PAPER – 3: COST ACCOUNTING AND FINANCIAL MANAGEMENT

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

*Answer any **five** questions from the remaining **six** questions.*

Working notes should form part of the answer.

Question 1

Answer the following:

(a) *RST Company Ltd. has computed labour turnover rates for the quarter ended 31st March, 2017 as 20%, 10% and 5% under flux method, replacement method and separation method respectively. If the number of workers replaced during that quarter is 50, find out (i) Workers recruited and joined (ii) Workers left and discharged and (iii) Average number of workers on roll.* *(5 Marks)*

(b) *AB Ltd. has furnished the following information:*

	Budgeted	***Actual July 2016***
Number of working days	*25*	*27*
Production (in units)	*20,000*	*22,000*
Fixed Overheads	*₹ 30,000*	*₹ 31,000*

Budgeted fixed overhead rate is ₹ 1.00 per hour. In July 2016, the actual hours worked were 31,500. In relation to fixed overheads, calculate:

(i) Efficiency Variance

(ii) Capacity Variance

(iii) Calendar Variance

(iv) Volume Variance

(v) Expenditure Variance *(5 Marks)*

(c) *You are given the following information of 5 firms of the same industry:*

Name of the Firm	***Change in Revenue***	***Change in Operating Income***	***Change in Earning per share***
M	*28%*	*26%*	*32%*
N	*27%*	*34%*	*26%*
P	*25%*	*38%*	*23%*
Q	*23%*	*43%*	*27%*
R	*25%*	*40%*	*28%*

You are required to calculate:

(i) Degree of operating leverage and

(ii) Degree of combined leverage for all firms. *(5 Marks)*

(d) VK Co. Ltd. has total cash disbursement amounting ₹ 22,50,000 in the year 2017 and maintains a separate account for cash disbursements. Company has an administrative and transaction cost on transferring cash to disbursement account ₹ 15 per transfer. The yield rate on marketable securities is 12% per annum.

You are required to determine optimum cash balance according to William J Baumol Model. (5 Marks)

Answer

(a) Labour Turnover Rate (Replacement method) $= \frac{\text{No. of workers replaced}}{\text{Average no. of workers}} \times 100$

Or, $\frac{10}{100} = \frac{50}{\text{Average no. of workers}}$

Thus, Average No. of workers = 500

Labour Turnover Rate (Separation method) $= \frac{\text{No. of workers separated}}{\text{Average No. of workers}} \times 100$

Or, $\frac{5}{100} = \frac{\text{Number of workers separated}}{500}$

Thus, No. of workers separated = 25

Labour Turnover Rate (Flux Method)

$= \frac{\text{No. of Separations + No. of Accession (Joinings)}}{\text{Average no. of workers}} \times 100$

Or, $\frac{20}{100} = \frac{25 + \text{No. of accessions (Joinings)}}{500}$

Or, 100 (25 + No. of Accessions) = 10,000

Or, 25 + No. of Accessions =100

Thus, No. of Accessions = 100 - 25 =75

Accordingly,

(i) Workers recruited and Joined = 75

(ii) Workers left and discharged = 25

(iii) Average number of workers on roll = 500

You are required to calculate:

(i) Degree of operating leverage and

(ii) Degree of combined leverage for all firms. *(5 Marks)*

(d) VK Co. Ltd. has total cash disbursement amounting ₹ 22,50,000 in the year 2017 and maintains a separate account for cash disbursements. Company has an administrative and transaction cost on transferring cash to disbursement account ₹ 15 per transfer. The yield rate on marketable securities is 12% per annum.

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Or, 100 (25 + No. of Accessions) = 10,000

Or, 25 + No. of Accessions =100

Thus, No. of Accessions = 100 - 25 =75

Accordingly,

(i) Workers recruited and Joined = 75

(ii) Workers left and discharged = 25

(iii) Average number of workers on roll = 500

(b) Workings:

(1) Budgeted Hours = $\frac{₹\,30,000}{₹\,1\,\text{per hour}}$ = 30,000 hours

(2) Standard Fixed Overhead rate per hour (Standard Rate):

$= \frac{\text{Budgeted fixed overheads}}{\text{Budgeted Hours}} = \frac{₹\,30,000}{30,000\,\text{hours}}$ = ₹ 1.00

(3) Standard Hour per unit of output = $\frac{30,000\,\text{hours}}{20,000\,\text{units}}$ = 1.5 hours

(4) Standard hours for Actual Output = 22,000 units × 1.5 hours = 33,000 Hours

(5) Budgeted Overhead per day for budgeted days = $\frac{₹\,30,000}{25\,\text{days}}$ = ₹ 1,200

(6) Budgeted Overhead for actual days worked = ₹ 1,200 × 27 days = ₹ 32,400

(7) Budgeted Hours for Actual days worked = $\frac{30,000\,\text{hours}}{25\,\text{days}} \times 27\,\text{days}$ = 32,400 hours

Computation of Variances in relation to Fixed Overheads:

(i) **Efficiency Variance**

= Standard Rate × (Standard hours for actual output – Actual hours worked)

= ₹1.00 (33,000 hours – 31,500 hours) = ₹ 1,500 (Favourable)

(ii) **Capacity Variance**

= Standard Rate × (Actual Hours – Budgeted Hours for actual days worked)

= ₹1.00 (31,500 hours – 32,400 hours) = ₹ 900 (Adverse)

(iii) **Calendar Variance**

= Standard Fixed Overhead Rate per day × (Actual Working days – Budgeted working days)

= ₹1,200 (27 days – 25 days) = ₹ 2,400 (Favourable)

(iv) **Volume Variance**

= Standard Rate × (Standard hours – Budgeted hours)

= ₹1.00 (33,000 hours – 30,000 hours) = ₹ 3,000 (Favourable)

(v) **Expenditure Variance**

= Budgeted Overheads – Actual Overheads

= ₹ 30,000 – ₹ 31,000 = ₹ 1,000 (Adverse)

Note: *Overhead Variances may also be calculated based on output.*

(c) Calculation of Degree of Operating leverage and Degree of Combined leverage

Firm	Degree of Operating Leverage (DOL) = $\frac{\%\text{ change in Operating Income}}{\%\text{ change in Revenue}}$	Degree of Combined Leverage (DCL) = $\frac{\%\text{ change in EPS}}{\%\text{ change in Revenue}}$
M	$\frac{26\%}{28\%} = 0.929$	$\frac{32\%}{28\%} = 1.143$
N	$\frac{34\%}{27\%} = 1.259$	$\frac{26\%}{27\%} = 0.963$
P	$\frac{38\%}{25\%} = 1.520$	$\frac{23\%}{25\%} = 0.920$
Q	$\frac{43\%}{23\%} = 1.870$	$\frac{27\%}{23\%} = 1.174$
R	$\frac{40\%}{25\%} = 1.60$	$\frac{28\%}{25\%} = 1.120$

(d) Determination of Optimum Cash Balance according to William J. Baumol's Model

$$C = \sqrt{\frac{2UP}{S}}$$

Where,

C = Optimum cash balance

U = Annual cash disbursement

P = Fixed cost per transaction

S = Opportunity cost of one-rupee p.a.

Therefore, Optimum Cash Balance

$$= \sqrt{\frac{2 \times ₹\,22,50,000 \times ₹\,15}{0.12}} = \sqrt{56,25,00,000}$$

= ₹ 23,717.08 or ₹ 23,717

Question 2

(a) KMR Ltd. produces product AY, which passes through three processes 'XM', 'YM' and 'ZM'. The output of process 'XM' and 'YM' is transferred to next process at cost plus 20 percent each on transfer price and the output of process 'ZM' is transferred to finished

stock at a profit of 25 percent on transfer price. The following information are available in respect of the year ending 31st March, 2017:

	Process-XM (₹)	Process-YM (₹)	Process-ZM (₹)	Finished Stock (₹)
Opening Stock	30,000	54,000	80,000	90,000
Material	1,60,000	1,30,000	1,00,000	-
Wages	2,50,000	2,16,000	1,84,000	-
Manufacturing Overheads	1,92,000	1,44,000	1,33,000	-
Closing Stock	40,000	64,000	78,000	1,00,000
Inter process profit included in Opening Stock	Nil	8,000	20,000	40,000

Stock in processes is valued at prime cost. The finished stock is valued at the price at which it is received from process 'ZM'. Sales of the finished stock during the period was ₹ 28,00,000.

You are required to prepare:

(i) All process accounts and

(ii) Finished stock account showing profit element at each stage. *(8 Marks)*

(b) PQ Limited wants to expand its business and has applied for a loan from a commercial bank for its growing financial requirements.

The records of the company reveals that the company sells goods in the domestic market at a gross profit of 25% not counting depreciation as part of the cost of goods sold.

The following additional information is also available for you:

	₹
Sales-Home at one month's credit	1,20,00,000
Sales-Export at three months' credit (sales price 10% below home price)	54,00,000
Material used (supplied extends two months' credit)	45,00,000
Wages paid ½ month in arrear	36,00,000
Manufacturing Expenses (Cash) paid (one month in arrear)	54,00,000
Adm. Expenses paid one month in arrear	12,00,000
Income tax payable in four installments of which one falls in the next financial year	15,00,000

The company keeps one month's stock of each of raw materials and finished goods and believes in keeping ₹ 10,00,000 available to it including the overdraft limit of ₹ 5,00,000 not yet utilized by the company. Assumes a 15% margin for contingencies. Ignore the work-in-progress.

You are required to ascertain the requirement of the working capital of the company.

(8 Marks)

Answer

(a) (i) Process 'XM' Account

Dr. Cr.

Particulars	Cost (₹)	Profit (₹)	Total (₹)	Particulars	Cost (₹)	Profit (₹)	Total (₹)
To Opening Stock	30,000	–	30,000	By Process 'YM' A/c (Transfer)	5,92,000	1,48,000	7,40,000
To Material	1,60,000	–	1,60,000				
To Wages	2,50,000	–	2,50,000				
Total	4,40,000	–	4,40,000				
Less: Closing stock	40,000	–	40,000				
Prime Cost	4,00,000		4,00,000				
To Manufacturing Overheads	1,92,000	–	1,92,000				
Total cost	5,92,000	–	5,92,000				
To Costing Profit and Loss A/c (20% on transfer Price or 25% on cost)		1,48,000	1,48,000				
	5,92,000	1,48,000	7,40,000		5,92,000	1,48,000	7,40,000

Process 'YM' Account

Dr. Cr.

Particulars	Cost (₹)	Profit (₹)	Total (₹)	Particulars	Cost (₹)	Profit (₹)	Total (₹)
To Opening Stock	46,000	8,000	54,000	By Process 'ZM' A/c (Transfer)	10,72,758	4,52,242	15,25,000
To Process 'XM' A/c	5,92,000	1,48,000	7,40,000				
To Material	1,30,000	--	1,30,000				
To Wages	2,16,000	--	2,16,000				
Total	9,84,000	1,56,000	11,40,000				

Less: Closing stock	55,242	8,758	64,000				
Prime Cost	9,28,758	1,47,242	10,76,000				
To Manufacturing Overheads	1,44,000	--	1,44,000				
Total cost	10,72,758	1,47,242	12,20,000				
To Costing Profit and Loss A/c (20% on transfer Price or 25% on cost)	--	3,05,000	3,05,000				
	10,72,758	4,52,242	15,25,000		10,72,758	4,52,242	15,25,000

(ii) Finished Stock Account

Dr. Cr.

Particulars	Cost (₹)	Profit (₹)	Total (₹)		Particulars	Cost (₹)	Profit (₹)	Total (₹)
To Opening Stock	50,000	40,000	90,000	By	Costing P&L A/c (Transfer)	14,83,725	13,16,275	28,00,000
To Process 'ZM' A/c	14,91,258	11,00,742	25,92,000					
Total	15,41,258	11,40,742	26,82,000					
Less: Closing stock	57,533	42,467	1,00,000					
	14,83,725	10,98,275	25,82,000					
To Costing Profit and Loss A/c (Profit) (Balancing figure)	--	2,18,000	2,18,000					
	14,83,725	13,16,275	28,00,000			14,83,725	13,16,275	28,00,000

Calculation of amount of unrealized profit on closing stock:

Process 'XM' = Nil

Process 'YM' = $\frac{₹1,56,000}{₹\ 11,40,000} \times ₹\ 64,000 = ₹\ 8,758.$

Process 'ZM' = $\frac{₹\ 4,72,242}{₹18,89,000} \times ₹78,000 = ₹19,500.$

Finished Stock = $\frac{₹11,00,742}{₹25,92,000} \times ₹1,00,000 = ₹42,467.$

Note: *Unrealised profit on closing finished stock can also be calculated on the basis of Average cost.*

(b) Statement of Working Capital Requirement for PQ Ltd

	(₹)	(₹)
A. Current Assets		
(i) Inventories:		
Material (1 month) $\left(\frac{₹45,00,000}{12 \text{ months}} \times 1 \text{ month}\right)$	3,75,000	
Finished goods (1 months) $\left(\frac{₹1,35,00,000}{12 \text{ months}} \times 1 \text{ month}\right)$	11,25,000	15,00,000
(ii) Receivables (Debtors)		
For Domestic Sales $\left(\frac{₹\ 90,00,000}{12 \text{ months}} \times 1 \text{ month}\right)$	7,50,000	
For Export Sales $\left(\frac{₹45,00,000}{12 \text{ months}} \times 3 \text{ months}\right)$	11,25,000	18,75,000
(iii) Cash in hand & at bank (₹ 10,00,000 – ₹ 5,00,000)		5,00,000
Total Current Assets		38,75,000
B. Current Liabilities:		
(i) Payables (Creditors) for materials (2 months) $\left(\frac{₹45,00,000}{12 \text{ months}} \times 2 \text{ months}\right)$		7,50,000
(ii) Outstanding wages (0.5 months) $\left(\frac{₹36,00,000}{12 \text{ months}} \times 0.5 \text{ month}\right)$		1,50,000
(iii) Outstanding manufacturing expenses $\left(\frac{₹54,00,000}{12 \text{ months}} \times 1 \text{month}\right)$		4,50,000
(iv) Outstanding administrative expenses		1,00,000

$\left(\frac{₹12,00,000}{12 \text{ months}} \times 1 \text{ month}\right)$		
(v) Income tax payable (₹ 15,00,000 ÷ 4)		3,75,000
Total Current Liabilities		18,25,000
Net Working Capital (A – B)		20,50,000
Add: 15% contingency margin		3,07,500
Total Working Capital required		23,57,500

Working Note:

1. Calculation of Cost of Goods Sold and Cost of Sales

	Domestic (₹)	Export (₹)	Total (₹)
Sales	1,20,00,000	54,00,000	1,74,00,000
Less: Gross profit @ 25% on domestic sales and 16.67% on export sales (Working note-2)	(30,00,000)	(9,00,000)	(39,00,000)
Cost of Goods Sold/ Cash Cost of Sales	90,00,000	45,00,000	1,35,00,000

2. Calculation of gross profit on Export Sales:

Let domestic selling price is ₹100. Gross profit is ₹25, and then cost per unit is ₹75

Export price is 10% less than the domestic price i.e. ₹100 – (1- 0.1) = ₹90

Now gross profit will be ₹90 - ₹75 = ₹15

Therefore, Gross profit at domestic price will be $\frac{₹15}{₹100} \times 100$ = 15%

Or, gross profit at export price will be $\frac{₹15}{₹90} \times 100 = 16.67\%$

Assumptions

(i) It is assumed that administrative expenses relating to production activities.

(ii) Value of opening and closing stocks are equal.

(iii) Receivables are calculated based on cost of goods sold

Question 3

(a) The following information was obtained from the records of a manufacturing unit:

	₹	₹
Sales 80,000 units @ ₹25		*20,00,000*
Material consumed	*8,00,000*	
Variable Overheads	*2,00,000*	
Labour Charges	*4,00,000*	
Fixed Overheads	*3,60,000*	*17,60,000*
Net Profit		*2,40,000*

Calculate:

(i) The number of units by selling which the company will neither lose nor gain anything.

(ii) The sales needed to earn a profit of 20% on sales.

(iii) The extra units which should be sold to obtain the present profit if it is proposed to reduce the selling price by 20% and 25%.

(iv) The selling price to be fixed to bring down its Break-even Point to 10,000 units under present conditions. (8 Marks)

(b) PNR Limited and PXR Limited are identical in every respect except capital structure. PNR limited does not employ debts in its capital structure whereas PXR Limited employs 12% Debentures amounting to ₹ 20,00,000. The following additional information are given to you:

(i) Income tax rate is 30%

(ii) EBIT is ₹5,00,000

(iii) The equity capitalization rate of PNR Limited is 20% and

(iv) All assumptions of Modigliani - Miller Approach are met.

Calculate:

(i) Value of both the companies,

(ii) Weighted average cost of capital for both the companies. (8 Marks)

Answer

(a) Workings:

(1) Contribution per unit = Selling price per unit – Variable cost per unit

= ₹ 25 – {₹ (8,00,000 + 2,00,000 + 4,00,000) ÷ 80,000 units}

= ₹ 25 – ₹ 17.50 = ₹ 7.50

(2) Profit-Volume (P/V) Ratio = $\frac{\text{Contribution per unit}}{\text{Selling price per unit}} \times 100 = \frac{₹7.50}{₹25} \times 100 = 30\%$

Calculations:

(i) The number of units to be sold for neither loss nor gain i.e. Break-even units:

$= \frac{\text{Fixed Overheads}}{\text{Contribution per unit}} = \frac{₹3,60,000}{₹7.50} = 48,000 \text{ units}$

(ii) The sales needed to earn a profit of 20% on sales:

As we know

S = V + F + P

(S = Sales; V = Variable Cost; F = Fixed Cost; P = Profit)

Suppose Sales units are x then

₹ $25x$ = ₹ 17.5 x + ₹ 3,60,000 + ₹ $5x$

₹ $25x$ – ₹ $22.5x$ = ₹ 3,60,000

Or, $x = \frac{₹3,60,000}{₹2.5}$ = 1,44,000 units

Therefore, Sales needed = 1,44,000 units × ₹25 = ₹36,00,000 to earn a profit of 20% on sales.

(iii) Calculation of extra units to be sold to earn present profit of ₹ 2,40,000 under the following proposed selling price:

		When selling price is reduced by	
		20%	**25%**
	Selling price per unit (₹)	20.00 (₹ 25 × 80%)	18.75 (₹ 25 × 75%)
	Less: Variable Cost per unit (₹)	17.50	17.50
	Contribution per unit (₹)	2.50	1.25
	Desired Contribution:		
	Fixed Overheads (₹)	3,60,000	3,60,000
	Desired Profit (₹)	2,40,000	2,40,000
		6,00,000	6,00,000

(a)	Sales unit for desired contribution $\left\lfloor \frac{\text{Desired Contribution}}{\text{Contribution per unit}} \right\rfloor$	$\left\lfloor \frac{₹6,00,000}{₹2.50} \right\rfloor$ 2,40,000 units	$\left\lfloor \frac{₹6,00,000}{₹1.25} \right\rfloor$ 4,80,000 units
(b)	Units presently sold	80,000 units	80,000 units
(c)	Extra units to be sold {(a) – (b)}	1,60,000 units	4,00,000 units

(iv) Sales price to bring down BEP to 10,000 units:

$$\text{B.E.P (Units)} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

$$\text{Or, Contribution per unit} = \frac{₹3,60,000}{10,000 \text{ units}} = ₹36$$

So, Sales Price (per unit) = Variable Cost + Contribution

= ₹17.5 + ₹36 = ₹53.50

(b) (i) Calculation of Value of Firms PNR Ltd. and PXR Ltd. according to Modigliani-Miller Approach*:*

Market Value of Firm PNR (Unlevered)

$$V_u = \frac{EBIT\,(1 - t)}{K_e} = \frac{₹5,00,000\ (1 - 0.30)}{20\ \%}$$

$$= \frac{₹3,50,000}{20\ \%} = ₹17,50,000$$

Market Value of Firm PXR (Levered)

Vg = Vu + TB

= ₹17,50,000 + (₹20,00,000 × 0.30)

= ₹ 17,50,000 + ₹ 6,00,000 = ₹ 23,50,000

(ii) Computation of Weighted Average Cost of Capital (WACC):

WACC of 'PNR Ltd.' = 20% (i.e. $K_e = K_o$)

WACC of 'PXR Ltd.'

	PXR Ltd. (₹)
EBIT	5,00,000
Interest to Debt holders @12%	(2,40,000)
EBT	2,60,000

Taxes @ 30%	(78,000)
Income available to Equity Shareholders	1,82,000
Total Value of Firm	23,50,000
Less: Market Value of Debt	(20,00,000)
Market Value of Equity	3,50,000
Return on equity (K_e) = 1,82,000 / 3,50,000	0.52

Computation of WACC of PXR Ltd

Component of Capital	Amount	Weight	Cost of Capital	WACC
Equity	3,50,000	0.149	0.52	0.0775
Debt	20,00,000	0.851	0.084*	0.0715
Total	23,50,000			0.1490

*K_d= 12% (1- 0.3) = 12% × 0.7 = 8.4%

WACC = 14.90%

Question 4

(a) The following information have been extracted from the cost records of JKL Manufacturing Company Ltd:

	₹
Stores:	
Opening Balance	*90,000*
Purchases	*4,80,000*
Transfer from WIP	*2,40,000*
Issue to WIP	*4,80,000*
Issue for repairs	*60,000*
Deficiency found in stock	*18,000*
Work-in-Progress:	
Opening Balance	*1,80,000*
Direct wages applied	*1,80,000*
Overhead charged	*7,20,000*
Closing Balance	*1,20,000*
Finished Production:	
Entire production is sold at a profit of 10% on cost from work-in-progress	-

Wages Paid	*2,10,000*
Overhead Incurred	*7,50,000*

Prepare Stores Ledger Control A/c., Work-in-Progress Control A/c., Overheads Control A/c. and Costing Profit & Loss A/c. *(8 Marks)*

(b) Following information relate to a concern:

Debtors Velocity	*3 months*
Credits Velocity	*2 months*
Stock Turnover Ratio	*1.5*
Gross Profit Ratio	*25%*
Bills Receivables	*₹ 25,000*
Bills Payables	*₹ 10,000*
Gross Profit	*₹ 4,00,000*
Fixed Assets to turnover Ratio	*4*

Closing stock of the period is ₹ 10,000 above the opening stock.

Find out:

(i) Sales and cost of goods sold

(ii) Sundry Debtors

(iii) Sundry Creditors

(iv) Closing Stock

(v) Fixed Assets *(8 Marks)*

Answer

(a) Stores Ledger Control A/c

Particulars	(₹)	Particulars	(₹)
To Balance b/d	90,000	By Work in Progress Control A/c	4,80,000
To General Ledger Adjustment A/c	4,80,000	By Overhead Control A/c	60,000
To Work in Process A/c	2,40,000	By Overhead Control A/c (Deficiency)	18,000*
		By Balance c/d	2,52,000
	8,10,000		8,10,000

*Deficiency assumed as normal (alternatively can be treated as abnormal loss)

Work in Progress Control A/c

Particulars	(₹)	Particulars	(₹)
To Balance b/d	1,80,000	By Stores Ledger Control a/c	2,40,000
To Stores Ledger Control A/c	4,80,000	By Costing P/L A/c (Balancing figures being Cost of finished goods)	12,00,000
To Wages Control A/c	1,80,000	By Balance c/d	1,20,000
To Overheads Control A/c	7,20,000		
	15,60,000		15,60,000

Overheads Control A/c

Particulars	(₹)	Particulars	(₹)
To Stores Ledger Control A/c	60,000	By Work in Process A/c	7,20,000
To Stores Ledger Control A/c	18,000	By Balance c/d* (Under absorption)	1,38,000
To Wages Control A/c (₹ 2,10,000- ₹1,80,000)	30,000		
To Gen. Ledger Adjust. A/c	7,50,000		
	8,58,000		8,58,000

*Alternatively may be transferred to Costing P& L A/c

Costing Profit & Loss A/c

Particulars	(₹)	Particulars	(₹)
To Work in progress	12,00,000	By Gen. Ledger Adjust. A/c (Sales) (12,00,000+1,20,000)	13,20,000
To Gen. Ledger Adjust. A/c (Profit)	1,20,000		
	13,20,000		13,20,000

General Ledger Adjustment A/c may also be written as Cost Ledger Control A/c

(b) (i) Determination of Sales and Cost of goods sold:

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

$$\text{Or, } \frac{25}{100} = \frac{₹\,4,00,000}{\text{Sales}}$$

$$\text{Or, Sales} = \frac{4,00,00,000}{25} = ₹\ 16,00,000$$

Cost of Goods Sold = Sales – Gross Profit

= ₹ 16,00,000 - ₹ 4,00,000 = ₹ 12,00,000

(ii) Determination of Sundry Debtors:

Debtors velocity is 3 months or Debtors' collection period is 3 months,

$$\text{So, Debtors' turnover ratio} = \frac{12\,\text{months}}{3\,\text{months}} = 4$$

$$\text{Debtors' turnover ratio} = \frac{\text{Credit Sales}}{\text{Average Accounts Receivable}}$$

$$= \frac{₹\,16,00,000}{\text{Bills Receivable} + \text{Sundry Debtors}} = 4$$

Or, Sundry Debtors + Bills receivable = ₹ 4,00,000

Sundry Debtors = ₹ 4,00,000 – ₹ 25,000 = ₹ 3,75,000

(iii) Determination of Sundry Creditors:

Creditors velocity of 2 months or credit payment period is 2 months.

$$\text{So, Creditors' turnover ratio} = \frac{12\ \text{months}}{2\ \text{months}} = 6$$

$$\text{Creditors turnover ratio} = \frac{\text{Credit Purchases}^*}{\text{Average Accounts Payables}}$$

$$= \frac{₹\ 12,10,000}{\text{Sundry Creditors} + \text{Bills Payables}} = 6$$

So, Sundry Creditors + Bills Payable = ₹ 2,01,667

Or, Sundry Creditors + ₹ 10,000 = ₹ 2,01,667

Or, Sundry Creditors = ₹ 2,01,667 – ₹ 10,000 = ₹ 1,91,667

(iv) Closing Stock

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = \frac{₹12,00,000}{\text{Average Stock}} = 1.5$$

So, Average Stock = ₹ 8,00,000

Now Average Stock = $\frac{\text{Opening Stock} + \text{Closing Stock}}{2}$

Or $\frac{\text{Opening Stock} + (\text{Opening Stock} + ₹10,000)}{2}$ = ₹ 8,00,000

Or, Opening Stock = ₹ 7,95,000

So, Closing Stock= ₹ 7,95,000 + ₹ 10,000 = ₹ 8,05,000

(v) Calculation of Fixed Assets

Fixed Assets Turnover Ratio = $\frac{\text{Cost of Goods Sold}}{\text{Fixed Assets}}$ = 4

Or, $\frac{₹12,00,000}{\text{Fixed Assets}}$ = 4

Or, Fixed Asset = ₹ 3,00,000

Workings:

***Calculation of Credit purchases:**

Cost of goods sold = Opening stock + Purchases – Closing stock

₹ 12,00,000 = ₹ 7,95,000 + Purchases – ₹ 8,05,000

₹ 12,00,000 + ₹ 10,000 = Purchases

₹ 12,10,000 = Purchases (credit).

Assumption:

(i) All sales are credit sales

(ii) All purchases are credit Purchase

(iii) Stock Turnover Ratio and Fixed Asset Turnover Ratio may be calculated either on Sales or on Cost of Goods Sold.

Question 5

(a) Explain 'Cost Unit' and 'Cost Centre'.

(b) What are the essential factors for installing a cost accounting system? Explain.

(c) Distinguish between 'Funds Flow' and 'Cash Flow'.

(d) Distinguish between 'Profit Maximization' and 'Wealth Maximization' objective of a firm.

(4 × 4 = 16 Marks)

Answer

(a) (i) **Cost Units:** It is a unit of product, service or time (or combination of these) in relation to which costs may be ascertained or expressed.

We may for instance determine the cost per tonne of steel, per tonne kilometre of a transport service or cost per machine hour. Sometime, a single order or a contract constitutes a cost unit. A batch which consists of a group of identical items and maintains its identity through one or more stages of production may also be considered as a cost unit.

Cost units are usually the units of physical measurement like number, weight, area, volume, length, time and value.

(ii) **Cost Centre:** It is defined as a location, person or an item of equipment (or group of these) for which cost may be ascertained and used for the purpose of Cost Control.

Cost Centres are of two types:

Personal Cost Centre: It consists of a person or group of persons e.g. Mr. X, supervisor, foreman, accountant, engineer, process staffs, mining staffs, doctors etc.

Impersonal Cost Centre: It consists of a location or an item of equipment (or group of these) e.g. boiler house, cooling tower, weighing machine, canteen, and generator set etc.

OR

Cost Centres in a manufacturing concern are of two types:

Production Cost Centre: it is a cost centre where raw material is handled for conversion into finished products. Here both direct and indirect expenses are incurred. Machine shops, welding shops and assembly shops etc. are examples of production cost centres.

Service Cost Centre: It is a cost centre which serves as an ancillary unit to production cost centre. Payroll processing department, HRD, Power house, Gas production shops, Plant maintenance centres etc. are example of service cost centres.

(b) Before installation of a system of cost accounting in a manufacturing organisation the under mentioned factors should be studied:

(i) **Objective:** The objective of costing system, for example whether it is being introduced for fixing prices or for insisting a system of cost control.

(ii) **Nature of Business or Industry:** The Industry in which business is operating. Every business industry has its own peculiar feature and costing objectives. According to its cost information requirement cost accounting methods are followed. For example, Indian Oil Corporation Ltd. has to maintain process wise cost

accounts to find out cost incurred on a particular process say in crude refinement process etc.

(iii) **Organisational Hierarchy:** Costing system should fulfill the requirement of different level of management. Top management is concerned with the corporate strategy, strategic level management is concerned with marketing strategy, product diversification, product pricing etc. Operational level management needs the information on standard quantity to be consumed, report on idle time etc.

(iv) **Knowing the product:** Nature of product determines the type of costing system to be implemented. The product which has by-products requires costing system which account for by-products as well. In case of perishable or short self- life, marginal costing method is required to know the contribution and minimum price at which it can be sold.

(v) **Knowing the production process:** A good costing system can never be established without the complete knowledge of the production process. Cost apportionment can be done on the most appropriate and scientific basis if a cost accountant can identify degree of effort or resources consumed in a particular process. This also includes some basic technical know-how and process peculiarity.

(vi) **Information synchronisation:** Establishment of a department or a system requires substantial amount of organisational resources. While drafting a costing system, information needs of various other departments should be taken into account. For example, in a typical business organisation accounts department needs to submit monthly stock statement to its lender bank, quantity wise stock details at the time filing returns to tax authorities etc.

(vii) **Method of maintenance of cost records:** The manner in which Cost and Financial accounts could be inter-locked into a single integral accounting system and in which results of separate sets of accounts, cost and financial, could be reconciled by means of control accounts.

(viii) **Statutory compliances and audit:** Records are to be maintained to comply with statutory requirements, standards to be followed (Cost Accounting Standards and Accounting Standards).

(ix) **Information Attributes:** Information generated from the Costing system should be possess all the attributes of an information i.e. complete, accurate, timeliness, confidentiality etc. This also meets the requirements of management information system.

(c) The points of distinction between Funds flow and Cash flow are as below:

Funds flow	Cash flow
(i) It ascertains the changes in financial position between two accounting periods.	(i) It ascertains the changes in balance of cash in hand and bank.

(ii) It analyses the reasons for change in financial position between two balance sheets	(ii) It analyses the reasons for changes in balance of cash in hand and bank
(iii) It reveals the sources and application of finds.	(iii) It shows the inflows and outflows of cash.
(iv) It helps to test whether working capital has been effectively used or not.	(iv) It is an important tool for short term analysis.
	(v) The two significant areas of analysis are cash generating efficiency and free cash flow.

(d) Distinguish between 'Profit Maximization' and 'Wealth Maximization': Profit maximisation is a short-term objective and cannot be the sole objective of a company. It is at best a limited objective. If profit is given undue importance, a number of problems can arise like the term profit is vague, profit maximisation has to be attempted with a realisation of risks involved, it does not take into account the time pattern of returns and as an objective it is too narrow.

Whereas, on the other hand, wealth maximisation, as an objective, means that the company is using its resources in a good manner. If the share value is to stay high, the company has to reduce its costs and use the resources properly. If the company follows the goal of wealth maximisation, it means that the company will promote only those policies that will lead to an efficient allocation of resources.

Question 6

(a) You are given the following data of a manufacturing concern:

	₹
Variable Expenses (at 50% capacity):	
Materials	*48,00,000*
Labour	*51,20,000*
Others	*7,60,000*
Semi variable expenses (at 50% capacity):	
Maintenance and Repairs	*5,00,000*
Indirect Labour	*19,80,000*
Sales Dept. Salaries	*5,80,000*
Sundry Administrative Expenses	*5,20,000*
Fixed Expenses:	
Wages & Salaries	*16,80,000*

Rent, Rates and Taxes	*11,20,000*
Depreciation	*14,00,000*
Sundry Administrative Exp.	*17,80,000*

The fixed expenses remain constant for all levels of production. Semi variable expenses remain constant between 45% and 65% of capacity whereas it increases by 10% between 65% and 80% capacity of 20% between 80% and 100 % capacity.

Sales at various levels are as under:

Capacity	*Sales (₹)*
75%	*2,40,00,000*
100%	*3,20,00,000*

Prepare flexible budget at 75% and 100% capacity. *(8 Marks)*

(b) X Limited is considering to purchase of new plant worth ₹ 80,00,000. The expected net cash flows after taxes and before depreciation are as follows:

Year	*Net Cash Flows (₹)*
1	*14,00,000*
2	*14,00,000*
3	*14,00,000*
4	*14,00,000*
5	*14,00,000*
6	*16,00,000*
7	*20,00,000*
8	*30,00,000*
9	*20,00,000*
10	*8,00,000*

The rate of cost of capital is 10%.

You are required to calculate:

(i) Pay-back period

(ii) Net present value at 10 discount factor

(iii) Profitability index at 10 discount factor

(iv) Internal rate of return with the help of 10% and 15% discount factor

The following present value table is given for you:

Year	*Present value of ₹1 at 10% discount rate*	*Present value of ₹1 at 15% discount rate*
1	*.909*	*.870*
2	*.826*	*.756*
3	*.751*	*.658*
4	*.683*	*.572*
5	*.621*	*.497*
6	*.564*	*.432*
7	*.513*	*.376*
8	*.467*	*.327*
9	*.424*	*.284*
10	*.386*	*.247*

(8 Marks)

Answer

(a) Preparation of Flexible Budget

	Particulars	**Capacity Levels**		
		50% (₹)	**75% (₹)**	**100% (₹)**
A	**Sales**	Given	2,40,00,000	3,20,00,000
B.	**Costs:**			
	(i) Variable Expenses:			
	Materials	48,00,000	72,00,000	96,00,000
	Labour	51,20,000	76,80,000	1,02,40,000
	Others	7,60,000	11,40,000	15,20,000
		1,06,80,000	1,60,20,000	2,13,60,000
	(ii) Semi-Variable Expenses:			
	Maintenance and Repairs	5,00,000	5,50,000	6,00,000
	Indirect Labours	19,80,000	21,78,000	23,76,000
	Sales Dept. salaries	5,80,000	6,38,000	6,96,000
	Sundry Administrative Expenses	5,20,000	5,72,000	6,24,000
		35,80,000	39,38,000	42,96,000

	(iii) Fixed Expenses:			
	Wages & Salaries	16,80,000	16,80,000	16,80,000
	Rent, Rates and Taxes	11,20,000	11,20,000	11,20,000
	Depreciation	14,00,000	14,00,000	14,00,000
	Sundry Administrative Expenses	17,80,000	17,80,000	17,80,000
		59,80,000	59,80,000	59,80,000
	Total Cost {(i) + (ii) + (iii)}	2,02,40,000	2,59,38,000	3,16,36,000
C.	**Profit/ (Loss) {(A) – (B)}**		(19,38,000)	3,64,000

At 75% and 100% capacity level, the semi-variable costs increased by 10% and 20% respectively.

(b) (i) Calculation of Pay-back Period

Cash Outlay of the Project = ₹ 80,00,000

Total Cash Inflow for the first five years = ₹ 70,00,000

Balance of cash outlay left to be paid back in the 6th year ₹ 10,00,000

Cash inflow for 6th year = 16,00,000

So the payback period is between 5th and 6th years, i.e.,

$$5 \text{ years} + \frac{₹10,00,000}{₹16,00,000} = 5.625 \text{ years or } 5 \text{ years } 7.5 \text{ months}$$

(ii) Calculation of Net Present Value (NPV) @10% discount rate:

Year	Net Cash Inflow (₹)	Present Value at Discount Rate of 10%	Present Value (₹)
	(a)	(b)	(c) = (a)× (b)
1	14,00,000	0.909	12,72,600
2	14,00,000	0.826	11,56,400
3	14,00,000	0.751	10,51,400
4	14,00,000	0.683	9,56,200
5	14,00,000	0.621	8,69,400
6	16,00,000	0.564	9,02,400
7	20,00,000	0.513	10,26,000
8	30,00,000	0.467	14,01,000

9	20,00,000	0.424	8,48,000
10	8,00,000	0.386	3,08,800
			97,92,200

Net Present Value (NPV) = Cash Outflow – Present Value of Cash Inflows

= ₹ 80,00,000 – ₹ 97,92,200 = 17,92,200

(iii) Calculation of Profitability Index @ 10% discount rate:

$$\text{Profitability Index} = \frac{\text{Present Value of Cash inflows}}{\text{Cost of the investment}}$$

$$= \frac{₹\,97,92,200}{₹\,80,00,000} = 1.224$$

(iv) Calculation of Internal Rate of Return:

Net present value @ 10% interest rate factor has already been calculated in (ii) above, we will calculate Net present value @15% rate factor.

Year	Net Cash Inflow (₹)	Present Value at Discount Rate of 15%	Present Value (₹)
	(a)	(b)	(c) = (a)× (b)
1	14,00,000	0.870	12,18,000
2	14,00,000	0.756	10,58,400
3	14,00,000	0.658	9,21,200
4	14,00,000	0.572	8,00,800
5	14,00,000	0.497	6,95,800
6	16,00,000	0.432	6,91,200
7	20,00,000	0.376	7,52,000
8	30,00,000	0.327	9,81,000
9	20,00,000	0.284	5,68,000
10	8,00,000	0.247	1,97,600
			78,84,000

Net Present Value at 15% = ₹ 78,84,000 – ₹ 80,00,000 = ₹ -1,16,000

As the net present value @ 15% discount rate is negative, hence internal rate of return falls in between 10% and 15%. The correct internal rate of return can be calculated as follows:

$$IRR = L + \frac{NPV_L}{NPV_L - NPV_H}(H - L)$$

$$= 10\% + \frac{₹17,92,200}{₹17,92,200 - (-₹1,16,000)}(15\% - 10\%)$$

$$= 10\% + \frac{₹17,92,200}{₹19,08,200} \times 5\% = 14.7\%$$

Question 7

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

(a) Discuss briefly the principles to be followed while taking credit for profit on incomplete contract.

(b) State the difference between Cost Accounting and Management Accounting.

(c) Explain the meaning and advantages of Factoring.

(d) Explain:

(i) Time Value of Money

(ii) A.B.C. Analysis

(e) Explain GDR and ADR. *(4 × 4 = 16 Marks)*

Answer

(a) Principles to be followed while taking credit for profit on incomplete contracts:

The portion of profit to be credited to costing profit and loss account depends on the stage of completion of a contract. The stage of completion of the contract refers to certified work only and uncertified work is not considered.

The transfer of profit to the costing profit and loss account is done as under:

(i) *Contract less than 25% complete:* If the contract has just started or it is less than 25% complete, no profit is taken into account.

(ii) *Contract is 25% or more but less than 50% complete:* In this case one third of the notional profit reduced in the ratio of cash received to work certified, may be transferred to the profit and loss account. The amount of profit to be transferred to the profit and loss account may be determined by using the following formula:

$$\frac{1}{3} \times \text{Notional profit} \times \frac{\text{Cash received}}{\text{Work certified}}$$

(iii) *Contract is 50% or more but less than 90% complete:* In this case, two third of the notional profit, reduced by the portion of cash received to work certified may be

transferred to the profit and loss account. In this case the formula to be used is as under:

$$\frac{2}{3} \times \text{Notional profit} \times \frac{\text{Cash received}}{\text{Work certified}}$$

(iv) *Contracts nearing completion, say between 90% and 100% complete:* When a contract is nearing completion or 90% or more work has been done on a contract. The amount of profit to be credited to costing profit and loss account may be determined by ***using any one of the following formula***.

(a) $\text{Estimated profit} \times \frac{\text{Work certified}}{\text{Contract price}}$

(b) $\text{Estimated profit} \times \frac{\text{Work certified}}{\text{Contract price}} \times \frac{\text{Cash received}}{\text{Work certified}}$

or $\text{Estimated profit} \times \frac{\text{Cash Received}}{\text{Contract price}}$

(c) $\text{Estimated Profit} \times \frac{\text{Cost of work to date}}{\text{Estimated total cost}}$

(d) $\text{Estimated profit} \times \frac{\text{Cost of work to date}}{\text{Estimated total cost}} \times \frac{\text{Cash received}}{\text{Work certified}}$

(e) $\text{Notional profit} \times \frac{\text{Work certified}}{\text{Contract price}}$

(b) 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 F.A., budgeting, Tax, Planning.
(iv)	Recording of data	It uses both past and present figures.	It is focused with the projection of figures for future.
(v)	Development	It's 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.

(c) Meaning of Factoring: Factoring is a specialised service related with receivable management which involves credit investigation, sales ledger management, purchase and collection of debts, credit protection as well as provision of finance against receivables. In factoring, accounts receivables are generally sold to a financial institution, known as factor, who charges commission and bears the credit risks associated with the accounts receivables purchased by it.

The factor takes the responsibility of monitoring, follow-up, collection and risk management related with receivables (debts).

Advantages of Factoring:

(1) The firm can convert accounts receivables into cash without bothering about repayment.

(2) Factoring ensures a definite pattern of cash inflows.

(3) Continuous factoring virtually eliminates the need for the credit department. That is why receivables financing through factoring is gaining popularly as useful source of financing short-term funds requirements of business enterprises because of the inherent advantage of flexibility it affords to the borrowing firm. The seller firm may continue to finance its receivables on a more or less automatic basis. If sales expand or contract it can vary the financing proportionally.

(4) Unlike an unsecured loan, compensating balances are not required in this case. Another advantage consists of relieving the borrowing firm of substantially credit and collection costs and to a degree from a considerable part of cash management.

(d) (i) Time Value of Money: It means money has time value. A rupee today is more valuable than a rupee after a year. Similarly, a rupee received in future is less valuable than it is today. Time value of money can be of two types, present value of money and future value of money. Concept of discounting is applicable to present value of money and compounding is applicable to future value of money. In a nutshell, time value of money represents monetary value arising out of difference of time.

(ii) ABC Analysis: It is a system of selective inventory control whereby the measure of control over an item of inventory varies with its usage value. It exercises discriminatory control over different items of stores grouped on the basis of the investment involved. Usually the items of material are grouped into three categories viz; A, B and C according to their use value during a period. In other words, the high use value items are controlled more closely than the items of low use value.

(i) 'A' Category of items consists of only a small percentage i.e., about 10 % of the total items of material handled by the stores but require heavy investment i.e., about 70% of inventory value, because of their high prices and heavy requirement.

(ii) 'B' Category of items comprises of about 20% of the total items of material handled by stores. The percentage of investment required is about 20% of the total investment in inventories.

(iii) 'C category of items does not require much investment. It may be about 10% of total inventory value but they are nearly 70% of the total items handled by stores

(e) Global Depository Receipts (GDRs): It is a negotiable certificate denominated in US dollars which represents a Non-US company's publically traded local currency equity shares. GDRs are created when the local currency shares of an Indian company are delivered to Depository's local custodian Bank against which the Depository bank issues depository receipts in US dollars. The GDRs may be traded freely in the overseas market like any other dollar-expressed security either on a foreign stock exchange or in the over-the-counter market or among qualified institutional buyers.

American Depository Receipts (ADRs): American Depository Receipts (ADRs) are securities offered by non- US companies who want to list on any of the US exchanges. It is a derivative instrument. It represents a certain number of company's shares. These are used by depository bank against a fee income. ADRs allow US investors to buy shares of these companies without the cost of investing directly in a foreign stock exchange. ADRs are listed on either NYSE or NASDAQ. It facilitates integration of global capital markets. The company can use the ADR route either to get international listing or to raise money in international capital market.

(b) Workings:

(1) Budgeted Hours = $\frac{₹\,30,000}{₹\,1\,\text{per hour}}$ = 30,000 hours

(2) Standard Fixed Overhead rate per hour (Standard Rate):

$= \frac{\text{Budgeted fixed overheads}}{\text{Budgeted Hours}} = \frac{₹\,30,000}{30,000\,\text{hours}}$ = ₹ 1.00

(3) Standard Hour per unit of output = $\frac{30,000\,\text{hours}}{20,000\,\text{units}}$ = 1.5 hours

(4) Standard hours for Actual Output = 22,000 units × 1.5 hours = 33,000 Hours

(5) Budgeted Overhead per day for budgeted days = $\frac{₹\,30,000}{25\,\text{days}}$ = ₹ 1,200

(6) Budgeted Overhead for actual days worked = ₹ 1,200 × 27 days = ₹ 32,400

(7) Budgeted Hours for Actual days worked = $\frac{30,000\,\text{hours}}{25\,\text{days}} \times 27\,\text{days}$ = 32,400 hours

Computation of Variances in relation to Fixed Overheads:

(i) **Efficiency Variance**

= Standard Rate × (Standard hours for actual output – Actual hours worked)

= ₹1.00 (33,000 hours – 31,500 hours) = ₹ 1,500 (Favourable)

(ii) **Capacity Variance**

= Standard Rate × (Actual Hours – Budgeted Hours for actual days worked)

= ₹1.00 (31,500 hours – 32,400 hours) = ₹ 900 (Adverse)

(iii) **Calendar Variance**

= Standard Fixed Overhead Rate per day × (Actual Working days – Budgeted working days)

= ₹1,200 (27 days – 25 days) = ₹ 2,400 (Favourable)

(iv) **Volume Variance**

= Standard Rate × (Standard hours – Budgeted hours)

= ₹1.00 (33,000 hours – 30,000 hours) = ₹ 3,000 (Favourable)

(v) **Expenditure Variance**

= Budgeted Overheads – Actual Overheads

= ₹ 30,000 – ₹ 31,000 = ₹ 1,000 (Adverse)

Note: *Overhead Variances may also be calculated based on output.*

(c) Calculation of Degree of Operating leverage and Degree of Combined leverage

Firm	Degree of Operating Leverage (DOL) = $\frac{\%\text{ change in Operating Income}}{\%\text{ change in Revenue}}$	Degree of Combined Leverage (DCL) = $\frac{\%\text{ change in EPS}}{\%\text{ change in Revenue}}$
M	$\frac{26\%}{28\%} = 0.929$	$\frac{32\%}{28\%} = 1.143$
N	$\frac{34\%}{27\%} = 1.259$	$\frac{26\%}{27\%} = 0.963$
P	$\frac{38\%}{25\%} = 1.520$	$\frac{23\%}{25\%} = 0.920$
Q	$\frac{43\%}{23\%} = 1.870$	$\frac{27\%}{23\%} = 1.174$
R	$\frac{40\%}{25\%} = 1.60$	$\frac{28\%}{25\%} = 1.120$

(d) Determination of Optimum Cash Balance according to William J. Baumol's Model

$$C = \sqrt{\frac{2UP}{S}}$$

Where,

C = Optimum cash balance

U = Annual cash disbursement

P = Fixed cost per transaction

S = Opportunity cost of one-rupee p.a.

Therefore, Optimum Cash Balance

$$= \sqrt{\frac{2 \times ₹\,22,50,000 \times ₹\,15}{0.12}} = \sqrt{56,25,00,000}$$

= ₹ 23,717.08 or ₹ 23,717

Question 2

(a) KMR Ltd. produces product AY, which passes through three processes 'XM', 'YM' and 'ZM'. The output of process 'XM' and 'YM' is transferred to next process at cost plus 20 percent each on transfer price and the output of process 'ZM' is transferred to finished