7. RATIO ANALYSIS

PROBLEM NO: 1

Important Ratios used in different situations

i) **Liquidity Ratios-** Here Liquidity or short-term solvency ratios would be used by the bank to check the ability of the company to pay its short-term liabilities. A bank may use Current ratio and Quick ratio to judge short terms solvency of the firm

ii) **Capital Structure/Leverage Ratios-**Here the long-term creditor would use the capital structure/leverage ratios to ensure the long term stability and structure of the firm. A long term creditors interested in the determining whether his claim is adequately secured may use Debt-service coverage and interest coverage ratio.

iii) **Profitability Ratios-**The shareholder would use the profitability ratios to measure the profitability or the operational efficiency of the firm to see the final results of business operations. A shareholder may use return on equity, earning per share and dividend per share.

iv) **Activity Ratios-**The finance manager would use these ratios to evaluate the efficiency with which the firm manages and utilises its assets. Some important ratios are (a) Capital turnover ratio (b) Current and fixed assets turnover ratio (c) Stock, Debtors and Creditors turnover ratio.

PROBLEM NO: 2

Gross Profit Rs. 54,000

Gross Profit Margin 20%

$\therefore$ Sales = $\frac{\text{Gross Profit}}{\text{Gross Profit Margin}}$ = Rs. 54,000/0.20= Rs. 2,70,000

Credit Sales to Total Sales = 80%

$\therefore$ Credit Sales = Rs. 2,70,000 x 0.80= Rs. 2,16,000

Total Assets Turnover = 0.3 times

$\therefore$ Total Assets = $\frac{\text{Sales}}{\text{Total Assests Turnover}}$

= $\frac{\text{Rs.2,70,000}}{0.3}$ = Rs. 9,00,000

Sales – Gross Profit = COGS

$\therefore$ COGS = Rs. 2,70,000 – 54,000 = Rs. 2,16,000

Inventory turnover = 4 times

Inventory = $\frac{\text{COGS}}{\text{Inventory turnover}} = \frac{2,16,000}{4}$ = Rs. 54,000

Average collection Period = 20 Days.

$\therefore$ Debtors turnover = $\frac{360}{\text{Average Collection Period}}$ = 360/20=18

$\therefore$ Debtors = $\frac{\text{Credit Sales}}{\text{Debtors turnover}} = \frac{2,16,000}{18}$ = Rs. 12,000

Current ratio = 1.8

1.8 = $\frac{\text{Debtors} + \text{Inventory} + \text{Cash (Current Assets)}}{\text{Creditors (Current Liabilities)}}$

1.8 Creditors = (Rs. 12,000 + Rs. 54,000+Cash)

1.8 Creditors = Rs. 66,000 + Cash ----------(i)

Long-term Debt to Equity = 40%

Shareholders' Funds (Equity) = Rs. 6,00,000

∴ Long-term Debt = Rs. 6,00,000 x 40% = Rs. 2,40,000

Creditors = Rs. 9,00,000 – (6,00,000+2,40,000) = Rs. 60,000

∴ Cash = (Rs. 60,000 x 1.8) – Rs. 66,000 = Rs. 42,000 [From equation (i)]

Balance Sheet

Liabilities	Rs.	Assets	Rs.
Creditors	60,000	Cash	42,000
Long-term debt	2,40,000	Debtors	12,000
Shareholders' funds	6,00,000	Inventory	54,000
		Fixed Assets (Balancing figure)	7,92,000
	9,00,000		9,00,000

PROBLEM NO: 3

Step 1: Given working capital = 75,00,000

i.e. current assets – current Liabilities = 75,00,000

i.e. 75,00,000 + Current Liabilities = Current assets

Given current ratio = 2

$\frac{\text{Current assets}}{\text{Current liab.}} = 2 \Rightarrow \frac{75L + CL}{CL} = 2$

∴ Current Liabilities = 75L

∴ Current assets = 2 × 75L = 1,50,00,000.

Step 2: Given liquid ratio = 1.5 times

$\Rightarrow \frac{\text{Quick assets}}{\text{Current liab.}} = 1.5 \Rightarrow \frac{\text{Quick assets}}{\text{Current liabilities}} = 1.5$

$\frac{\text{Quick Assets}}{\text{75 Lakhs}}$ = 1.5 times ∴ Quick Assets = 1,12,50,000

Quick Assets = Current Assets - Stock = 1,12,50,000

1,50,00,000 - Stock = 1,12,50,000

∴ Stock = 37,50,000

Step 3: **Balance sheet**

Liabilities	Rs.	Assets	Rs.
Proprietor's funds	4	Fixed assets	3
		Working capital (B/F)	1
	4		**4**

Given fixed assets to Proprietor's funds = 3:4

i.e. Working capital to prop. Funds = 1:4

$\Rightarrow \frac{\text{Working capital}}{\text{proprietory funds}} = \frac{1}{4}$

$\frac{75,00,000}{\text{prop. funds}} = \frac{1}{4}$

⇒ Proprietary funds = 3,00,00,000

Equity Share Capital + Reserves & Surplus = 3,00,00,000

Equity Share Capital + 50 L = 2,00,00,000

∴ Equity share capital = 2,50,00,000

Fixed assets = 2,25,00,000 (3 cr. – 75L)

Balance Sheet

Liabilities	Amount	Assets	Amount
Equity share capital	2,50,00,000	Fixed assets	2,25,00,000
(+) R & S	50,00,000	Stock	37,50,000
Current liabilities	75,00,000	Current assets	1,12,50,000
	3,75,00,000		**3,75,00,000**

PROBLEM NO: 4

a) Preparation of Balance Sheet of a Company

Working Notes:

i) Cost of Goods Sold = Sales – Gross Profit (= 25% of Sales)

= Rs. 30,00,000 – Rs. 7,50,000 = Rs. 22,50,000

ii) Closing Stock = Cost of Goods Sold / Stock Turnover

= Rs. 22,50,000/6 = Rs. 3,75,000

iii) Fixed Assets = Cost of Goods Sold / Fixed Assets Turnover

= Rs. 22,50,000/1.5 = Rs. 15,00,000

iv) Current Assets = Current Ratio = 1.5 and Liquid Ratio = 1

Stock = 1.5 – 1 = 0.5

Current Assets = Amount of Stock x 1.5/0.5 = Rs. 3,75,000 x 1.5/0.5 = Rs. 11,25,000

v) Liquid Assets (Debtors and Cash) = Current Assets – Stock

= Rs. 11,25,000 – Rs. 3,75,000 = Rs. 7,50,000

vi) Debtors = Sales x Debtors Collection period /12 = Rs. 30,00,000 x 2 /12 = Rs. 5,00,000

vii) Cash = Liquid Assets – Debtors = Rs. 7,50,000 – Rs. 5,00,000 = Rs. 2,50,000

viii) Net worth = Fixed Assets /1.2 = Rs. 15,00,000/1.2 = Rs. 12,50,000

ix) Reserves and Surplus

Reserves and Share Capital = 0.6 + 1 = 1.6

Reserves and Surplus = Rs. 12,50,000 x 0.6/1.6 = Rs. 4,68,750

x) Share Capital = Net worth – Reserves and Surplus = Rs. 12,50,000 – Rs. 4,68,750 = Rs. 7,81,250

xi) Current Liabilities = Current Assets/ Current Ratio = Rs. 11,25,000/1.5 = Rs. 7,50,000

xii) Long-term Debts

Capital Gearing Ratio = Long-term Debts / Equity Shareholders' Fund

Long-term Debts = Rs. 12,50,000 x 0.5 = Rs. 6,25,000

Balance Sheet of a Company

Liabilities	Amount (Rs.)	Assets	Amount (Rs.)
Equity Share Capital	7,81,250	Fixed Assets	15,00,000
Reserves and Surplus	4,68,750	Current Assets	
Long-term debts	6,25,000	Stock	3,75,000
		Debtors	5,00,000
		Cash	2,50,000
	26,25,000		**26,25,000**

b) Statement Showing Working Capital Requirement

A.	**Current Assets**		
	Stock	3,75,000	
	Debtors	5,00,000	
	Cash	2,50,000	11,25,000
B.	Current Liabilities		7,50,000
	Working Capital before Provision (A – B)		3,75,000
Add:	Provision for Contingencies @ 10% of Working Capital including Provision i.e. 1/9th of Working Capital before Provision: 3,75,000 x 1/9		41,667
	Working Capital Requirement including Provision		4,16,667

PROBLEM NO: 5

Step 1: Computation of stock turnover ratio and stock velocity:

$$\text{Stock turnover ratio} = \frac{\text{COGS}}{\text{Avg. Stock}} = \frac{\text{Sales - GP}}{\text{Avg. Stock}} = \frac{3,00,000}{60,000} = 5 \text{ times}$$

$$\text{Stock velocity} = \frac{360 \text{ days}}{5} = 72 \text{ days}$$

Step 2: Computation of debtors turnover ratio and debtors velocity:

$$\text{Debtors turnover ratio} = \frac{\text{Credit Sales}}{\text{Cl. A/c Receivables}} = \frac{2,10,000}{20,000 + 15,000} = 6 \text{ times}$$

$$\text{Debtors velocity} = \frac{360 \text{ days}}{6 \text{ times}} = 60 \text{ days}$$

Step 3: Calculation of operating cycle:

Operating cycle period = Inventory velocity + Debtors velocity

= 72 days + 60 days = 132 days

Significance:

a) The operating cycle may be defined as no. of days it is taking term procurement of goods to realization from debtors in case of credit sales.

b) The operating cycle of the given firm indicates that it is taking 132 days to convert the Finished Good into cash.

c) The operating cycle of the above firm should be compared either with the pre-determined standard or with the operating cycle of the similar firm / firms in the same industry and then it should be concluded that whether our operating cycle is good or bad.

PROBLEM NO: 6

Calculation of Amount to be needed:

Let x be the amount to be needed

$$\text{Debt Equity ratio} = \frac{\text{Debt}}{\text{Equity}} \qquad \text{(Rs.in '000s)}$$

Debt: Long term borrowed funds, Loans from Institutions

Equity: Equity share capital + preference share capital + Reserves & surplus - Loss

$$\text{Require Debt-Equity ratio} = \frac{2}{1}$$

$$\frac{\text{Debt (Note i)}}{\text{Equity (Note ii)}} = \frac{2}{1} = \frac{37.5 + x}{100 + 10 + 50 + 5 - 20} = \frac{2}{1} = \frac{37.5 + x}{145} = \frac{2}{1} = 37.5 + x = 290$$

x = 290-37.5 = **Rs.252.5**

Calculation of Proprietary ratio:

$$\text{Proprietary ratio} = \frac{\text{Proprietary Funds (Note iii)}}{\text{Total Assets (Note iv)}} = \frac{210}{600} = \mathbf{0.35}$$

Note i:

Debt:

14% Debentures (Existing)	=	37.5 (50 X 25%)
(+) Fresh issue of 14% Debentures	=	x
Total Debt	=	**37.5 + x**

Note ii:

Equity:

Share Capital	=	150 (100 + 50)
(+) General Reserve	=	10
(+) Securities Premium	=	5
(-) Profit & Loss A/c	=	20
		145

Note iii:

Proprietary Fund: Equity Share Capital (100+50)		150
(+) Reserves & Surplus:		
Securities Premium	5	
Capital Reserve	15	
General Reserve	10	
CRR	50	
P & L (Debit Balance)	(20)	60
		210

Note (iv):

Total Assets

Net Block	-	180
Investment	-	100
Sundry Debtors	-	40
Cash (Note (v))	-	280
		600

Note (V):

Cash Balance:

Opening	-	40.00
(+) Issue of 14% Deb	-	252.50
(-) Redemption of 14% Deb	-	12.50
		280.00

Note vi:

12% Convertible Debentures

Equity Share Capital	Securities Premium
50,000 $\left(\frac{55,000}{10+1} \text{ X } 1 = 5,000\right)$	5,000 $\left(\frac{55,000}{10+1} \text{ X } 10 = 50,000\right)$
	55,000

PROBLEM NO: 7

(a) Workings Notes:

1. Net Working Capital = Current Assets – Current Liabilities = 2.5 – 1= 1.5

Thus, Current Assets = $\frac{\text{Net Working Capital x 2.5}}{1.5} = \frac{\text{Rs. 4,50,000 x 2.5}}{1.5} = \text{Rs. 7,50,000}$

Current Liabilities = Rs. 7,50,000-Rs. 4,50,000= Rs. 3,00,000

2. Sales = Total Assets Turnover x Total Assets

= 2 x (Fixed Assets + Current Assets)

= 2 X (Rs. 10,00,000 + Rs. 7,50,000) = Rs. 35,00,000

3. Cost of Goods Sold = 100% - 20% = 80% of Sales = 80% of Rs. 35,00,000 = Rs. 28,00,000]

4. Average Stock = $\frac{\text{Cost of Good Sold}}{\text{Stock Turnover Ratio}} = \frac{\text{Rs. 28,00,000}}{7} = \text{Rs. 4,00,000}$

Closing Stock = (Average Stock x2) - Opening Stock = (Rs. 4,00,000 x2) - Rs. 3,80,000= Rs. 4,20,000

Quick Assets = Current Assets – Closing Stock = Rs. 7,50,000-Rs. 4,20,000= Rs. 3,30,0000

$\frac{\text{Debt}}{\text{Equity (here Proprietary fund)}} = \frac{1}{1.5}$, Or $\text{Proprietary fund} = 1.5\ \text{Debt}$

Total Asset = Proprietary Fund (Equity) + Debt

Or 17,50,000 = 1.5 Debt + Debt

$\frac{\text{Debt}}{\text{Equity (here Proprietary fund)}} = \frac{1}{1.5}$, Or $\text{Proprietary fund} = 1.5\ \text{Debt}$

Total Asset = Proprietary Fund (Equity) +Debt

Or 17,50,000 = 1.5 Debt + Debt

Or Debt $= \frac{\text{Rs. 17,50,000}}{2.5}$, $= \text{Rs. 7,00,000}$

Proprietary fund = 7,00,000 x 1.5 =Rs. 10,50,000

$= \frac{\text{Rs. 17,50,000 x 1.5}}{2.5} = \text{Rs. 10,50,000}$

5. Profit after tax (PAT) = Total Assets x Return on Total Assets = Rs. 17,50,000 x 15% = Rs. 2,62,500

(i) Calculation of Quick Ratio

$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}, = \frac{\text{Rs. 3,30,000}}{\text{Rs. 3,00,000}} = 1.1:1$

(ii) Calculation of Fixed Assets Turnover Ratio

$\text{Fixed Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Fixed Assets}}, = \frac{\text{Rs. 35,00,000}}{\text{Rs. 10,00,000}} = 3.5$

(iii) Calculation of Proprietary Ratio

$\text{Proprietary Ratio} = \frac{\text{Proprietary fund}}{\text{Total Assets}} = \frac{\text{Rs. 10,50,000}}{\text{Rs. 17,50,000}} = 0.6:1$

(iv) Calculation of Earnings per Equity Share (EPS)

$\text{Earnings per Equity Share (EPS)} = \frac{\text{PAT} - \text{Preference Share Dividend}}{\text{Number of Equity Shares}}$

$= \frac{\text{Rs. 2,62,500} - \text{Rs. 18,000 (9\% of 2,00,000)}}{60,000} = \text{Rs. 4.075 per share}$

(v) Calculation of Price – Earnings Ratio (P/E Ratio)

$\text{P/E Ratio} = \frac{\text{Market Price of Equity Share}}{\text{EPS}} = \frac{\text{Rs. 16}}{\text{Rs. 4.075}}$ 3.926

PROBLEM NO: 8

R.O.E = [R.O. I + (R.O.I – r) x D/E] x (1-t)

= [0.2 + (0.20 – 0.10) x 0.60] x (1-0.4)

= [0.2 +0.06] x 0.60 = 0.1560

R.O.E = 0.1560 x 100 = 15.60 %

PROBLEM NO: 9

Calculating fixed Assets & Proprietor's:

Since Ratio of fixed Assets to P.F = 0.75

∴ Fixed Assets = 0.75 x P.F

Net working capital = 0.25 x P.F

600.000 = 0.25 x P.F

∴ Proprietor's & Fund = $\frac{6,00,000}{0.25}$ = 24,00,000

Since, Fixed Assets = 0.75 P.F = 0.75 x 24,00,000 = 18,00,000

PROBLEM NO: 10

The net profit is calculated as follows:

Particulars	Rs.
Sales revenue	22,50,000
Less: direct costs	15,00,000
Gross profits	7,50,000
Less: operating expenses	2,40,000
Earnings before interest and tax (EBIT)	5,10,000
Less: Interest on debt [9% × 7,50,000 (i.e. 30% of 25,00,000)]	67,500
Earnings before Tax)(EBT)	4,42,500
Less: Taxes (@ 40%)	1,77,000
Profit after Tax (PAT)	**2,65,500**

(i) Net profit margin (After tax):

Net profit margin = $\frac{EBIT\,(1-t)}{Sales} X\,100 = \frac{Rs.\,5,10,000X\,(1-0.4)}{Rs.\,22,50,000} = 13.6\%$

(ii) Return on assets (ROA)(After tax)

ROA = $\frac{EBIT\,(1-t)}{Total\,Sales} X\,100 = \frac{Rs.\,5,10,000X\,(1-0.4)}{Rs.\,22,50,000}$

$= \frac{Rs.\,3,06,000}{Rs.\,25,00,000} = 0.1224 = 12.24\%$

(iii) Asset turnover = $\frac{Sales}{Assets} = \frac{Rs.\,22,50,000}{Rs.25,00,000} = 0.9$

Asset turnover = 0.9

(iv) Return on equity (ROE) = $\frac{PAT}{Equity} = \frac{Rs.\,2,65,000}{Rs.\,17,\,50,000} = 15.17\%$

PROBLEM NO: 11

i) Quick Ratio = $\frac{Q.A}{C.L}$

Quick Assets = C.A - Stock - Prepaid exp. = 30,50,000 - 21,60,000 - 10,000 = 8,80,000

Quick Ratio = $\frac{8,80,000}{10,00,000}$ = 0.88 : 1

ii) Debt equity Ratio = $\frac{L.T.Debt}{S/L/F} = \frac{16,00,000}{(20,00,000+800,000)}$ = 0.57 : 1

iii) Return on Capital Employed (RoE) = $\frac{EBIT}{Capitle\ employed} \times 100 = \frac{12,00,000}{44,00,000} \times 100 = 27.27\%$

iv) A.C.P = $\frac{Sunday\ Dr}{Credit\ sales} \times 360 = \frac{4,00,000}{32,00,000} \times 360 = 45$ Days

WORKING NOTES:

1. Current Assets & Current Liabilities Computation

$\frac{C.A}{C.L} = \frac{2.5}{1}$

C.A = 2.5 C.L

Working Capital = C.A – C.L

2,40,000 = C.A – C.L

C.A = 2,40,000 + C.L

C.A = 2.5 C.L

2,40,000 + C.L = 2.5 C.L

C.L = $\frac{2,40,000}{1.5}$

Current Liabilities = 1,60,000

∴ Current Assets = 1,60,000 x 2.5 = Rs. 4,00,000

2. Computation of Stock:

Liquid Ratio = $\frac{Liquid\ Assets}{C.L}$

1.5 = $\frac{C.A - Stock}{1,60,000}$

1.5 x 1,60,000 = 4,00,000 - Stock

Stock = Rs. 1,60,000

3. Computation of P.F, Fixed Assets, Capital & Sundry Creditors

Proprietary Ratio = $\frac{F.A.}{P.F.}$

Fixed Assets = 0.75 x P.F

New working capital = 0.25 X P.F

$\frac{2,40,000}{0.25}$ = P.F

∴ Proprietary Funds = 9,60,000

Fixed Assets = 9,60,000 x 75% = 7,20,000

Capital = Proprietary Funds - Reserves and Surplus = 9,60,000 - 1,60,000 = Rs. 8,00,000

Sundry Creditors = C.L - B.O.D = 1,60,000 - 40,000 = 1,20,000

Balance Sheet

Liabilities	Rs.	Assets	Rs.
Capital	8,00,000	F.A	7,20,000
R & S	1,60,000	Stock	1,60,000
B.O.D	40,000	C.A	2,40,000
S/Cr	1,20,000		
	11,20,000		**11,20,000**

PROBLEM NO: 12

Particulars	2002	2003
1. Fixed Assets turnover ratio = $\frac{\text{Turnover}}{\text{Fixed Assets}}$	$\frac{4,000}{2,450}$ = 1.63	$\frac{5,000}{2,450}$ = 2.04
2. Stock turnover ratio = $\frac{\text{Sales}}{\text{Average Stock}}$	$\frac{4,000}{1800+1900\ /2}$ = 2.16	$\frac{5,000}{1900+2400\ /2}$ = 2.33
3. Debtors Turnover ratio = $\frac{\text{Sales (incl. excise \& sales tax)}}{\text{Avg. Debtors}}$	$\frac{4000\times120\%}{1750}$ = 2.74	$\frac{5000\times120\%}{1825}$ = 3.29
4. Debtors Velocity = $\frac{365\text{ days}}{\text{Deb. T/o ratio}}$	$\frac{365}{2.74}$ = 133.2 days	$\frac{365}{3.29}$ = 110.94 days.
5. Earnings per share = $\frac{\text{EAESH}}{\text{No.of E.Shares}}$		
a. Earnings available to ES holders **b.** No. of Equity shares **c.** Earnings per share ((a) /(b))	(1700–1500) + (2000 X 10%) = 400 300 Rs.2	(1800–1700)+13k X 10% = 400 300 Rs.1.33

Comment: From the above turnover ratios it is clear that utilization of fixed assets and current assets is good when compared to the previous year. With respect to earnings per share, although there is decline when compared to that of previous year, one reason for such decrease is because of fresh issue of equity shares made during the year.

PROBLEM NO: 13

Profit and Loss statement of Stan Co.

Particulars	Rs.
Sales (WN 4) **Less:** variable costs (60% on sales)	50,00,000 30,00,000
Contribution (sales less variable cost) **Less: Fixed costs (bal. fig)** (Contribution less profit)	20,00,000 9,00,000
EBIT (WN 7) **Less:** Interest **(bal. fig) (**EBIT - EBT)	11,00,000 6,00,000
EBT **Given (10% of sales of Rs.50,00,000)** **Less: Tax**	5,00,000 Nil
EAT (EBT less Tax)	5,00,000

Important Note:

- If opening stock (or) closing stock (or) GP Ratio (or) COGS-related information is given in the question, use Trading and P&L Account format.
- If Leverage (or) Interest Coverage (or) Interest coverage (or)EBIT/EBT/EAT related information is given ,use P&L statement format as given in this question,

Balance sheet of M/S Stan Co.

Liabilities	Rs.	Assets	Rs.
Share capital **(WN 11)**	5,00,000	Fixed Assets **(WN 5)**	41,66,667
Reserves & surplus **(WN 12)**	15,00,000	Current Assets	

12% Term Loan **(WN 8)**	50,00,000	Stock **(WN 2)**	10,00,000
Current Liabilities **(WN 1)**	5,00,000	Debtors **(WN 6)**	4,16,667
		Other current Assets **(WN 13)**	83,333
		Other Non-current Assets **(bal. fig)**	18,33,333
Total:	**75,00,000**	**Total:**	**75,00,000**

Working Notes and Calculation

1. Current Ratio $= \frac{\text{Current Assets}}{\text{Current Liabilities}} = 3$ times. So, Current Assets = 3 x Current Liabilities,

Net working capital = Current Assets - Current Liabilities = Rs. 10,00,000.

3x Current Liabilities - Current Liabilities = Rs.10,00,000. So, 2x Current Liabilities = Rs.10,00,000

So, Current Liabilities $= \frac{\text{Rs.}10,00,000}{2}$ Rs.**5,00,000**

Hence, Current Assets = 3 x Rs.5,00,000 = **Rs.15,00,000**

2. $\frac{\text{Current Assets}}{\text{stock}} = \frac{\text{Rs.}15,00,000}{\text{stock}} = \frac{3}{2}$. So, Stock = Rs. 15,00,000 x $\frac{2}{3}$ **=Rs. 10,00,000**

3. Quick Ratio $= \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = 1\text{time}$ So, $\frac{\text{Current Assets} - \text{stock}}{\text{Current Liabilities} - \text{Bank OD}} = 1$

On Substitution, $\frac{\text{Rs.}15,00,000 - \text{Rs.}10,00,000}{\text{Rs.}5,00,000 - \text{Bank OD}} = 1$ On solving, we get, **Bank OD =Rs. Nil**

4. Stock Turnover Ratio **=** $\frac{\text{sales}}{\text{Inventory}} = \frac{\text{Sales}}{\text{Rs.}10,00,000} = 5$ So, **Sales** = Rs. 10,00,000 x5 = **Rs.50,00,000**

Note: In the absence of specific information about opening and closing Inventory, it is assumed that opening inventory = closing Inventory = Average Inventory.
In the absence of GP Ratio and cogs, stock Turnover Ratio is taken based on sales.

5. Fixed Assets T/O= $\frac{\text{Sales}}{\text{Net Fixed Assets}} = \frac{\text{Rs.}50,00,000}{\text{Net Fixed Assets}} = 1.2$ so, Net Fixed Assets = $\frac{\text{Rs.}50,00,000}{1.2}$ =Rs.41,66,667

6. Avg. Collection period = 30days. Assuming 1 year = 360 days, Debtors= sales x $\frac{30}{360}$ = Rs.50,00,000x $\frac{30}{360}$ = Rs.4,16,667

7. Financial Leverage $= \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{EBIT}}{\text{Rs.}5,00,000} = 2.20$ So, EBT = Rs. 5,00,000X2.2 =Rs.11,00,000

8. Long Term Loan $= \frac{\text{Interest Amount}}{\text{Interest Rate}} = \frac{\text{Rs.}6,00,000}{12\%}$ =Rs.50,00,000. [Note: Interest Amt from P&L Stmt]

9. Total External Liabilities = Long Term Liabilities + Current Liabilities = Rs.55,00,000 =Rs.20,00,000

10. $\frac{\text{Total Liabilities}}{\text{Net worth}} = 2.75$ So, $\frac{\text{Rs.}55,00,000}{\text{Net worth}} = 2.75$. Hence, Net worth $= \frac{\text{Rs. }55,00,000}{2.75} = \text{Rs.}20,00,000$

11. Number of Equity shares= $\frac{\text{Net worth}}{\text{Book Value per share}} = \frac{\text{Rs. }20,00,000}{\text{Rs. }40} = 50,000$ **Shares.**

So, Equity share capital= 50,000 shares x Rs. 10 = Rs.5,00,000

12. Retained Earnings = Net worth- share capital = Rs.20,00,000-Rs.5,00,000**=Rs.15,00,000**

13. Total Current Assets = WN 1 **= Rs.15,00,000**

Inventory (given) = Rs. 10,00,000 | Debtors (WN 6) = Rs.4,16,667 | Cash and Bank (bal. fig) Rs.83,333

PROBLEM NO: 14

Balance Sheet of XYZ

Liabilities	Rs. (in lakhs)	Assets	Rs. (in lakhs)
Capital	50	Plant & Machinery	125
Reserves & Surplus (bal fig.)	78	Other Fixed Assets	75
Bank Credit	144	Stock	75
Current Liabilities	72	Cash	5
		Debtors	64
	344		**344**

WORKING NOTE-1: CLOSING STOCK

Sales = 500L

Net Sales = Sales – Sales Returns

= 500L – 20%

= 400L

G.P% = 25%

COGS = (100-25)% = 75%

COGS = 400X75/100 = 300 Lakhs

Inventory T.O Ratio = 4

$$\frac{COGS}{Closing\,Stock}=4$$

Closing Stock = $\frac{300L}{4}=75L$

WORKING NOTE-2: CASH

Cash to Inventory = 1:15

$$\frac{Cash}{Closing\,Stock}=\frac{1}{15}$$

$$Cash=\frac{75L}{15}=5L$$

WORKING NOTE-3: F. ASSETS

$$\frac{Sales}{Fixed\,Assets}=2$$

$$Fixed\,Assets=\frac{400L}{2}=200L$$

Plant & Machinery = 125L

∴ Other Fixed Assets = 75L

WORKING NOTE-4: DEBTORS

Avg. Collection Period = 73

Annual Credit Sales = 80% of net sales = 80% of 400L = 320L

$$Debtors = \frac{Avg.\,Collection\,Period\,X\,Annual\,Credit\,Sales}{365} = \frac{73\,X\,320}{365}=64L$$

WORKING NOTE-5: CURRENT LIABILITIES

$$\frac{\text{Current Assets}}{\text{Current Liabilities}} = 2$$

Current Assets = Stock + Cash + Debtors

= 75L + 5L + 64L = 144L

$\therefore$ Current Liabilities = $\frac{\text{Current Assets}}{2} = \frac{144}{2} = 72L$

Trade Credit / Current Liabilities = 72L

WORKING NOTE-6: BANK CREDIT

$$\frac{\text{Bank Credit}}{\text{Trade Credit}} = 2$$

Bank Credit = 2 X 72L = 144L

PROBLEM NO: 15

WORKING NOTES:

1. Current assets and Current liabilities computation:

$$\frac{\text{Current assets}}{\text{Current liabilities}} = \frac{2.5}{1}$$

Or Current assets = 2.5 Current liabilities

Now. Working capital = Current assets – Current liabilities

Or 1.5 Current liability = Rs. 2,40,000

$\therefore$ Current liability = Rs. 1,60,000

So, Current assets = Rs. 1,60,000 x 2.5 = Rs. 4,00,000

2. Computation of stock

Liquid ratio = $\frac{\text{Liquid assets}}{\text{Current liabilities}}$

Or 1.5 = $\frac{\text{Current assets} - \text{Inventories}}{\text{Rs.1,60,000}}$

Or Inventories = Rs. 4,00,000 – Rs, 2,40,000

Or Stock = Rs. 1,60,000

3. Computation of Proprietary fund: Fixed assets: Capital and Sundry creditors

Fixed Asset to Proprietary ratio = $\frac{\text{Fixed assets}}{\text{Pr oprietary fund}} = 0.75$

$\therefore$ Fixed assets = 0.75 Proprietary fund (PF) [FA + NWC = PF or NWC = PF - FA (i.e. 75 PF)] and Net working capital (NWC) = 0.25 Proprietary fund

Or Rs. 2,40,000/0.25 = Proprietary fund

Or Proprietary fund = Rs. 9,60,000

And Fixed assets = 0.75 proprietary fund = 0.75 X Rs. 9,60,000 = Rs. 7,20,000

Capital = Proprietary fund - Reserves & Reserves & Surplus = Rs. 9,60,000 - Rs. 1,60,000 = Rs. 8,00,000

Sundry creditors = (Current liabilities - Bank overdraft) = (Rs. 1,60,000 - Rs. 40,000) = Rs. 1,20,000

Balance Sheet

Liabilities	Rs.	Assets	Rs.
Capital	8,00,000	Fixed assets	7,20,000
Reserves & Surplus	1,60,000	Stock	1,60,000

Bank overdraft	40,000	Current assets	2,40,000
Sundry creditors	1,20,000		
	11,20,000		**11,20,000**

PROBLEM NO: 16

Balance Sheet of MNOP Ltd as at .....

Liabilities	Rs.	Assets	Rs.
Equity share capital	1,00,000	Fixed assets	60,000
Current debt	24,000	Cash (balancing figure)	60,000
Long term debt	36,000	Inventory	40,000
	1,60,000		1,60,000

Working Notes

1. Total debt = 0.60 x Equity share capital = 0.60 x Rs. 1,00,000 = Rs. 60,000
   Further, Current debt to total debt = 0.40. So, current debt = 0.40 × Rs.60,000 = Rs.24,000,
   Long term debt = Rs.60,000 - Rs.24,000= Rs. 36,000
2. Fixed assets = 0.60 × Equity share Capital = 0.60 × Rs. 1,00,000 = Rs. 60,000
3. Total assets to turnover = 2 Times : Inventory turnover = 8 Times
   Hence, Inventory /Total assets = 2/8=1/4, Total assets = Rs. 1,60,000
   Therefore Inventory = Rs. 1,60,000/4 = Rs. 40,000

PROBLEM NO: 17

WORKINGS:

i) $\frac{\text{Fixed Assets}}{\text{Total Current Assets}} = \frac{5}{7}$

Or, Total Current Assets = $\frac{\text{Rs.}40{,}000 \times 7}{5}$ = Rs. 56,00,000

ii) $\frac{\text{Fixed Assets}}{\text{Capital}} = \frac{5}{4}$ Or, Capital = $\frac{\text{Rs.}40{,}000 \times 4}{5}$ = Rs. 32,00,000

iii) $\frac{\text{Capital}}{\text{Total Liabilities}^*} = \frac{1}{2}$ Or, Total = $\frac{\text{Rs.}40{,}000 \times 4}{5}$ = Rs. 32,00,000

iv) $\frac{\text{Net Profit}}{\text{Capital}} = \frac{1}{5}$ Or, Net Profit = Rs. 32,00,000 x 1/5 = Rs. 6,40,000

v) $\frac{\text{Net Profit}}{\text{Sales}} = \frac{1}{5}$ Or, Sales = Rs. 6,40,000 x 5 = Rs. 32,00,000

vi) Gross Profit = 25% of Rs. 32,00,000 = Rs. 8,00,000

vii) Stock Turnover = $\frac{\text{Cost of Goods Sold (i.e.Sales} - \text{Gross profit)}}{\text{Average Stock}} = 10 = \frac{\text{Rs.}32{,}00{,}000 - \text{Rs.}8{,}00{,}000}{\text{Average Stock}} = 10$

Or, Average Stock = Rs. 2,40,000 Or, $\frac{\text{Opening Stock} - \text{Rs.}4{,}00{,}000}{2}$

Or, Opening Stock = Rs. 80,000

Trading Account

Particulars	(Rs.)	Particulars	(Rs.)
To Opening Stock	80,000	By Sales	32,00,000
To Manufacturing exp./ Purchase (Balancing figure)	27,20,000		

To Gross Profit b/d	8,00,000	By Closing Stock	4,00,000
	36,00,000		**36,00,000**

Profit and Loss Account

Particulars	(Rs.)	Particulars	(Rs.)
To Operating Expenses (Balancing figure)	1,60,000	By Gross Profit c/d	8,00,000
To Net Profit	6,40,000		
	8,00,000		**8,00,000**

Balance Sheet

Capital and Liabilities	(Rs.)	Assets	(Rs.)
Capital	32,00,000	Fixed Assets	40,00,000
Liabilities	64,00,000	Current Assets	
		Closing Stock	4,00,000
		Other Current Assets (Bal. figure)	52,00,000
	96,00,000		**96,00,000**

PROBLEM NO: 18

i) Determination of Sales and Cost of goods sold:

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

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

$$\text{Or, Sales} = \frac{\text{Rs. 4,00,000}}{0.25} = \text{Rs. 16,00,000}$$

Cost of Goods Sold = Sales - Gross Profit = Rs. 16,00,000 - Rs. 4,00,000 = Rs. 12,00,000

ii) Determination of Sundry Debtors:

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

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

$$\text{Debtors' turnover ratio} = \frac{\text{Credit Sales}}{\text{Average Accounts Receivable}} = \frac{16,00,000}{\text{Bills Receivable + Sundry Debtors}} = 4$$

Or, Sundry Debtors + Bills receivable = Rs. 4,00,000

Sundry Debtors = Rs. 4,00,000 – Rs. 25,000 = Rs. 3,75,000

iii) Determination of Sundry Creditors:

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

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

$$\text{Creditors turnover ratio} = \frac{\text{Credit Purchases *}}{\text{Average Accounts Payables}} = \frac{\text{Rs. 12,10,000}}{\text{Sundry Creditors + Bills Payables}} = 6$$

So, Sundry Creditors + Bills Payable = Rs. 2,01,667

Or, Sundry Creditors + Rs. 10,000 = Rs. 2,01,667

Or, Sundry Creditors = Rs. 2,01,667 – Rs. 10,000 = Rs. 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 = Rs. 8,00,000

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

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

Or, Opening Stock = Rs. 7,95,000

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

v) Calculation of Fixed Assets

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

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

Or, Fixed Asset = Rs. 3,00,000

Workings:

*Calculation of Credit purchases:

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

Rs. 12,00,000 = Rs. 7,95,000 + Purchases - Rs. 8,05,000

Rs. 12,00,000 + Rs. 10,000 = Purchases

Rs. 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.

PROBLEM NO: 19

The efficient use of assets is indicated by the following key ratios: (a) Current assets turnover, (b) Debtors' turnover, (c) Inventory turnover, (d) Fixed assets turnover, and (e) Total assets turnover.

Computation of Ratios:

	Year 1	Year 2	Year 3
(a) Current assets turnover ratio (Cost of goods sold / Total current assets)	1.36	1.55	1.59
(b) Debtor's turnover (Credit sales / Average debtors)	2.8*	3.30	3.19
(c) Inventory turnover (Cost of goods sold/ Average inventory)	3.46*	4.10	3.91
(d) Fixed assets turnover (Cost of goods sold/ Fixed Assets)	3.75	2.38	2.58
(e) Total assets turnover (Cost of goods sold/ Total assets)	1.00	0.93	0.98

* Based on Debtors and Inventory at the end, as their opening balances are not available.

Comments: The first three ratios indicate the efficiency of Current Assets usage, and the latter two, namely, Fixed assets turnover and Total assets turnover ratio, show the efficiency of utilisation of these. Current assets utilisation appears to be very satisfactory as reflected in the first three types of ratios. No major change is noticeable in their values over a period of time, which is presumably indicative of consistency in Debtors collection period and inventory turnover. There does not seem to be any significant problem regarding utilisation of Current assets.

However, it appears that fixed assets are not being fully utilised. Investments in fixed assets have more than doubled during years 2 and 3. The Fixed assets turnover ratio has sharply fallen to 2.58 in year 3 from 3.75 in year 1. Thus, investment in fixed assets are either excessive, or the capacity of the additional plant is under utilised. This is corroborated by the fact that sales in the latter 2-year have increased by around 15%. Therefore, the remedy lies in utilising the plant capacity by increasing production and sales.

PROBLEM NO: 20

(a) The answer should be focused on using the current and quick ratios. While the current ratio has steadily increased, it is to be noted that the liquidity has not resulted from the most liquid assets as the CEO proposes. Instead, from the quick ratio, it is noted that the increase in liquidity is caused by an increase in inventories. For a fresh cheese company, it can be argued that inventories are relatively liquid when compared to other industries. Also, given the information, the industry benchmark can be used to derive that the company's quick ratio is very similar to the industry level and that the current ratio is indeed slightly higher - again, this seems to come from inventories.

(b) Inventory turnover, day's sales in receivables, and the total asset turnover ratio are to be mentioned here. Inventory turnover has increased over time and is now above the industry average. This is good - especially given the fresh cheese nature of the company's industry. In 2014, it means for example that every 365/62.65 = 5.9 days the company is able to sell its inventories as opposed to the industry average of 6.9 days. Days' sales in receivables have gone down over time, but are still better than the industry average. So, while they are able to turn inventories around quickly, they seem to have more trouble collecting on these sales, although they are doing better than the industry. Finally, total asset turnover is gone down over time, but it is still higher than the industry average. It does tell us something about a potential problem in the company's long term investments, but again, they are still doing better than the industry.

(c) Solvency and leverage is captured by an analysis of the capital structure of the company and the company's ability to pay interest. Capital structure: Both the equity multiplier and the debt-to-equity ratio tell us that the company has become less levered. To get a better idea about the proportion of debt in the firm, we can turn the D/E ratio into the D/V ratio: 2014: 43%, 2013: 46%, 2012:47%, and the industry average is 47%. So based on this, we would like to know why this is happening and whether this is good or bad. From the numbers it is hard to give a qualitative judgment beyond observing the drop in leverage. In terms of the company's ability to pay interest, 2014 looks pretty bad. However, remember that times interest earned uses EBIT as a proxy for the ability to pay for interest, while we know that we should probably consider cash flow instead of earnings. Based on a relatively large amount of depreciation in 2014 (see info), it seems that the company is doing just fine.

PROBLEM NO: 21

Working notes:

i) $\frac{\text{Net profit}}{\text{Capital}} = \frac{1}{4}$

$\frac{\text{Net profit}}{25,00,000} = \frac{1}{4}$

Net profit = 6,25,000

ii) $\frac{\text{Net profit}}{\text{Sales}} = 20\%$

$\text{Sales} = \frac{6,25,000}{0.20} = 31,25,000$

iii) $\text{Gross profit Ratio} = \frac{\text{Gross profit}}{\text{Sales}} X100$

$25 = \frac{\text{Gross profit}}{31,25,000} X100$

Gross profit $= \frac{31,25,000 X 25}{100} = 7,81,250$

iv) Stock turnover = $\frac{COGS}{Average\ stock}$

$5 = \left[\frac{31,25,000 - 7,81,250}{Average\ stock}\right]$

Average stock = $\frac{23,43,750}{5}$ =4,68,750

v) Average stock = $\frac{Closing\ Stock + Opening\ Stock}{2}$

$4,68,750 = \frac{6,00,000 + Opening\ Stock}{2}$

Opening stock = 9,37,500 - 6,00,000 = 3,37,500

Trading A/c for the year ending 31st March, 2014

	Rs.		Rs.
To opening stock	3,37,500	By sales	31,25,000
To purchases (bal. fig)	26,06,250	By closing stock	6,00,000
To gross profit c/f to P&L A/c	7,81,250		- .
	37,25,000		**37,25,000**

Profit & Loss A/c for the year ending 31st March, 2014

	Rs.		Rs.
To miscellaneous expenses(bal. fig)	1,56,250	By gross profit b/f from trading a/c	7,81,250
To net profit	6,25,000		- .
	7,81,250		**7,81,250**

PROBLEM NO: 22

(i) Liquidity ratios:

a) Current ratio = CA/CL= Rs. 25,88,000 / Rs. 6,40,000 = 4.04 : 1 (previous year); Rs. 30,52,000 / Rs. 8,00,000 = 3.82 : 1 (current year)

b) Acid test ratio = (Rs. 25,88,000 − Rs.18,68,000) / Rs. 6,40,000 = 1.125 : 1 (previous year); (Rs. 30,52,000 − Rs. 21,72,000) / Rs. 8,00,000 = 1.1 : 1 (current year)

(ii) Solvency ratios:

a) Debt-equity ratios:

1. Total outside debts/Equity funds = Rs. 22,40,000/Rs. 24,68,000 = 0.91 (previous year) ; Rs. 24,00,000/Rs. 28,12,000 = 0.85 (current year)

2. Long-term debts/Equity funds = Rs. 16,00,000/Rs. 24,68,000 = 0.65 (previous year); Rs. 16,00,000/Rs. 28,12,000 = 0.57 (current year)

b) Interest coverage ratio:

= EBIT/Interest charges = Rs.12,00,000/Rs.1,60,000 =7.5 times (current year)

(iii) Profitability ratios (current year):

a) Gross profit ratio = (Gross profit/sales) × 100 = (Rs. 12,00,000/Rs. 40,00,000) × 100 = 30 per cent

b) Net profit ratio = (Net profit/sales) × 100 = (Rs. 6,76,000/Rs. 40,00,000) × 100 = 16.9 per cent

c) Return on total resources = (EAT + Interest − Tax savings on interest)/Total assets) × 100 = [(Rs.6,76,000 + Rs. 1,60,000 − Rs. 56,000)/Rs. 64,00,000] × 100 = 12.2 per cent

d) Return on capital employed = [(EAT + Interest − Tax savings on interest)/Total assets] × 100 = [(Rs. 6,76,000 + Rs. 1,60,000 − Rs. 56,000)/44,12,000] × 100 = 17.7 per cent

e) Return on equity funds = (Net profit after taxes/Equity funds) × 100 = (Rs. 6,76,000/Rs. 28,12,000) × 100 = 24 per cent.

Note: Ratios (c), (d) and (e) can also be determined by taking average total assets/capital employed/equity funds.

(iv) Activity ratios:

a) Debtors turnover = Rs. 40,00,000/Rs. 3,60,000 = 11.1 times

b) Stock turnover = Rs. 28,00,000/Rs. 20,00,000 = 1.4 times

c) Total assets turnover = Rs. 28,00,000/Rs. 64,00,000 = 0.44 times

Comment: The company's position is quite sound from the point of view of liquidity, solvency and profitability. However, its activity ratios, particularly in terms of utilization , do not seem to be satisfactory.

THE END