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) Surekha Limited produces 4,000 Litres of paints on a quarterly basis. Each Litre requires 2 kg of raw material. The cost of placing one order for raw material is ₹ 40 and the purchasing price of raw material is ₹ 50 per kg. The storage cost and interest cost is 2% and 6% per annum respectively. The lead time for procurement of raw material is 15 days.

Calculate Economic Order Quantity and Total Annual Inventory Cost in respect of the above raw material.

(b) The following data is presented by the supervisor of a factory for a Job:

	₹ per unit
Direct Material	120
Direct Wages @ ₹ 4 per hour	
(Departments A-4 hrs, B-7 hrs, C-2 hrs & D-2 hrs)	60
Chargeable Expenses	20
Total	200

Analysis of the Profit and Loss Account for the year ended

31st March, 2019

Material		2,00,000	Sales	4,30,000
Direct Wages				
Dept. A	12,000			
Dept. B	8,000			
Dept. C	10,000			
Dept. D	20,000	50,000		
Special Store items		6,000		

Overheads				
Dept. A	*12,000*			
Dept. B	*6,000*			
Dept. C	*9,000*			
Dept. D	*17,000*	*44,000*		
Gross Profit c/d		*1,30,000*		
		4,30,000		*4,30,000*
Selling Expenses		*90,000*	*Gross Profit b/d*	*1,30,000*
Net Profit		*40,000*		
		1,30,000		*1,30,000*

It is also to be noted that average hourly rates for all the four departments are similar.

Required:

(i) Prepare a Job Cost Sheet.

(ii) Calculate the entire revised cost using the above figures as the base.

(iii) Add 20% profit on selling price to determine the selling price.

(c) A Factory produces two products, 'A' and 'B' from a single process. The joint processing costs during a particular month are :

Direct Material	*₹30,000*
Direct Labour	*₹ 9,600*
Variable Overheads	*₹ 12,000*
Fixed Overheads	*₹ 32,000*

Sales: A- 100 units@ ₹ 600 per unit; B – 120 units @ ₹ 200 per unit.

I. Apportion joints costs on the basis of:

(i) Physical Quantity of each product.

(ii) Contribution Margin method, and

II. Determine Profit or Loss under both the methods.

(d) When volume is 4,000 units; average cost is ₹ 3.75 per unit. When volume is 5,000 units, average cost is ₹ 3.50 per unit. The Break-Even point is 6,000 units.

Calculate: (i) Variable Cost per unit (ii) Fixed Cost and (iii) Profit Volume Ratio.

(4 x 5 = 20 Marks)

Answer

(a) Working:

Calculation of Annual demand of raw material

= 4,000 Litres (per quarter) x 4 (No. of Quarter in a year) x 2 kg. (raw material required for each Litre of paint)

= **32,000 kg.**

Calculation of Carrying cost

Storage rate = 2%

Interest Rate = 6%

Total = 8% per annum

Carrying cost per unit per annum = 8% of ₹ 50 = ₹ 4 per unit per annum

(i) EOQ $= \sqrt{\frac{2 \times \text{Annual demand (A)} \times \text{Ordering Cost per order(O)}}{\text{Carrying cost per unit per annum (C)}}}$

$= \sqrt{\frac{2 \times 32{,}000\,\text{kg} \times ₹\,40}{₹\,4}}$ = **800** Kg

(ii) Total Annual Inventory Cost

Purchasing cost of 32,000 kg @ ₹ 50 per kg	=	₹ 16,00,000
Ordering Cost $\left(\frac{32{,}000\,\text{kg}}{800\,\text{kg}} \times ₹\,40\right)$	=	₹ 1,600
Carrying Cost of Inventory $\left(\frac{15\text{ days}}{30\text{ days}} \times 800\ kg \times ₹\,4\right)$	=	₹ 1,600
		₹ 16,03,200

(b) Job Cost Sheet

Customer Details ——— Job No._____

Date of commencement —— Date of completion _____

Particulars		**Amount (₹)**
Direct materials		120
Direct wages:		
Deptt. A ₹ 4.00 × 4 hrs.	₹ 16.00	
Deptt. B ₹ 4.00 × 7 hrs.	₹ 28.00	

Deptt. C ₹ 4.00 × 2 hrs.	₹ 8.00	
Deptt. D ₹ 4.00 × 2 hrs.	₹ 8.00	60
Chargeable expenses		20
Prime cost		**200**
Overheads		
Deptt. A = $\frac{₹12,000}{₹12,000}$ × 100 =100% of ₹ 16	₹ 16	
Deptt. B = $\frac{₹6,000}{₹8,000}$ × 100 = 75% of ₹ 28	₹ 21	
Deptt. C = $\frac{₹9,000}{₹10,000}$ × 100 = 90% of ₹ 8 = $\frac{₹9,000}{₹10,000}$ × 100 = 90% of ₹ 8 = ₹ 7.20	₹ 7.20	
Deptt. D = $\frac{₹17,000}{₹20,000}$ × 100 = 85% of ₹ 8	₹ 6.80	**51.00**
Works cost		251.00
Selling expenses = $\frac{₹90,000}{₹3,00,000}$ ×100 = 30% of work cost		**75.30**
Total cost		326.30
Profit (20% profit on selling price i.e 25% of total cost)		**81.58**
Selling price		**407.88**

(c) Total Joint Cost

	Amount (₹)
Direct Material	30,000
Direct Labour	9,600
Variable Overheads	12,000
Total Variable Cost	51,600
Fixed Overheads	32,000
Total joint cost	83,600

Apportionment of Joint Costs:

			Product-A	Product-B
I.	(i)	Apportionment of Joint Cost on the basis of 'Physical Quantity'	**₹ 38,000** $\left(\frac{₹\,83,600}{100+120\,\text{units}}\times 100\right)$	**₹ 45,600** $\left(\frac{₹\,83,600}{100+120\,\text{units}}\times 120\right)$
	(ii)	Apportionment of Joint Cost on the basis of 'Contribution Margin Method':		
		- Variable Costs (on basis of physical units)	**₹ 23,455** $\left(\frac{₹\,51,600}{100+120\,\text{units}}\times 100\right)$	**₹ 28,145** $\left(\frac{₹\,51,600}{100+120\,\text{units}}\times 120\right)$
		Contribution Margin	**36,545** (₹600×100 – 23,455)	**-4,145** (₹200×120 – 28,145)
		Fixed Costs*	₹ 32,000	
		Total apportioned cost	₹ 55,455	₹ 28,145
II.	**(iii)**	**Profit or Loss:**		
	When Joint cost apportioned on basis of physical units			
	A.	Sales Value	₹ 60,000	₹ 24,000
	B.	Apportioned joint cost on basis of 'Physical Quantity':	₹ 38,000	₹ 45,600
	A-B	**Profit or (Loss)**	**22,000**	**(21,600)**
	When Joint cost apportioned on basis of 'Contribution Margin Method'			
	C	Apportioned joint cost on basis of 'Contribution Margin Method'	₹ 55,455	₹ 28,145
	A-C	**Profit or (Loss)**	₹ 4,545	₹ (4,145)

* The fixed cost of ₹ 32,000 is to be apportioned over the joint products A and B in the ratio of their contribution margin but contribution margin of Product B is Negative so fixed cost will be charged to Product A only.

(d) **(i)** Variable cost per unit = $\frac{\text{Change in Total cost}}{\text{Change in units}}$

$= \frac{(₹\,3.50 \times 5{,}000 \text{ units}) - (₹\,3.75 \times 4{,}000 \text{ units})}{5{,}000 - 4{,}000}$

$= \frac{₹\,17{,}500 - ₹\,15{,}000}{1{,}000} = ₹\ \mathbf{2{,}500}/1000 = \mathbf{₹2.5}$

(ii) Fixed cost = Total Cost – Variable cost (at 5,000 units level)

= ₹17,500 – ₹2.5 × 5,000 = **₹5,000**

(iii) Contribution per unit = $\frac{\text{Fixed cost}}{\text{BEP (in units)}} = \frac{₹\,5{,}000}{6{,}000 \text{ units}} = 0.833$

P/V Ratio = $\frac{\text{Contribution per unit}}{\text{Sale price per unit}} = \frac{0.833}{2.5 + 0.833} = \mathbf{25\%}$

Question 2

(a) PQR Ltd has decided to analyse the profitability of its five new customers. It buys soft drink bottles in cases at ₹ 45 per case and sells them to retail customers at a list price of ₹ 54 per case. The data pertaining to five customers are given below:

Particulars					
	A	***B***	***C***	***D***	***E***
Number of Cases Sold	*9,360*	*14,200*	*62,000*	*38,000*	*9,800*
List Selling Price (₹)	*54*	*54*	*54*	*54*	*54*
Actual Selling Price (₹)	*54*	*53.40*	*49*	*50.20*	*48.60*
Number of Purchase Orders	*30*	*50*	*60*	*50*	*60*
Number of Customers visits	*4*	*6*	*12*	*4*	*6*
Number of Deliveries	*20*	*60*	*120*	*80*	*40*
Kilometers travelled per delivery	*40*	*12*	*10*	*20*	*60*
Number of expediate Deliveries	*0*	*0*	*0*	*0*	*2*

Its five activities and their cost drivers are:

Activity	*Cost Driver*
Order taking	*₹ 200 per purchase order*
Customer visits	*₹ 300 per each visit*

Deliveries	*₹ 4.00 per delivery km travelled*
Product Handling	*₹ 2.00 per case sold*
Expedited deliveries	*₹ 100 per such delivery*

You are required to :

(i) Compute the customer level operating income of each of five retail customers by using the Cost Driver rates.

(ii) Examine the results to give your comments on Customer 'D' in comparison with Customer 'C' and on Customer 'E' in comparison with Customer 'A'. ***(10 Marks)***

(b) ABS Enterprises produces a product and adopts the policy to recover factory overheads applying blanket rate based on machine hours. The cost records of the concern reveal the following information:

Budgeted production overheads	*₹ 10,35,000*
Budgeted machine hours	*₹ 90,000*
Actual machine hours worked	*₹ 45,000*
Actual production overheads	*₹ 8,80,000*
Production overheads (actual) include-	
Paid to worker as per court's award	*₹ 50,000*
Wages paid for strike period	*₹ 38,000*
Stores written off	*₹ 22,000*
Expenses of previous year booked in current year	*₹ 18,500*
Production -	
Finished goods	*30,000 units*
Sale of finished goods	*27,000 units*

The analysis of cost information reveals that 1/3 of the under absorption of overheads was due to defective production planning and the balance was attributable to increase in costs.

You are required:

(i) To find out the amount of under absorbed production overheads.

(ii) To give the ways of treating it in Cost Accounts.

(iii) To apportion the under absorbed overheads over the items. ***(10 Marks)***

Answer

(a) Working note:

Computation of revenues (at listed price), discount, cost of goods sold and customer level operating activities costs:

Particular	Customers				
	A	B	C	D	E
Cases sold: (a)	9,360	14,200	62,000	38,000	9,800
Revenues (at listed price) (₹): (b) {(a) × ₹ 54)}	5,05,440	7,66,800	33,48,000	20,52,000	5,29,200
Discount (₹): (c) {(a) × Discount per case}	-	8,520 (14,200 cases × ₹ 0.6)	3,10,000 (62,000 cases × ₹ 5)	1,44,400 (38,000 cases × ₹ 3.80)	52,920 (9,800 cases × ₹ 5.40)
Cost of goods sold (₹): (d) {(a) × ₹ 45}	4,21,200	6,39,000	27,90,000	17,10,000	4,41000
Customer level operating activities costs					
Order taking costs (₹): (No. of purchase × ₹ 200)	6,000	10,000	12,000	10,000	12,000
Customer visits costs (₹) (No. of customer visits × ₹ 300)	1,200	1,800	3,600	1,200	1,800
Delivery vehicles travel costs (₹) (Kms travelled by delivery vehicles × ₹ 4 per km.)	3,200	2,880	4,800	6,400	9,600
Product handling costs (₹) {(a) ×₹ 2}	18,720	28,400	1,24,000	76,000	19,600
Cost of expediting deliveries (₹) {No. of expedited deliveries × ₹ 100}	-	-	-	-	200
Total cost of customer level operating activities (₹)	29,120	43,080	1,44,400	93,600	43,200

(i) Computation of Customer level operating income

Particular	Customers				
	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)
Revenues (At list price) (Refer to working note)	5,05,440	7,66,800	33,48,000	20,52,000	5,29,200
Less: Discount (Refer to working note)	-	8,520	3,10,000	1,44,400	52,920
Revenue (At actual price)	5,05,440	7,58,280	30,38,000	19,07,600	4,76,280
Less: Cost of goods sold (Refer to working note)	4,21,200	6,39,000	27,90,000	17,10,000	4,41000
Gross margin	84,240	1,19280	2,48,000	1,97,600	35,280
Less: Customer level operating activities costs (Refer to working note)	29,120	43,080	1,44,400	93,600	43,200
Customer level operating income	55,120	76,200	1,03,600	1,04,000	(7,920)

(ii) Comments

Customer D in comparison with Customer C: Operating income of Customer D is more than of Customer C, despite having only 61.29% (38,000 units) of the units volume sold in comparison to Customer C (62,000 units). Customer C receives a higher percent of discount i.e. 9.26% (₹ 5) while Customer D receive a discount of 7.04% (₹ 3.80). Though the gross margin of customer C (₹ 2,48,000) is more than Customer D (₹ 1,97,600) but total cost of customer level operating activities of C (₹ 1,44,400) is more in comparison to Customer D (₹ 93,600). As a result, operating income is more in case of Customer D.

Customer E in comparison with Customer A: Customer E is not profitable while Customer A is profitable. Customer E receives a discount of 10% (₹ 5.4) while Customer A doesn't receive any discount. Sales Volume of Customer A and E is almost same. However, total cost of customer level operating activities of E is far more (₹ 43,200) in comparison to Customer A (₹ 29,120). This has resulted in occurrence of loss in case of Customer E.

(b) (i) Amount of under absorption of production overheads:

Particular	Amount (₹)	Amount (₹)
Total production overheads actually incurred		8,80,000
Less: Amount paid to worker as per court order	50,000	
Wages paid for the strike period under an award	38,000	
Stores written off	22,000	
Expenses of previous year booked in the current year	18,500	1,28,500
		7,51,500
Less: Production overheads absorbed as per machine hour rate (45,000 hours × ₹**11.50***)		**5,17,500**
Amount of under- absorbed production overheads		**2,34,000**

*Budgeted Machine hour rate (Blanket rate) = $\frac{₹\ 10,35,000}{90,000}$ = ₹ 11.50 per hour

(ii) Accounting treatment of under absorbed production overheads:

(a) As 1/3rd of the under absorbed overheads were due to defective production planning, this being abnormal, hence should be debited to Costing Profit and Loss Account.

Amount to be debited to Costing Profit and Loss Account

= ₹ 2,34,000 × 1/3 = ₹ **78,000**.

(b) Balance of under absorbed production overheads should be distributed over Finished goods and Cost of sales by applying supplementary rate*.

Amount to be distributed = ₹ 2,34,000 × 2/3 = ₹**1,56,000**

*Supplementary rate = $\frac{₹\ 1,56,000}{30,000\ \text{units}}$ = ₹ **5.20** per unit

(iii) Apportionment of under absorbed production overheads over Finished goods and Cost of sales:

Particular	Units	Amount (₹)
Finished goods (3,000 units × ₹**5.20**)	**3,000**	**15,600**
Cost of sales (27,000 units × ₹**5.20**)	**27,000**	**1,40,400**

Total	30,000	1,56,000

Question 3

(a) *A hotel is being run in a Hill station with 200 single rooms. The hotel offers concessional rates during six off-season months in a year.*

During this period, half of the full room rent is charged. The management's profit margin is targeted at 20% of the room rent. The following are the cost estimates and other details for the year ending 31st March ,2019:

(i) Occupancy during the season is 80% while in the off-season it is 40%.

(ii) Total investment in the hotel is ₹ 300 lakhs of which 80% relates to Buildings and the balance to Furniture and other Equipment.

(iii) Room attendants are paid ₹ 15 per room per day on the basis of occupancy of rooms in a month.

(iv) Expenses:

- *Staff salary (excluding that of room attendants) ₹ 8,00,000*
- *Repairs to Buildings ₹ 3,00,000*
- *Laundry Charges ₹ 1,40,000*
- *Interior Charges ₹ 2,50,000*
- *Miscellaneous Expenses ₹ 2,00,200*

(v) Annual Depreciation is to be provided on Buildings @ 5% and 15% on Furniture and other Equipments on straight line method.

(vi) Monthly lighting charges are ₹ 110, except in four months in winter when it is ₹ 30 per room and this cost is on the basis of full occupancy for a month.

You are required to workout the room rent chargeable per day both during the season and the off-season months using the foregoing information.

(Assume a month to be of 30 days and winter season to be considered as part of off-season).

(10 Marks)

(b) *XYZ a manufacturing firm, has revealed following information for September ,2019:*

	1st September	*30th September*
	(₹)	*(₹)*
Raw Materials	*2,42,000*	*2,92,000*
Works-in-progress	*2,00,000*	*5,00,000*

The firm incurred following expenses for a targeted production of 1,00,000 units during the month :

	(₹)
Consumable Stores and spares of factory	*3,50,000*
Research and development cost for process improvements	*2,50,000*
Quality control cost	*2,00,000*
Packing cost (secondary) per unit of goods sold	*2*
Lease rent of production asset	*2,00,000*
Administrative Expenses (General)	*2,24,000*
Selling and distribution Expenses	*4,13,000*
Finished goods (opening)	*Nil*
Finished goods (closing)	*5000 units*

Defective output which is 4% of targeted production, realizes ₹61 per unit.

Closing stock is valued at cost of production (excluding administrative expenses)

Cost of goods sold, excluding administrative expenses amounts to ₹78,26,000.

Direct employees cost is 1/2 of the cost of material consumed.

Selling price of the output is ₹110 per unit.

You are required to :

(i) Calculate the Value of material purchased

(ii) Prepare cost sheet showing the profit earned by the firm. ***(10 Marks)***

Answer

(a) Working Notes:

(i) Total Room days in a year

Season	Occupancy (Room-days)	Equivalent Full Room charge days
Season – 80% Occupancy	200 Rooms × 80% × 6 months × 30 days in a month = **28,800** Room Days	28,800 Room Days × 100% = 28,800
Off-season – 40% Occupancy	200 Rooms × 40% × 6 months × 30 days in a month = **14,400** Room Days	14,400 Room Days × 50% = 7,200
Total Room Days	28,800 + 14,400 = 43,200 Room Days	36,000 Full Room days

(ii) Lighting Charges:

It is given in the question that lighting charges for 8 months is ₹110 per month and during winter season of 4 months it is ₹30 per month. Further it is also given that peak season is 6 months and off season is 6 months.

It should be noted that – being Hill station, winter season is to be considered as part of Off season. Hence, the non-winter season of 8 months include – Peak season of 6 months and Off season of 2 months.

Accordingly, the lighting charges are calculated as follows:

Season	Occupancy (Room-days)
Season & Non-winter – 80% Occupancy	200 Rooms × 80% × 6 months × ₹ 110 per month = ₹ **1,05,600**
Off- season & Non-winter – 40% Occupancy (8 – 6 months)	200 Rooms × 40% × 2 months × ₹110 per month = ₹ **17,600**
Off- season & -winter – 40% Occupancy months)	200 Rooms × 40% × 4 months × ₹ 30 per month = ₹ **9,600**
Total Lighting charges	₹ 1,05,600+ ₹ 17,600 + ₹ 9,600 = ₹ **132,800**

Statement of total cost:

	(₹)
Staff salary	8,00,000
Repairs to building	3,00,000
Laundry	1,40,000
Interior	2,50,000
Miscellaneous Expenses	2,00,200
Depreciation on Building (₹ 300 Lakhs × 80% × 5%)	**12,00,000**
Depreciation on Furniture & Equipment (₹ 300 Lakhs × 20% × 15%)	**9,00,000**
Room attendant's wages (₹ 15 per Room Day for 43,200 Room Days)	**6,48,000**
Lighting charges	1,32,800
Total cost	**45,71,000**
Add: Profit Margin (20% on Room rent or 25% on Cost)	11,42,750
Total Rent to be charged	**57,13,750**

Calculation of Room Rent per day:

Total Rent / Equivalent Full Room days = ₹ 57,13,750/ 36,000 = ₹ 158.72

Room Rent during Season – ₹ 158.72

Room Rent during Off season = ₹ 158.72 × 50% = ₹ 79.36

(b) Workings:

1. Calculation of Sales Quantity:

Particular	Units
Production units	1,00,000
Less: Defectives (4%×1,00,000 units)	4,000
Less: Closing stock of finished goods	5,000
No. of units sold	91,000

2. Calculation of Cost of Production

Particular	Amount (₹)
Cost of Goods sold (given)	78,26,000
Add: Value of Closing finished goods $\left(\frac{₹\ 78,26,000}{91,000\ \text{units}} \times 5,000\ \text{units}\right)$	4,30,000
Cost of Production	82,56,000

3. Calculation of Factory Cost

Particular	Amount (₹)
Cost of Production	82,56,000
Less: Quality Control Cost	(2,00,000)
Less: Research and Development Cost	(2,50,000)
Add: Credit for Recoveries/Scrap/By-Products/ misc. income (1,00,000 units × 4% × ₹ 61)	2,44,000
Factory Cost	80,50,000

4. Calculation of Gross Factory Cost

Particular	Amount (₹)
Cost of Factory Cost	80,50,000
Less: Opening Work in Process	(2,00,000)
Add: Closing Work in Process	5,00,000

Cost of Gross Factory Cost	83,50,000

5. Calculation of Prime Cost

Particular	Amount (₹)
Cost of Gross Factory Cost	83,50,000
Less: Consumable stores & spares	(3,50,000)
Less: Lease rental of production assets	(2,00,000)
Prime Cost	78,00,000

6. Calculation of Cost of Materials Consumed & Labour cost

Let Cost of Material Consumed = M and Labour cost = 0.5M

Prime Cost = Cost of Material Consumed + Labour Cost

78,00,000 = M + 0.5M

M = 52,00,000

Therefore, Cost of Material Consumed = ₹ 52,00,000 and

Labour Cost = ₹ 26,00,000

(i) Calculation of Value of Materials Purchased

Particular	Amount (₹)
Cost of Material Consumed	52,00,000
Add: Value of Closing stock	2,92,000
Less: Value of Opening stock	(2,42,000)
Value of Materials Purchased	**52,50,000**

Cost Sheet

Sl.	Particulars	Total Cost (₹)
1.	Direct materials consumed:	
	Opening Stock of Raw Material	2,42,000
	Add: Additions/ Purchases [balancing figure as per requirement (i)]	**52,50,000**
	Less: Closing stock of Raw Material	(2,92,000)
	Material Consumed	**52,00,000**
2.	Direct employee (labour) cost	**26,00,000**

3.	**Prime Cost (1+2)**	78,00,000
4.	*Add:* Works/ Factory Overheads	
	Consumable stores and spares	3,50,000
	Lease rent of production asset	**2,00,000**
5.	Gross Works Cost (3+4)	83,50,000
6.	*Add:* Opening Work in Process	2,00,000
7.	Less: Closing Work in Process	(5,00,000)
8.	**Works/ Factory Cost (5+6-7)**	80,50,000
9.	*Add:* Quality Control Cost	**2,00,000**
10.	*Add:* Research and Development Cost	**2,50,000**
11.	*Less:* Credit for Recoveries/Scrap/By-Products/misc. income	**(2,44,000)**
12.	**Cost of Production (8+9+10-11)**	**82,56,000**
13.	*Add:* Opening stock of finished goods	-
14.	*Less:* Closing stock of finished goods (5000 Units)	**(4,30,000)**
15.	**Cost of Goods Sold (12+13-14)**	78,26,000
16.	*Add:* Administrative Overheads (General)	**2,24,000**
17.	*Add:* Secondary packing	**1,82,000**
18.	*Add:* Selling Overheads& Distribution Overheads	4,13,000
19.	**Cost of Sales (15+16+17+18)**	**86,45,000**
20.	**Profit**	**13,65,000**
21.	**Sales 91,000 units@ ₹ 110 per unit**	**1,00,10,000**

Question 4

(a) Zico Ltd. has its factory at two locations viz Nasik and Satara. Rowan plan is used at Nasik factory and Halsey plan at Satara factory.

Standard time and basic rate of wages are same for a job which is similar and is carried out on similar machinery. Normal working hours is 8 hours per day in a 5 day week.

Job at Nasik factory is completed in 32 hours while at Satara factory it has taken 30 hours. Conversion costs at Nasik and Satara are ₹5,408 and ₹4,950 respectively. Overheads account for ₹25 per hour.

Required:

(i) To find out the normal wage; and

(ii) To compare the respective conversion costs. ***(10 Marks)***

(b) A product passes through two distinct processes before completion.

Following information are available in this respect :

	Process-1	*Process-2*
Raw materials used	*10,000 units*	*-*
Raw material cost (per unit)	*₹ 75*	*-*
Transfer to next process/Finished good	*9,000 units*	*8,200 units*
Normal loss (on inputs)	*5%*	*10%*
Direct wages	*₹ 3,00,000*	*₹ 5,60,000*
Direct expenses	*50% of direct wages*	*65% of direct wages*
Manufacturing overheads	*25% of direct wages*	*15% of direct wages*
Realisable value of scrap (per unit)	*₹ 13.50*	*₹ 145*

8,000 units of finished goods were sold at a profit of 15% on cost. There was no opening and closing stock of work-in-progress.

Prepare:

(i) Process-1 and Process-2 Account

(ii) Finished goods Account

(iii) Normal Loss Account

(iv) Abnormal Loss Account

(v) Abnormal Gain Account. ***(10 Marks)***

Answer

(a)

Particulars	Nasik	Satara
Hours worked	32 hr.	30 hr.
Conversion Costs	₹5,408	₹4,950
Less: Overheads	₹800 (₹25×32 hr.)	₹750 (₹25×30 hr.)
Labour Cost	₹4,608	₹4,200

(i) Finding of Normal wage rate:

Let Wage rate be ₹R per hour, this is same for both the Nasik and Satara factory.

Normal wage rate can be found out taking total cost of either factory.

Nasik: Rowan Plan

Total Labour Cost = Wages for hours worked + Bonus as per Rowan plan

$$₹\ 4,608 = \text{Hours worked} \times \text{Rate per hour} + \left(\frac{\text{Time saved}}{\text{Time allowed}} \times \text{Hours worked} \times \text{Rate per hour}\right)$$

$$\text{Or, } ₹\ 4,608 = 32 \text{ hr.} \times R + \left(\frac{40-32}{40} \times 32 \times R\right)$$

Or, ₹ 4,608 = 32R + 6.4R

R = ₹ 120

Normal wage = 32 hrs × ₹ 120 = ₹ 3,840

OR

Satara: Halsey Plan

Total Labour Cost = Wages for hours worked + Bonus as per Halsey plan

$$₹\ 4,200 = \text{Hours worked} \times \text{Rate per hour} + \left(50\% \times \text{Hours saved} \times \text{Rate per hour}\right)$$

₹ 4,200 = 30 hr. × R + 50% × (40 hr. – 30 hr.) × R

₹ 4,200 = 35 R

Or R = ₹ 120

Normal Wage = 30 hrs × ₹ 120 = ₹ 3,600

(ii) Comparison of conversion costs:

Particulars	Nasik (₹)	Satara (₹)
Normal Wages (32 x 120)	3,840	
(30x120)		3,600
Bonus (6.4 x 120)	768	
(5 x 120)		600
Overhead	800	750
	5,408	4,950

(b) (i)

Dr. **Process-1 Account** *Cr.*

	Particulars	Units	Total (₹)		Particulars	Units	Total (₹)
To	Raw Material Consumed	10,000	7,50,000	By	Normal Loss A/c @ 13.5	500	6,750
”	Direct Wages	--	3,00,000	”	Process 2 @ 133.5	9,000	12,01,500
”	Direct	--	1,50,000	”	By Abnormal	500	66,750

	Expenses				Loss @ 133.5		
"	Manufacturing Overheads		75,000				
		10,000	12,75,000			10,000	12,75,000

Cost per unit of completed units and abnormal loss:

$$= \frac{₹12,75,000 - ₹6,750}{10,000\,units - 500\,units} = ₹\ \mathbf{133.5}$$

(ii)

Dr. **Process-2 Account** *Cr.*

	Particulars	Units	Total (₹)		Particulars	Units	Total (₹)
To	Process-I A/c	9,000	12,01500	By	Normal Loss A/c @ 145	900	1,30,500
"	To Direct Wages	--	5,60,000	"	By Finished Stock A/c [bal fig]	8,200	21,04,667
"	Direct Expenses	--	3,64,000				
"	Manufacturing Overheads	--	84,000				
"	To Abnormal gain (₹ 256.67 × 100 units)	100	25,667				
		9,100	22,35,167			9,100	22,35,167

Cost per unit of completed units and abnormal gain:

$$= \frac{₹22,09,500 - ₹130500}{8,100\,units} = ₹\ \mathbf{256.67}$$

Dr. **Finished Goods A/c** *Cr.*

	Particulars	Units	Total (₹)		Particulars	Units	Total (₹)
To	Process II A/c	8,200	21,04,667	By	By Cost of Sales	8,000	20,53,333
				"	By Balance c/d	200	51,334
		8,200	**21,04,667**			**8,200**	**21,04,667**

(iii) Normal Loss A/c

Dr. *Cr.*

	Particulars	Units	Total (₹)		Particulars	Units	Total (₹)
To	Process I	500	6,750	By	By abnormal Gain II	100	14,500
	Process II	900	1,30,500		By Cash	500	6,750
					By Cash	800	1,16,000
		1400	1,37,250			1400	1,37,250

(iv) Abnormal Loss A/c

Dr. *Cr.*

	Particulars	Units	Total (₹)		Particulars	Units	Total (₹)
To	Process I	500	66,750	By	By Cost Ledger Control A/c	500	6,750
					By Costing P& L A/C (Abnormal Loss)		60,000
			66,750				66,750

(v) Abnormal Gain A/c

Dr. *Cr.*

	Particulars	Units	Total (₹)		Particulars	Units	Total (₹)
To	Normal Loss A/c @ 145	100	14,500	By	Process II	100	25,667
To	Costing P & L A/C		11,167				
		100	25,667			100	25,667

Question 5

(a) PJ Ltd manufactures hockey sticks. It sells the products at ₹ 500 each and makes a profit of ₹ 125 on each stick. The Company is producing 5,000 sticks annually by using 50% of its machinery capacity.

The cost of each stick is as under:

Direct Material	*₹ 150*
Direct Wages	*₹ 50*

Works Overhead *₹ 125 (50% fixed)*

Selling Expenses *₹ 50 (25% variable)*

The anticipation for the next year is that cost will go up as under:

Fixed Charges *10%*

Direct Wages *20%*

Direct Material *5%*

There will not be any change in selling price.

There is an additional order for 2,000 sticks in the next year.

Calculate the lowest price that can be quoted so that the Company can earn the same profit as it has earned in the current year? ***(10 Marks)***

(b) The standard cost of a chemical mixture is as follows:

60% of Material A @ ₹ 50 per kg

40% Material B @ ₹ 60 per kg

A standard loss of 25% on output is expected in production. The cost records for a period has shown the following usage.

540 kg of Material A @ ₹ 60 per kg

260 kg of Material B @ ₹ 50 per kg

The quantity processed was 680 kilograms of good product.

From the above given information

Calculate:

(i) Material Cost Variance

(ii) Material Price Variance

(iii) Material Usage Variance

(iv) Material Mix Variance

(v) Material Yield Variance. ***(10 Marks)***

Answer

(a) Selling Price = ₹ 500

Profit = ₹ 125

No of Sticks = 5,000

Particular	Current Year (₹)	Next Year (₹)

Direct Material	150	**157.50** (150 + 5%)
Direct Wages	50	**60** (50+20%)
Works Overheads	62.50 (125 × 50%)	**62.5**
Selling Expenses	12.50 (50 × 25%)	**12.5**
Total Variable Cost	275	292.50
Fixed Cost (62.5 × 5,000) = 3,12,500; (37.5 × 5,000) = 1,87,500	**5,00,000**	**5,50,000**

Let: Lowest Price Quoted = K

Now, Sales = Target Profit (5,000 units × ₹ 125) + Variable Cost + Fixed Cost

Or, = (5,000 × 500) + (2,000 × K) = **6,25,000** + 20,47,500 + 5,50,000

Or, K = ₹ **361.25**

So, Lowest Price that can be quoted to earn the profit of ₹ 6,25,000 (same as current year) is ₹ 361.25

(b) **Basic Calculation**

Material	Standard for 640 kg. output			Actual for 680 kg. output		
	Qty. Kg.	Rate (₹)	Amount (₹)	Qty Kg.	Rate (₹)	Amount (₹)
A	480	50	24,000	540	60	32,400
B	320	60	19,200	260	50	13,000
Total	800		43,200	800		45,400
Less: Loss	160	–	–	120	–	–
	640		43,200	680		45,400

Std. cost of actual output = ₹ 43,200 × 680/640 = ₹ 45,900

Calculation of Variances

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

= (45,900– 45,400)

= ₹ **500 (F)**

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

Material A = (50 – 60) × 540 = ₹ 5400 (A)

Material B = (60 – 50)) × 260 = ₹ 2600 (F)

MPV = **₹ 2800 (A)**

(iii) **Material Usage Variance (MUV)** = (Std. Quantity for actual output – Actual Quantity) × Std. Price

Material A = $\left(\frac{480 \times 680}{640} - 540\right) \times 50$ = ₹ 1,500 (A)

Material B = $\left(\frac{320 \times 680}{640} - 260\right) \times 60$ = ₹ 4,800 (F)

MUV = **₹ 3,300 (F)**

(iv) **Material Mix Variance** = SP × (RAQ – AQ)

A = ₹ 50× (480 Kg – 540 Kg) = ₹ 3,000 (A)

B = ₹ 60 × (320 Kg. – 260 Kg.) = ₹ 3,600 (F)

Total = ₹ 3,000 (A) + ₹ 3,600 (F) = **₹ 600 (F)**

(v) **Material Yield Variance** = SP × (SQ – RAQ)

A = ₹ 50 × (510 Kg. – 480 Kg) = ₹ 1,500 (F)

B = ₹ 60 × (340 Kg. – 320 Kg.) = ₹ 1,200 (F)

Total = ₹ 1,500 (F) + ₹ 1,200 (F) = ₹ **2,700 (F)**

Question 6

*Answer any **four** of the following:*

(a) Describe Composite Cost unit as used in Service Costing and discuss the ways of computing it.

(b) Journalise the following transactions in cost books under Non-Integrated system of Accounting.

(i)	*Credit Purchase of Material*	*₹ 27,000*
(ii)	*Manufacturing overhead charged to Production*	*₹ 6,000*
(iii)	*Selling and Distribution overheads recovered from Sales*	*₹ 4,000*
(iv)	*Indirect wages incurred*	*₹ 8,000*
(v)	*Material returned from production to stores*	*₹ 9,000*

(c) Define Inventory Control and give its objectives.

List down the basis to be adopted for Inventory Control.

(d) Mention the Cost Unit of the following Industries:

(i) Electricity

(ii) Automobile

(iii) Cement

(iv) Steel

(v) Gas

(vi) Brick Making

(vii) Coal Mining

(viii) Engineering

(ix) Professional Services

(x) Hospital

(e) Define Zero Base Budgeting and mention its various stages. ***(4 x 5 = 20 Marks)***

Answer

(a) Composite Cost Unit: Sometime two measurement units are combined together to know the cost of service or operation. These are called composite cost units. For example, a public transportation undertaking would measure the operating cost per passenger per kilometre.

Examples of Composite units are Ton- km., Quintal- km, Passenger-km., Patient-day etc. **Composite unit may be computed in two ways**:

(i) Absolute (Weighted Average) basis.

(ii) Commercial (Simple Average) basis.

In both bases of computation of service cost unit, weightage is also given to qualitative factors rather quantitative (which are directly related with variable cost elements) factors alone.

(i) Weighted Average or Absolute basis – It is summation of the products of qualitative and quantitative factors. For example, to calculate absolute Ton-Km for a goods transport is calculated as follows.:

$$\sum (\text{Weight Carried} \times \text{Distance})_1 + (\text{Weight Carried} \times \text{Distance})_2 + \ldots + (\text{Weight Carried} \times \text{Distance})_n$$

Similarly, in case of Cinema theatres, price for various classes of seats are fixed differently. For example–

First class seat may be provided with higher quality service and hence charged at a higher rate, whereas Second Class seat may be priced less. In this case, appropriate weight to be given effect for First Class seat and Second Class seat – to ensure proper cost per composite unit.

(ii) Simple Average or Commercial basis – It is the product of average qualitative and total quantitative factors. For example, in case of goods transport, Commercial Ton-Km is arrived at by multiplying total distance km., by average load quantity.

$$\sum (\text{Distance}_1 + \text{Distance}_2 + \ldots\ldots\ldots\ldots + \text{Distance}_n) \times \left(\frac{W_1 + W_2 + \ldots + W_n}{n} \right)$$

In both the example, variable cost is dependent of distance and is a quantitative factor. Since, the weight carried does not affect the variable cost hence and is a qualitative factor.

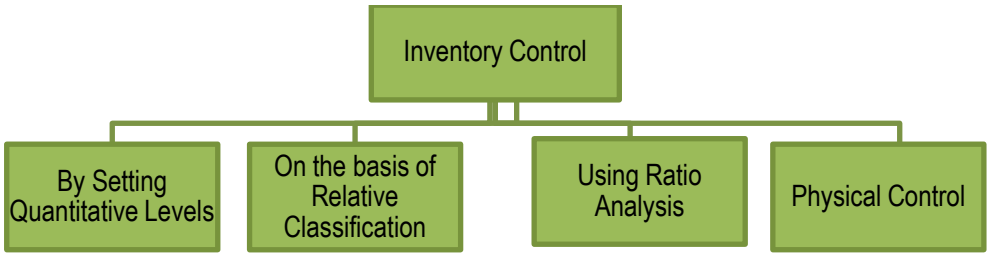
(b) Journal entries are as follows:

			Dr. (₹)	Cr. (₹)
(i)	Stores Ledger Control A/c……	Dr.	27,000	
	To Cost Ledger Control A/c			27,000
(ii)	Work-in-Process Control A/c.....	Dr.	6,000	
	To Manufacturing Overhead Control A/c			6,000
(iii)	Cost of Sales A/c……	Dr.	4,000	
	To Selling & Dist. Overhead Control A/c			4,000
(iv)	(1) Wage Control A/c……	Dr.	8,000	
	To Cost Ledger Control A/c			8,000
	(2) Manufacturing Overhead Control A/c……	Dr.	8,000	
	To Wages Control A/c			8,000
	OR			
	Manufacturing Overhead Control A/c……..	Dr.	8,000	
	To Cost Ledger Control A/c			8,000
(v)	Stores Ledger Control A/c ……	Dr.	9,000	
	To Work-in-Process Control A/c			9,000

*Cost Ledger Control A/c is also known as General Ledger Control A/c

(c) Inventory Control: The Chartered Institute of Management Accountants (CIMA) **defines** Inventory Control as "The function of ensuring that sufficient goods are retained in stock to meet all requirements without carrying unnecessarily large stocks."

The **objective** of inventory control is to make a balance between sufficient stock and over-stock. The stock maintained should be sufficient to meet the production requirements so that uninterrupted production flow can be maintained. Insufficient stock not only pause the production but also cause a loss of revenue and goodwill. On the other hand, Inventory requires some funds for purchase, storage, maintenance of materials with a risk of obsolescence, pilferage etc. A trade-off between Stock-out and Over-stocking is required. The management may employ various methods of Inventory control to have a balance. Management may adopt the following **basis** for Inventory control:



(d) Cost Unit of Industries:

S. No.	Industry	Cost Unit Basis
(i)	Electricity	Kilowatt-hour (kWh)
(ii)	Automobile	Number
(iii)	Cement	Ton/ per bag etc.
(iv)	Steel	Ton
(v)	Gas	Cubic feet
(vi)	Brick-making	1,000 bricks
(vii)	Coal mining	Tonne/ton
(viii)	Engineering	Contract, job
(ix)	Professional services	Chargeable hour, job, contract
(x)	Hospitals	Patient day

(e) Zero-based Budgeting: (ZBB) is an emergent form of budgeting which arises to overcome the limitations of incremental (traditional) budgeting system. Zero- based Budgeting (ZBB) is **defined** as 'a method of budgeting which requires each cost element to be specifically justified, although the activities to which the budget relates are being undertaken for the first time, without approval, the budget allowance is zero'.

ZBB is an activity based budgeting system where budgets are prepared for each activities rather than functional department. Justification in the form of cost benefits for the activity is required to be given. The activities are then evaluated and prioritized by the management on the basis of factors like synchronisation with organisational objectives, availability of funds, regulatory requirement etc.

ZBB is suitable for both corporate and non-corporate entities. In case of non-corporate entities like Government department, local bodies, not for profit organisations, where these entities need to justify the benefits of expenditures on social programmes like mid-day meal, installation of street lights, provision of drinking water etc.

ZBB involves the following stages:

(i) Identification and description of Decision packages

(ii) Evaluation of Decision packages

(iii) Ranking (Prioritisation) of the Decision packages

(iv) Allocation of resources