RATIO ANALYSIS PROBLEMS AND SOLUTIONS

1. You are required to calculate the following:

   a) Working capital turnover, b) Fixed assets turnover, c) Capital turnover.

The information available is as under:

Capital employed Rs.4,00,000

Current assets Rs.2,00,000;Current liabilities Rs.40,000

Net fixed assets Rs.2,50,000;Sales Rs.5,00,000

Solution:
1. **Working capital turnover ratio:**

Sales / Working capital

Sales: 500000 and Working capital = Current assets – Current liabilities
= 200000-40000 = 160000

W.C Turnover ratio = 500000/160000 = **3.125 Times**

2. **Fixed assets turnover ratio:**

F.A Turnover ratio = Sales / Fixed Assets

Sales 500000 and Net F.A 250000

= 500000/250000 **= 2 times**

3.) **Capital turnover ratio**

Sales / Capital Employed

Sales = 500000; and capital employed 400000

C.T Ratio = 500000/400000 **= 1.25 times**

Problem - 1

The following Trading and Profit and Loss Account of Fantasy Ltd. for the year 31-3-2000 is given below:

Particular	Rs.	Particular	Rs.
To Opening Stock	76,250	By Sales	5,00,000
" Purchases	3,15,250	" Closing stock	98,500
" Carriage and Freight	2,000		
" Wages	5,000		
" Gross Profit b/d	2,00,000		
	5,98,500		5,98,500
To Administration expenses	1,01,000	By Gross Profit b/d	2,00,000
" Selling and Dist. expenses	12,000	" Non-operating incomes:	
" Non-operating expenses	2,000	" Interest on Securities	1,500
" Financial Expenses	7,000	" Dividend on shares	3,750
Net Profit c/d	84,000	" Profit on sale of shares	750
	2,06,000		2,06,000

Calculate:

1. Gross Profit Ratio **2.** Expenses Ratio **3.** Operating Ratio

1. Net Profit Ratio **5.** Operating (Net) Profit Ratio **6.** Stock Turnover Ratio.

Solution – 1 (Problem related to Revenue Ratio)

1. Gross Profit Margin = $\frac{\text{Gross profit}}{\text{Sales}}$ **X** 100

$\frac{2,00,000}{5,00,000}$ **X** 100

= 40%

2. Expenses Ratio = $\frac{\text{Op. Expenses}}{\text{Net Sales}}$ **X** 100

$\frac{1,13,000}{5,00,000}$ **X** 100

= 22.60%

3. Operating Ratio = $\frac{\text{Cost of goods sold + Op. Expenses}}{\text{Net Sales}}$ **X** 100

$\frac{3,00,000 + 1,13,000}{5,00,000}$ **X** 100

= 82.60%

Cost of Goods sold = Op. stock + purchases + carriage and Freight + wages – Closing Stock

= 76250 + 315250 + 2000 + 5000 - 98500

= Rs.3,00,000

4. Net Profit Ratio = $\frac{\text{Net Profit}}{\text{Net Sales}}$ **X** 100

$\frac{84,000}{5,00,000}$ **X** 100

= 16.8%

5. Operating Profit Ratio = $\frac{\text{Op. Profit}}{\text{Net Sales}}$ **X** 100

Operating Profit = Sales – (Op. Exp. + Admin Exp.)

$\frac{87,000}{5,00,000}$ **X** 100

= 17.40%

6. Stock Turnover Ratio = $\frac{\text{Cost of goods sold}}{\text{Avg. Stock}}$

$\frac{3,00,000}{87,375}$

= 3.43 times

Problem - 2

The Balance Sheet of Punjab Auto Limited as on 31-12-2002 was as follows:

Particular	Rs.	Particular	Rs.
Equity Share Capital	40,000	Plant and Machinery	24,000
Capital Reserve	8,000	Land and Buildings	40,000
8% Loan on Mortgage	32,000	Furniture & Fixtures	16,000
Creditors	16,000	Stock	12,000
Bank overdraft	4,000	Debtors	12,000
Taxation:		Investments (Short-term)	4,000
Current	4,000	Cash in hand	12,000
Future	4,000		
Profit and Loss A/c	12,000		
	1,20,000		1,20,000

From the above, compute (a) the Current Ratio, (b) Quick Ratio, (c) Debt-Equity Ratio, and (d) Proprietary Ratio.

Solution – 2 (Problem related to Balance Sheet Ratio)

1. Current Ratio =	$\frac{\text{Current Assets}}{\text{Current liabilities}}$	
	Current Assets = Stock + debtors + Investments (short term) + Cash In hand	
	Current Liabilities = Creditors + bank overdraft + Provision for Taxation (current & Future)	
	CA = 12000 + 12000 + 4000 + 12000 = 40,000	
	CL = 16000 + 4000 + 4000 + 4000	
	= 28,000	
	$= \frac{40,000}{28,000}$	
	= 1.43 : 1	

2. Quick Ratio =	$\frac{\text{Quick Assets}}{\text{Quick Liabilities}}$	
	Quick Assets = Current Assets - Stock	

Quick Liabilities = Current Liabilities – (BOD + PFT future)	
QA = 40,000 – 12,000 = 28,000	
QL = 28,000 – (4,000 + 4,000) = 20,000	
= $\frac{28,000}{20,000}$	
= 1.40 : 1	

3. Debt – Equity Ratio =	$\frac{\text{Long Term Debt (Liabilities)}}{\text{Shareholders Fund}}$	
	LTL = Debentures + long term loans	
	SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets	
	LTL = 32,000	
	SHF = 40,000 + 8,000 + 12,000 = 60,000	
	= $\frac{32,000}{60,000}$	
	= 0.53 : 1	

4. Proprietary Ratio =	$\frac{\text{Shareholders' Funds}}{\text{Total Assets}}$	
	SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets	
	Total Assets = Total Assets – Fictitious Assets	
	SHF = 40,000 + 8,000 + 12,000 = 60,000	

TA = 1,20,000	
= 60,000 / 1,20,000	
= 0.5 : 1	

Problem - 3 [Sau. Uni. T. Y., April, 2000]

The details of Shreenath Company are as under:

Sales (40% cash sales)			15,00,000
Less: Cost of sales			7,50,000
	Gross Profit:		7,50,000
Less: Office Exp. (including int. on debentures)		1,25,000	
Selling Exp.		1,25,000	2,50,000
	Profit before Taxes:		5,00,000
Less: Taxes			2,50,000
	Net Profit:		2,50,000

Balance Sheet

Particular	Rs.	Particular	Rs.
Equity share capital	20,00,000	Fixed Assets	55,00,000
10% Preference share capital	20,00,000	Stock	1,75,000
Reserves	11,00,000	Debtors	3,50,000
10% Debentures	10,00,000	Bills receivable	50,000
Creditors Bank-	1,00,000	Cash	2,25,000
overdraft Bills	1,50,000	Fictitious Assets	1,00,000
payable	45,000		
Outstanding expenses	5,000		
	64,00,000		64,00,000

Beside the details mentioned above, the opening stock was of Rs. 3,25,000. Taking 360 days of the year, calculate the following ratios; also discuss the position of the company:

(1) Gross profit ratio. (2) Stock turnover ratio. (3) Operating ratio. (4) Current ratio. (5) Liquid ratio. (6) Debtors ratio. (7) Creditors ratio. (8) Proprietary ratio. (9) Rate of return on net capital employed. (10) Rate of return on equity shares.

Solution – 3 (Problem related to Composite Ratio)

1. Gross Profit Margin =	$\frac{\text{Gross profit}}{\text{Sales}}$	**X** 100
	$\frac{7,50,000}{15,00,000}$	**X** 100
	= 50%	

2. Stock Turnover Ratio =	$\frac{\text{Cost of goods sold}}{\text{Avg. Stock}}$
	Avg. stock = $\frac{\text{Opening Stock + Closing Stock}}{2}$
	COGS = Sales – GP
	$\frac{3,25,000 + 1,75,000}{2}$
	AS = 2,50,000
	COGS = 15,00,000 – 7,50,000 7,50,000
	= $\frac{7,50,000}{2,50,000}$
	= 3 times

3. Operating Profit Ratio =	$\frac{\text{Op. Profit}}{\text{Net Sales}}$	**X** 100
	Operating Profit = Sales – (Op. Exp. + COGS.)	
	OP = 15,00,000 – (7,50,000 + 1,25,000 + 25,000) = 6,00,000 **(excluding Interest on Debentures)**	
	= $\frac{6,00,000}{15,00,000}$	**X** 100
	= 40%	

4. Current Ratio =	$\frac{\text{Current Assets}}{\text{Current liabilities}}$	
	Current Assets = Stock + debtors + Bills receivable + Cash	
	Current Liabilities = Creditors + bank overdraft + Bills payable + Outstanding expenses	

CA = 1,75,000 + 3,50,000 + 50,000 + 2,25,000 = 8,00,000	
CL = 1,00,000 + 1,50,000 + 45,000 + 5,000 = 3,00,000	
= $\frac{8,00,000}{3,00,000}$	
= 2.67 : 1	

5. Quick Ratio / Liquid Ratio =	$\frac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$	
	(Liquid) Quick Assets = Current Assets - Stock	
	(Liquid) Quick Liabilities = Current Liabilities – BOD	
	QA = 8,00,000 – 1,75,000 = 6,25,000	
	QL = 3,00,000 – 1,50,000 = 1,50,000	
	= $\frac{6,25,000}{1,50,000}$	
	= 4.17 : 1	

6. Debtors Ratio =	$\frac{\text{Debtors + Bills receivable}}{\text{Credit sales}}$	**X** 365 / 360 days
	= $\frac{3,50,000 + 50,000}{9,00,000}$ (60% of 15,00,000)	**X** 360 days
	= 0.444	**X** 360 days
	= 160 days	
7. Creditors Ratio =	$\frac{\text{Creditors + Bills payable}}{\text{Credit Purchase}}$	**X** 365 / 360 days

	$= \frac{1,00,000 + 45,000}{7,50,000}$ **Notes: If credit purchase could not find out at that point Cost of Goods sold consider Credit purchase**	**X** 360 days
	= 0.193	**X** 360 days
	= 69 days	

8. Proprietary Ratio =	$\frac{\text{Shareholders' Funds}}{\text{Total Assets}}$	
	SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets	
	Total Assets = Total Assets – Fictitious Assets	
	SHF = 20,00,000 + 20,00,000 + 11,00,000 – 1,00,000 = 50,00,000	
	TA = 64,00,000 – 1,00,000 = 63,00,000	
	$= \frac{50,00,000}{63,00,000}$	
	= 0.79 : 1	

Notes:

Rate of Return on Capital Employed		**Rate of Return on Share holders Fund**		**Rate of return on Equity Shareholders Fund**	
$= \frac{\text{EBIT}}{\text{Capital employed}}$	X 100	$= \frac{\text{PAT}}{\text{SHF}}$	X 100	$= \frac{\text{PAT – Pref. Div.}}{\text{ESHF}}$	X 100

CE = Eq Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus + Debenture + Long Term Loan – Fictitious Assets	**SHF =** Eq. Sh. Cap. + Pref. Sh.Cap. + Reserves & Surplus –Fictitious Assets	**ESHF =** Eq. Sh. Cap. +Reserves & Surplus –Fictitious Assets

Sales	15,00,000
Less: Cost of goods sold	7,50,000
Gross profit	**7,50,000**
Less: Operating expenses (including Depreciation)	1,50,000
Earnings before Interest & Tax (EBIT)	**6,00,000**
Less: Interest Cost	1,00,000
Earnings before Tax (EBT)	**5,00,000**
Less: Tax liability	2,50,000
Earnings after Tax (EAT/ PAT)	**2,50,000**
Less: Preference share dividend	2,00,000
Distributional Profit	**50,000**

9.	**10.**	**11.**
Rate of Return on Capital Employed	**Rate of Return on Share holders Fund**	**Rate of return on Equity Shareholders Fund**
= EBIT / Capital employed X 100	= PAT / SHF X 100	= PAT – Pref. Div. / ESHF X 100
CE = Eq Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus + Debenture + Long Term Loan – Fictitious Assets	**SHF =** Eq. Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus – Fictitious Assets	**ESHF =** Eq. Sh. Cap. + Reserves & Surplus – Fictitious Assets
CE = 20,00,000 + 20,00,000 11,00,000 +10,00,000 – 1,00,000	**SHF =** 20,00,000 + 20,00,000 11,00,000 – 1,00,000	ESHF = 20,00,000 + 11,00,000 – 1,00,000
= 60,00,000	**= 50,00,000**	**= 30,00,000**
= 6,00,000 / 60,00,000 X 100	= 2,50,000 / 50,00,000 X 100	= 50,000 / 30,00,000 X 100
= 10%	**= 5%**	**= 1.67 %**

Problem = 4

From the following particulars extracted from the books of Ashok & Co. Ltd., compute the following ratios and comment:
(a) Current ratio, (b) Acid Test Ratio, (c) Stock-Turnover Ratio, (d) Debtors Turnover Ratio, (e) Creditors' Turnover Ratio, and Average Debt Collection period.

	1-1-2002 Rs.	31-12-2002 Rs.
Bills Receivable	30,000	60,000
Bills Payable	60,000	30,000
Sundry Debtors	1,20,000	1,50,000
Sundry Creditors	75,000	1,05,000
Stock-in-trade	96,000	1,44,000

Additional information:

(a) On 31-12-2002, there were assets: Building Rs. 2,00,000, Cash Rs. 1,20,000 and Cash at Bank Rs. 96,000.
(b) Cash purchases Rs. 1,38,000 and Purchases Returns were Rs. 18,000.
(c) Cash sales Rs. 1,50,000 and Sales returns were Rs. 6,000.
Rate of gross profit 25% on sales and actual gross profit was Rs. 1,50,000.

Solution – 4 (Problem related to find out missing item)

Notes: In this problem available information is not enough to solve ratios asked so that need to prepare Trading Account to identify values which are not given in the question.

Trading Account

Particular		Amount Rs.	Particular		Amount Rs.
To Opening Stock		96,000	By Sales: Cash:	1,50,000	
To Purchase: Cash:	1,38,000		Credit :	4,56,000	
Credit:	3,78,000			6,06,000	
	5,16,000		Less: S/R	6,000	**6,00,000**
Less: P/R	18,000	4,98,000	By Closing Stock		1,44,000
To Gross Profit		1,50,000			
		7,44,000			7,44,000

1. Gross Profit Margin =	$\frac{\text{Gross profit}}{\text{Sales}}$	**X** 100
	25% = $\frac{1,50,000}{\text{Sales}}$	**X** 100

Sales = $\frac{1,50,000}{25}$	**X** 100
Sales = 6,00,000	

2. Current Ratio =	$\frac{\text{Current Assets}}{\text{Current liabilities}}$	
	Current Assets = Stock + debtors + Bills receivable + Cash + Bank Balance	
	Current Liabilities = Creditors + Bills payable	
	CA = 1,44,000 + 1,50,000 + 60,000 + 1,20,000 + 96,000 = 5,70,000	
	CL = 1,05,000 + 30,000 = 1,35,000	
	= $\frac{5,70,000}{1,35,000}$	
	= 4.22 : 1	

3. Acid Test Ratio =	$\frac{\text{Cash \& Cash Equivalent Assets}}{\text{Liquid Liabilities}}$	
	Cash & Cash equivalent Assets = Cash + Bank + Short term Investments	
	(Liquid) Quick Liabilities = Current Liabilities – BOD	
	= 1,20,000 + 96,000 = 2,16,000	
	QL = 1,05,000 + 30,000 = 1,35,000	
	= $\frac{2,16,000}{1,35,000}$	
	= 1.6 : 1	

4. Stock Turnover Ratio =	$\frac{\text{Cost of goods sold}}{\text{Avg. Stock}}$
	Avg. stock = $\frac{\text{Opening Stock + Closing Stock}}{2}$

COGS = Sales – GP
96,000 + 1,44,000 / 2
AS = 1,20,000
COGS = 6,00,000 – 1,50,000 4,50,000
= 4,50,000 / 1,20,000
= 3.75 times

5. Debtors Ratio = **(Avg. debt collection period)**	Debtors + Bills receivable / Credit sales	**X** 365 / 360 days
	= 1,50,000 + 60,000 / 4,56,000	**X** 365 days
	= 0.461	**X** 365 days
	= 168 days	

6. Creditors Ratio =	Creditors + Bills payable / Credit Purchase	**X** 365 / 360 days
	= 1,05,000 + 30,000 / 3,78,000	**X** 365 days
	= 0.357	**X** 365 days
	= 130 days	

Problem - 5

Following is the summarised Balance Sheet of Mona Ltd. as on 31-3-04.

Particular	Rs.	Particular	Rs.
Equity Shares of Rs. 10 each 10%	10,00,000	Fixed Assets	20,00,000
Pref. Sh. of Rs.100 each Reserves	4,00,000	Investments	2,00,000
and Surplus	7,00,000	Closing Stock	2,00,000
15% Debentures	5,00,000	Sundry Debtors	4,60,000
Sundry Creditors	2,40,000	Bills Receivable	60,000
Bank Overdraft	1,60,000	Cash at Bank	60,000
		Preliminary Expenses	20,000
	30,00,000		30,00,000

Summarised Profit and Loss Account is as under for the year ending on 31-3-'04:

	Rs.
Sales (25% Cash sales)	80,00,000
Less: Cost of goods sold	56,00,000
Gross Profit	24,00,000
Net profit (Before interest and tax 50%)	9,00,000

Calculate the following ratios:

(1) Rate on Return on Capital Employed (2) Proprietary Ratio (3) Debt-Equity (4) Capital gearing Ratio (5) Debtors Ratio (365 days of the year.) (6) Rate of Return on Shareholders' Funds (7) Rate of Return on Equity shareholders fund

Solution - 5

Statement of Profitability

Sales	80,00,000
Less: Cost of goods sold	56,00,000
Gross profit	**24,00,000**
Less: Operating expenses (including Depreciation)	15,00,000
Earnings before Interest & Tax (EBIT)	**9,00,000**
Less: Interest Cost	75,000
Earnings before Tax (EBT)	**8,25,000**
Less: Tax liability (50%)	4,12,500
Earnings after Tax (EAT/ PAT)	4,12,500
Less: Preference share dividend	40,000
Distributional Profit	**3,72,500**

1.		**6.**		**7.**	
Rate of Return on Capital Employed		**Rate of Returr on Share holders Fund**		**Rate of return on Equity Shareholders Fund**	
$= \frac{\text{EBIT}}{\text{Capital employed}}$	X 100	$= \frac{\text{PAT}}{\text{SHF}}$	X 100	$= \frac{\text{PAT – Pref. Div.}}{\text{ESHF}}$	X 100
CE = Eq Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus + Debenture + Long Term Loan – Fictitious Assets		**SHF =** Eq. Sh. Cap. + Pref. Sh. Cap. + Reserves & Surplus – Fictitious Assets		**ESHF =** Eq. Sh. Cap. + Reserves & Surplus – Fictitious Assets	
CE = 10,00,000 + 4,00,000 7,00,000 + 5,00,000 – 20,000 **= 25,80,000**		**SHF =** 10,00,000 + 4,00,000 + 7,00,000 - 20,000 **= 20,80,000**		ESHF = 10,00,000 + 7,00,000 – 20,000 **= 16,80,000**	
$= \frac{9,00,000}{25,80,000}$	X 100	$= \frac{4,12,500}{20,80,000}$	X 100	$= \frac{3,72,500}{16,80,000}$	X 100

= 34.88%	**= 19.83%**	**= 22.17 %**

2. Proprietary Ratio =	Shareholders' Funds / Total Assets
	SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets
	Total Assets = Total Assets – Fictitious Assets
	SHF = 10,00,000 + 7,00,000 + 4,00,000 - 20,000 = 20,80,000
	TA = 30,00,000 – 20,000 = 29,80,000
	= 20,80,000 / 29,80,000
	= 0.70 : 1

3. Debt – Equity Ratio =	Long Term Debt (Liabilities) / Shareholders Fund
	LTL = Debentures + long term loans
	SHF = Eq. Sh. Cap. + Reserves & Surplus + Preference Sh. Cap. – Fictitious Assets
	LTL = 5,00,000
	SHF = 10,00,000 + 7,00,000 + 4,00,000 - 20,000 = 20,80,000
	= 5,00,000 / 20,80,000
	= 0.24 : 1

4. Capital Gearing Ratio =	Fixed Interest or Dividend Securities / Equity Shareholders Fund
	FIS = Debentures + Preference share capital
	ESHF = Eq. Sh. Cap. + Reserves & Surplus – Fictitious Assets
	LTL = 9,00,000

ESHF = 10,00,000 + 7,00,000 - 20,000 = 16,80,000	
= $\frac{9,00,000}{16,80,000}$	
= 0.54 : 1	

5. Debtors Ratio = **(Avg. debt collection period)**	$\frac{\text{Debtors + Bills receivable}}{\text{Credit sales}}$	**X** 365 / 360 days
	= $\frac{4,60,000 + 60,000}{60,00,000}$	**X** 365 days
	= 0.461	**X** 365 days
	= 31.63 days **= 32 days (Aprox.)**	

Problem - 6

Two years' Balance sheets of Jamuna Company Ltd. are as follows:**[S. U. T.Y.-April, 1999]**

Liabilities	31-3-03	31-3-04	Assets	31-3-03	31-3-04
Equity share capital	1,00,000	1,50,000	Land and Buildings	1,00,000	90,000
10%Pref. Sh. capital	50,000	50,000	Machinery	90,000	90,000
General Reserve Profit &	30,000	30,000	Debtors	53,000	30,000
Loss A/c 12%	20,000	-----	Bills Receivable	20,000	12,000
Debentures Creditors	1,00,000	50,000	Stock	75,000	90,000
Bills payable	30,000	35,000	Bank Balance	15,000	35,000
Bank Overdraft	10,000	25,000	Cash Balance	2,000	13,000
O/s. Expenses	10,000 5,000	20,000 10,000	Profit & Loss A/c	----	10,000
	3,55,000	3,70,000		3,55,000	3,70,000

Additional Information:

	2002-'03 Rs.	2003-04 Rs.
(1) Sales	3,65,000	2,19,000
(2) Cost of Goods sold	2,19,000	1,46,000
(3) Net profit (Before Pref. Dividend)	35,000	47,500
(4) Stock on 1-4-'02	71,000	---

Calculate following ratios and give your opinion about company position in 2003-'04 in comparison with 2002-'03. Whether it is positive or negative?

(1) Current ratio (2) Liquid ratio (3) Debtors ratio (Take 365 days for calculations) (4) Gross profit ratio (5) Stock Turnover ratio (6) Rate of return on equity share-holders' funds.

Solution - 6 (problem related to comparative analysis between two years)

1. Current Ratio = $\frac{\text{Current Assets}}{\text{Current liabilities}}$

Current Assets = Stock + debtors + Bills receivable + Cash + Bank Balance

Current Liabilities = Creditors + Bills payable

2002-03:

$$= \frac{53{,}000 + 20{,}000 + 75{,}000 + 15{,}000 + 2{,}000}{30{,}000 + 10{,}000 + 10{,}000 + 5{,}000}$$

$$= \frac{1{,}65{,}000}{55{,}000}$$

= 3 :1

2003-04:

$$= \frac{30{,}000 + 12{,}000 + 90{,}000 + 35{,}000 + 13{,}000}{35{,}000 + 25{,}000 + 20{,}000 + 10{,}000}$$

$$= \frac{1{,}80{,}000}{90{,}000}$$

= **2 : 1**

2. Liquid Ratio = $\frac{\text{Liquid Assets}}{\text{Liquid liabilities}}$

(Liquid) Quick Assets = Current Assets - Stock

(Liquid) Quick Liabilities = Current Liabilities – BOD

2002-03:

$$= \frac{1{,}65{,}000 - 75{,}000}{55{,}000 - 10{,}000}$$

$$= \frac{90{,}000}{45{,}000}$$

= 2 :1

2003-04:

$$= \frac{1{,}80{,}000 - 90{,}000}{90{,}000 - 20{,}000}$$

$$= \frac{90{,}000}{70{,}000}$$

= **1.29 : 1**

3. Debtors Ratio = **(Avg. debt collection period)**	$\frac{\text{Debtors + Bills receivable}}{\text{Credit sales}}$	**X** 365 / 360 days
	2002-03: $= \frac{53,000 + 20,000}{3,65,000}$	**X** 365 days
	$= \frac{73,000}{3,65,000}$	**X** 365 days
	= 73 days	
	2003-04: $= \frac{30,000 + 12,000}{2,19,000}$	**X** 365 days
	$= \frac{42,000}{2,19,000}$	**X** 365 days
	= 70 days	

4. Gross Profit Margin =	$\frac{\text{Gross profit}}{\text{Sales}}$	**X** 100
	GP = Sales - COGS **2002-03:** 365000 - 219000 = 1,46,000 **2003-04:** 219000 - 146000 = 73,000	
	2002-03: $= \frac{1,46,000}{3,65,000}$	**X** 100
	= 40%	
	2003-04: $= \frac{73,000}{2,19,000}$	**X** 100
	= 33.33%	

5. Stock Turnover Ratio =	$\frac{\text{Cost of goods sold}}{\text{Avg. Stock}}$
	Avg. stock = $\frac{\text{Opening Stock + Closing Stock}}{2}$

2002-03: $\frac{71000 + 75000}{2}$ = 73,000 **2003-04:** $\frac{75000 + 90000}{2}$ = 82,500
2002-03: **=** $\frac{2,19,000}{73,000}$
= **3 times**
2003-04:
= $\frac{1,46,000}{82,500}$
= 1.77 times

7. Rate of return on Equity Shareholders Fund:

2002-03 = $\frac{\text{PAT – Pref. Div.}}{\text{ESHF}}$	**X** 100
ESHF = Eq. Sh. Cap. + Reserves & Surplus – Fictitious Assets	
ESHF = 1,00,000 + 30,000 + 20,000 **= 1,50,000**	
= $\frac{35,000 - 5,000}{1,50,000}$	**X** 100
= 20 %	
2003-04: **ESHF:** 1,50,000 + 30,000 - 10,000 = 1,70,000	
= $\frac{47,500 - 5,000}{1,70,000}$	**X** 100
= **25%**	

Problem - 7

The Balance Sheet as on 2002 and 2003 are as under:

Liabilities	2002	2003	Assets	2002	2003
Equity share capital	1,00,000	1,25,000	Land and Buildings	50,000	75,000
General Reserve Profit &	12,500	15,000	Plant Machinery	57,500	55,000
Loss A/c Creditors	10,000	7,500	Stock	10,000	12,500
Bills payable	5,000	6,250	Debtors	7,500	10,000
O/s. Expenses	3,750	7,500	Cash & Bank	5,000	7,500
Provident Fund	1,250	3,750	Bills Receivable	2,500	5,000
	7,500	5,000	Preliminary Exp.	7,500	5,000
	1,40,000	1,70,000		1,40,000	1,70,000

Profit & Loss A/c.

Particulars	2002	2003	Particulars	2002	2003
To Op. Stock	5,000	10,000	By Sales	62,500	1,12,500
To Purchase	37,500	47,500	By Closing Stock	10,000	12,500
To Office Exp.	7,500	10,000	By Profit on Sale of		
To Selling exp.	5,000	12,500	Furniture	2,500	----
To Fin. Exp.	2,500	15,000			
To Net Profit	17,500	30,000			
	75,000	1,25,000		75,000	1,25,000

Find out (1) Current Ratio (2) Stock Turnover Ratio (3) Gross Profit Ratio (4) Liquid Ratio (5) Debtor Ratio (working days 300) (6) Return on Equity Capital employed (7) Ownership Ratio.

Solution - 7

1. Current Ratio =	$\frac{\text{Current Assets}}{\text{Current liabilities}}$
	Current Assets = Stock + debtors + Bills receivable + Cash & Bank Balance
	Current Liabilities = Creditors + Bills payable + O/s Exp. + PF
	2002: $= \frac{10,000 + 7,500 + 5,000 + 2,500}{5,000 + 3,750 + 1,250 + 7,500}$
	$= \frac{25,000}{17,500}$
	= 1.43 :1
	2003-04: $= \frac{12,500 + 10,000 + 7,500 + 5,000}{6,250 + 7,500 + 3,750 + 5,000}$
	$= \frac{35,000}{22,500}$
	= **1.56 : 1**

2. Stock Turnover Ratio =	$\frac{\text{Cost of goods sold}}{\text{Avg. Stock}}$
	Avg. stock = $\frac{\text{Opening Stock + Closing Stock}}{2}$
	2002-03: $\frac{5000 + 10000}{2}$ = 7,500 **2003-04:** $\frac{10000 + 12500}{2}$ = 11,250
	Gross Profit = Sales + Closing Stock - (Opening Stock + Purchase) **COGS =** Sales - GP
	2002: = 62,500 + 10,000 - (5,000 + 37,500) = 30,000 **COGS =** 62,500 - 30,000 = 32,500
	2003: = 1,12,500 + 12,500 - (10,000 + 47,500) = 67,500 **COGS =** 1,12,500 - 67,500 = 45,000
	2002-03: **=** $\frac{32,500}{7,500}$
	= **4.33 times**
	2003-04: = $\frac{45,000}{11,250}$
	= 4 times

3. Gross Profit Margin =	$\frac{\text{Gross profit}}{\text{Sales}}$	**X** 100
	GP = Sales - COGS **2002-03:** **2002: =** 62,500 + 10,000 - (5,000 + 37,500) = 30,000 **2003-04: =** 1,12,500 + 12,500 - (10,000 + 47,500)	

= 67,500	
2002-03: = $\frac{30,000}{62,500}$	**X** 100
= 48%	
2003-04: = $\frac{67,500}{1,12,500}$	**X** 100
= 60%	

4. Liquid Ratio =	$\frac{\text{Liquid Assets}}{\text{Liquid liabilities}}$	
	(Liquid) Quick Assets = Current Assets - Stock	
	(Liquid) Quick Liabilities = Current Liabilities – BOD	
	2002-03: = $\frac{25,000 - 10,000}{17,500}$	
	= $\frac{15,000}{17,500}$	
	= 0.86 :1	
	2003-04: = $\frac{35,000 - 12,500}{22,500}$	
	= $\frac{22,500}{22,500}$	
	= **1 : 1**	

5. Debtors Ratio = **(Avg. debt collection period)**	$\frac{\text{Debtors + Bills receivable}}{\text{Credit sales}}$	**X** 300 days
	2002-03: = $\frac{7,500 + 2,500}{62,500}$	**X** 300 days
	= $\frac{10,000}{62,500}$	**X** 300 days
	= 48 days	

2003-04: = $\frac{10,000 + 5,000}{1,12,500}$	**X** 300 days
= $\frac{15,000}{1,12,500}$	**X** 300 days
= **40 days**	

6. Rate of return on Equity Shareholders Fund:

2002 = $\frac{\text{PAT – Pref. Div.}}{\text{ESHF}}$	**X** 100
ESHF = Eq. Sh. Cap. + Reserves & Surplus – Fictitious Assets	
ESHF = 1,00,000 + 12,500 + 10,000 - 7,500 **= 1,15,000**	
= $\frac{17,500}{1,15,000}$	**X** 100
= 15.22 %	
2003:	
ESHF: 1,25,000 + 15,000 + 7,500 - 5,000 = 1,42,500	
= $\frac{30,000}{1,42,500}$	**X** 100
= **21.05%**	

7. Ownership Ratio =	$\frac{\text{Shareholders' Funds}}{\text{Total Assets}}$
	SHF = Eq. Sh. Cap. + Reserves & Surplus – Fictitious Assets
	Total Assets = Total Assets – Fictitious Assets
	2002 = SHF = 1,00,000 + 12,500 + 10,000 - 7,500 = 1,15,000
	TA = 1,40,000 - 7,500 = 1,32,500
	= $\frac{1,15,000}{1,32,500}$
	= 0.87 : 1 **OR** = **87%**

2003 = SHF = 1,25,000 + 15,000 + 7,500 - 5,000 = 1,42,500	
TA = 1,70,000 - 5,000 1,65,000	
= $\frac{1,42,500}{1,65,000}$	
= 0.86 : 1 **OR** **= 86%**	

Problem - 8

Following are incomplete Trading & Profit and Loss A/c. and Balance Sheet.

Trading A/c.

Particular	Rs.	Particular	Rs.
To Op. stock	3,50,000	By Sales	(?)
To Purchase	(?)	By Closing Stock	(?)
To Purchase Return	87,000		
To Gross Profit	7,18,421		
	14,96,710		14,96,710

Profit & Loss A/c.

Particular	Rs.	Particular	Rs.
To Office Exp.	3,70,000	By Gross Profit	7,18,421
To Int. on Deb.	30,000	By Commission	(?)
To Tax. Provision	18,421		
To Net Profit	3,50,000		
	(?)		(?)

Balance Sheet

Particular	Rs.	Particular	Rs.
Paid Up Capital	5,00,000	Plant & machinery	7,00,000
General Reserve	(?)	Stock	(?)
P & L a/c.	(?)	Debtors	(?)
10% Debenture	(?)	Bank	62,500
Current Liabilities	6,00,000	Other Fixed Assets	(?)
	(?)		(?)

Find out missing items with the help of other details are as under:

1. Current Ratio was 2:1.
2. Closing Stock is 25% of Sales.
3. Proposed Dividend was 40% of paid up capital.
4. Gross profit Ratio was 60%.
5. Amount transfer to General Reserve is same as proposed Dividend.
6. Balance of P & L Account is calculated 10% of proposed dividend.
7. Commission income is 1/7 of Net profit.
8. Balance of General reserve is twice the current year transfer amount.

Solution - 8

Trading A/c.

Particular	Rs.	Particular	Rs.
To Op. stock	3,50,000	By Sales (?)	**11,97,368**
To Purchase (?)	**3,41,289**	By Closing Stock (?)	**2,99,342**
To Purchase Return	87,000		
To Gross Profit	7,18,421		
	14,96,710		**14,96,710**

Profit & Loss A/c.

Particular	Rs.	Particular	Rs.
To Office Exp.	3,70,000	By Gross Profit	7,18,421
To Int. on Deb.	30,000	By Commission (?)	**50,000**
To Tax. Provision	18,421		
To Net Profit	3,50,000		
	7,68,421		**7,68,421**

Balance Sheet

LIABILITIES	AMOUNT	ASSETS	AMOUNT
Paid Up Capital	5,00,000	Plant & machinery	7,00,000
General Reserve (?)	**6,00,000**	Stock (?)	**2,99,342**
P & L a/c. (?)	**20,000**	Debtors (?)	**8,38,158**
10% Debenture (?)	**3,00,000**	Bank (?)	62,500
Current Liabilities	6,00,000	Other Fixed Assets	**1,20,000**
	20,20,000		**20,20,000**

1. Gross Profit Margin =	$\frac{\text{Gross profit}}{\text{Sales}}$	**X** 100
	$60 = \frac{7,18,421}{\text{Sales}}$	**X** 100
	$\text{Sales} = \frac{7,18,421}{60}$	**X** 100
	Sales = 11,97,368	

2. Closing Stock =	**Sales x 25%**
	11,97,368 x 25%
	CS = 2,99,342

3. **Proposed Dividend** =	Paid up Capital x 40%
	= 5,00,000 x 40%
	PD = 2,00,000

4. General Reserve =	GR find out as per Proposed Dividend
	Proposed Dividend is 2,00,000
	So that Proposed Dividend = General Reserve
	GR = 2,00,000

5. Commission =	It is 1/7 part of Net Profit
	Commission = 3,50,000 x 1/7
	Commission = 50,000
6. Profit & Loss Account =	It is 10% of Proposed Dividend
	P & L A/c. = 2,00,000 x 10%
	P & L A/c. = 20,000
7. Debenture =	Rate of Interest is 10%
	Interest amount is Rs. 30,000
	So that, Debenture value is = 30,000 x 10/100
	= 3,00,000
8. Current Ratio =	$\frac{\text{Current Assets}}{\text{Current liabilities}}$
	2 = $\frac{\text{Stock + debtors + Bank Balance}}{\text{Current Liability}}$
	2 = <u>2,99,342 + debtors + 62,500</u>
	6,00,000
	12,00,000 = Debtors + 3,61,842
	Debtors = 12,00,000 - 3,61,842
	Debtors = 8,38,158

8. Current Ratio =	$\frac{\text{Current Assets}}{\text{Current liabilities}}$
	2 = $\frac{\text{Stock + debtors + Bank Balance}}{\text{Current Liability}}$
	2 = $\frac{2{,}99{,}342 + \text{debtors} + 62{,}500}{6{,}00{,}000}$
	12,00,000 = Debtors + 3,61,842
	Debtors = 12,00,000 - 3,61,842
	Debtors = 8,38,158

8. Balance of General Reserve =	It is twice of current year provision for General Reserve
	Current year provision is Rs. 2,00,000
	So that, Balance of G. R. = 2,00,000 x 2
	Balance of GR = 4,00,000
	Now, General Reserve = 4,00,000 + 2,00,000
	GR = 6,00,000

Problem -9

From the following information, prepare the Balance Sheet of ABB Ltd. Showing the details of working:

Paid up capital	Rs. 50,000
Plant and Machinery	Rs. 1,25,000
Total Sales (p.a.)	Rs. 5,00,000
Gross Profit	25%
Annual Credit Sales	80% of net sales
Current Ratio	2
Inventory Turnover	4
Fixed Assets Turnover	2
Sales Returns	20% of sales
Average collection period	73 days
Bank Credit to trade credit	2
Cash to Inventory	1 : 15
Total debt to current Liabilities	3

Solution - 9

1. Net Sales =	Total Sales - Sales Return
	= 5,00,000 - 1,00,000
	= Rs. 4,00,000
2. Credit Sales =	80% of Net Sales
	= 4,00,000 x 80%
	= Rs. 3,20,000
3. Gross Profit =	25% of Net sales

	= 4,00,000 x 25%
	= Rs. 1,00,000
4. Cost of Goods Sold =	Net Sales - Gross Profit
	= 4,00,000 - 1,00,000
	= Rs. 3,00,000
5. Inventory =	$\frac{\text{Cost of Goods Sold}}{\text{Inventory Turnover}}$
	$= \frac{3,00,000}{4}$
	= Rs. 75,000
6. Receivable Turnover =	$\frac{365}{73}$ = 5
Receivables **=**	$\frac{\text{Credit Sales}}{\text{Receivables Turnover}}$
	$= \frac{3,20,000}{5}$
	= Rs. 64,000
7. Cash =	1/5 of Inventory
	= 1/5 x 75,000
	= Rs. 5,000
8. Total Current Assets =	Inventory + Receivables + Cash
	= 75,000 + 64,000 + 5,000
	= Rs. 1,44,000
9. Total Current Liabilities =	$\frac{\text{Current Assets}}{2}$
	$= \frac{1,44,000}{2}$
	= Rs. 72,000
10. Bank Credit =	2/3 **x** Current Liabilities
	= 2/3 x 72,000
	= Rs. 48,000
11. Trade Credit =	1/2 of Bank Credit OR 1/3 of Current Liabilities
	Rs. 24,000
12. Total Debt =	Current Liabilities x 3
	72,000 x 3
	= Rs. 2,16,000
13. Long term debt =	Total Debt - Current Liabilities
	= 2,16,000 - 72,000

	= Rs. 1,44,000
14. Fixed Assets =	1/2 of Net Sales =
	1/2 x 4,00,000
	= Rs. 2,00,000
15. Other fixed Assets =	Fixed Assets - Plant & Machinery
	= 2,00,000 - 1,25,000
	= Rs. 75,000
16. Total Assets =	Fixed Assets + Current Assets
	= 2,00,000 + 1,44,000
	= 3,44,000
17. Net worth =	Total Assets - Total Debt
	3,44,000 - 2,16,000
	= Rs. 1,28,000
18. Reserves & Surplus =	Net worth - Paid Up capital
	= 1,28,000 - 50,000
	= Rs. 78,000

Balance Sheet

LIABILITIES	AMOUNT	ASSETS	AMOUNT
Paid Up Capital	50,000	Plant & machinery	1,25,000
Reserves & Surplus	78,000	Other Fixed Assets	75,000
Long term Debt	1,44,000	Inventory	75,000
Bank credit	48,000	Receivables	64,000
Trade credit	24,000	Cash	5,000
	3,44,000		**3,44,000**

Problem No: 10
The following is the Balance Sheet of a company as on 31st March:

Liabilities	*Rs.*	*Assets*	*Rs.*
Share Capital	2,00,000	Land and Buildings	1,40,000
Profit & Loss Account	30,000	Plant and Machinery	3,50,000
General Reserve	40,000	Stock	2,00,000
12% Debentures	4,20,000	Sundry Debtors	1,00,000
Sundry Creditors	1,00,000	Bills Receivable	10,000
Bills Payable	50,000	Cash at Bank	40,000
	8,40,000		8,40,000

Calculate :

(1) Current Ratio
(2) Quick Ratio
(3) Inventory to working Capital
(4) Debt to Equity Ratio
(5) Proprietary Ratio
(6) Capital Gearing Ratio
(7) Current Assets to Fixed Assets

SOLUTION :

(1) Current Ratio $= \dfrac{\text{Current assets}}{\text{Current Liabilities}}$

$$= \frac{\text{Rs. } 3{,}50{,}000}{\text{Rs. } 1{,}50{,}000} = \mathbf{2.33 : 1}$$

(2) Quick Ratio $= \dfrac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$

$$= \frac{\text{Rs. } 1{,}50{,}000}{\text{Rs. } 1{,}50{,}000} = \mathbf{1 : 1}$$

(3) Inventory to Working Capital $= \dfrac{\text{Inventory}}{\text{Working Capital}}$

$$= \frac{\text{Rs. } 2{,}00{,}000}{\text{Rs. } 2{,}00{,}000} = \mathbf{1 : 1}$$

(Working Capital = Current Assets – Current Liabilities
= Rs. 3,50,000 – Rs. 1,50,000 = Rs. 2,00,000)

(4) Debt to Equity Ratio $= \dfrac{\text{Long Term Debts}}{\text{Shareholders' Fund}}$

$$= \frac{\text{Rs. } 4{,}20{,}000}{\text{Rs. } 2{,}70{,}000} = \mathbf{1.56 : 1}$$

(Or)

$$= \frac{\text{Long Term Debts}}{\text{Shareholders' Fund + Long Term Debts}}$$

$$= \frac{\text{Rs. } 4{,}20{,}000}{\text{Rs. } 2{,}70{,}000 + 4{,}20{,}000} = \mathbf{0.6 : 1}$$

(5) Proprietary Ratio $= \dfrac{\text{Shareholders' Fund}}{\text{Total Assets}}$

$$= \frac{\text{Rs. } 2{,}70{,}000}{\text{Rs. } 8{,}40{,}000} = \mathbf{0.32 : 1}$$

(6) Capital Gearing Ratio $= \dfrac{\text{Fixed Interest Bearing Securities}}{\text{Equity Share Capital}}$

$$= \frac{\text{Rs. } 4{,}20{,}000}{\text{Rs. } 2{,}00{,}000} = \mathbf{2.1 : 1}$$

(7) Current Assets to Fixed Assets Ratio $= \dfrac{\text{Current Assets}}{\text{Fixed Assets}}$

$$= \frac{\text{Rs. } 3{,}50{,}000}{\text{Rs. } 4{,}90{,}000} = \mathbf{0.71 : 1}$$

Problem 11:

From the following Balance Sheet and additional information, you are required to calculate:

(i) Return on Total Resources

(ii) Return on Capital Employed

(iii) Return on Shareholders' Fund

BALANCE SHEET as on 31st Dec.

	Rs.		*Rs.*
Share Capital (Rs. 10)	8,00,000	Fixed Assets	10,00,000
Reserves	2,00,000	Current Assets	3,60,000
8% Debentures	2,00,000		
Creditors	1,60,000		
	13,60,000		13,60,000

Net operating profit before tax is Rs. 2,80,000. Assume tax rate at 50%. Dividend declared amounts to Rs.1,20,000. (*B.Com. MS.*)

SOLUTION:

(*i*) Retrun on Total Resources $= \frac{\text{Profit after Tax}}{\text{Total Assets}} \times 100$

$$= \frac{\text{Rs.1,40,000}}{\text{Rs.13,60,000}} \times 100 = 10.29\%$$

(*ii*) Return on Capital Employed

$$= \frac{\text{Profit before Tax \& Interest}}{\text{Capital Employed}} \times 100$$

$$= \frac{\text{Rs.2,96,000}}{\text{Rs.12,00,000}} \times 100 = 24.7\%$$

(*iii*) Return on Shareholders' Fund

$$= \frac{\text{Profit after Tax}}{\text{Shareholders Fund}} \times 100$$

$$= \frac{\text{Rs.1,40,000}}{\text{Rs.10,00,000}} \times 100 = 14\%$$

Problem 12:

Extract from financial accounts of X, Y, Z Ltd. are:

	Year I		Year II	
	Assets *Rs.*	*Liabilities* *Rs.*	*Assets* *Rs.*	*Liabilities* *Rs.*
Stock	10,000		20,000	
Debtors	30,000		30,000	
Payment in Advance	2,000		—	
Cash in hand	20,000		15,000	
Sundry Creditors		25,000		30,000
Acceptances		15,000		12,000
Bank Overdraft		—		5,000
	62,000	40,000	65,000	47,000

Sales amounted to Rs.3,50,000 in the first year and Rs.3,00,000 in the second year.

You are required to comment on the solvency position of the concern with the help of accounting ratios. *(C.A. Final ;M. Com. Madras)*

SOLUTION :

Short-term Solvency Analysis

(1) Current Ratio $= \dfrac{\text{Current Assets}}{\text{Current Liabilities}}$

$$\text{Year I}: \frac{10{,}000 + 30{,}000 + 2{,}000 + 20{,}000}{25{,}000 + 15{,}000} = \frac{62{,}000}{40{,}000}$$

$$= \mathbf{1.55 : 1}$$

$$\text{Year II}: \frac{20{,}000 + 30{,}000 + 15{,}000}{30{,}000 + 12{,}000 + 5{,}000} = \frac{65{,}000}{47{,}000}$$

$$= \mathbf{1.38 : 1}$$

(2) Liquid or Quick Ratio $= \dfrac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$

$$\text{Year I}: \frac{30{,}000 + 20{,}000 + 2{,}000}{25{,}000 + 15{,}000} = \frac{52{,}000}{40{,}000}$$

$$= \mathbf{1.30 : 1}$$

$$\text{Year II}: \frac{30{,}000 + 15{,}000}{30{,}000 + 12{,}000 + 5{,}000} = \frac{45{,}000}{47{,}000}$$

$$\mathbf{0.96 : 1}$$

(3) Inventory Turnover Ratio $= \dfrac{\text{Net Sales}}{\text{Average Inventory}}$

$$\text{Year I}: \frac{3{,}50{,}000}{10{,}000} = \mathbf{35 : 1}$$

$$\text{Year II}: \frac{3{,}00{,}000}{15{,}000} = \mathbf{20 : 1}$$

(4) Inventory Current Assets Ratio $= \dfrac{\text{Inventory}}{\text{Total Current Assets}} \times 100$

$$\text{Year I}: \frac{10{,}000}{62{,}000} \times 100 = \mathbf{16\%}$$

$$\text{Year II}: \frac{20{,}000}{65{,}000} \times 100 = \mathbf{31\%}$$

$$\text{(5) Average Collection Period} = \frac{\text{Trade Receivables}}{\text{Net Credit Sales}} \times \text{No. of Working Days}$$

$$\text{Year I}: \frac{30{,}000}{3{,}50{,}000} \times 365 = \mathbf{31.3\ days}$$

$$\text{Year II}: \frac{30{,}000}{3{,}00{,}000} \times 365 = \mathbf{36.5\ days}$$

Long-Term Solvency Analysis

$$\text{(1) Debt Equity Ratio} = \frac{\text{External Equities}}{\text{Internal Equities}}$$

$$\text{Year I}: \frac{25{,}000 + 15{,}000}{62{,}000 - 40{,}000} = \frac{40{,}000}{22{,}000} = \mathbf{1.82:1}$$

$$\text{Year II}: \frac{30{,}000 + 12{,}000 + 5{,}000}{65{,}000 - 47{,}000} = \frac{47{,}000}{18{,}000} = \mathbf{2.61:1}$$

$$\text{(2) Proprietary Ratio is} = \frac{\text{Shareholder's Equities}}{\text{Total Equities}}$$

$$\text{Year I}: \frac{22{,}000}{62{,}000} = \mathbf{0.35:1}$$

$$\text{Year II}: \frac{18{,}000}{65{,}000} = \mathbf{0.28:1}$$