apportionment of capital cost	$\left(\frac{₹\ 900 crore}{10 years} \times \frac{1}{12 months}\right)$	**7,50,00,000**
B. Other Costs		
Salary to Collection Personnel	(3 Shifts × 5 persons per shift × 30 days × ₹ 200 per day)	**90,000**
Salary to Supervisor	(3 Shifts × 2 persons per shift × 30 days × ₹ 350 per day)	**63,000**
Salary to Security Personnel	(2 Shifts × 2 persons per shift × 30 days × ₹ 200 per day)	**24,000**
Salary to Toll Booth Manager	(3 Shifts × 1 person per shift × 30 days × ₹ 500 per day)	**45,000**
Electricity		1,50,000
Telephone		1,00,000
		4,72,000
C. Maintenance cost		50,00,000
Total (A + B + C)		**8,04,72,000**

(1) Calculation of cost per kilometre:

$$= \frac{\text{Total Cost}}{\text{Total km.}} = \frac{₹\ 8,04,72,000}{120 km.} = ₹\ 6,70,600$$

(2) Calculation of toll rate per vehicle:

$$= \frac{\text{Total Cost} + 25\% \text{ profit}}{\text{Vehicles per month}} = \frac{₹\ 8,04,72,000 + ₹\ 2,41,41,600}{1,00,00,000 \text{ vehicles}} = ₹\ \mathbf{10.46}$$

Working:

$$\text{Vehicles per month} = \frac{\text{Total estimated vehicles}}{10 \text{ years}} \times \frac{1 \text{ month}}{12 \text{ months}}$$

$$= \frac{120 crore}{10 years} \times \frac{1 month}{12 months} = 1 \text{ Crore vehicles}$$

(b) (i) Calculation Cost-Driver's rate

Activity	Overhead cost (₹)	Cost-driver level	Cost driver rate (₹)
	(A)	(B)	(C) = (A)/(B)
Ordering	64,000	34 + 32 + 14 = 80 no. of purchase orders	**800**
Delivery	1,58,200	110 + 64 + 52 = 226 no. of deliveries	**700**
Shelf stocking	87,560	110 + 160 + 170 = 440 shelf stocking hours	**199**

(ii) Calculation of total cost of products using Activity Based Costing

Particulars	Fruit Juices		
	Apple (₹)	Orange (₹)	Mixed Fruit (₹)
Material cost	80,000 (10,000 x ₹ 8)	90,000 (15,000 x ₹ 6)	1,00,000 (20,000 x ₹ 5)
Direct labour cost	50,000 (10,000 x ₹ 5)	60,000 (15,000 x ₹ 4)	60,000 (20,000 x ₹ 3)
Prime Cost (A)	1,30,000	1,50,000	1,60,000
Ordering cost	**27,200** (800 x 34)	**25,600** (800 x 32)	**11,200** (800 x 14)
Delivery cost	**77,000** (700 x 110)	**44,800** (700 x 64)	**36,400** (700 x 52)
Shelf stocking cost	**21,890** (199 x 110)	**31,840** (199 x 160)	**33,830** (199 x 170)
Overhead Cost (B)	1,26,090	1,02,240	81,430
Total Cost (A + B)	**2,56,090**	**2,52,240**	**2,41,430**

(c) Various Level of Activities under ABC Methodology

Level of Activities	Meaning
1. Unit level activities	These are those activities for which the consumption of resources can be identified with the number of units produced.
2. Batch level activities	The activities such as setting up of a machine or processing a purchase order are performed each time a batch of goods is produced. The cost of batch related

	activities varies with number of batches made, but is common (or fixed) for all units within the batch.
3. Product level activities	These are the activities which are performed to support different products in product line.
4. Facilities level activities	These are the activities which cannot be directly attributed to individual products. These activities are necessary to sustain the manufacturing process and are common and joint to all products manufactured.

Question 6

Answer any four of the following:

(a) Differentiate between "Cost Accounting and Management Accounting".

(b) What are the important points an organization should consider if it wants to adopt Performance Budgeting?

(c) Explain what are the pre-requisites of integrated accounting.

(d) State the Method of Costing to be used in the following industries:

(i) Real Estate

(ii) Motor repairing workshop

(iii) Chemical Industry

(iv) Transport service

(v) Assembly of bicycles

(vi) Biscuits manufacturing Industry

(vii) Power supply Companies

(viii) Car manufacturing Industry

(ix) Cement Industry

(x) Printing Press

(e) Differentiate between "Marginal and Absorption Costing". ***(4 x 5 = 20 Marks)***

Answer

(a) Difference between Cost Accounting and Management Accounting

	Basis	Cost Accounting	Management Accounting
(i)	**Nature**	It records the quantitative aspect only.	It records both qualitative and quantitative aspect.
(ii)	**Objective**	It records the cost of producing a product and providing a service.	It Provides information to management for planning and co-ordination.

(iii)	**Area**	It only deals with cost Ascertainment.	It is wider in scope as it includes financial accounting, budgeting, taxation, planning etc.
(iv)	**Recording of data**	It uses both past and present figures.	It is focused with the projection of figures for future.
(v)	**Development**	Its development is related to industrial revolution.	It develops in accordance to the need of modern business world.
(vi)	**Rules and Regulation**	It follows certain principles and procedures for recording costs of different products.	It does not follow any specific rules and regulations.

(b) For an enterprise that wants to adopt Performance Budgeting, it is thus imperative that:

- the objectives of the enterprise are spelt out in concrete terms.
- the objectives are then translated into specific functions, programmes, activities and tasks for different levels of management within the realities of fiscal constraints.
- realistic and acceptable norms, yardsticks or standards and performance indicators should be evolved and expressed in quantifiable physical units.
- a style of management based upon decentralised responsibility structure should be adopted, and
- an accounting and reporting system should be developed to facilities monitoring, analysis and review of actual performance in relation to budgets.

(c) The essential pre-requisites for integrated accounts include the following steps:

- The management's decision about the extent of integration of the two sets of books. Some concerns find it useful to integrate up to the stage of prime cost or factory cost while other prefer full integration of the entire accounting records.
- A suitable coding system must be made available so as to serve the accounting purposes of financial and cost accounts.
- An agreed routine, with regard to the treatment of provision for accruals, prepaid expenses, other adjustment necessary for preparation of interim accounts.
- Perfect coordination should exist between the staff responsible for the financial and cost aspects of the accounts and an efficient processing of accounting documents should be ensured.
- Under this system there is no need for a separate cost ledger. Of course, there will be a number of subsidiary ledgers; in addition to the useful Customers' Ledger and the Bought Ledger, there will be: (a) Stores Ledger; (b) Stock Ledger and (c) Job Ledger.

(d) Method of costing used in different industries:

S. No.	Industries	Method of Costing
(i)	Real Estate	Contract Costing
(ii)	Motor Repairing Workshop	Job Costing
(iii)	Chemical Industry	Process Costing
(iv)	Transport Service	Service/Operating Costing
(v)	Assembly of Bicycles	Unit/ Single/Output/Multiple Costing
(vi)	Biscuits Manufacturing Industry	Batch Costing
(vii)	Power Supply Companies	Service/Operating Costing
(viii)	Car Manufacturing Industry	Multiple Costing
(ix)	Cement Industry	Unit/Single/Output Costing
(x)	Printing Press	Job Costing

(e) Difference between Marginal costing and Absorption costing

S. No.	Marginal costing	Absorption costing
1.	Only variable costs are considered for product costing and inventory valuation.	Both fixed and variable costs are considered for product costing and inventory valuation.
2.	Fixed costs are regarded as period costs. The Profitability of different products is judged by their P/V ratio.	Fixed costs are charged to the cost of production. Each product bears a reasonable share of fixed cost and thus the profitability of a product is influenced by the apportionment of fixed costs.
3.	Cost data presented highlight the total contribution of each product.	Cost data are presented in conventional pattern. Net profit of each product is determined after subtracting fixed cost along with their variable costs.
4.	The difference in the magnitude of opening stock and closing stock does not affect the unit cost of production.	The difference in the magnitude of opening stock and closing stock affects the unit cost of production due to the impact of related fixed cost.
5.	In case of marginal costing the cost per unit remains the same, irrespective of the production as it is valued at variable cost	In case of absorption costing the cost per unit reduces, as the production increases as it is fixed cost which reduces, whereas, the variable cost remains the same per unit.