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) M/s. SJ Private Limited manufactures 20000 units of a product per month. The cost of placing an order is ₹ 1,500. The purchase price of the raw material is ₹ 100 per kg. The re-order period is 5 to 7 weeks. The consumption of raw materials varies from 200 kg to 300 kg per week, the average consumption being 250 kg. The carrying cost of inventory is 9.75% per annum.

You are required to calculate:

(i) Re-order quantity

(ii) Re-order level

(iii) Maximum level

(iv) Minimum level

(v) Average stock level

(b) A manufacturing concern has provided following information related to fixed overheads:

	Standard	Actual
Output in a month	5000 units	4800 units
Working days in a month	25 days	23 days
Fixed overheads	₹ 5,00,000	₹ 4,90,000

Compute:

(i) Fixed overhead variance

(ii) Fixed overhead expenditure variance

(iii) Fixed overhead volume variance

(iv) Fixed overhead efficiency variance

(c) Following details have been provided by M/s AR Enterprises:

(i) Opening works-in-progress - 3000 units (70% complete)

(ii) Units introduced during the year - 17000 units

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

(iv) Transferred to next process - 15000 units

(v) Closing works-in-progress - 2200 units (80% complete)

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

Using FIFO method, compute:

(i) Equivalent production

(ii) Cost per equivalent unit

(d) M/s. SD Private Limited commenced a contract on 1st July 2017 and the company closes its account for the year on 31st March every year. The following information relates to the contract as on 31st March 2018.

(i)	*Material issued*	*₹9,48,000*
(ii)	*Direct wages*	*₹4,57,200*
(iii)	*Prepaid direct wages as on 31.3.2018*	*₹1,08,000*
(iv)	*Administration charges*	*₹7,20,000*
(v)	*A supervisor, who is paid ₹ 50,000 per month, has devoted two-third of his time to this contract*	
(vi)	*A plant costing ₹7,85,270 has been on the site for 185 days, its working life is estimated at 9 years and its scrap value is ₹ 75,000*	

The contract price is ₹ 42 lakhs. On 31st March 2018 two-third of the contract was completed. The Architect issued certificate covering 50% of the contract price and the contractor had been paid ₹ 15.75 lakhs on account.

Assuming 365 days in a year, you are required to:

(i) Prepare a Contract Account showing work cost

(ii) Calculate Notional Profit or Loss as on 31st March 2018 ***(4 x 5 = 20 Marks)***

Answer

(a) Annual consumption 250 kg × 52 weeks = 13,000 kg.

(i) Re-order Quantity or EOQ = $\sqrt{\frac{2 \times A \times O}{c \times i}}$

A = Annual Consumption = 13,000 kg

O = Ordering Cost = ₹. 1,500

C = Cost per kg = ₹. 100

i = carrying cost rate = 9.75%

Carrying cost per kg per annum (c× i) = 100 × 9.75% = ₹. 9.75

$\therefore$ EOQ = $\sqrt{\frac{2 \times 13{,}000 \times 1{,}500}{9.75}}$

= $\sqrt{\frac{39000000}{9.75}}$ = 2000 kg.

(ii) Re-order level = Max. re-order period × Max, Consumption

= 7 weeks × 300 kg = 2,100 kg

(iii) Maximum level = Re-order level + Re-order Qty – (Min re-order Period × Min. Consumption)

= 2100 kg + 2000 kg – (5 × 200) kg = 3100 kg.

(iv) Minimum level = Re-order level – (Avg. re-order period × Avg. Consumption)

= 2,100 kg – (6 × 250) kg = 600 kg.

(v) Avg. stock level = $\frac{1}{2}(\text{Max. level} + \text{Min.level})$

= $\frac{1}{2}(3100 + 600)$ = 1850 kg

OR

= Minimum level + $\frac{1}{2}$ ROQ

= 600 kg. + $\frac{1}{2}$ × 2000 kg. = 1600 kg.

(b) Calculation of Variances:

(i) Fixed Overhead Variance: Standard fixed overhead – Actual fixed overhead

= ₹ [(5,00,000÷5000) ×4800] – ₹ 4,90,000 = ₹ 10,000 (A)

(ii) Fixed Overhead Expenditure Variances:

Budgeted fixed overhead – Actual fixed overhead

= ₹ 5,00, 000 – ₹ 4,90, 000 = ₹ 10,000 (F)

(iii) Fixed Overhead Volume Variance: Standard fixed overhead – Budgeted fixed overhead

= ₹ 4,80, 000 – ₹ 5,00, 000 = ₹ 20,000 (A)

(iv) Fixed Overhead efficiency Variance: Standard fixed overhead – Budgeted fixed overhead for Actual days

= ₹ 4,80, 000 – [(₹ 5,00, 000÷25) ×23] = ₹ 20,000 (F)

(c) Statement of Equivalent Production Units (Under FIFO Method)

Particulars	Input units	Particulars	Output units	Equivalent Production	
				(%)	Equivalent units
Opening W-I-P	3,000	From opening W-I-P	3,000	30	900
Units introduced	17,000	From fresh inputs	12,000	100	12,000
		Units completed (Transferred to next process)	15,000		
		Normal Loss {12% (3,000 + 17,000 units)}	2,400	--	--
		Closing W-I-P	2,200	80	1760
		Abnormal loss (Balancing figure)	400	100	400
	20,000		11,000		15,060

Computation of cost per equivalent production unit :

Cost of the Process (for the period)	₹ 33,12,720
Less: Scrap value of normal loss (₹ 50 × 2,400 units)	(₹ 1,20,000)
Total process cost	₹ 31,92,720

(d) **Contract Account**

	Particulars	(₹)		Particulars	(₹)
To	Material issued	9,48,000	By	Machine (Working note 1)**	7,45,270
”	Direct Wages (4,57,200 – 1,08,000)	3,49,200			
”	Administrative charges	7,20,000			
”	Supervisor's salary (₹ 50,000 × 9 × 2/3)	3,00,000			
”	Machine**	7,85,270	”	Works cost (balancing figure)	23,57,200
		31,02,470			31,02,470
”	Works cost	23,57,200	”	Value of work certified (50%×42,00,000)	21,00,000
”	Costing P&L A/c (Notional profit)	3,32,100	”	Cost of work uncertified (Working Note 2)	5,89,300
		26,89,300			26,89,300

** Alternatively Depreciation on machine can be shown debit side of Contract Account.

Working notes:

1. Written down value of Machine:

   $$\text{Depreciation} = \frac{₹7,85,270 - ₹75,000}{9\,\text{years}} \times \frac{185\,\text{days}}{365\,\text{days}} = ₹\ 40,000$$

   Hence the value of machine after the period of 185 days = ₹ 7,85,270 – ₹ 40,000 = ₹ 7,45,270

2. The cost of 2/3rd of the contract is ₹ 23,57,200

   $$\therefore \text{ Cost of 100\% " " " " } \frac{₹\ 23,57,200}{2} \times 3 = ₹\ 35,35,800$$

   $\therefore$Cost of 50% of the contract which has been certified by the architect is ₹. 17,67,900. Also, the cost of 1/3rd of the contract, which has been completed but not certified by the architect is ₹. 5,89,300.

Question 2

(a) Following details are provided by M/s ZIA Private Limited for the quarter ending 30 September, 2018:

(i)	*Direct expenses*	*₹ 1,80,000*
(ii)	*Direct wages being 175% of factory overheads*	*₹ 2,57,250*
(iii)	*Cost of goods sold*	*₹ 18,75,000*
(iv)	*Selling & distribution overheads*	*₹ 60,000*
(v)	*Sales*	*₹ 22,10,000*
(vi)	*Administration overheads are 10% of factory overheads*	

Stock details as per Stock Register:

Particulars	***30.06.2018*** ***₹***	***30.09.2018*** ***₹***
Raw material	*2,45,600*	*2,08,000*
Work-in-progress	*1,70,800*	*1,90,000*
Finished goods	*3,10,000*	*2,75,000*

You are required to prepare a cost sheet showing:

(i) Raw material consumed

(ii) Prime cost

(iii) Factory cost

(iv) Cost of goods sold

(v) Cost of sales and profit ***(10 Marks)***

(b) A manufacturing company is producing a product 'A' which is sold in the market at ₹45 per unit. The company has the capacity to produce 40000 units per year. The budget for the year 2018-19 projects a sale of 30000 units.

The costs of each unit are expected as under:

	₹
Materials	*12*
Wages	*9*
Overheads	*6*

Margin of safety is ₹ 4,12,500.

You are required to:

(i) calculate fixed cost and break-even point.

(ii) calculate the volume of sales to earn profit of 20% on sales.

(iii) *if management is willing to invest ₹ 10,00,000 with an expected return of 20%, calculate units to be sold to earn this profit.*

(iv) *Management expects additional sales if the selling price is reduced to ₹ 44. Calculate units to be sold to achieve the same profit as desired in above (iii).* ***(10 Marks)***

Answer

(a) **Cost Sheet**

(for the quarter ending 30 September 2018)

	Amount (₹)
(i) Raw materials consumed	
Opening stock of raw materials	2,45,600
Add: Purchase of materials	12,22,650*
Less: Closing stock of raw materials	(2,08,000)
Raw materials consumed	12,60,250
Add: Direct wages (1,47,000×175%)	2,57,250
Direct Expenses	1,80,000
(ii) Prime cost	**16,97,500**
Add: Factory overheads (2,57,250/175%)	1,47,000
Gross Factory cost	18,44,500
Add: Opening work-in-process	1,70,800
Less: Closing work-in-process	(1,90,000)
(iii) Factory cost	**18,25,300**
Add: Administration overheads (10% of factory overheads)	14,700
Add: Opening stock of finished goods	3,10,000
Less: Closing stock of finished goods	(2,75,000)
(iv) Cost of goods sold	**18,75,000**
Add: Selling & distribution overheads	60,000
Cost of sales	19,35,000
(v) Net Profit	**2,75,000**
Sales	22,10,000

*(18,75,000 + 2,75,000 – 3,10,000 – (1,47,000 × 10%) + 1,90,000 –1,70,800 – (2,57,250 × 100/175%) - 1,80,000 – 2,57,250 + 2,08,000 – 2,45,600) = 12,22,650

Working notes

Purchase of raw materials = Raw material consumed + Closing stock - opening stock of raw material

Raw material consumed = Prime cost - Direct wages - Direct expenses

Factory Overheads = 2,57,250*100/175

Prime cost = Factory cost + Closing WIP – Opening WIP – Factory overheads

Factory Cost = Cost of Production goods sold + Closing stock of Finished goods – Opening stock of finished goods – Administrative overheads

Net Profit = Sales - Cost of sales

Alternative solution

Cost Sheet

(for the quarter ending 30 September 2018)

	Amount (₹)
(i) Raw materials consumed	
Opening stock of raw materials	2,45,600
Add: Purchase of materials	12,37,350*
Less: Closing stock of raw materials	(2,08,000)
Raw Material consumed	12,74,950
Add: Direct wages (1,47,000×175%	2,57,250
Direct Expenses	1,80,000
(ii) Prime cost	**17,12,,200**
Add: Factory overheads (2,57,250/175%)	1,47,000
Gross Factory cost	18,59,200
Add: Opening work-in-process	1,70,800
Less: Closing work-in-process	(1,90,000)
(iii) Factory cost/works cost/cost of production	**18,40,000**
Add: Opening stock of finished goods	3,10,000
Less: Closing stock of finished goods	(2,75,000)
(iv) Cost of goods sold	**18,75,000**
Add: Administration overheads (10% of factory overheads)	14,700
Add: Selling & distribution overheads	60,000
Cost of sales	19,49,700
(v) Net Profit	**2,60,300**
Sales	22,10,000

*(18,75,000 + 2,75,000 – 3,10,000 + 1,90,000 –1,70,800 – 1,47,500 - 1,80,000 – 2,57,250 + 2,08,000 – 2,45,600) = 12,37,350

Working notes

Purchase of raw materials = Raw material consumed + Closing stock - opening stock of raw material

Raw material consumed = Prime cost - Direct wages - Direct expenses

Factory Overheads = 257250*100/175

Prime cost = Factory cost + Closing WIP – Opening WIP – Factory overheads

Factory Cost = Cost of Production goods sold + Closing stock of Finished goods – Opening stock of finished goods

Net Profit = Sales - Cost of sales

(b) Margin of Safety = $\frac{\text{Profit}}{\text{P / V ratio}} = ₹\ 4,12,500$

$$= \frac{\text{Profit}}{\frac{45 - (12 + 9 + 6)}{45}} = ₹\ 4,12,500$$

$$= \frac{\text{Profit}}{\frac{18}{45}} = 4,12,500$$

Profit = 1,65,000 **OR** P/V = (18/45) x 100 =40%

(i) **Fixed Cost**

Profit = (Sales × P/V Ratio) – Fixed Cost

1,65,000 = $\left((30,000 \times 45) \times \frac{18}{45}\right) - \text{Fixed Cost}$

Or Fixed Cost = 5,40,000 – 1,65,000

= ₹ 3,75,000

OR

Profit = Contribution – Fixed Cost=₹ 5,40,000-₹ 3,75,000 =₹.1,65,000

P/V Ratio = $\frac{18}{45}$ =40%

Break-even Point = Total Sales – Margin of Safety

= ₹ (30,000 × 45) – 4,12,500

= 13,50,000 – 4,12,500 =₹ 9,37,500

Or

$$\text{BEP} = \frac{\text{Fixed Cost}}{\text{P / V ratio}} = \frac{3,75,000}{\frac{18}{45}} = \frac{3,75,000}{40\%} = ₹9,37,500$$ **OR 20833.33 Units**

(ii) Let's assume, Sales Volume = S unit so total sales value is 45 S and

Contribution is 45 S - 27 S =18 S

Now, Contribution = Fixed Cost + Desired Profit

18 S = 3,75,000 + 9 S (20% of 45 S)

Or, 9S = 3,75,0000

So, S $= \frac{3,75,000}{9}$ Units

Volume of sales $= \frac{3,75,000 \times 45}{9}$ = ₹ 18,75,000 **OR 41666.67 Units**

So, ₹ 18,75,000 sales are required to earn profit on 20% of sales

(iii) Contribution = Fixed Cost + Desired Profit

18S = 3,75,000 + Return on Investment

18S = 3,75,000 + 2,00,000

S $= \frac{5,75,000}{18}$ Units=**31,945** Units(approx.)

So,31,945 Units to be sold to earn a return of ₹ 2,00,000.

(iv) Revised Contribution = Fixed Cost + Desired Profit

17S = 3,75.000 + 2,00,000

S $= \frac{5,75,000}{17}$ Units

S = **33,824** units (approx.)

$\therefore$ Additional Sales to be sold to achieve the same profit is 33,824 Units.

Question 3

(a) XYZ Ltd. has obtained an order to supply 48000 bearings per year from a concern. On a steady basis, it is estimated that it costs ₹ 0.20 as inventory holding cost per bearing per month and the set-up cost per run of bearing manufacture is ₹ 384.

You are required to:

(i) compute the optimum run size and number of runs for bearing manufacture.

(ii) compute the interval between two consecutive runs.

(iii) find out the extra costs to be incurred, if company adopts a policy to manufacture 8000 bearings per run as compared to optimum run Size.

(iv) give your opinion regarding run size of bearing manufacture.

Assume 365 days in a year. ***(10 Marks)***

(b) M/s. HMB Limited is producing a product in 10 batches each of 15000 units in a year and incurring following overheads their on:

	Amount (₹)
Material procurement	22,50,000
Maintenance	17,30,000
Set-up	6,84,500
Quality control	5,14,800

The prime costs for the year amounted to ₹ 3,01,39,000.

The company is using currently the method of absorbing overheads on the basis of prime cost. Now it wants to shift to activity-based costing. Information relevant to Activity drivers for a year are as under:

Activity Driver	**Activity Volume**
No. of purchase orders	1500
Maintenance hours	9080
No. of set-ups	2250
No. of inspections	2710

The company has produced a batch of 15000 units and has incurred ₹ 26,38,700 and ₹ 3,75,200 on materials and wages respectively.

The usage of activities of the said batch are as follows:

Materials orders	48 orders
Maintenance hours	810 hours
No. of set-ups	40
No. of inspections	25

You are required to:

(i) find out cost of product per unit on absorption costing basis for the said batch.

(ii) *determine cost driver rate, total cost and cost per unit of output of the said batch on the basis of activity based costing.* ***(10 Marks)***

Answer

(a) (i) Optimum batch size or Economic Batch Quantity (EBQ):

$$EBQ = \sqrt{\frac{2DS}{C}} = \sqrt{\frac{2 \times 48{,}000 \times 384}{2.4}} = 3919.18 \text{ or } 3{,}920 \text{ units}$$

Number of Optimum runs = 48,000 ÷ 3,920 = 12.245 or **13 run**

(ii) Interval between 2 runs (in days) = 365 days ÷ 13 = 28 days

Or 365÷12.24=29.82 days

(iii) If 8,000 bearings are manufactures in a run:

Total cost = Set-up cost + Inventory holding cost

= ₹.384×(48,000÷8,000) + (8,000÷2)×₹.2.4

= **2304+9,600** = 11,904

Extra cost = ₹(11,904 – 9,406*) =₹ **2,498**/-

OR

Extra cost = ₹ (11,904 – 9,696*) = ₹ **2,208/-**

* Minimum Inventory Cost = Average Inventory × Inventory Carrying Cost per unit per annum

Average Inventory = 3,920 units ÷ 2 = 1,960 units

Carrying Cost per unit per annum = ₹0.2 × 12 months = ₹2.4

Minimum Inventory Holding Costs = 1,960 units × ₹2.4 = ₹4,704

Total cost = Set-up cost + Inventory holding cost = (12.245×384) + 4704 = ₹ **9,406** (approx.)

OR

Total cost = Set-up cost + Inventory holding cost = (13×384) + 4704 = ₹ **9,696** (approx.)

(iv) To save cost the company should run at optimum batch size i.e. 3,920 Units. **It saves ₹ 2,498 or 2208.** Run size should match with the Economic production run of bearing manufacture. When managers of a manufacturing operation make decisions about the number of units to produce for each production run, they must consider the costs related to setting up the production process and the costs of holding inventory

Alternative presentation to part 3(a) (iii)

Statement showing Total Cost at Production Run size of 3,600 and 8,000 bearings

A.	Annual requirement	48,000	48,000
B.	Run Size	3,920	8,000
C.	No. of runs (A/B)	12.245	6
D.	Set up cost per run	₹ 384	₹ 384
E.	Total set up cost (CxD)	₹ 4,702	₹ 2,304
F.	Average inventory (B/2)	1,960	4,000
G.	Carrying cost per unit p.a.	2.40	2.40
H.	Total Carrying cost (FxG)	4,704	9,600
I.	Total cost (E+H)	9,406	11,904

Extra cost incurred, if run size is of 8,000= ₹11,904-9,406= **₹ 2,498**

(b) Working Note:

Overhead Absorption Rate = $\frac{51,79,300}{3,01,39,000} \times 100$ =**17.18%**

(i) Cost of Product Under Absorption Costing

Item of Cost	Amount (₹)
Material	26,38,700
Wages	3,75,200
Prime Cost	30,13,900
Overheads: $\frac{51,79,300}{3,01,39,000} \times 30,13,900$	5,17,930
Total Cost	35,31,830
Units	15,000
Cost per unit	**235.46**

(ii) Cost driver rate, total cost and cost per unit on the basis of activity-based costing method Absorption Costing

Calculation of Cost Driver rate:

Activity	**₹.**	**Activity Volume**	**Cost Driver Rate**
Material Procurement	22,50,000	1500	1500

Maintenance	17,30,000	9080	190.53
Setup	6,84,500	2250	304.22
Quality Control	5,14,800	2710	189.96

Calculation of total Cost and cost per unit:

Item of Cost	**Amount (₹)**
Material	26,38,700
Wages	3,75,200
Prime Cost	30,13,900
Material Purchase $\left(\frac{22,50,000}{1,500}\times 48\right)$	72,000
Maintenance $\left(\frac{17,30,000}{9,080}\times 810\right)$	1,54,328
Setup $\left(\frac{6,84,500}{2,250}\times 40\right)$	12,169
Quality Control $\left(\frac{5,14,800}{2,710}\times 25\right)$	4,749
Total Cost	32,57,146
Unit	15,000
Cost per unit	**217.14**

Question 4

(a) The following balances were extracted from a Company's ledger as on 30th June, 2018:

Particulars	***Debit (₹)***	***Credit (₹)***
Raw material control a/c	*2,82,450*	
Work-in-progress control a/c	*2,38,300*	
Finished stock control a/c	*3,92,500*	
General ledger adjustment a/c		*9,13,250*
Total	***9,13,250***	***9,13,250***

The following transactions took place during the quarter ended 30th September, 2018:

		₹
(i)	*Factory overheads - allocated to work-in-progress*	*1,36,350*

(ii)	*Goods furnished - at cost*	*13,76,200*
(iii)	*Raw materials purchased*	*12,43,810*
(iv)	*Direct wages - allocated to work-in-progress*	*2,56,800*
(v)	*Cost of goods sold*	*14,56,500*
(vi)	*Raw materials - issued to production*	*13,60,430*
(vii)	*Raw materials - credited by suppliers*	*27,200*
(viii)	*Raw materials losses - inventory audit*	*6,000*
(ix)	*Work-in-progress rejected (with no scrap value)*	*12,300*
(x)	*Customer's returns (at cost) of finished goods*	*45,900*

You are required to prepare:

(i) Raw material control a/c

(ii) Work-in-progress control a/c

(iii) Finished stock control a/c

(iv) General ledger adjustment a/c **(10 Marks)**

(b) M/s XY Travels has been given a 25 km. long route to run an air- conditioned Mini Bus. The cost of bus is ₹ 20,00,000. It has been insured @3% premium per annum while annual road tax amounts to ₹ 36,000. Annual repairs will be ₹ 50,000 and the bus is likely to last for 5 years. The driver's salary will be ₹2,40,000 per annum and the conductor's salary will be ₹ 1,80,000 per annum in addition to 10% of the takings as commission (to be shared by the driver and the conductor equally). Office and administration overheads will be ₹ 18,000 per annum. Diesel and oil will be ₹ 1,500 per 100 km. The bus will make 4 round trips carrying on an average 40 passengers on each trip.

Assuming 25% profit on takings and considering that the bus will run on an average 25 days in a month, you are required to:

(i) prepare operating cost sheet (for the month).

(ii) calculate fare to be charged per passenger km. **(10 Marks)**

Answer

(a) (i) Raw Material Control A/c

		(₹)			(₹)
To	Balance b/d	2,82,450	By	General Ledger Adjustment A/c	27,200
”	General Ledger Adjustment A/c	12,43,810	” ”	Work-in-progress Control A/c Costing P&L A/c	13,60,430 6,000

		(Loss) (OR GLA)	
		” Balance c/d	1,32,630
	15,26,260		15,26,260

(ii) Work-in-Progress Control A/c

	(₹)		(₹)
To Balance b/d	2,38,300		
” Raw Material Control A/c	13,60,430	” Finished Goods Control A/c	13,76,200
” Wages Control A/c	2,56,800	Costing P&L A/c (OR GLA)	12,300
” Factory OH Control A/c	1,36,350	” Balance c/d	6,03,380
	19,91,880		19,91,880

(iii) Finished Goods Control A/c

	(₹)		(₹)
To Balance b/d	3,92,500	By Cost of goods sold A/c (OR GLA)	14,56,500
General Ledger Adjustment A/c	45,900		
” Work-in-process Control A/c	13,76,200	” Balance c/d	3,58,100
	18,14,600		18,14,600

(iv) General Ledger Adjustment A/c

	(₹)		(₹)
To Costing P&L A/c (sales) (Balancing figure)	25,68,910	By Balance b/d	9,13,250
” Raw Material Control A/c	27,200	” Raw Material Control A/c	12,43,810
		” Wages Control A/c	2,56,800
		” Factory OH Control A/c	1,36,350
		” Finished Goods Control A/c	45,900
	25,96,110		25,96,110

OR

General ledger adjustment account

		(₹)			(₹)
To	Raw Material Control A/c	27,200	By	Balance b/d	9,13,250
"	Raw Material control account(loss)	6,000	"	Raw Material Control A/c	12,43,810
''	WIP control Account (rejection)	12,300	"	Wages Control A/c	2,56,800
"	Finished stock Control Account	14,56,500	"	Factory OH Control A/c	1,36,350
""	Balance c/d	10,94,110	"	Finished Goods Control A/c	45,900
		25,96,110			25,96,110

Working:

Factory Overhead Control A/c

		(₹)			(₹)
To	General Ledger Adjustment A/c	1,36,350	By	Work-in-progress A/c	1,36,350
		1,36,350			1,36,350

(b) (i) Statement showing the Operating Cost per Passenger-km.

		Yearly (₹.)	Monthly (₹.)
(A)	***Standing Charges:***		
	Insurance Charge ₹. 20,00,000 × 3%	60,000	5,000
	Road Tax	36,000	3,000
	Depreciation (20,00,000/5)	4,00,000	33,333.33
	Total	4,96,000	41,333.33
(B)	***Maintenance Charges:***		
	Annual Repairs	50,000	4166.67
	Office and administration overheads	3,18,000	26,500
	Total	3,68,000	30666.67
(C)	***Running Cost/Charges:***		
	Driver's Salary	2,40,000	20,000
	Conductor's Salary	1,80,000	15,000

Diesel & Oil $\left(60,000 \times \frac{1,500}{100}\right)$	9,00,000	75,000
Total	13,20,000	41,333.33
Total (A+B+C) Cost before commission and profit	21,84,000	1,82,000
Commission (33,60,000 × 10%) (working note 2)	3,36,000	28,000
Profit (33,60,000 × 25%) (working note 2)	8,40,000	70,000
Takings (working note 1)	33,60,000	2,80,000

(ii) Fare per Passenger-km. = $\frac{\text{Total Collection/Takings}}{\text{Total Passenger-km (Working note 3)}}$

$$= \frac{33,60,000}{24,00,000} = ₹.\ 1.40$$

OR

Fare per Passenger-km. (monthly) = $\frac{2,80,000}{2,00,000}$ = ₹.1.40

Working note:

1. Cost before commission (10%) and profit (25%) is 21,84,000 which is 65% of total takings. So total takings is (21,84000÷65) ×100=₹ 33,60,000
2. Commission is 10% of ₹ 33,60,000=₹ 3,36,000 and Profit is 25% of ₹ 33,60,000=₹ 8,40,000
3. Total Km is (4 Round Trips × Days in a month × Month = (4×2×25 ×25×12) = 60,000 km

Passenger km is 60,000 km×40 passenger= 24,00,000

Question 5

(a) An electronic gadget manufacturer has prepared sales budget for the next few months. In this respect, following figures are available:

Months	*Electronic gadgets' sales*
January	*5000 units*
February	*6000 units*
March	*7000 units*
April	*7500 units*
May	*8000 units*

To manufacture an electronic gadget, a standard cost of ₹ 1,500 is incurred and it is sold through dealers at an uniform price of ₹ 2,000 per gadget to customers. Dealers are given a discount of 15% on selling price.

Apart from other materials, two units of batteries are required to manufacture a gadget. The company wants to hold stock of batteries at the end of each month to cover 30% of next month's production and to hold stock of manufactured gadgets to cover 25% of the next month's sale.

3250 units of batteries and 1200 units of manufactured gadgets were in stock on 1st January.

Required:

(i) Prepare production budget (in units) for the month of January, February, March and April.

(ii) Prepare purchase budget for batteries (in units) for the month of January, February and March and calculate profit for the quarter ending on March. **(10 Marks)**

(b) (i) Following data have been extracted from the books of M/s. ABC Private Limited:

(i)	*Salary (each employee, per month)*	*₹ 30,000*
(ii)	*Bonus*	*25% of salary*
(iii)	*Employer's contribution to PF, ESI etc.*	*15% of salary*
(iv)	*Total cost at employees' welfare activities*	*₹ 6,61,500 per annum*
(v)	*Total leave permitted during the year*	*30 days*
(v)	*No. of employees*	*175*
(vii)	*Normal idle time*	*70 hours per annum*
(viii)	*Abnormal idle time (due to failure of power supply)*	*50 hours*
(ix)	*Working days per annum*	*310 days of 8 hours*

You are required to calculate:

1. *Annual cost of each employee*
2. *Employee cost per hour*
3. *Cost of abnormal idle time, per employee* **(5 Marks)**

(ii) M/s. NOP Limited has its own power plant and generates its own power. Information regarding power requirements and power used are as follows:

	Production Dept.		*Service Dept.*	
	A	*B*	*X*	*Y*
	(Horse power hours)			
Needed capacity production	*20,000*	*25,000*	*15,000*	*10,000*
Used during the quarter ended September 2018	*16,000*	*20,000*	*12,000*	*8,000*

During the quarter ended September 2018, costs for generating power amounted to ₹ 12.60 lakhs out of which ₹ 4.20 lakhs was considered as fixed cost.

Service department X renders services to departments A, B, and Y in the ratio of 6:4:2 whereas department Y renders services to department A and B in the ratio of 4: 1. The direct labour hours of department A and B are 67500 hours and 48750 hours respectively.

Required:

1 Prepare overheads distribution sheet.

2 Calculate factory overhead per labour hour for the dept. A and dept. B.

(5 Marks)

Answer

(a) (i) Preparation of Production Budget (in Units)

	January	February	March	April	May
Sales	5,000	6,000	7,000	7,500	8,000
Add: Closing stock (25% of next month's sales)	1,500	1,750	1,875	2,000	
Less: Opening Stock	(1200)	(1500)	(1750)	(1875)	
Production of electronic Gadgets	5,300	6,250	7,125	7,625	

(ii) Preparation of Purchase budget

	January	February	March	April
Consumption/production of Batteries (@ 2 per Gadget)	10,600	12,500	14,250	15,250
Add: Closing Stock (30% of next month's production)	3750	4275	4575	

Less: Opening Stock	3,250	3,750	4275	
Purchase of Batteries	**11,100**	**13,025**	**14,550**	

Statement Showing Profit

	Jan.	Feb.	March	Total
Sales (A)	5,000	6,000	7,000	18,000
Selling Price per unit*	₹. 2,000	₹. 2,000	₹. 2,000	₹. 2,000
Less: Discount @15% of selling price	300	300	300	300
Less: Standard cost of Manufacturing per gadget Cost	1500	1500	1500	1500
Profit (B) (selling Price-discount-cost)	200	200	200	200
Total Profit (A × B)	₹.10,00,000	₹.12,00,000	₹.14,00,000	₹.36,00,000

(b) (i) 1.

	Annual cost of each employee	₹.
1.	Salary (30,000×12)	3,60,000
2.	Bonus (25% of Salary)	90,000
3.	Employees Contribution to PF (15% of Salary)	54,000
4.	Employers welfare (661500/175)	3,780
	Total Annual Cost	5,07,780

2.

Effective Working hours (310 days × 8 hours)	2480 hours
Less: Leave days (30 days × 8 hours)	240 hours*
Available Working hours	2240 hours
Less: Normal Loss @	70 hours
	2170 hours

Employee Cost per hour $\frac{507780}{2170}$ = ₹. 234

*It is assumed 310 working days are without taking leave permitted into consideration

3. **Cost of abnormal idle time per employee = ₹ 234× 50 hours= ₹ 11700**

Alternative solution for Part (2) and (3)

(2) Calculation of Employee cost per hour:

Working hours per annum	2,480 *
Less: Normal Idle time hours	70
Effective hours	2,410
Employee cost	5,07,780
Employee cost per hour	210.70

***It is assumed 310 working days are after adjusting leave permitted during the year.**

(3) Cost of Abnormal idle time per employee:

Abnormal Idle time hours	50
Employee cost per hour	210.70
Cost of Abnormal idle time (210.70 ×50)	10,534.85

(ii)

(1) Overheads distribution Sheet

Item	Basis	Total Amount (₹)	Production Departments		Service Departments	
			A (₹)	B (₹)	X (₹)	Y (₹)
Variable overheads (₹ 12.60 lakhs - ₹ 4.20 lakhs)	Horse Power hours used	8,40,000	2,40,000	3,00,000	1,80,000	1,20,000
Fixed Overheads	Horse power for Capacity production	4,20,000	1,20,000	1,50,000	90,000	60,000
Total Overheads		12,60,000	3,60,000	4,50,000	2,70,000	1,80,000
Service dept X allocated to A, B & Y	As per the ratio given 6:4:2	(2,70,000)	1,35,000	90,000		45,000
Service dept Y allocated to A & B	As per the ratio of 4:1	(1,80,000+45000 = 2,25,000)	1,80,000	45,000		

Total Overheads of Production departments			6,75,000	5,85,000		

(2) Calculation of Factory overhead per labour hour

Item	Production Departments	
	A (₹)	**B (₹)**
Total overheads	6,75,000	5, 85,000
Direct labour hours	67,500	48,750
Factory overheads per hour	**10**	**12**

Question 6

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

(a) Mention and explain types of responsibility centres.

(b) Explain obsolescence and circumstances under which materials become obsolete. State the steps to be taken for its treatment.

(c) State the bases of apportionment of following overhead costs:

(i) Air-conditioning

(ii) Time keeping

(iii) Depreciation of plant and machinery

(iv) Power/steam consumption

(v) Electric power (Machine operation)

(d) How are By-products treated in Costing?

(e) Explain 'Activity Based Budgeting'. ***(4 x 5 = 20 Marks)***

Answer

(a) There are four types of responsibility centres:

(i) **Cost Centres:** The responsibility centre which is held accountable for incurrence of costs which are under its control. The performance of this responsibility centre is measured against pre-determined standards or budgets. The cost centres are of two types:

(a) Standard Cost Centre and (b) Discretionary Cost Centre

(ii) **Revenue Centres:** The responsibility centres which are accountable for generation of revenue for the entity. Sales Department for example, is the responsible for achievement of sales target and revenue generation. Though, revenue centres does not have control on the all expenditures it incurs but some time expenditures related with selling activities like commission to sales person etc. are incurred by revenue centres.

(iii) Profit Centres: These are the responsibility centres which have both responsibility of generation of revenue and incurrence of expenditures. Since, managers of profit centres are accountable for both costs as well as revenue, profitability is the basis for measurement of performance of these responsibility centres. Examples of profit centres are decentralised branches of an organisation.

(iv) Investment Centres: These are the responsibility centres which are not only responsible for profitability but also has the authority to make capital investment decisions. The performance of these responsibility centres is measured based on Return on Investment (ROI) besides profit.

(b) Obsolescence: Obsolescence is defined as "the loss in the intrinsic value of an asset due to its supersession".

Materials may become obsolete under any of the following **circumstances:**

(i) where it is a spare part, or a component of a machinery used in manufacture and that machinery becomes obsolete;

(ii) where it is used in the manufacture of a product which has become obsolete;

(iii) where the material itself is replaced by another material due to either improved quality or fall in price.

Treatment: In all three cases, the value of the obsolete material held in stock is a total loss and immediate steps **should be taken to dispose it off** at the best available price. The loss arising out of obsolete materials on **abnormal loss does not form part of the cost** of manufacture.

(c)

Overhead Cost	Bases of Apportionment
(i) Air- conditioning	Floor area, or volume of department
(ii) Time keeping	Number of workers
(iii) Depreciation of plant and machinery	Capital values
(iv) Power/steam consumption	Technical estimates
(v) Electric power (machine operation)	Horse power of machines, or Number of machine hour, or value of machines or units consumed. Kilo-watt hours.

(d) Treatment of by-product cost in Cost Accounting:

By-product cost can be dealt in cost accounting in the following ways:

(a) **When they are of small total value:** When the by-products are of small total value, the amount realised from their sale may be dealt in any one the following two ways:

1. The sales value of the by-products may be credited to the Costing Profit and Loss Account and no credit be given in the Cost Accounts. The credit to the Costing Profit and Loss Account here is treated either as miscellaneous income or as additional sales revenue.
2. The sale proceeds of the by-product may be treated as deductions from the total costs. The sale proceeds in fact should be deducted either from the production cost or from the cost of sales.

(b) **When the by-products are of considerable total value:** Where by-products are of considerable total value, they may be regarded as joint products rather than as by-products. To determine exact cost of by-products the costs incurred upto the point of separation, should be apportioned over by-products and joint products by using a logical basis.

(c) **Where they require further processing:** In this case, the net realisable value of the by-product at the split-off point may be arrived at by subtracting the further processing cost from the realisable value of by-products.

(e) Activity Based Budgeting (ABB)

- Activity based budgeting analyse the resource input or cost for each activity.
- It provides a framework for estimating the amount of resources required in accordance with the budgeted level of activity.
- Actual results can be compared with budgeted results to highlight both in financial and non-financial terms those activities with major discrepancies from budget for potential reduction in supply of resources.
- It is a planning and control system which seeks to support the objectives of continuous improvement.
- It means planning and controlling the expected activities of the organization to derive a cost-effective budget that meet forecast workload and agreed strategic goals.
- ABB is the reversing of the ABC process to produce financial plans and budgets.