BACHELOR OF COMPUTER APPLICATIONS

SEMESTER 4

DCA2204

PRINCIPLES OF FINANCIAL ACCOUNTING AND MANAGEMENT

Unit 9

Financial Statement Analysis

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1. INTRODUCTION

Ratio analysis helps to interpret the information in such a way that it can be understood by even those people who are not much familiar with financial figures and statistics. However, all the problems of a business can't be solved by ratio analysis. It will merely give a general indication of a trend, at the same time spotlighting any divergence from normality. This knowledge, however, should enable management to correct whatever may be going wrong in business. This unit deals with meaning, classification, advantages and calculation of ratios.

Ratio analysis is a quantitative method of gaining insight into a company's liquidity, operational efficiency, and profitability by studying its financial statements such as the balance sheet and income statement. Ratio analysis is a cornerstone of fundamental equity analysis.

1.1 Objectives:

After studying this unit, you will be able to:

- *Explain the meaning of Ratio Analysis*
- *Explain the steps in Ratio Analysis*
- *Explain the classification of Ratios*
- *Explain the merits and demerits of Ratio Analysis*
- *Compute the different Ratios*

2. MEANING OF RATIO ANALYSIS

The most important task of a financial manager is to interpret the financial information in such a manner, that it can be well-understood by the people, who are not well-versed in financial information figures. The technique by which it is so done is known as 'Ratio Analysis'.

'Ratio' is a relationship between two or more variable expressed in,

(i) Percentage, (ii) Rate and (iii) Proportion

Ratio Analysis is an important technique of financial analysis. It depicts the efficiency or short-fall of the organisation in the form of trend analysis.

Different ratios appeal to different people. Management, having the task of running a business efficiently, will be interested in all ratios. A supplier of goods on credit will be particularly interested in liquidity ratios, which indicate the ability of the business to pay its bills. Existing and future shareholders will be interested in investment ratios, which indicate the level of return that can be expected on an investment in the business. Major customers, intent on having a continuing source of supply, will be interested in the financial stability, as revealed by the capital structure, liquidity and profitability ratios. Debenture and loan stock holders will be interested in the ability of a business to pay interest, and ultimately to repay the capital. A banker, giving only short-term loans, will be interested mainly in the liquidity of the business, and its ability to repay those loans.

The overall advantages of ratios are that they enable valid comparisons to be made between business of varying size and in different industries.

2.1 Steps In Ratio Analysis

Step 1 : Collection of information, which are relevant from the financial statements and then to calculate different ratios accordingly.

Step 2 : Comparison of computed ratios of the same organisation or with the industry ratios.

Step 3 : Interpretation, drawing of inference and report-writing.

3. CLASSIFICATION OF RATIOS

Profit and Loss A/c Ratios	Combined Ratios	Balance Sheet Ratios
Examples:	*Examples:*	*Examples:*
Gross Profit Ratio	Return on Capital Employed	Liquidity Ratio
Net Profit Ratio	Return on Share- holders' Fund	Current Ratio
Expense Ratio	Turnover of Working Capital	Proprietary Ratio
Operating Profit etc.	Debtors Turnover Ratio etc.	Debt-Equity Ratio Capital Gearing etc.

CHART SHOWING APPLICATION OF DIFFERENT RATIOS

For Testing	Ratio Concerned	Interested Parties
A. Profitability	1. Gross Profit Ratio 2. Net Profit Ratio 3. Operating Ratio 4. Return on Capital Employed 5. Dividend Ratio 6. Earnings per Share 7. Dividend per Share	Shareholders Creditors (Long Term) Government Purchasers of Enterprise
B. Liquidity and Solvency	1. Current Ratio 2. Liquid Ratio 3. Absolute Liquid Ratio 4. Proprietary Ratio 5. Assets to Proprietorship Ratio 6. Debt. -Equity Ratio 7. Capital Gearing Ratio	Creditors (Short Term) Investors Money lenders
C. Capital Structure		Shareholders and outsiders

	1. Capital Gearing Ratio 2. Equity Capital Ratio 3. Long-term Loans to Networth	
D. Activity	1. Debtors Turnover Ratio 2. Creditors Turnover Ratio 3. Stock Turnover Ratio 4. Fixed Asset Turnover Ratio 5. Current Asset Turnover 6. Total Asset Turnover Ratio 7. Working Capital Turnover Ratio	Management Shareholders Creditors (Long and Short Term) Customers
E. Management All concerned ratios Efficiency		Management

3.1 Balance Sheet Ratio Analysis

1. Current Ratio

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

- Current ratio indicates the firm's ability to pay its current liabilities.
- It indicates the strength of the working capital.
- Higher ratio, i.e., more than 2:1 indicates sound solvency position.
- Lower ratio i.e., less than 2:1 indicates inadequate working capital.

2. the current ratio is very straightforward: Simply divide the company's current assets by its current liabilities. Current assets are those that can be converted into cash within one year, while current liabilities are obligations expected to be paid within one year.
3. 

4. Quick Ratio

Quick ratio is also known as liquid ratio or acid test ratio.

$$Liquid\ Ratio = \frac{\text{Quick or Liquid Assets}}{\text{Liquid/Current Liabilities}}$$

$$= \frac{\text{Current Assets} - \text{(Stock and Prepaid Expenses)}}{\text{Current Liabilities s} - \text{Bank Overdraft}}$$

- Higher ratio i.e., more than 1:1 indicates sound financial position.
- Lower ratio, i.e., less than 1:1 indicates financial difficulty.

5. ***quick ratio formula.*** There are two ways to calculate quick ratio:

$$\text{QR} = \frac{\textbf{(Current Assets} - \textbf{Inventories} - \textbf{Prepaid Expenses)}}{\textbf{Current Liabilities}}$$

$$\text{QR} = \frac{\text{(Cash} + \text{Cash Equivalents} + \text{Marketable Securities} + \text{Accounts Receivable)}}{\text{Current Liabilities}}$$

6. Net Working Capital Ratio

It is a measure of company's liquidity position.

$$\text{Net Working Capital Ratio} = \frac{\text{Net Working Capital}}{\text{Net Assets}}$$

$$\text{Current Assets} - = \frac{\text{Current Liabilities}}{\text{total assets}} = \text{NWC Ratio}$$

The optimal NWC ratio falls between 1.2 and 2, meaning you have between 1.2 times and twice as many current assets as you do short-term liabilities.

7. Proprietary Ratio

$$Proprietary\ Ratio = \frac{\text{Shareholder' s Funds}}{\text{Total Assets or Total Resources}}$$

- Higher ratio, say more than 75% shows lesser dependence on external sources.
- Lower ratio, say less than 60% shows more dependence on external sources.
- Determine the extent of trading on equity.
- The proprietary ratio is expressed in the form of a percentage and is calculated by **dividing the shareholders equity with the total assets of the business**.

8. Capital Gearing Ratio

$$Capital\ Gearing = \frac{\text{Equity share capita}}{\text{Fixed interest–bearing funds}}$$

The capital gearing ratio shows the mix of finance employed in the business.

Few Concepts

Equity Capital = Loan Capital = Even Gear

Equity Capital > Loan Capital = Low Gear = Over Capitalisation

Equity Capital < Loan Capital = Higher Gear = Under Capitalisation

It is useful to ascertain whether a company is practicing "trading on equity" and if so, to what extent is done.

9. Debt Equity Ratio

Debt-equity ratio is calculated as follows:

The formula for calculating the debt-to-equity ratio is **to take a company's total liabilities and divide them by its total shareholders' equity**. A good debt-to-equity ratio is generally below 2.0 for most companies and industries.

As a long-term financial ratio, it may be calculated as follows:

(i) Debt- Equity Ratio= $\frac{Total\ Long-Term\ Debts}{Total\ Long-Term\ Funds}$

(ii) Debt- Equity Ratio= $\frac{Total\ Long-Term\ Debts}{\text{Shareholders' Funds}}$

As acceptable norm for this ratio is considered to be 2:1 a higher debt- equity ratio is allowed in the case of capital-intensive industries.

3.2 Profit And Loss Account Ratio Analysis

1. ***Gross Profit Ratio***

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

   $$= \frac{\text{Sales} - \text{Cost of Goods Sold}}{\text{Net Sales}} \times 100$$

   A ratio of 25 % 30% may be considered good.

   The profit/loss ratio is the **average profit on winning trades divided by the average loss on losing trades over a specified time period.**

2. ***Operating Ratio***

   $$\text{Operating ratio} = \frac{\text{Operating Expenses} + \text{Cost of Goods Sold}}{\text{Net Sales}}$$

   A higher ratio would indicate that expenses are more than the company's ability to generate sufficient revenue and may be considered inefficient. Cost of Goods Sold = Opening Stock + Purchase – Closing Stock

   Operating Expenses = Administrative Expenses + Financial Expenses + Selling Expenses

   For manufacturing concern an operating ratio between 75% and 80% is expected.

3. ***Net Profit Ratio***

   Higher the ratio of net operating profit to sales, better is the operational efficiency of the concern.

Net Profit margin = Net Profit/Total revenue x 100

Net profit is calculated by deducting all company expenses from its total revenue. The result of the profit margin calculation is a percentage – for example, a 10% profit margin means for each $1 of revenue the company earns $0.10 in net profit.

Net Profit Ratio= Net profit/ Sales * 100

This ratio is used to measure the overall profitability and hence it is very useful to proprietors.

4. ***Return on Capital Employed***

This is considered as 'Du-point control' i.e.,

Return on capital employed is calculated by **dividing net operating profit, or earnings before interest and taxes (EBIT), by capital employed**. Another way to calculate it is by dividing earnings before interest and taxes by the difference between total assets and current liabilities.

$$\frac{\text{Net Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}} \; or$$

$$\text{Return on Capital Employed} = \frac{\text{Operating Profit}}{\text{Capital Employed}} \times 100$$

The higher the ratio, the more efficient use of the capital employed and better is the financial position.

5. ***Return on Shareholders' Fund***

This ratio establishes the profitability from the shareholders point of view.

$$\text{Return on Shareholders' Fund} = \frac{\text{Net Profit}}{\text{Shareholders' Fund}} \times 100$$

It is calculated by **dividing a company's earnings after taxes (EAT) by the total shareholders' equity, and multiplying the result by 100%.** The higher the percentage, the more money is being returned to investors. This ratio helps business owners and financing professionals determine a company's financial health.

Net Profit = Net operation Income – Interest – non-operating expenses Shareholders' Fund = Share Capital + Reserves Surplus –

P & L A/c (Dr. Balance) –

Misc. Expenditure to the extent not written-off.

3.3 Combined Ratio Analysis

1. ***Stock Turnover***

It is also known as Stock Velocity. This ratio helps the financial manager to evaluate an inventory policy. The ratio reveals the number of times finished stock is turned over during a given accounting period.

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory at Cost}} \; or \; \frac{\text{Sales}}{\text{Closing Stock}}$$

This ratio indicates whether investment in inventory is within proper limit or not.

It is a test of efficient inventory management. To judge whether the ratio of a firm is satisfactory or not, it should be compared over a time on the basis of trend analysis.

$$\text{Age of Inventory} = \frac{\text{No.of days in a year/month Operating Profit}}{\text{Inventory Turnover Ratio}}$$

2. ***Debtor's Turnover Ratio***

$$Debtors\ Turnover\ Ratio = \frac{Credit\ Sales}{Average\ Debtors}$$

$$Debtors\ Turnover = \frac{Credit\ Sales}{Closing\ Debtos}$$

Debt collection period is calculated by any of the following ratios:

i) $\frac{Month\ /\ Days\ in\ a\ year}{\text{Debtors Turnover}}$

ii) $\frac{\text{Average Debtors} \times \text{Months / Days}}{\text{Net Credit Sales for the Year}}$

iii) $\frac{\text{Accounts Receivable}}{\text{Average Monthly or Daily Credit Sales}}$

The higher the Turnover Ratio and the shorter the average collection period, the better the trade credit management and the better the liquidity of debtors.

3. *Creditors Turnover Ratio*

Also termed as Creditors Velocity

$$Creditors\ Turnover\ Ratio\ = \frac{\text{Net Credit Purchase}}{\text{Average Accounts Payable}}$$

$$= \frac{\text{Accounts Payable}}{\text{Net Credit Purchase}}$$

$$Average\ Payment\ Period\ = \frac{\text{Accounts Payable}}{\text{NetCredit Purchase}} \times \text{No. of Days in a year}$$

A higher ratio shows that the creditors are not paid in time. A lower ratio shows that the business is not taking the full advantage of credit period allowed by the creditors.

4. *Working Capital Turnover Ratio*

A Higher Working Capital Turnover Ratio shows that there is low investment in working capital and vice-versa. A higher ratio will indicate effective utilisation and more profit.

$$\text{Working Capital Turnover Ratio} = \frac{\text{Credit of Sales}}{\text{Net Working Capital}}\ or\ \frac{Sales}{\text{Net Working Capital}}$$

5. *Fixed Assets Turnover Ratio*

Higher the ratio, greater is the intensive utilization of fixed assets. Lower ratio means underutilizations of fixed assets.

$$\text{Fixed Asset Turnover Ratio} = \frac{\text{Cost of Sales}}{\text{Net Fixed Assets}} \; or \; \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

6. ***Capital Turnover Ratio***

$$\text{Lower Capital Turnover Ratio} = \frac{\text{Cost of Sales}}{\text{Total Capital Employed}} \; or \; \frac{\text{Sales}}{\text{Total Capital Employed}}$$

Lower ratio shows lower profit and higher ratio shows higher profit.

7. ***Interest Coverage***

$$\text{Interest Coverage} = \frac{\text{EBIT}}{\text{Fixed Interest Chrarges}}$$

[EBIT = Earnings before Interest and Tax]

The ratio shows how many times the interest charges are covered by EBIT out of which they will be paid. The coverage ratio may be interpreted with reference to its degree. Higher the ratio, better is the position of long-term creditors. It also highlights the ability of the firm to raise additional funds in future.

8. ***Dividend Coverage***

It measures the ability of a firm to pay dividend on preference shares which carry a stated rate of return. Higher the coverage, better is the position. Dividend coverage on equity share also calculated.

$$\text{Dividend Coverage (For Preference)} = \frac{\text{Net Profit after Tax and Interest}}{\text{Preference Dividend}}$$

$$\text{Dividend Coverage (For Equity)} = \frac{\text{EBIT} - \text{Preference Dividend}}{\text{Equity Dividend}}$$

(Where I = Interest on Debt-Capital, T = Tax]

Other Important Ratios on which the Management is interested.

1. Dividend Pay out Ratio $= \frac{\text{Dividend per share}}{\text{Earning per share}}$

$$= \frac{\text{Total Dividend to Equity Shareholders (Cash Dividend)}}{\text{Total Net Profit available to Equity Shareholders}}$$

2. Earnings per Equity Share $= \frac{\text{Dividend paid to Equity Shareholders}}{\text{No.of Equity Shares}}$
3. Dividend per share $\frac{\text{Profit available for Equity Shreholdes}}{\text{No.of Equity Shares}}$
4. Fixed Interest Cover $= \frac{\text{Operating Income}}{\text{Annual Interest Expense}}$
5. Price Earnings Ratio $= \frac{\text{Market Price of a Share}}{\text{Earnings per Share}}$
6. Dividend Yield $= \frac{\text{Dividend per Share}}{\text{Market Price per Share}}$
7. Earning Yield $= \frac{\text{Earnings per Share}}{\text{Market Price per Share}}$

Functional Classification of Ratios: All the ratios discussed previously can be classified on the basis of their functions as follows:

1. Liquidity Ratios: a) Current ratio b) Acid test ratio	2. Solvency Ratios: a) Current ratio b) Acid test ratio c) Equity ratio d) Debt ratio e) Debt-equity ratio f) Net income to debt service ratio
3. Profitability Ratios: a) Gross profit ratio b) Net profit ratio c) Return on equity d) Return on investment e) Return on networth	4. Activity Ratios: a) Inventory turnover b) Debtors' turnover c) Fixed assets turnover d) Working capital turnover

5. Leverage Ratios: a) Debt ratio b) Net income to debt service ratio c) Debt equity ratio d) Proprietary ratio	6. Financial ratios: a) Fixed assets ratio b) Capital gearing ratio c) Debt-equity ratio d) Current ratio e) Liquidity ratio

The classification given above would help students to work out problems which do not specify the individual ratios to be worked out but the student is asked to calculate a particular group such as solvency ratios, leverage ratios, etc.

The table given below would also help students to calculate the required ratios in a given problem:

Objectives of Analysis	Ratios to be Computed
Short-term financial solvency	Current ratio
	Liquidity ratio
Long-term financial solvency	Equity or proprietary ratio
	Debt ratio
	Debt-equity ratio
	Shareholders equity to total equity ratio
Immediate solvency	Liquidity ratio
Overall efficiency	Return on investment
	Operating ratio
	Assets turnover and other turnover ratios
	Return on proprietors' equity
	Earnings per share

Profitability in relation to sales	Gross profit ratio Net profit ratio
Profitability in relation to investment	Return on investment Return on proprietor's equity
Over-trading or under-trading	Earnings per share Proprietary ratio Current ratio
Trading on equity	Stock turnover ratio
Over-capitalisation and under-capitalisation	Capital gearing ratio Proprietary ratio Current ratio
Operating efficiency	Return on equity capital Operating ratio Expense ratios

An absolute figure does not convey anything unless it is related with the other relevant figure. Magnitude of current liabilities of a company does not tell anything about solvency position of the company. It is only when it is related with current assets figures of the same company an idea about the solvency position of the company can be had. Ratios make a humble attempt in this direction.

Ratios are significant both in vertical and horizontal analysis. In vertical analysis ratios help the analyst to form a judgement whether performance of the Corporation at a point of time is good, questionable or poor. Likewise, use of ratios in horizontal analysis indicates whether the financial condition of the corporation is improving or deteriorating and whether the cost, profitability or efficiency is showing an upward or downward trend.

Financial ratios are meaningful in judging the financial condition and profitability performance of the corporation only when there is a comparison. In fact, analysis of ratio involves two types of comparison. First, a comparison of present ratio with past and expected future ratios for the same corporation. When financial ratios for several preceding years are computed, the analyst can determine the composition of change and whether there has been an improvement or deterioration in the financial position of the corporation over the period of time. The second method of comparison involves comparing the ratios of the company with those of similar type of company or with industry averages at the same point

of time. Such a comparison would provide considerable insight into the relative financial condition and performance of the company.

SELF-ASSESSMENT QUESTIONS - 1

1. _____is the technique of interpreting the financial information in such a manner, that it can be well-understood by the people, who are not well-versed in financial information figures.
2. _____ iss a relationship between two or more variable expressed in Percentage, Rate and Proportion.
3. Existing and future shareholders of a company will be interested in which _____ indicate the level of return that can be expected on an investment in the business.
4. Higher Current Ratio indicates _____ while Lower Current Ratio indicates _____ .
5. _____is also known as liquid ratio or acid test ratio.
6. _____is a measure of company's liquidity position.

4. ADVANTAGES OF RATIO ANALYSIS

Ratio analysis is a very important and useful tool for financial analysis. It serves many purposes and is helpful not only for internal management but also for prospective investors, creditors and other outsiders. The following are the important uses (advantages) of ratio analysis.

1. It is an important and useful tool to check upon the efficiency with which the working capital is being used (managed) in a business enterprise. Ensures efficient management of working capital.
2. It helps the management of business concern in evaluating its financial position and efficiency of performance.
3. It serves as a sort of health test of a business firm, because with the help of this analysis financial managers can determine whether the firm is financially healthy or not.
4. A ratio analysis covering a number of past accounting (financial) periods clearly shows the trend of changes in the business position (i.e., whether the trend in financial position, income position etc. is upward, or downward or static). The progress or downfall of a business concern is clearly indicated by this analysis. Use to measure the trend of the Business.
5. It helps in making financial estimates for the future (i.e., in financial forecasting).
6. It helps the task of managerial control to a great extent.
7. It helps the credit suppliers and investors in evaluating a business firm as a desirable debtor or as a potential investment outlet.
8. With the help of this analysis ideal (standard) ratios can be established and these can be used for the purpose of comparison of a firm's progress and performance.
9. This analysis communicates important information regarding financial strength and standing, earning capacity, debt (borrowing) capacity, liquidity position, capacity to meet fixed commitments (charges, solvency, capital gearing, working capital management, future prospects etc. of a business concern.
10. This analysis may be employed for the purpose of comparing the working result and efficiency of performance of a business enterprise with that of other enterprises engaged in the same industry (Inter-firm- comparison).

11. It helps the management or a business concern to discharge their basic functions of planning, co-ordinating, controlling, etc.,
12. It serves as an instrument for testing management efficiency.
13. It sometimes provides a useful tool for decisions on certain policy matters.

SELF-ASSESSMENT QUESTIONS - 2

7. State whether the following statements are **True or False**:

1. Ratio analysis helps in making financial forecasting.
2. The progress or downfall of a business concern is not clearly indicated by ratio analysis.
3. Ratio analysis is an important and useful tool to check upon the efficiency with which the working capital is being managed in a business enterprise.

5. LIMITATIONS OF RATIO ANALYSIS

1. Accounting ratios (calculated under the system of ratio analysis) will be correct only if the accounting data (figures), on which they are based, are correct.
2. It is mainly a historical analysis or an analysis of the past financial data.
3. In regard to profits of a business concern, ratio analysis may, in certain circumstances be misleading.
4. Continuous changes in price levels (or, purchasing power of money) seriously affect the validity or comparison of accounting ratios calculated for different accounting (financial) periods, and make such comparisons very difficult.
5. Comparisons become difficult also on account of difference in the definition of several financial (accounting) terms like gross profit, operating profit, net profit etc., and on account of a considerable diversity in practice as regards their measurement.
6. The validity of comparison is also seriously affected by window dressing in the basic financial statements and by differences in accounting methods used by different business concerns.
7. A single ratio will not be able to convey much information.
8. This analysis gives only a part of the total information required for proper decision-making.
9. Ratio analysis should not be taken as substitute for sound judgement.
10. It should not be overlooked that business problems cannot be solved simply mechanically through ratio analysis or other types of financial analysis.

6. COMPUTATION & RATIOS (PROBLEMS)

Illustration 1: The following is the trading and profit and loss account of Ram Sons (Pvt.) Ltd. For the year ended June 30, 2007.

		Rs.		Rs.
To	Stock-in-hand	76,250	By Sales	5,00,000
To	Purchases	3,15,250	By Stock in hand	98,500
To	Carriage and freight	2,000		
To	Wages	5,000		
To	Gross profit	2,00,000		
		Rs. 5,98,500		Rs.5,98,500

		Rs.		Rs.
To	Administrative expenses	1,01,000	By Gross profit	2,00,000
To	Finance expenses:		By Non-operating incomes:	
	Interest	1,200	Interest on security	1,500
	Discount	2,400	Dividend on shares	3,750
	Bad debts	3,400	Profit on sale of shares	750
		Rs.7,000		Rs. 6,000,

	Rs.	Rs.
To selling and distribution		

To Selling and distribution

Expenses 12,000

To Non-operating expenses:

Loss on sale of

Securities 350

Provision for legal suit 1,650 2,000

To Net profit 84000

Rs. 2,06,000 Rs. 2,06,000

You are required to calculate: (a) Expense ratio, (b) Gross profit ratio, (c) Net profit ratio, (d) Operating net profit ratio, (e) Operating ratio, and

(f) Stock turnover.

Solution:

a) Expense ratios

i) $\frac{\text{Administration expenses}}{\text{Sales}} = \frac{\text{Rs.1,01,000}}{\text{Rs.5,00,000}} \times 100 = 20.2\%$

ii) $\frac{\text{Finance expenses}}{\text{Sales}} = \frac{\text{Rs.7,000}}{\text{Rs.5,00,000}} \times 100 = 1.40\%$

iii) $\frac{\text{Selling and distribution expenses}}{\text{Sales}} = \frac{\text{Rs.12,000}}{\text{Rs.5,00,000}} \times 100 = 2.40\%$

iv) $\frac{\text{Non} - \text{operating expenses}}{\text{Sales}} = \frac{Rs.2,000}{Rs.5,00,000} \times 100 = 0.4\%$

b) Gross Profit ratio

$$\frac{\text{Gross Profit}}{\text{Sales}} = \frac{2,000}{5,00,000} \times 100 = 40\%$$

c) Net Profit ratio

$$\frac{\text{Net Profit}}{\text{Sales}} = \frac{84,000}{5,00,000} \times 100 = 16.80\%$$

d) Operating Net Profit Ratio

Operating net profit = Net profit + non-operating expenses – non-operating incomes

= Rs. 84,000 + Rs. 2,000 – Rs. 6,000 = Rs. 80,000

$$\therefore Ratio \ \frac{\text{Operating net profit}}{\text{Sales}} = \frac{\text{Rs. 80,000}}{\text{Rs. 5,00,000}} \times 100 = 16\% *$$

* It may be noted that operating ratio together with the operating net profit ratio will be equal to 100%.

e) Operating ratio

This is an expression of the cost of goods sold plus all other operating expenses to net sales. This is calculated as follows:

Stock in the beginning	Rs.	76,250
Add: Purchases		3,15,250
Add: Direct expenses (Rs. 2,000 + Rs. 5,000)		7,000
		3,98,500
Less: Stock in hand at the end		98,500
Cost of goods sold		3,00,000
All operating expenses: Administration expenses		
	1,01,000	
Finance expenses	7,000	
Selling and distribution expenses	12,000	
		1,20,000
Total cost of operation	Rs.	4,20,000

$$\text{The operating ratio} = \frac{\text{Rs.4,20,000}}{\text{Rs.5,00,000}} \times 100 = 84\% *$$

f) Stock turnover

Stock at the beginning	Rs.	76,250
Add: Stock at the end		98,500
Total Stock	Rs.	1,74,750

$$\left(\frac{\text{Rs. 1,74,750}}{2}\right)$$

$$\text{Stock turnover} = \frac{\text{Cost of gods sold}}{\text{Average stock}} \quad \frac{\text{Rs. 3,00,000}}{\text{Rs. 87,375}} \; 3.43 \text{ times}$$

* It may be noted that operating ratio together with the operating net profit ratio will be equal to 100%.

Illustration 2: M/s Raj and Sons Ltd. present you the following:

BALANCE SHEET

As at 31st December, 2006

	Rs.		Rs.
Equity Share Capital	50,000	Fixed assets	87,500
8% Preference Share Capital	10,000	Investments	25,000
Reserve Fund	40,000	Stock	30,000
6% Debentures	20,000	Sundry Debtors	13,500
Sundry Creditors	30,000	Bank Balance	7,000
Profit and Loss Account		Preliminary expenses	8,000
2005	1,000		
2006	20,000		
	21,000		
	Rs. 171,000		Rs. 171,000

The directors intend to transfer a sum of Rs. 5,000 out of the current year profits to provision for tax.

You are required to calculate the following ratios:

a) Return on capital employed ratio
b) Current ratio
c) Fixed assets to net worth
d) Debt to equity capital
e) Return on owner's capital

Solution:

Raja & Sons Limited

Working Capital:		
Current Assets:		
Bank Balance	Rs. 7,000	
Sundry Debtors	13,500	
Stock	30,000	
Investments*	25,000	
		75,500
Less: Current Liabilities		
Sundry Creditors	30,000	
Provision for taxation	5,000	
		35,000
Working Capital		40,500
Fixed Assets		87,500
Total Funds (Capital) Employed		1,28,000
Less: 6% Debentures		20,000
Shareholders' Equity		1,08,000
Represented by:		
Equity Share Capital		50,000
Preference Share Capital		10,000
Reserves		40,000
Profit and Loss A/c Balance		8,000
		Rs. 1,08,000

(a) *Return on capital employed ratio*

Net profit for 2000	Rs.	20,000
Add: Interest on debentures		1,200
	Total	21,200
Less: Provision for tax		5,000
Adjusted profits after tax	Rs.	16,200

$$\text{Return} = \frac{16,200}{1,28,000} \times 100 = 12.7\%$$

Note: It is presumed that the provision for taxation is sufficient to discharge tax liability.

* Presumed to be temporary investments.

P & L A/c balance less preliminary expenses provision for taxation.

(b) *current ratio*

$$\frac{\text{Current Asset}}{\text{Current Liabilities s}} = \frac{75{,}500}{35{,}000} = 2.16:1$$

Company is having current assets of Rs. 2.16 for every Re. 1 of current liabilities. As the ideal ratio is 2:1, the current ratio is very satisfactory.

(c) *Fixed assets to NetWorth* ……

$$\frac{Fixed\ assets}{Netwrth} = \frac{Rs.87{,}500}{Rs.108{,}500} = 81:1$$

The ratio is less than 1 and it indicates that net worth is more than the fixed assets and that a portion of net worth is used for financing working capital. The proper ratio is 0.67, where the whole of long-term funds are considered. In this case as we have taken only net worth the situation is very satisfactory.

d)*Debt to equity capital*

$$\frac{\text{Debt}}{\text{Equity Capital}} = \frac{20{,}000}{50{,}000} = 2.5$$

This ratio indicates very low gearing. If one substitutes equity for equity capital in the denominator, the ratio will be further lower than it is now.

(e) *Return on owner's capital*

$$\frac{\text{Pr ofits available forow ners}}{\text{Ow ner' s Capital}} = \frac{20{,}000 - 5{,}000}{50{,}000 + 10{,}000} = \frac{15{,}000}{60{,}000} \times 100 = 25\%$$

The return is high even without trading on equity. It would have been much more had there been high gearing.

Illustration 3: Following is the Balance Sheet of X Company Ltd.:

Balance Sheet as on 31st December 2006

	Rs.		Rs.
Equity Share Capital	1,00,000	Cash in Hand	2,000
6% Preference Share Capital	1,00,000	Cash at Bank	10,000
7% Debentures	40,000	Bills Receivable	30,000
8% Public Debt	20,000	Investments	20,000
Bank Overdraft	40,000	Debtors	70,000
Creditors	60,000	Stock	40,000
Outstanding's Creditors	7,000	Furniture	30,000
Proposed Dividend	10,000	Machinery	1,00,000
Reserves	1,50,000	Land and Building	2,20,000
Provision for Taxation	20,000	Goodwill	35,000
Profit and Loss Account	20,000	Preliminary Expenses	10,000
	Rs. 5,67,000		**Rs. 5,67,000**

During the year provision for taxation was Rs. 20,000. Debentures are repayable in 2019 and public debt in 2013. Sales during the year were Rs. 3,00,000. Dividend proposed was Rs. 10,000. Profit carried forward from the last year Rs. 15,000.

You are required to calculate: (a) Short-term solvency ratios, (b) Long-term solvency ratios, and (c) Sales ratios.

Solution:

(a) Short-term solvency ratios

1. Current ratio

$$Current\ ratio = \frac{\text{Current ratio}}{\text{Current liabilitie s}}$$

$$= \frac{Rs.\ (2{,}000 + 10{,}000 + \ 30{,}000 + \ 20{,}000\ * \ + 70{,}000 + \ 40{,}000)}{\text{Rs.}\ (40{,}000 + 60{,}000 + \ 7{,}000 + 10{,}000 + \ 20{,}000)}$$

$$= \frac{\text{Rs. } 1{,}72{,}000}{\text{Rs. } 1{,}37{,}000} = \frac{172}{137}$$

Company is having current assets of Rs. 172 as against current liabilities of Rs. 137. There is small margin of safety against fall in price and financial position is not very sound.

2. ***Quick ratio:***

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

$$= \frac{\text{Rs. } (2{,}000 + 10{,}000 + 30{,}000 + 20{,}000 + 70{,}000)}{\text{Rs. } 1{,}37{,}000}$$

$$= \frac{\text{Rs. } 1{,}32{,}000}{\text{Rs. } 1{,}37{,}000} = \frac{132}{137}$$

Company's immediate resources for meeting current liabilities are a little less than obligations. Its financial position cannot be said to be very strong. This fact was supported by current ratio also.

* Presumed to be temporary investment.

(b)**Long-term solvency ratios**

1. ***Equity ratio:***

   This is also called shareholders' equities to total equities ratio, or net worth to total assets ratio.

   $$\text{Equity ratio} = \frac{\text{Total owned capital including accumulate d profits}}{\text{Total Capital}}$$

   $$= \frac{\text{Rs.}(1{,}00{,}000 + 1{,}00{,}000 + 1{,}50{,}000 + 20{,}000)}{\text{Rs.}5{,}67{,}000} = \frac{\text{Rs.}3{,}70{,}000}{\text{Rs.}5{,}67{,}000} = \frac{370}{567}$$

It means that out of every investment of Rs. 567 in the firm, shareholders' contribution is only Rs. 370, i.e., the cushion against fall in price of assets in the case of liquidation of the company is only Rs. 197. This margin is not very satisfactory.

2. Net Income to debt service ratio:

$$= \frac{\text{Net income before charging interest and income}}{\text{Periodic interest on long – term debts}}$$

$$= \frac{\text{Rs . 35,000 (1) + Rs . 4,400}}{\text{Rs . 4,400}} = \frac{\text{Rs . 39,400}}{\text{Rs . 4,400}} = 9\ times$$

Earning of the company from this angle is very sound.

Note:

i) Profit for the year has been calculated as under:

Profit and Loss Account as per B/S	Rs. 20,000
Add: Transfer to proposed dividend	10,000
Add: Transfer to taxation reserve	20,000
	50,000
Less: Carried forward from last year	15,000
Profit for the year	**Rs. 35,000**

Sales ratios

1. Sales to fixed assets = Sales : Fixed assets

   = Rs. 3,00,000 : Rs. 3,85,000 = 60:77

   Whether this ratio is satisfactory or not will be determined by comparing it either with standard ratio or with some ratio prevalent in that industry. Goodwill is included in fixed assets.

2. Sales to working capital = Sales : Working Capital

   = Sales: (Current assets – Current liabilities)

   = Rs. 3,00,000 : (Rs. 1,72,000 – Rs. 1,37,000)

   = 3,00,000 : 35,000 = 60 : 7

   Again, comment on suitability of ratio can be made only after comparing this ratio with other standard ratio.

Illustration 4: A Ltd. has a current ratio of 4.5 to 1 and liquidity ratio of 3 to

1. If its merchandise inventory is Rs. 24,000, find out the total current liabilities.

Solution:

Current ratio	4.5:1
Liquidity ratio	3.0:1
∴ Inventory to current liabilities	1.5:1

$$Current\ Liabilities = \frac{24{,}000}{1.5} \times 1 = Rs\,.16{,}000$$

Illustration 5: B Ltd. Has a liquidity ratio of 2 to 1. If its merchandise inventory is Rs. 15,000 and total current liabilities are Rs. 30,000, ascertain the current ratio.

Solution: As per the liquidity ratio for every Re. 1 of liability, there are Rs. 2 of liquid assets.

∴ Liquid assets (Rs. 30,000 x 2)	Rs. 60,000
Add: Merchandise inventory	15,000
Total of current assets	**Rs. 75,000**

$$Current\ ratio = \frac{Rs.\ 75{,}000}{\text{Rs. } 30{,}000} = 2.5:1$$

Illustration 6: Following are the ratios relating to the trading activities of National Traders Ltd.:

Debtor's velocity	3 months
Stock velocity	8 months
Creditors' velocity	2 months
Gross profit ratio	25 per cent

Gross profit for the year ended 31st December, 2006 amounts to Rs. 4,00,000. Closing stock of the year is Rs. 10,000 above the opening stock. Bills receivable amount of Rs. 25,000 and bills payable to Rs. 10,000. Find out: (a) Sales, (b) Sundry debtors, (c) Closing stock and (d) Sundry creditors.

Solution:

a) G.P. Ratio $= \frac{\text{Gross profit}}{\text{Sales}}$

$\therefore$Sales $= \frac{Gross\ profit}{\text{G.P.ratio}}$

$\frac{Rs\ .4,00,000}{25} \times 100$

=Rs .16,00,000

b) Debtors velocity = $\frac{Debtors}{\text{Sales}} \times 12$

$\therefore\ Debtors = \frac{Sales\ \times Debtors\ velocity}{12}$

$= \frac{16,00,000\ \times 3}{12}$

= Rs . 4,00,000

As debtors for this ratio include bills receivable, the book debts amount to Rs. 4,00,000 – Rs. 25,000 = Rs. 3,75,000.

c) Stock velocity = $\frac{Cost\ of\ goods\ sold}{\text{Average stock}} \times 12$

Average stock $= \frac{\text{Cost of goods sold} \times \text{ Stock velocity}}{12}$

Cost of goods sold = Sales – GP.

= Rs. 16,00,000 – Rs. 4,00,000 = Rs. 12,00,000

Average stock $= \frac{12,00,000\ \times 8}{12} = \text{Rs. } 8,00,000$

If x is assumed to be the opening stock, x + Rs. 10,000 would be the closing stock.

$$\therefore Average\ stock = \frac{\text{x} + \text{ x} + 10,000}{2}$$

$$\text{Opening stock}(x) = \frac{\text{Average stock} \times 2 - 10{,}000}{2}$$

$$= \frac{8{,}00{,}000 \times 2 - 10{,}000}{2} = Rs.\ 7{,}95{,}000$$

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

d) Creditor ' s velocity

$$\frac{\text{Total creditors}}{\text{Purchases}} \times 12$$

$$\therefore \text{Creditors} = \frac{Purchases \times Creditors\ velocity}{12}$$

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

= Rs. 12,00,000 + 8,05,000 – 7,95,000 = Rs. 12,10,000

$$\text{Creditors} = \frac{12{,}10{,}000 \times 2}{12} = \text{Rs}.\ 2{,}01{,}667$$

As creditors for this ratio include bills payable.

Trade creditors = Rs. 2,01,667 – Rs. 10,000 = Rs. 1,91,667

Illustration 7: Following is the Balance Sheet of X Ltd. on 31st December, 2006.

Liabilities	Rs.	Assets	Rs.
Equity Share Capital	20,000	Goodwill	12,000
Capital Reserves	4,000	Fixed Assets	28,000
8% Loan on Mortgage	16,000	Stocks	6,000
Trade Creditors	8,000	Debtors	6,000
Bank Overdraft	2,000	Investments	2,000
Taxation: Current	2,000	Cash in Hand	6,000
Future	2,000		

Profit and Loss Account:

Profit 2006 after taxation and interest on fixed deposits 12,000

Less: Transfer to:

Reserves	4,000		
Dividend	2,000		
	6,000		
	6,000		
	Rs. 60,000		**Rs. 60,000**

Sales amounted to Rs. 1,20,000. Calculate ratios for: (a) testing liquidity,

(b) testing solvency, and (c) testing profitability.

Solution:

Test of Liquidity

1. ***Current ratio***

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

$$= \frac{\text{Stock+ Debtors+Investment s+ Cash}}{\text{Creditors+Bank overdraft}* + \text{Pr vision for current taxation}}$$

$$= \frac{\text{Rs. 20,000}}{\text{Rs. 12,000}} = 5:3$$

Current ratio is reasonably good because current assets are almost double the current liabilities.

2. ***Quick ratio***

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

$$\frac{\text{Debtors+Investment s+ Cash in hand}}{\text{Creditors+ Bank overdraft+ Provision for current taxation}}$$

$$= \frac{\text{Rs .14,000}}{\text{Rs .12,000}} = 7:6 = 1.2:1$$

* Many accountants do not include bank overdraft in the current liability on the ground that arrangement with the bank regarding the bank overdraft is “permanent”. Though this

argument is substantially true yet the fact remains that this facility can be concerned by the bank at any time and in keeping with convention of "conservation", the inclusion of bank overdraft in current liability seems to be reasonable.

If quick ratio is 1:1 then position is said to be satisfactory. In this case it is more than one and hence liquidity of the company is sound.

TEST OF SOLVENCY

Although test of liquidity is the test of solvency, yet solvency normally stands for the ability to meet *all outside liabilities out of all assets*. Therefore:

$$Solvency\ ratio = \frac{\text{Total assets}}{\text{Total outside liabilitie s}} - \frac{\text{Rs .60,000}}{\text{Rs .28,000}} - \frac{15}{7}$$

$$= 15 : 7 = 2.2 : 1$$

Total liabilities are covered more than twice and, hence, solvency of the company is certain. In liabilities provision for future taxation is not included and in total assets goodwill is included only on the presumption that, if sold, it will realise that much of the amount. Goodwill appears in the Balance Sheet only when company has paid for it. In emergency it can also find market for it.

TEST FOR PROFITABILITY

The following tests have been carried out: (a) Return on total assets,

(b) Return on total investment employed, (e) Return on shareholders' funds. Other profitability ratios based on sales have not been calculated because of lack of information.

(a) Return on total assets:

$$Return\ on\ total\ assets = \frac{\text{Income before tax \& interest on fixedliability}}{\text{Total assets}} \times 100$$

$$= \frac{\text{Rs. (6,000 + 2,000 + 2,000 + 1,280)}}{\text{Rs .60,000}} = 100$$

$$\frac{\text{Rs. } 11{,}280}{\text{Rs. } 60{,}000} \times 100 = 18.8\%$$

This return can be compared with general return in the market and accordingly conclusions can be drawn.

(b) ***Return on gross capital, employed:***

Return on gross Capital

$$\text{Employed} = \frac{\text{Income before tax \& int erest on fixedliabilities}}{\text{Shareholders'funds+ fixedliabilitie s}} \times 100$$

$$= \frac{\text{Rs. } 11{,}280}{\text{Rs. } (20{,}000 + 4{,}000 + \ 2{,}000 + \ 6{,}000 + \ 16{,}000)} \times 100$$

$$= \frac{\text{Rs.}11{,}280}{\text{Rs.}48{,}000} \times 100 = 23.5\%$$

Company seems to have very sound financial policy because after earning at the rate of 23.5%, they are paying only 8% on fixed loans.

(c) ***Return on shareholders' funds:***

$$Return\ on\ shareholders'funds = \frac{\text{Income after taxation}}{\text{Shareholders' funds}} \times 100$$

$$\frac{\text{Rs. } 6{,}000 + \ \text{Rs. } 2{,}000}{\text{Rs. } (20{,}000 + \ 4{,}000 + \ 2{,}000 + \ 6{,}000)} \times 100$$

$$= \frac{\text{Rs. } 8{,}000}{\text{Rs. } 32{,}000} \times 100 = 25\%$$

Provision for taxation for future has been included in income. Since transfer to capital reserve is not available to shareholders it has been excluded from the income.

Illustration 8: Define any three of the following accounting ratios:

(i) Liquid ratio; (ii) Proprietary ratio; (iii) Operating ratio; (iv) Net profit ratio;

(v) Return on proprietor's funds.

From the following financial statements of Rimzim Ltd., calculate any three of the above accounting ratios and comment on the significance thereof.

XYZ Ltd.

Manufacturing, Trading and Profit and Loss Account for the year ended 31st March, 2007

	Rs.			Rs.
To Opening Stock	5,00,000	By Sales: Cash	3,00,000	
To Purchases	11,00,000	Credit	17,00,000	
To Wages	3,00,000			20,00,000
To Factory Overheads	2,00,000	By Closing Stock		6,00,000
To Gross Profit	5,00,000			
Rs.	**26,00,000**	**Rs.**		**26,00,000**
To Administrative Expenses	75,000	By Gross Profit		5,00,000
To Selling and Distribution Expenses	50,0000	By Dividend on Investments		10,000
To Debenture Interest	20,000	By Profit on Sale of Furniture		20,000
To Depreciation	60,000			
To Loss on Sale of Motor Car	5,000			
To Net Profit	3,20,000			
Rs.	**5,30,000**	**Rs.**		**5,30,000**
To Preference Dividend (net) – interim	15,000	By Balance b/d		2,71,000
To Provision for Taxation	1,76,000	By Net Profit		3,20,000
To Balance c/d	4,00,000			
Rs.	**5,91,000**	**Rs.**		**5,91,000**

Balance Sheet as at 31st March, 2007

Liabilities	Rs.	Assets	Rs.
Equity Share Capital	10,00,000	Goodwill (at cost)	5,00,000
6% Preference Share Capital	5,00,000	Plant & Machinery	6,00,000
General Reserve	1,00,000	Land and Building	7,00,000
Profit and Loss Account	4,00,000	Furniture and Fixtures	1,00,000
Provision for Taxation	1,76,000	Stock-in-trade	6,00,000
Bills Payable	1,24,000	Bills Receivable	30,000
Bank Overdraft	1,20,000	Debtors	1,50,000
Creditors	4,80,000	Bank	2,20,000
	Rs. 29,00,000		**Rs. 29,00,000**

Solution:

(i) ***Liquid ratio:*** This is also known as 'acid test ratio' or 'quick ratio'. It is a ratio between cash and bank balances, readily saleable securities and book debts against current liabilities and is calculated as under:

$$\frac{\textbf{Quick assets}}{\textbf{Current Liabilities}}$$

$$\frac{\text{Bills receivable} + \text{Debtors} + \text{Bank}}{\text{Tax provision} + \text{Bills payable} + \text{Creditors} + \text{Bank overdraft}}$$

$$\frac{\text{Rs. } 30{,}000 + 1{,}50{,}000 + 2{,}20{,}000}{\text{Rs. } 1{,}76{,}00\,0 + 1{,}24{,}000 + 4{,}80{,}000 + 1{,}20{,}000} = \frac{4{,}00{,}000}{9{,}00{,}000} = 0.44$$

Thus, against the current-payable liability of Re. 1, the readily available liquid assets for payment are Re. 0.44.

(ii) ***Proprietary ratio:*** It is the ratio of total shareholders' fund to the total assets employed in the business. In the given problem, it is

$$= \frac{\text{Equity capital} + \text{Preferencecapital} + \text{General reserve} + \text{Profit and Loss A/c}}{\text{Total assets}}$$

$$\frac{\text{Rs. } 10{,}000 + 5{,}00{,}000 + 1{,}00{,}000 + 4{,}00{,}000}{\text{Rs. } 29{,}00{,}000} = \frac{20{,}00{,}000}{29{,}00{,}000} = 0.69$$

Thus, out of every Re. 1 employed in the business, shareholders' contribution is Re. 0.69 whereas the creditors have contributed the remaining Re. 0.31.

(iii) ***Operating ratio:*** Operating ratio is the ratio between cost of sales to the total net sales and is found as under:

$$= \frac{\text{Costof goods sold} + \text{Other operating expenses} - \text{closing stock}}{\text{Total net sales}} \times 100$$

$$= \frac{\text{Opening stock} + \text{Purchases} + \text{Wages} + \text{Overheads}}{\text{Total net sales}} \times 100$$

$$= \frac{\text{Rs. } 5{,}00{,}000 + \ 11{,}00{,}000 + \ 3{,}00{,}000 + \ 2{,}00{,}000 - \ 6{,}00{,}000 + \ 75{,}000 + \ 50{,}000 + \ 60{,}000}{20{,}00{,}000} \times 100$$

$$\frac{5{,}85{,}000}{20{,}00{,}000} \times 100$$

This ratio indicates the ratio of total expenses to sales and deducting it from 100, we get profit margin on sales. However, in calculating this ratio non- operating income and expenses (like profit or loss on sale of assets and dividends and purely financial expenses like interest) are excluded.

(iv) ***Net profit ratio:*** It is the ratio between net profit (excluding non- operating income and expenses) to total sales.

$$= \frac{\text{Net profit+ Losson sale of motor car +Debenture interest+ (Dividend+ Profit on sale of furniture)}}{\text{Total sales}} \times 100$$

$$= \frac{\text{Rs. } 3{,}20{,}000 + \ 5{,}000 + \ 20{,}000 + \ (10{,}000 + \ 20{,}000)}{20{,}00{,}000} = \frac{3{,}15{,}000}{20{,}00{,}000} \times 100 = 5.75$$

Thus, on a sale of Rs. 100 a net profit of Rs. 15.75 is made before taxes. *

* Operating ratio together with net profit ratio when expressed as percentage will equal 100.

(v) ***Return on proprietor's fund:*** It is a ratio between net operating profit to total shareholders' equity. In the given problem. It is

$$\frac{\text{Net operating profit [as per (iv) above]}}{\text{Shareholders equity [as per (ii) above]}} \times 100$$

$$= \frac{2{,}95{,}000}{20{,}00{,}000} \times 100 = 14.75\%$$

Illustration 9:

Gross profit	Rs. 80,000
Gross profit to cost of goods sold ratio	1/3
Stock velocity	6 times
Opening stock	Rs. 36,000
Accounts receivable velocity (year of 360 days)	72 days
Accounts payable velocity	90 days
Current assets	Rs. 1,50,000
Bills receivable	20,000
Bills payable	5,000
Fixed assets turnover ratio	8 times

Prepare balance sheet with as many details as possible.

Solution:

A) Working Notes

1) Cost of goods sold = Gross profit × 3 times

= 80,000 × 3 = Rs. 2,40,000

2) Sales = Cost of goods sold + Gross profit

= Rs. 2,40,000 + Rs. 80,000 = Rs. 3,20,000

3) Average stock:

$$\text{Stock velocity} = \frac{Cost\ of\ gods\ sold}{\text{Average stock}}$$

$$\text{Average stock} = \frac{Cost\ of\ gods\ sold}{\text{Stock velocity}} = \frac{2,40,000}{6} = \text{Rs . } 40,000$$

4) Closing Stock:

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

or Closing stock = Average stock × 2 – Opening stock

= 40,000 × 2 – Rs. 36,000 = Rs. 80,000 – Rs. 36,000 = Rs. 44,000

5) *Accounts receivable:*

$$Accounts\ receivable\ turnover = \frac{\text{Credit sales}}{\text{Average debtors}}$$

$$\text{Collection period} = \frac{360}{\text{Accounts receivable turnover}}$$

$$= \frac{360 \times \text{Averag debtors}}{\text{Credit sales}}$$

$$\text{or Average debtors} = \frac{\text{Collection period} \times \text{Credit sales}}{360}$$

$$= \frac{72 \times 3{,}20{,}000}{360} = \text{Rs. } 64{,}000$$

Note: All sales have been assumed to be credit sales.

6) *Debtors* = Accounts receivable – Bills receivable

= Rs. 64,000 – Rs. 20,000 = Rs. 44,000

7) *Accounts payable:*

$$\text{Accounts payable turnover} = \frac{\text{Credit purchases}}{\text{Average creditors}}$$

$$\text{Payment period} = \frac{360}{\text{Accounts Payable turnover}}$$

$$\text{or Payment period} = \frac{360}{\frac{\text{Credit Purchases}}{\text{Average Creditors}}}$$

$$= \frac{360 \times \text{Average Debtors}}{\text{Credit purchases}}$$

$$\text{Average Creditors} = \frac{\text{Payment period} \times \text{Credit Purchases}}{360}$$

$$= \frac{90 \times \text{Rs. } 2{,}48{,}000 *}{360} = \text{Rs. } 62{,}000$$

8) *Creditors* = Accounts payable – Bills receivable

= Rs. 62,000 – Rs. 5,000 = Rs. 57,000

9) Fixed assets

$$\text{Fixed assets turnover} = \frac{Cost\ of\ goods\ sold}{\text{Fixed assets}}$$

$$\text{or Fixed assets} = \frac{\text{Cost of goods sold}}{\text{Fixed assets turnover}} = \frac{2,40,000}{8}$$

= Rs .30,000

Note: For the calculation of fixed assets turnover ratio, it is cost of goods sold (not sales) which is taken into consideration.

(B) Balance Sheet as on ……..

Shareholders' Fund		Fixed Assets	Rs. 30,000
(balancing figure)	Rs. 1,18,000	Current Assets	
Creditors	57,000	Stock	44,000
Bills Payable	5,000	Debtors	44,000
		Bills Receivable	20,000
		Cash	42,000
	Rs. 1,80,000		**Rs. 1,80,000**

Note: In the absence of information average debtors and average creditors have been taken as debtors and creditors at the end respectively.

Illustration 10: From the following particulars, prepare the Balance Sheet of X Ltd., which has only one class of share capital:

i) Sales for the year Rs. 20,00,000.
ii) G.P. ratio – 25%.
iii) Current assets ratio – 1.50.
iv) Quick assets (cash and debtors) ratio 1.25.
v) Stock turnover ratio – 15.
vi) Debts collection period – 1 ½ months.
vii) Turnover to fixed assets 1.5.
viii) Ratio of reserves to share capital – 0.33 (i.e. 1/3).

ix) Fixed assets to net worth 0.83 (i.e. 5/6).

(The term turnover refers to cost of sales and the term stock to closing stock).

Solution:

(A) Working Notes:

(1) Closing Stock:

Sales	Rs. 20,00,000
Less: Gross Profit 25% on sales	Rs. 5,00,000
Cost of goods sold	Rs. 15,00,000

$$\text{Stock velocity} = \frac{\text{Cost of sales}}{\text{Average stock}}$$

$$\therefore \text{Average stock} = \frac{\text{Cost of sales}}{\text{Stock velocity}} = \frac{\text{Rs.15,00,000}}{15}$$

$$= \text{Rs. 1,00,000}$$

As the term stock relates to closing stock, Rs. 1,00,000 is the closing stock

(2) Fixed assets:

As the term turnover refers to cost of sales

$$\text{Fixed assets} = \frac{\text{Cost of sales}}{\text{Turnover to fixed assets}}$$

$$= \frac{\text{Rs.15,00,0 00}}{1.5}$$

$$= \text{Rs.10,00,0 00}$$

(3) Share capital and reserves:

$$\text{Fixed assets to net worth} = \frac{\text{Fixed assets}}{\text{Net worth}}$$

$$\therefore \text{Net worth} = \frac{\text{Fixed assets}}{\text{Fixed assets to net worth ratio}}$$

$$= \frac{\text{Rs.10,00,0 00}}{5/6}$$

$$= \text{Rs.12,00,0 00}$$

As the ratio of reserves to share capital is 1:3 out of net worth Rs.3,00,000 are reserves and the rest share capital (i.e., Rs.9,00,000).

(4) Book Debts:

Debt collection period (in terms of months) $=\frac{\text{Debtors}}{\text{Net sales}} \times 12$

$$\therefore Debtors = \frac{Net\ sales \times \text{Collection period}}{12}$$

$$= \frac{\text{Rs. } 20,00,000 \times 1.5}{12}$$

=Rs. 2,50,000

(5) Current Liabilities:

Current assets ratio = 1.5

Quick assets ratio = 1.25

Stock to current liabilities **0.25**

∴Current liabilities will be 4 times the stock = Rs. 4,00,000.

(6) Cash:

Current assets ratio = 1.5.

As the current liabilities are Rs. 4,00,000, the total of current assets would be Rs. 6,00,000.

Cash = Current assets – (Stock and debtors)

= Rs. 6,00,000 – (1,00,000 + 2,50,000)

= Rs. 2,50,000

X Ltd.

(B)Balance Sheet as on …….

Share Capital	Rs. 9,00,000	Fixed Assets		Rs.10,00,000
Reserves	3,00,000	Current Assets:		
Current Liabilities	4,00,000	Cash	2,50,000	
		Debtors	2,50,000	
		Stock	1,00,000	6,00,000
	Rs.16,00,000			**Rs.16,00,000**

SELF-ASSESSMENT QUESTIONS - 3

8. State whether the following statements are **True or False**:
    1. 'Equity ratio' is also called shareholders' equities to total equities ratio, or net worth to total assets ratio.
    2. Solvency normally stands for the ability to meet all outside liabilities out of all assets.
    3. Goodwill appears in the Balance Sheet only when company has paid for it.
    4. 'Operating ratio' is the ratio of total shareholders' fund to the total assets employed in the business.

7. SUMMARY

- 'Ratio' is a relationship between two or more variable expressed in
- Percentage, Rate and Proportion.
- Ratio Analysis is an important technique of financial analysis.
- Current ratio indicates the firm's ability to pay its current liabilities.
- Quick ratio is also known as liquid ratio or acid test ratio.
- Net Profit Ratio is used to measure the overall profitability and hence it is very useful to proprietors.
- A Higher Working Capital Turnover Ratio shows that there is low investment in working capital and vice-versa.
- Ratio analysis is a very important and useful tool for financial analysis.
- It helps the management of business concern in evaluating its financial position and efficiency of performance.

8. TERMINAL QUESTIONS

Short answer type questions

1. Explain the steps in Ratio Analysis.
2. What are some ratios that can be used for the objective of finding the long-term financial solvency position of the organisation?
3. List 4 limitations of ratio analysis.

Long answer type questions

4. Following is the Balance Sheet of Spraylac Paints Limited as on 31st December, 2006:

	Rs.			Rs.
Creditors	6,000	Cash		5,000
Bills Payable	10,000	Investments (Govt. Securities)		15,000
Outstanding Expenses	1,000	Sundry Debtors		20,000
Taxation Provision	13,000	Stock		30,000
Total Current Liabilities	30,000	Total Current Assets		70,000
6% Mortgage Debentures	70,000	Fixed Assets	1,80,000	
7% Preference Shares	10,000	*Less:* Depreciation provision	50,000	
Equity Shares	50,000			1,30,000
Reserves and Surplus	40,000			
	Rs. 2,00,000			**Rs. 2,00,000**

Additional information:

a) Net sales 3,00,000
b) Cost of goods sold 2,58,000
c) Net income before tax 20,000
d) Net income after tax 10,000

Calculate solvency ratios.

5. The following are the summarized Profit and Loss Account of Vidarbha Limited for the year ending 31st December, 2006, and the Balance Sheet as on that date:

Profit and Loss Account

	Rs.		Rs.
To Opening Stock	99,500	By Sales	8,50,000
To Purchases	5,45,250	By Closing Stock	1,49,000
To Incidental Expenses	14,250		
To Gross Profit	3,40,000		
	9,99,000		9,99,000
To Operating Expenses:		By Gross Profit	3,40,000
Selling and Distribution	30,000	By Non-operating Income	
Administrative Expenses	1,50,000	Interest	3,000
Finance	15,000	By Profit on Sale of Shares	6,000
To Non-operating Expenses:			
Loss on Sales of Assets	4,000		
To Net Profit	1,50,000		
	3,49,000		3,49,000

Balance Sheet

	Rs.		Rs.
Issued Capital:		Land & Buildings	1,50,000
2,000 Equity Shares of		Plant & Machinery	80,000
Rs. 100/- each	2,00,000	Stock-in-trade	1,49,000
Reserves	90,000	Sundry Debtors	71,000
Current Liabilities	1,30,000	Cash and Bank Balance	30,000
Profit and Loss Account	60,000		
	Rs. 4,80,000		**Rs. 4,80,000**

From the above statement you are required to calculate the following ratios:

i) Current ratio
ii) Operating rato
iii) Stock turnover
iv) Return on total resources
v) Turnover of fixed assets.

6. The following are the extracts from the financial statements of M/s Efficient and Experts Ltd., as on 1-3-2006 and 2007 respectively:

	31-3-2006 Rs.	31-3-2007 Rs.
Stock	10,000	25,000
Debtors	20,000	20,000
Bills receivable	10,000	5,000
Advance (recoverable in cash or kind)	2,000	–
Cash on hand	18,000	15,000
Creditors	25,000	30,000
Bills payable	15,000	20,000
Bank overdraft	–	2,000
9% Debentures 2022	2,00,000	2,00,000
Sales for the year	3,50,000	3,00,000
Gross profit	70,000	50,000

Your are required to compute for both these years:

(1) Current ratio; (2) Liquid ratio; (3) Stock turnover rate, (4) Number of days outstanding of debtors; (5) Stock-working capital ratio.

9. ANSWERS

Self-Assessment Questions

1. Ratio Analysis
2. Ratio
3. Investment ratios
4. Sound solvency position; inadequate working capital

5. Quick ratio
6. Net Working Capital Ratio
7. 1-True; 2- False; 3- True
8. 1-True; 2- True; 3- True; 4- False

Terminal Questions

1. Step 1: Collection of information, which are relevant from the financial statements and then to calculate different ratios accordingly.

   Step 2: Comparison of computed ratios of the same organisation or with the industry ratios.

   Step 3: Interpretation, drawing of inference and report-writing

2. Some ratios that can be used for finding the long term solvency position of the organisation:
   - Equity or proprietary ratio
   - Debt ratio
   - Debt-equity ratio
   - Shareholders equity to total equity ratio
3. Some limitations of ratio analysis are:
   - Accounting ratios (calculated under the system of ratio analysis) will be correct only if the accounting data (figures), on which they are based, are correct.
   - It is mainly a historical analysis or an analysis of the past financial data.
   - In regard to profits of a business concern, ratio analysis may, in certain circumstances be misleading.
   - Continuous changes in price levels (or, purchasing power of money) seriously affect the validity or comparison of accounting ratios calculated for different accounting (financial) periods, and make such comparisons very difficult.
4. Refer to 6
5. Refer to 6
6. Refer to 6