Financial Accounting and Auditing – Introduction to Management Accounting

(As Per the Revised Syllabus of S.Y. B.Com., 2017-18, Sem. III, University of Mumbai)

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Preface

It is a matter of great pleasure to present this new edition of the book on **Introduction to Management Accounting** to the students and teachers of Bachelor of Commerce B.Com started by University of Mumbai. This book is written on lines of revised syllabus instituted by the university. The book presents the subject matter in a simple and convincing language.

In keeping with the aims of the book, we have attempted to present the text in a lucid and simple style; the treatment is comprehensive and by and large non-mathematical. Another notable feature of this volume is that the discussions of the concepts and theories are invariably followed by exhaustive illustrative problems. To test the understanding of the readers as also to enable them to have sufficient practice, a large number of exercises have also been given at the end of the chapters.

The syllabus contains a list of the topics covered in each chapter which will avoid the controversies regarding the exact scope of the syllabus. The text follows the term wise, chapter-topic pattern as prescribed in the syllabus. We have preferred to give the text of the section and rules as it is and thereafter added the comments with the intention of explaining the subject to the students in a simplified language. While making an attempt to explain in a simplified language, any mistake of interpretation might have crept in.

This book is a unique presentation of subject matter in an orderly manner. This is a student-friendly book and tutor at home. We hope the teaching faculty and the student community will find this book of great use.

We are extremely grateful to Mr. K.N. Pandey of Himalaya Publishing House Pvt. Ltd., for their devoted and untiring personal attention accorded by them to this publication.

We owe a great many thanks to a great many people who helped and supported us during the writing of this book which includes Principal, HOD, and Students of B.Com Section.

We gratefully acknowledge and express our sincere thanks to the following people without whose inspiration, support, constructive suggestions of this book would not have been possible.

- Mr. Jitendra Singh Thakur *(Trustee, Thakur College)*
- Dr. Chaitaly Chakraborty *(Principal, Thakur College)*
- Mrs. Janki Nishikhant Jha

We welcome suggestions from students and teachers for further improvement of quality of book.

— Authors

Syllabus

Financial Accounting and Auditing – Introduction to Management Accounting

Sr. No.	Modules	No. of Lectures
1.	Introduction to Management Accounting	10
2.	Ratio Analysis and Interpretation	15
3.	Working Capital Management	10
4.	Capital Budgeting	10
	Total	**45**

Sr. No.	Modules /Units
1.	**Introduction to Management Accounting**
	A. Introduction to Management Accounting – Meaning – Nature – Scope and Functions, Decision Making Process, Financial Accounting V/s Management Accounting. B. Analysis and Interpretation of Financial Statements (i) Study of Balance sheet and Income statement / Revenue statements in vertical form suitable for analysis (ii) Relationship between items in Balance Sheet and Revenue statement (iii) Tools of analysis of Financial Statements (i) Trend analysis (ii) Comparative Statement (iii) Common Size Statement **Note:** (i) Problems based on trend analysis (ii) Short Problems on Comparative and Common sized statements
2.	**Ratio Analysis and Interpretation** (Based on Vertical Forms of Financial statements) – Meaning, classification, Du Point Chart, advantages and Limitations) **A. Balance Sheet Ratios:** (i) Current Ratio (ii) Liquid Ratio (iii) Stock Working Capital Ratio (iv) Proprietary Ratio (v) Debt Equity Ratio (vi) Capital Gearing Ratio **B. Revenue Statement Ratio** (i) Gross Profit Ratio (ii) Expenses Ratio (iii) Operating Ratio (iv) Net Profit Ratio (v) Net Operating Profit Ratio (vi) Stock Turnover Ratio **A. Combined Ratio:** (i) Return on capital employed (including Long Term Borrowings) (ii) Return on proprietor's Fund (Shareholders Fund and Preference Capital) (iii) Return on Equity capital (iv) Dividend Payout Ratio (v) Debt Service Ratio

	(vi) Debtors Turnover (vii) Creditors Turnover (Practical Question on Ratio Analysis)
3.	**Working Capital Management : (Practical Questions)**
	(A) Concept, Nature of Working Capital, Planning of Working Capital (B) Estimation / Projection Working Capital Requirement in case of Trading and Manufacturing Organization (C) Operating Cycle
4.	**Capital Budgeting** (A) Introduction (B) The classification of capital budgeting projects (C) Capital budgeting process (D) Capital budgeting techniques - **Payback period, Accounting Rate of return, Net Present value, The Profitability Index, Discounted Payback. (Excluding calculation of cash flow)**

Question Paper Pattern

Duration: 3 Hrs. Maximum Marks: 100

All Question are Compulsory Carrying 15 marks each. Questions to be Set: 06

	Particulars	Marks
Q.1	Objective Questions (c) Sub Questions to be asked 12 and to be answered any 10 (d) Sub Questions to be asked 12 and to be answered any 10 (*Multiple choice/True or False/Match the column/Fill in the blanks)	20 Marks
Q.2	Full Length Question	15 Marks
	OR	
Q.2	Full Length Question	15 Marks
Q.3	Full Length Question	15 Marks
	OR	
Q.3	Full Length Question	15 Marks
Q.4	Full Length Question	15 Marks
	OR	
Q.4	Full Length Question	15 Marks
Q.5	Full Length Question	15 Marks
	OR	
Q.4	Full Length Question	15 Marks
Q.6	(c) Theory Questions	10 Marks
	(d)Theory Questions	10 Marks
	OR	
Q.6	Short Notes To be asked 06 To be answered 04	20 Marks

Note: Theory question of 15 marks may be divided into two sub question of 7/8 and 10/5 Marks.

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Chapter

1

Introduction to Management Accounting

INTRODUCTION

Financial Accounting is the basic form of accounting. The main purpose of financial accounting is the preparation of Financial Statements of an organisation. Profit and Loss account and the Balance Sheet are the two Financial Statements. Financial accounting provides complete information of the results of business operations and its financial position.

Today, the management is not interested in knowing only the profit or loss and the financial position of business, but also requires other information too to take important decisions and tackle the problems if any. Thus, to provide necessary information to management in taking important decision, Management Accounting system was introduced.

The term 'Management Accounting' was first used by the British team of Accountants that visited the United States in 1950 under the auspices of Anglo-American Productivity Council. In November 1950, the team defined the nature of management accounting as 'The presentation of accounting information in such a way as to assist management in the creation of policy and in the day-to-day operations of an undertaking".

MEANING AND DEFINITIONS OF MANAGEMENT ACCOUNTING

Management accounting refers to adoption and analysis of accounting information for diagnosis and explanation in such a way so as to assist management in policy framing and taking important decisions. It involves presentation of financial information in such a way so as to assist the management in planning, controlling and decision-making. It is a modern concept of accounting and also an effective tool of forecasting. The management has to carry out different functions such as planning, organising, coordinating, directing and controlling. At every level, the management needs to take certain decision which is possible only if the information is available to the management. Management accounting helps in providing the information by analysing and presenting financial information which helps in the interpretation of financial statements.

Definitions of Management Accounting

According to **J. Batty**, "Management Accounting is the term used to describe the accounting methods, systems and techniques which coupled with special knowledge and ability, assists management in its task of maximising or minimising losses."

According to **Broad and Camichael**, "Management Accounting covers all those services by which the accounting department can assist the top management and other departments in the formation of policy control of execution and appreciation of effectiveness."

Institute of Chartered Accountants, England and Wales has defined Management Accounting as "Any form of accounting which enables a business to be conducted more efficiently can be regarded as Management Accounting."

According to **American Accounting Association**, "Management Accounting includes the methods of concepts necessary for effective planning for choosing among alternative business actions and for control through the evaluation and interpretation of performance."

According to **Brown and Howard**, "Management accounting is concerned with the efficient management of a business through the presentation to management of such information as will facilitate efficient planning and control."

According to **T.G. Rose**, "Management Accounting is the adaption and analysis of accounting information and its diagnosis and explanation in such a way as to assist management."

According to **The Institute of Chartered Accountants of India**, "Such of its techniques and procedures by which accounting mainly seek to aid the management collectively have come to be known as Management Accounting."

NATURE AND SCOPE OF MANAGEMENT ACCOUNTING

Management accounting is mainly concerned with accounting information which is useful to management for decision-making. The nature of management accounting has changed over the years. Earlier, the focus was on information for management planning and control. Now, the focus is on resource management. Now, management accounting is used to create, protect and preserve the value of stakeholders. The scope of management accounting is very wide and covers all the areas where the management accounting has to function. Following systems and techniques fall within the scope of management accounting:

- **Financial Accounting:** It is concerned with the recording and summarising of business transactions. Maintenance of books of accounts helps in preparation of financial statements. These statements are analysed in management accounting. Financial statements are the base for management accounting.
- **Cost Accounting:** With the help of various techniques like standard costing, marginal costing, etc., it helps in knowing the deviations in the costs. Marginal costing is the most important tool in decision-making. Management accounting makes use of cost data in taking managerial decisions.
- **Budgetary Control:** Budgets are prepared and compared with actual performance. The variance is ascertained and suitable measures are taken for prevention in future. Budgetary control is the system of controlling the cost with the help of budgets.
- **Statistical Techniques:** The management accountant makes use of statistical techniques like regression, correlation, probability, standard deviation, etc. to present the reports to the management more accurately.
- **Forecasting:** Planning is based on forecasting. Budgets are prepared on the basis of forecasting. Both budgetary control and forecasting helps management accounting in taking important decisions.
- **Taxation:** Tax accounting includes the computation of tax liability. Tax accounting is an important aspect of management accounting. Tax planning has become an integral part of management in the present scenario.

- **Internal Audit:** Management accounting includes internal audit. Internal audit helps the management in fixing individual responsibility for internal control.
- **Methods and Procedures:** Management accounting is also concerned with the use of modern technology. It includes maintaining an efficient system for data processing and effective reporting of necessary data in time. This improves the office operations and develops a smooth conduct of office service.

FUNCTIONS OF MANAGEMENT ACCOUNTING

- **Planning:** The main aim of any business organisation is to earn profits. The same can be achieved if there is proper planning in making optimum utilisation of resources. The planning function of the management is facilitated by management accounting making relevant information available.
- **Analysis and Interpretation of Data:** Management accounting involves analysis and interpretation of financial data. Several tools are used for the analysis and interpretation such as ratio analysis, trend analysis, common size statements, etc.
- **Forecasting:** Management accounting makes short-term and long-term forecasts and plan future operations. Management accounting provides necessary information in forecasting.
- **Budgeting:** A budget provides complete estimated details about the utilisation of resources. The management accountant prepares different budgets and compares it with the actual performance.
- **Facilitates Management Control:** Management accounting facilities management in controlling the various functions of the organisation. It acts as a coordinating agent between different departments. Comparing the actual performance with the standards set helps the management in controlling the overall performance of the organisation.
- **Organising:** Management accounting helps organising human and other resources.
- **Reporting:** Management accounting plays a vital role in reporting the financial information to the management. It makes use of different tools of analysis and interprets the financial statements. It acts as an important medium of communication by preparation and submission of various reports to the management.
- **Coordination:** Management accounting provides necessary facts and figures to the management which helps in increasing the efficiency of the organisation. It helps the management in coordination of various departments.
- **Tax Management:** Management accounting helps in tax planning. The management accountant gives advice on tax effects and helps the management in taking important decisions in tax planning.

DECISION-MAKING PROCESS

The management accountant plays a vital role in providing the necessary information to the management in decision-making. Decision-making always involves a choice between alternative options available. Managerial decisions are based on information. The management accountant makes available the necessary facts and figures available to the management. He collects data, evaluates it and then provides it to the management. The management accountant analyses the financial statements and gives interpretations on it. He prepares report on the financial statements and provides it to the management. He makes use of different techniques of analysis such as trend analysis, ratio analysis, etc. The information within the organisation is analysed according to three types of management activities, i.e., strategic, tactical and operational. Strategic information is used by top level management to plan their objectives. Tactical information is used by middle level of management. Operational information is used by lower level of management. The information must be accurate, complete, up-to-date, relevant, brief and significant.

MANAGEMENT ACCOUNTING AND FINANCIAL ACCOUNTING

Both Management accounting and Financial accounting plays a vital role in management decision-making. Financial accounting provides the result and the position of an organisation. Management accounting makes use of different techniques to analyse and interpretate the financial statements.

Management Accounting vs. Financial Accounting

No.	Management Accounting	Financial Accounting
1	Involves analysis and interpretation of financial statements.	Involves preparation of financial statements.
2	It serves the management, hence internal interest.	It serves outsiders like shareholders, creditors, etc., hence external interest.
3	Voluntary in nature.	Mandatory under law.
4	It is concerned with the assessment of activities of various units or departments.	It is concerned with the assessment of result of the whole organisation.
5	It is prepared as frequently as required for decision-making.	It is prepared at the end of the financial year.
6	It provides data for comparison and important decision.	It provides data showing the results and position of the organisation.
7	It makes use of different analysis such as ratio analysis, trend statement analysis,etc.	It is done as per the accounting rules.
8	Reports are based on management needs.	Reports are based on Generally Accepted Accounting Principles.
9	Management accounting is dependent on financial accounting.	Financial accounting is independent.
10	It is concerned with both monetary and non-monetary aspects.	It is concerned with only monetary aspects.

FINANCIAL STATEMENTS

The term financial statements refers to the statements which the accountants prepare at the end of a period of time for a business enterprise. They are the:

1. Balance sheet.
2. Income Statement, i.e., Profit and Loss Account.
3. Cash Flow Statements.

Financial statements are the collection of financial results based on current facts and figures. For financial planning and control, financial statements have great importance. The following are the most common forms of financial statements:

1. Manufacturing, Trading and Profit and Loss Account
2. Balance Sheet
3. Cash Flow Statements
4. Funds Flow Statements.

Importance of Financial Statements

1. **Requirements of lenders:** In case of borrowings from banks and financial institutions, they insist the borrowers to furnish financial statements in order to assess their profitability.

2. **Guides future course of action:** Financial statements guides the management about the proper way to expand and prosper including in which area and to what extent expansion is possible.
3. **To understand the future:** Based on projected financial statements, the management will be in a better way to understand the future.
4. **To exercise control:** The management can exercise better control if clear about the position of the organisation.
5. **Better awareness about the present position:** For preparing the financial statements, a good knowledge about the present situations is a must. Thus, in the process of preparation of financial statements, management is made aware about the present situation.
6. **Arithmetical accuracy to the future plans:** In case of financial statements, everything is put down on paper in therms of rupees. Thus, it is very useful for control and corrective actions.
7. **Acts as a base for future actions:** Financial statements are the basis on which the management will act.

Uses of Financial Statements

1. It helps to reveal the changes in the various items in the Balance Sheet from the past to the present.
2. Financial statements help to measure the profitability.
3. Financial statements provides a concise summary of the firms revenues and expenses during the date or series of dates.
4. The financial statements reports the effect of the plan of operations on the assets, liabilities and capital of the company.

A profit and loss account summarises the income earned and expenses incurred during a particular period. A balance sheet is a statement of balances of assets and liabilities as at a particular date.

Formats of Financial Statements

1. Conventional Format or Horizontal Format or "I" Form:

Here, the Balance Sheet and Income Statement is presented in the "I" form or the account form. In case of Balance Sheet, the left hand side indicates the "liabilities" and the right hand side "assets" and in case of profit and loss account, the left hand side indicates the "expenses" incurred and the right hand side indicates the "incomes" earned. The conventional form of financial statement is not suitable for financial analysis.

2. Vertical Format:

The vertical format of financial statement is most suitable for financial analysis especially in case of ration analysis and for comparative analysis, common size analysis and trend analysis. It serves the purpose of other users such as potential investors or lenders also.

Balance Sheet

LIABILITIES	ASSETS
Owned Funds	Fixed Assets
Borrowed Funds	Long-term Investments
	Working Capital = Current Assets minus Current Liabilities

A Balance Sheet is divided into 5 windows. The liabilities side consists of:

1. **Owned Funds:** Owned funds belongs to the proprietors. It mainly consists of Share Capital + Reserves – Fictitious Assets. It indicates the owner's stake in the business.

2. **Borrowed Funds:** Borrowed funds consists of long-term borrowings both secured as well as unsecured from outside sources. The repayment period of such funds are beyond one year from the date of Balance Sheet. It consists of debentures, term loans from banks and financial institutions, fixed deposits, etc.

The Assets side consists of:

1. **Fixed Assets:** Fixed assets are also termed as long-term assets and they act a major source of revenue to the business. It consists of land and buildings, plant and machinery, furniture and fixtures, vehicles, and also includes intangible assets such as goodwill, patent, copyrights, etc.
2. **Investments:** Long-term investments are investments whose maturity period is beyond one year from the date of the Balance Sheet. In case of the long-term investment, the intention of the investor is to retain such securities for a longer period of time. Such investments may even be trade investment. Trade investments means an investment by a company in shares and/or debentures of another company for the purpose of promoting the business or trade interests of the investing company. Long-term investments may even be in government securities.
3. **Working Capital:** Working capital is the excess of current assets over current liabilities, i.e., current assets less current liabilities. Investment in working capital gets converted into cash withing a period less then a year. Current assets can be further split up into quick liabilities and non-quick liabilities.

Exercise

Theory Questions

1. What is Management Accounting? Give any three definitions.
2. Explain the nature and scope of Management accounting.
3. Give the functions of Management accounting.
4. Distinguish between Management accounting and Financial accounting.

Short Notes

1. Management accounting
2. Scope of management accounting
3. Decision-making process
4. Financial accounting

Fill in the Blanks

1. The main purpose of _____ accounting is preparation of financial statements.
2. Profit and Loss account and _____ are the two financial statements.
3. The term _____ was first used by the British team of Accountants that visited the United States in 1950 under the auspices of Anglo-American Productivity Council.
4. _____ accounting helps in providing the information by analysing and presenting financial information which helps in the interpretation of financial statements.
5. Management accounting involves analysis and _____ of financial data.
6. The information within the organisation is analysed according to three types of management activities, i.e., strategic, tactical and _____.
7. Strategic information is used by _____ level of management.

8. Tactical information is used by _____ level of management.
9. Operational information is used by _____ level of management.
10. The main aim of any business organisation is to earn _____.
11. Tax accounting includes the computation of _____ liability.
12. _____ always involves a choice between alternative options available.

[**Ans.:** 1. Management; 2. Balance Sheet; 3. Management Accounting; 4. Management accounting; 5. Interpretation; 6. Operational; 7. Top; 8. Middle; 9. Lower; 10. Profits; 11. Tax; 12. Decision-making.]

Chapter 2

Analysis and Interpretation of Account

FINANCIAL STATEMENTS

A financial statement is a compilation of data, which is logically and consistently organised according to accounting principles. Its purpose is to convey an understanding of some financial aspects of a business firm. It may show a position at a moment in time, as in the case of a balance sheet, or may reveal a series of activities over a given period of time, as in the case of an income statement. Financial statements are the major means through which firms present their financial situation to stockholders, creditors, and the general public. The majority of firms include extensive financial statements in their annual reports, which receive wide distribution.

Financial Statements

- Balance Sheet
- Income Statement
- Cash Flow Statement
- Others
  1. Board's Report
  2. Director's Responsibilities
  3. Management Discussion and Analysis
  4. Auditor's Report
  5. Report on Corporate Governance
  6. Accounting Policies
  7. Segment Report

The Nature of Financial Statement Analysis

Financial statement analysis consists of the application of analytical tools and techniques to the data in financial statements in order to derive from them measurements and relationships that are significant and useful for decision-making. The process of financial analysis can be described in various ways depending on the objectives to be obtained. Financial analysis can be used as a preliminary screening tool in the selection of stocks in the secondary market. It can be used as a forecasting tool of future financial conditions and results. It may be used as a process of evaluation and diagnosis of managerial, operating, or other problem areas. Above all, financial analysis reduces reliance on intuition, guesses and thus narrows the areas of uncertainty that is present in all decision-making processes. Financial analysis does not lessen the need for judgement but rather establishes a sound and systematic basis for its rational application.

Sources of Financial Information

The financial data needed in the financial analysis come from many sources. The primary source is the data provided by the firm itself in its annual report and require disclosures. The annual report comprises the income statement, the balance sheet, and the statement of cash flows, as well as footnotes to these

statements. Besides this, information such as the market prices of securities of publicly traded corporations can be found in the financial press and the electronic media daily. The financial press also provides information on stock price indices for industries and for the market as a whole.

The development of this chapter on financial statement analysis is carried out with the help of balance sheets and profit and loss accounts.

The Principal Tools of Analysis

In the analysis of financial statements, the analyst has a variety of tools available from which he can choose those best suited to his specific purpose. The following are the important tools of analysis:

1. Ratio analysis
2. Funds flow analysis
3. Cash flow analysis, etc.

Methods Used in Analysis of Financial Statements or Tools of Analysis in Financial Statements

Financial statements when analysed of one year are not much meaningful. In order to arrive at reasonable conclusions, financial statements should be analysed with reference to earlier years or with reference to other similar company. For such study, following tools are:

1. Comparative Statement
2. Common Size Statement
3. Trend Analysis.

In this chapter, we are discussing first three tools only.

1. COMPARATIVE STATEMENTS

It includes comparative Income Statement and comparative Balance Sheet. The statement gives information about the comparative preference of the company over different years. Profitability and financial position can be formed very well by making comparison between two year's financial statement of same company or by making comparison between two different companies (inter-firm comparison).

Example: Comparison between years 2013 and 2014 of R Ltd. and comparison between two companies A Ltd. and B Ltd. (same line of business).

They are presented in the following form:

M/s _____

Comparative Statement

No.	Particulars	2013 ₹	2014 ₹	Increase/Decrease ₹	Increase/Decrease %
1	Net Sales	50,000	70,000	20,000	40.00
2	Cost of Goods Sold	35 000	40 000	5,000	14.29
3	Gross Profit (1 – 2)	15,000	30,000	15,000	100.00
4	Operating Expenses	7.000	4000	(3,000)	(42.86)
5	Net Profit	8,000	26,000	18,000	225.00
1	Shareholders' Funds	1,00,000	1,00,000	–	–
2	Fixed Assets	80,000	60,000	(20,000)	(25.00)
3	Working Capital	15,000	18,000	3,000	20.00

Rupees Column	= Year 2014 – Year 2013	= + Increase/(–) Decrease
% Column	$= \frac{\text{Year 2014 – Year 2013}}{\text{Year 2013}} \times 100$	= + Increase %/(–) Decrease %

Advantages of Comparative Statements:

1. They are very useful as it gives information about the nature of changes in financial position and performance of an enterprise over the years.
2. These statements gives information about weakness and soundness of an enterprise, with respect to liquidity, solvency and profitability.
3. These statements help the management in forecasting and planning.

Limitations of Comparative Statements:

1. Comparison are not possible:
   (A) When accounting principles are not followed consistently.
   (B) When two periods are at normal periods (i.e., one normal and other abnormal).
   (C) Inter-firm comparison cannot be made unless they are of the same line.

2. COMON SIZE STATEMENTS

Meaning

Common size statement is another technique for financial analysis and interpretation which is also called as Vertical Technique, as against the comparative statement, which is called as the Horizontal Technique of comparison. It includes common size Income Statements and common size Balance Sheet.

This is useful when only one year financial statement is to be studied and conclusions are to be drawn.

Here, the actual size of the statement is converted into common size, i.e., 100. Size means the total of the statement. Therefore, the size of all statements becomes equal, i.e., 100 and so the technique is called the common size statement. The other items of which the total is made are also reduced proportionately. So, common size statements are nothing but the financial statements presented in percentage form.

Procedure to Convert Actual Statements to Common Size Statement

(a) Profit and Loss A/c

Here, the Net Sales to be taken as equal to 100 and the other items to be proportionately reduced. The formula is amount of the item divided by sale multiplied by 100.

Example: If sale is ₹ 1,00,000, cost of sale is ₹ 60,000.

So, the sale is to be taken = 100%

$$\text{Now, cost of sale} = \frac{60{,}000 \times 100}{1{,}00{,}000} = 60\%$$

In this way, the other items of Profit and Loss A/c are to be converted.

(b) Balance Sheet

In case of Balance Sheet, firstly it is to be converted in vertical form. Then the total funds are to be taken as equal to 100 and other items like proprietor's fund, long-term liabilities, fixed assets, working capital are to be converted proportionately.

$$\text{The Formula :} \quad \frac{\text{Amount of item to be converted}}{\text{Total funds}} = 100$$

With the help of common size statement, the comparison between the items of the statement can be made easily and conclusion can be drawn.

Also the comparison between the same item of two different statements can be made easily.

Example: Gross profit of 2012.

3. TREND ANALYSIS

Meaning

It is a another simplified technique of analysis of financial data. In this case, out of several years, 1st year is considered as the base year. All the figures of base year are considered as 100 and the figures of subsequent years are expressed as a percentage of base year.

Example: (Practical Example)

Trend Analysis

No.	Particulars	Rupees				% in Rupees			
		2011	**2012**	**2013**	**2014**	**2011**	**2012**	**2013**	**2014**
1	Net Sales	1,000	1,200	1,500	1,250	100	120	150	125
2	Cost of Goods Sold	700	750	900	800	100	107.14	128.57	114.29
3	Gross Profit	300	450	600	450	100	150	200	150

1. First year is taken as base year, i.e., 100.
2. Second and subsequent years are expressed in percentages on the basis of base year.

$$\% = \frac{\text{Year Under Study}}{\text{Base Year}} \times 100$$

3. Common Size Balance Sheet is prepared in same manner.

Advantages of Trend Analysis

1. It is more reliable and accurate because it is based on percentages and not on absolute figures.
2. This method is considered as very useful for analysing the financial statement than other techniques because it takes more than 2 years. So, we can say it as quick technique of analysis.

Limitations of Trend Analysis

1. There is always the danger of selecting the base year which may be wrong.
2. Trend percentage is affected when accounts are not drawn on a consistent basis (different accounting policies).

M/s_____

Financial Position Statement as on _____

Particulars	₹	₹	₹
I. Sources of Funds:			
1. Shareholders' Fund (Owned Fund)			
Equity Share Capital (Called-up Capital)		X	
Less: Calls in Arrears		X	
		X	
Add: Shares Forfeited		X	
		X	
Preference Share Capital (Called-up Capital)		X	
		X	
Add: Reserves and Surplus:			
General Reserve	X		
Capital Reserve	X		
Capital Redemption Reserve	X		
Securities Premium	X		
Dividend Equalisation Reserve	X		
Investment Fluctuation Reserve	X		
Workmen Compensation Fund	X		
Insurance Fund	X		
Provident Fund	X		
Foreign Project Reserve	X		
Debenture Redemption Reserve	X		
Profit and Loss Account (Cr. Balance)	X		
Sinking Fund	X	X	
		X	
Less: Fictitious Assets (Miscellaneous Expenditure not written off)			
Preliminary Expenses	X		

Underwriting Expenses	X		
Discount on Issue of Shares/Debentures	X		
Issue Expenses not written off	X		
Deferred Revenue Expenditure	X		
Research and Development Expenditure	X		
Interest Paid out of Capital During Construction Period	X		
Profit and Loss Account (Dr. Balance)	X	(X)	X
2. Long-term Liabilities (Owned Fund/Borrowed Funds)			
Debentures		X	
Bank Loans (Secured/Unsecured Loans)		X	
Loan from Financial Institutions		X	
Deposits		X	
Public Deposits		X	
Bonds		X	X
3. Net Fund Employed (1 + 2) (Total Fund Available)			**X**
II. Application of Funds:			
1. Fixed Assets:			
Goodwill		X	
Patent Rights		X	
Copy Right		X	
Trade Mark		X	
Technical Know-how		X	XXX
Land and Building		X	
Plant and Machinery		X	
Furniture and Fittings		X	
Livestock		X	
Vehicles		X	
Motor Car		X	
Equipments		X	
Leasehold Property		X	
Freehold Property		X	
Railway Sidings		X	
		X	
Less: Provision for Depreciation		X	X
2. Investments:			
Investment ion Government Bonds/Shares/Debentures			
Provident Fund Investment (Net) (Investment Exceeds Funds)			
3. Working Capital			
(A) Current Assets (Quick Assets + Non-quick Assets)			
Marketable Investment (Short-term)	X		
Cash and Bank Balance	X		
Debtors	X		
Bills Receivable	X		
Quick Assets:	XXX		
Closing Stock (Raw Material, W.I.P., Finished Goods, Spare Parts)	X		
Prepaid Expenses	X		
Advance Given	X		
Advance Tax	X		
		X	

Less: (B) Current Liabilities: (Quick Liabilities + Non-quick Liabilities)			
Creditors	X		
Bills Payable	X		
Outstanding Expenses	X		
Provision for Tax	X		
Quick Liabilities:	XXX		
Bank Overdraft	X		
		(X)	X
4. Net Assets Owned (1 + 2 + 3)/(Total Funds Employed)			**X**

M/s_____

Income Statement for the year ended _____

Particulars	₹	₹	₹
1. Sales:			
Cash Sales		X	
Credit Sales		X	
		X	
Less: Sales Return and Allowances		X	X
2. *Less:* Cost of Goods Sold:			
Opening Stock		X	
Add: Purchase (*Less* Purchase Return)		X	
Add: Direct Expenses			
Carriage Inward	X		
Freight Inwards	X		
Octroi Duty	X		
Import Duty	X		
Loading and Unloading Charges	X		
Commission on Purchase	X	X	
Add: Manufacturing/Factoring Expenses			
Direct Wages	X		
Motive Power	X		
Factory Rent and Rates	X		
Factory Insurance	X		
Gas and Water Charges	X		
Royalties on Production	X		
Excise Duty	X		
Depreciation on Plant and Machinery	X		
Depreciation on Factory Building	X		
Loose Tools written off	X		
Patents/Patterns written off	X		
Factory Repairs	X		
Stores Consumed	X		
Bonus to Workers	X	X	
Less: Closing Stock	X		
Goods Damaged by Fire	X		
Goods Sent on Consignment	X		
Goods Sent to Branch	X		
Goods to Transit	X	(X)	(X)
3. Gross Profit (1 – 2)			X

4. Operating Incomes:			
Discount Received (Discount on Purchases)		X	
Bad Debts Recovered		X	X
5. Operating Expenses (A + B + C)			X
(A) Office and Administrative Expenses:			
Salaries	X		
Office Rent	X		
Insurance	X		
Printing and Salaries	X		
Postage and Telegram	X		
Telephone Charges	X		
Audit Fees	X		
Legal Fees	X		
Director's Fees	X		
Depreciation on Office Building/Furniture/Equipment	X		
Repairs to Office Building/Furniture	X		
Sundry Expenses	X		
Conveyance	X		
Rates and Taxes	X		
Electricity Charges	X	X	
(B) Selling and Distribution Expenses:			
Advertisements	X		
Commission on Sales	X		
Salesman Salary	X		
Depreciation on Delivery Van/Motor Car	X		
Carriage Outward	X		
*Bad Debts	X		
Showroom Rent	X		
Exhibition Expenses	X		
Warehouse Rent/Insurance/Repairs	X		
*Discount Allowed	X		
Sales Promotion Expenses	X		
After Sales Service Expenses	X		
Trade Fair Expenses	X		
Travelling Expenses	X	X	
(C) Finance Expenses:			
*Interest on Debentures	X		
*Interest on Loans	X		
*Interest on Overdraft	X		
Cash Discount	X		
Discount on Bills of Exchange	X		
Rebate on Bills of Exchange	X		
Bank Charges	X		
Bank Commission	X		
Loss on Issue of Shares written off	X		
Commission to Raise Loans	X	X	(X)
6. Operating Profit (3 + 4 – 5)			X
7. Non-operating Income:			
Dividend and Interest on Investments		X	

	Commission Received		X	
	Rent Received		X	
	Share Transfer Fees		X	
	Profit on Sale of Assets/Investments		X	
	Royalty Received		X	X
8.	**Non-operating Expenses:**			X
	Loss on Sale of Assets/Investments		X	
	Loss by Fire/Theft/Accident		X	
	Goodwill written off		X	
	Preliminary Expenses written off		X	
	Under Writing Commission written off		X	
	Fine or Penalty for Breach of Law		X	
	Issue Expenses written off		X	(X)
9.	**Net Profit before Tax (6 + 7 – 8)**			X
	Less: Provision for Tax			(X)
10.	**Net Provision after Tax**			X
	Add: Operating Retained Earning b/d			X
	Profit Available for Tax Appropriation			X
	Less: Proposed Dividend (Equity/ Preference Shares)		X	
	Transfer to Reserve		X	
	Interim Dividend		X	
	Closing Retained Earning c/d			**X**

Illustration 1: From the following balances, prepare balance sheet in vertical form as on 31st March, 2014.

Particulars	₹
Equity Share Capital	5,000
Preference Share Capital	3,000
General Reserve	2,000
Profit and Loss A/c (Cr.)	1,000
Fixed Capital	8,000
Current Assets	4,000
Current Liabilities	3,000

(T.Y. B.Com., Modified)

Solution: **Financial Position Statement as on 31 March, 2014**

No.	Particulars		₹	₹
I.	**Sources of Funds:**			
1.	Shareholders' Funds:			
	Equity Share Capital		5,000	
	Preference Share Capital		3,000	
			8,000	
	Add: Reserves and Surplus:			
	General Reserve	2,000		
	Profit and Loss A/c	1,000	3,000	
			11,000	
	Less: Fictitious Assets – Preliminary Expenses		1,500	9,500
2.	Long-term Liabilities:			
	Debentures			500
3.	Net Fund Employed (1 + 2)			**10,000**
II.	**Application of Funds:**			
1.	Fixed Assets			8,000
2.	Investments			1,000
3.	Working Capital (A – B)			

	(A) Current Assets		4,000	
	(B) Current Liabilities		3,000	1,000
4.	Net Assets Owned (1 + 2 + 3)			**10,000**

Illustration 2:

Liabilities	₹	Assets	₹
Equity Share Capital	3,90,000	Cash in Hand	15,000
10% Preference Share Capital	2,00,000	Cash at Bank	90,000
9% Debentures	2,50,000	Preliminary Expenses	20,000
General Reserve	60,000	Goodwill	1,00,000
Capital Reserve	50,000	Building	3,00,000
11% Bank Loan	1,00,000	Investment (Long-term)	2,00,000
Creditors	1,25,000	Furniture	2,50,000
Bank Overdraft	1,35,000	Plant and Machinery	3,00,000
Provision for Tax	1,40,000	Debtors	1,50,000
Proposed Dividend	30,000	Prepaid Expenses	50,000
Profit and Loss A/c	1,40,000	Stock	2,00,000
Depreciation Provision	80,000	Calls in Arrears (Equity)	10,000
		Commission on Issue of Shares	15,000
	17,00,000		**17,00,000**

Present the above Balance Sheet in Vertical form and show the following: (1) Net worth, (2) Borrowed fund, (3) Capital employed, (4) Net block, (5) Working capital and (6) Fictitious assets.

(T.Y. B.Com., Modified)

Solution: Financial Position Statement as on 31 March, 2014

No.	Particulars	₹	₹	₹
I.	**Sources of Funds**			
1.	Shareholder's Funds/Net worth:			
	(a) Share Capital:			
	Equity Share Capital	3,90,000		
	Less: Calls in Arrears	10,000	3,80,000	
	10% Preference Share Capital		2,00,000	
			5,80,000	
	(b) Reserves:			
	General Reserve	60,000		
	Capital Reserve	50,000		
	P & L A/c	1,40,000	2,50,000	
			8,30,000	
	(c) Fictitious Assets:			
	Preliminary Expenses	20,000		
	Commission on Issue of Shares	15,000	35,000	7,95,000
2.	Long-term Liabilities:			
	9% Debentures		2,50,000	
	11% Bank Loan		1,00,000	3,50,000
3.	Net Fund Employed (1+2)			**11,45,000**
II.	**Application on Funds:**			
1.	Fixed Assets:			
	Gross block		1,00,000	
	Goodwill			
	Building	3,00,000		
	Plant and Machinery	3,00,000		
	Furniture	2,50,000		
		8,50,000		
	Less: Depreciation furniture	80,000	7,70,000	8,70,000
2.	Investment (Long-term)			2,00,000
3.	Working Capital:			
	Current Assets:			

	Cash in Hand		15,000		
	Cash at Bank		90,000		
	Debtors		1,50,000		
	Quick Assets:		2,55,000		
	Prepaid Expenses		50,000		
	Stock		2,00,000		
		(A)		5,05,000	
	Current Liabilities:				
	Creditors		1,25,000		
	Provision for Tax		1,40,000		
	Propose Dividend		30,000		
	Quick Liabilities:		2,95,000		
	Bank Overdraft		1,35,000		
		(B)		4,30,000	
		(A – B)			75,000
4.	Net Assets Owned (1 + 2 + 3)				**11,45,000**

Illustration 3: Following is the Profit and Loss Account of Well-balanced Limited for the year ended 31st March, 2014. You are required to prepare vertical income statement for purpose of analysis.

Particulars	₹	Particulars	₹	₹
To Opening Stock	7,00,000	By Sales		
To Purchases	9,00,000	Cash	5,20,000	
To Wages	1,50,000	Credit	15,00,000	
To Factory Expenses	3,50,000		20,20,000	
To Office Salaries	25,000	*Less:* Returns and Allowances	20,000	20,00,000
To Office Rent	39,000	By Closing Stock		6,00,000
To Postage and Telegram	5,000	By Dividend on Investment		10,000
To Director's Fees	6,000	By Profit on Sale of Furniture		20,000
To Salesman Salaries	12,000			
To Advertising	18,000			
To Delivery Expenses	20,000			
To Debenture Interest	20,000			
To Depreciation:				
on Office Furniture	10,000			
on Plant	30,000			
on Delivery Van	20,000			
To Loss on Sale of Van	5,000			
To Income Tax	1,75,000			
To Net Profit	1,45,000			
	26,30,000			**26,30,000**

(T.Y. B.Com., Modified)

Solution:

M/s Well-balanced Ltd.
Income Statement as on 31st March, 2014

No.	Particulars	₹	₹	₹
1.	Net Sales:			
	Cash		5,20,000	
	Credit		15,00,000	
			20,20,000	
	Less: Return and Allowances		20,000	20,00,000
2.	Cost of Goods Sold:			
	Opening Stock	7,00,000		

	Add: Purchases	9,00,000		
	Wages	1,50,000		
	Factory Expenses	3,50,000		
	Depreciation on Plant	30,000	21,30,000	
	Less: Closing Stock		6,00,000	15,30,000
3.	Gross Profit (1 – 2)			4,70,000
4.	Operating Expenses:			
	Office and Administration Expenses			
	Office Salaries	25,000		
	Office Rent	39,000		
	Postage and Telegram	5,000		
	Director's Fees	6,000		
	Depreciation on Office Furniture	10,000	85,000	
	Selling and Distribution Expenses:			
	Salesman's Salary	12,000		
	Advertising	18,000		
	Delivery Expenses	20,000		
	Depreciation on Delivery Van	20,000	70,000	
	Finance Expenses:			
	Debenture Interest		20,000	1,75,000
5.	Operating Profits (3 – 4)			2,95,000
6.	Non-operating Income:			
	Dividend on Investment		10,000	
	Profit on Sale of Furniture		20,000	30,000
7.	Non-operating Expenses:			
	Loss on Sale of Van			5,000
8.	Net Profit before Tax			3,20,000
	Less: Income Tax			1,75,000
9.	Net Profit after Tax			1,45,000

Illustration 4: The accountant of company submits the following financial statements for 2014.

Trading and Profit Loss A/c for the year ended 31st December, 2013

Expenses	₹	Income	₹
To Opening Stock	35,000	By Sales	8,30,000
To Purchase	7,50,000	By Closing Stock	80,000
To Gross Profit	1,25,000		
	9,10,000		**9,10,000**
To Depreciation	18,000	By Gross Profit	1,25,000
To Other Expenses	37,000	By Interest	5,000
To Tax Provision	20,000		
To Proposed Dividend	8,000		
To Net Profit	47,000		
	1,30,000		**1,30,000**

Balance Sheet as on December 2013

Liabilities	₹	Assets	₹
Share Capital	1,50,000	Cash	24,000
Bank Overdraft	19,000	Stock	80,000
Creditors	13,000	Debtors	69,250
Depreciation Provision	27,875	Land and Buildings	46,075

Tax Provision	20,000	Machinery/Equipment	64,300
Proposed Dividend	8,000	Prepaid Expenses	750
Profit and Loss A/c	90,000	Goodwill	10,000
		Preliminary Expenses	3,500
		Loans	30,000
	3,27,875		**3,27,875**

Rearrange the above in a form suitable to analysis. **(T.Y. B.Com., Modified)**

Solution: **Income Statement as on 31st March, 2013**

No.	Particulars	₹	₹	₹
1	Net Sales			8,30,000
2	Cost of Goods Sold:			
	Opening Stock		35,000	
	Add: Purchases		7,50,000	
			7,85,000	
	Less: Closing Stock		80,000	7,05,000
3	Gross Profit (1 – 2)			1,25,000
4	Operating Expenses:			
	Depreciation		18,000	
	Other Expenses		37,000	55,000
5	Operating Profit (3 – 4)			70,000
6	Non-operating Income:			
	Interest			5,000
7	Net Profit before Tax			75,000
	Less: Tax Provision			20,000
8	Net Profit after Tax			55,000
	Less: Proposed Dividend			8,000
9	Closing Stock Earnings c/d			47,000

Financial Position Statement as on 31st December, 2013

No.	Particulars	₹	₹	₹
I.	**Sources of Funds:**			
1	Shareholders' Funds:			
	Share Capital		1,50,000	
	Add: Reserves and Surplus:			
	Profit and Loss A/c		90,000	
			2,40,000	
	Less: Fictitious Assets:			
	Preliminary Expenses		3,500	2,36,500
2	Long-term Liabilities			–
3	Net Fund Employed (1 + 2)			**2,36,500**
II.	**Application of Funds:**			
1	Fixed Assets:			
	Goodwill		10,000	
	Land and Buildings		46,075	
	Machinery/Equipment		64,300	
			1,20,000	
	Less: Depreciation		27,875	92,500
2	Working Capital (A – B)			

	(A) Current Assets:				
	Cash		24,000		
	Debtors		69,250		
	Loans		30,000		
	Quick Assets:		1,23,250		
	Stock		80,000		
	Prepaid Expenses		750		
		(A)		2,04,000	
	(B) Current Liabilities:				
	Creditors		13,000		
	Tax Provision		20,000		
	Proposed Dividend		8,000		
	Quick Liabilities:		41,000		
	Bank Overdraft		19,000		
		(B)		60,000	1,44,000
3	Net Assets Owned (1 + 2)				**2,36,500**

Illustration 5: The following information regarding Maruti Car Ltd. for the year ended 31st March, 2014 is given to you.

Particulars	₹
Sales	75,00,000
Purchases	50,00,000
Opening Stock (01/04/2006)	5,00,000
Closing Stock (31/03/2013)	7,50,000
Return Inward	75,000
Carriage Outward	57,000
Carriage Inward	50,000
Return Outward	50,000
Salesman Salary	75,000
Advertising and Publicity	2,52,000
Salesman Travelling Allowance	7,500
Office Salary	4,00,000
Computer Repairs and Maintenance	84,000
Rent, Rates and Taxes	4,000
Printing and Stationary	400
Bad Debts	75,750
Purchase of Computer	40,000
Dividend of Shares (Cr.)	10,000
Staff Welfare Expenses	44,000
Interest (Dr.)	50,000
Loss on Sales of Shares	1,25,000

Rearrange above information in vertical form suitable for analysis. **(T.Y. B.Com., Modified)**

Solution: **M/s Maruti Car Ltd.**

Income Statement for the year ended 31st March, 2014

No.	Particulars	₹	₹	₹
1	Net Sales:			
	Sales		75,00,000	
	Less: Return Inward		75,000	74,25,000
2	Cost of Goods Sold:			
	Opening Stock		5,00,000	
	Add: Purchases	50,00,000		
	Less: Return Outward	50,000	49,50,000	

	Carriage Inward		50,000	
			55,00,000	
	Less: Closing Stock		7,50,000	47,50,000
				26,75,000
3	Gross Profit (1 – 2)			
4	Operating Expenses: (A + B + C)			
	(A) Office and Administrative Expenses:			
	Office Salary	4,00,000		
	Computer Repairs and Maintenance	84,000		
	Rent, Rates and Taxes	4,000		
	Printing and Stationary	400		
	Staff Welfare Expenses	44,000	5,32,400	
	(B) Selling and Distribution Expenses:			
	Carriage Outward	57,000		
	Salesman Salary	75,000		
	Advertising and Publicity	2,52,000		
	Salesman Travelling Allowances	7,500		
	Bad Debts	75,750	4,67,250	
	(C) Finance Expenses:			
	Interest		50,000	10,49,650
5	Operating Profit (3 – 4)			16,25,350
6	Non-operating Income: Dividend on Shares			10,000
7	Non-operating Expenses: Loss on Sale of Shares			1,25,000
8	Net Profit (5 + 6 – 7)			15,10,350

Illustration 6: Complete the following Income Statement for the year ended 31st March, 2008

Particulars	₹
Net Sales	?
Less: Cost of Goods Sold	?
Gross Profit (25% of Sales)	2,00,000
Less: Operating Expenses	?
Operating Net Profit	?
Add: Non-operating Income	Nil
Less: Non-operating Expenses	40,000
Net Profit before Tax	40,000
Less: Income Tax (50%on NPBT)	?
Net Profit after Tax	?

(T.Y. B.Com., Modified)

Solution:

Particulars	₹
Net Sales	8,00,000
Less: Cost of Goods Sold	6,00,000
Gross Profit (25% of Sales)	2,00,000
Less: Operating Expenses	1,20,000
Operating Net Profit	80,000
Add: Non-operating Income	Nil
Less: Non-operating Expenses	40,000
Net Profit before Tax	40,000
Less: Income Tax (50%)	20,000
Net Profit after Tax	20,000

Illustration 7: Classify the following accounts and state whether it is:

(i) Current Assets (ii) Fixed Assets
(iii) Current Liabilities (iv) Long-term Liabilities
(v) Shareholders' Fund
(vi) None of these

(a) Delivery truck (g) Trade mark
(b) Accounts payable (h) Short-term investment

(c) Bills payable (90 days)
(d) Delivery Expenses
(e) Equity Capital
(f) Prepaid insurance
(i) Income tax payable
(j) Debenture redeemable after seven years
(k) Tsunami relief fund deducted from employee's salary
(l) Depreciation

Solution:

(i) Current Assets : Prepaid insurance, Short-term investment
(ii) Fixed Assets : Delivery truck, Trade mark
(iii) Current Liabilities : Accounts payable, Bills payable (90 days), Income tax payable, Tsunami relief fund deducted from employee's salary
(iv) Long-term Liabilities : Debenture redeemable after seven years
(v) Shareholder's Fund : Equity capital
(vi) None of these : Delivery expenses, Depreciation

Illustration 8: The following balances appear in the books of M/s Bhushan Ltd. for the year ended 31st March 2011. You are required to prepare a Revenue statement in a vertical form.

Dr. **Cr.**

Particulars	₹	Particulars	₹
Opening Stock	50,000	Sales Return	20,000
Net Profit b/f from P.Y.	60,000	Profit on Sale of Investment	5,000
Office Rent	5,000	Loss by Fire	5,000
Carriage Inward	20,000	Closing Stock	40,000
General Reserve	40,000	Purchases	2,00,000
Wages	72,000	Postage and Telegram	5,000
Octroi	5,000	Provision for Tax	30,000
Office Staff Salaries	40,000	Sales	6,20,000
Audit Fees	20,000	Dividend on Shares Held	25,000
Advertisement	25,000	Carriage Outward	5,000
Finance Expenses	25,000	Warehouse Expenses	5,000
Loss on Sale of Asset	30,000	Import Duty	3,000
Depreciation:		Proposed Dividend	35,000
Plant and Machinery	15,000		
Furniture	16,000		
Delivery Van	14,000		

(T.Y. B.Com., Modified)

Solution: **M/s Bhushan Ltd.**

Revenue Statement for the year ended 31st March, 2011

Particulars	₹	₹	₹
Sales		6,20,000	
Less: **Sales Returns**		20,000	
Net Sales			6,00,000
Less: **Cost of Goods Sold**			
Opening Stock		50,000	
Add: Purchases		2,00,000	
Carriage Inwards		20,000	
Octroi		5,000	
Import Duty		3,000	
Less: Closing Stock		2,78,000	
		40,000	
		2,38,000	
Less: **Operating Expenses:**			
Wages		72,000	
Debentures on Machinery		15,000	3,25,000
Gross Profit			2,75,000

Warehouse Expenses	5,000		
Staff Salaries	40,000		
Audit Fees	20,000		
Postage and Telegram	5,000		
Depreciation	30,000	1,00,000	
Finance Expenses		25,000	
Selling and Distribution Expenses:			
Advertisement	25,000		
Carriage Outward	5,000		
Warehouse Expenses	5,000	35,000	
		–	1,60,000
Operating Profit			1,15,000
Add: Non-operating Income			
Divided on Shares Held		25,000	
Profit on Sale of Investment		5,000	30,000
			1,45,000
Less: **Non-operating Expenses and Losses:**			
Loss on Sale of Asset		30,000	
Loss by Fire		5,000	35,000
Net Profit before Tax			1,10,000
Less: Provision for Tax			30,000
Net Profit after Tax			80,000
Add: Net Profit b/f from P.Y.			60,000
			10,40,000
Less: Transfer to general Reserve		40,000	
Proposed Dividend		35,000	75,000
Balance Carried to Balance Sheet			65,000

Illustration 9: Following are the balances as on 31-03-2010 in the books of accounts of Ratnagiri Mango Products Ltd. You are required to prepare a vertical Balance Sheet from the same.

Particulars	₹
T.D.S. (Staff Salaries)	25,000
Share Issue Expenses	20,000
Land and Building	5,00,000
10% Debentures	3,00,000
Trade Investment	2,00,000
Creditors	8,80,000
Plant and Machinery	3,70,000
Calls-in-arrears	10,000
Profit and Loss A/c (Cr. Balance)	3,85,000
Patents	50,000
Stock	4,35,000
Debtors	9,25,000
Equity Share Capital	5,00,000
Bank Overdraft	4,20,000

(T.Y. B.Com., Modified)

Solution:

Ratnagiri Mango Products Ltd.
Balance Sheet as on 31.03.2010

Particulars		₹	₹
I. SOURCES OF FUND			
1. Shareholders' Fund			
(a) Share Capital			
Equity Share Capital		5,00,000	
Less: Calls-in-arrears		10,000	
		4,90,000	
(b) Reserves and Surplus			
Profit and Loss Account		3,85,000	

(c) Miscellaneous Expenditure			
Less: Share Issue Expense		20,000	
Net Worth (a + b – c)			8,55,,000
2. Loan Fund			
(a) Secured Loans			
10% Debentures		3,00,000	
(b) Unsecured Loans		Nil	3,00,000
Total			**11,55,000**
II. APPLICATIONS OF FUNDS			
1. Fixed Assets			
Land and Building		5,00,000	
Plant and Machinery		3,70,000	
Patents		50,000	9,20,000
2. Investments			
Trade Investment			2,00,000
3. Working Capital			
(a) Current Assets			
Stock	4,35,000		
Debtors	9,25,000		
Total Current Assets		13,60,000	
(b) Current Liabilities			
T.D.S.	25,000		
Creditors	8,80,000		
Bank Overdraft	4,20,000		
Total Current Liabilities		13,25,000	
Working Capital (A – B)			35,000
Total (I – II – III)			**11,55,000**

Illustration 10: Following are the balances as on 31-3-2010 in the books of accounts of Mangaon Machines Ltd. You are required to Prepare a Vertical Balance sheets from the same.

Particulars	₹
Capital Work-in-progress	2,80,000
15% Term Loan	6,00,000
Marketable Investment	1,00,000
MVAT Payable	84,000
Land and Building	8,40,000
Creditors	7,75,000
Bank Balance (Dr. Balance)	35,000
Provision for Depreciation	2,51,000
TDS (Rent Paid)	20,000
Debtors	8,15,000
Equity Share Capital	5,00,000
Plant and Machinery	4,50,000
Stock	2,70,000
Rent Received in Advance	1,00,000
Preliminary Expenses	10,000
Profit and Loss A/c (Cr. Balance)	4,70,000

Solution:

Mangaon Machines Ltd.
Balance Sheet as on 31st March, 2010

Particulars	₹	₹	₹
I. SOURCES OF FUNDS			
1. Shareholders' Funds			
A. Capital			
Equity Share Capital		5,00,000	
B. Reserves and Surplus			
Profit and Loss A/c	4,70,000		

***Less:* Fictitious Assets**			
Preliminary Expenses	(10,000)		
Net Reserves and Surplus		4,60,000	
Own Funds or Net Worth			9,60,000
2. Loan Funds			
A. Secured/Long-term Loans			
15% Term Loan		6,00,000	
B. Unsecured Loans		Nil	6,00,000
3. Capital Employed			**15,60,000**
II. APPLICATION OF FUNDS			
1. Fixed Assets			
A. Tangible			
Land & Buildings	8,40,000		
Plant & Machinery	4,50,000		
Less: Provision for Depreciation	(2,51,000)	10,39,000	
Capital Work-in-progress		2,80,000	
Net Tangible Assets		13,19,000	
B. Intangible		Nil	13,19,000
2. Long-term Investments			Nil
3. Working Capital			
(i) Liquid Assets:			
Debtors	8,15,000		
Marketable Investment	1,00,000		
Bank Balance	35,000		
Stock	2,70,000		
Other Current Assets	Nil		
(ii) Inventory	Nil		
A. Current Assets		12,20,000	
B. *Less:* Current Liabilities			
Creditors	7,75,000		
MVAT Payable	84,000		
TDS	20,000		
Rent Received in Advance	1,00,000		
Total Quick Liabilities	9,79,000		
Non-quick Liabilities	Nil		
Current Liabilities		9,79,000	
Working Capital (A – B)			2,41,000
4. Capital Employed			15,60,000

Illustration 11: Following balances are extracted from the books of Tax and Trouble Limited for the year ended 31-03-2014. You are required to prepare Vertical Income Statement and Vertical Balance Sheet after considering other information provided:

Particulars	₹
Premises	3,07,500
Machinery	3,60,000
Interim Dividend Paid	7,500
Purchases	1,80,000
Preliminary Expenses	5,000
Carriage Inward	13,100
Director's Fees	5,740
Bad Debts	2,110
6% Debentures	3,00,000
Profit and Loss A/c (Cr.) Balance	14,500
Creditors	40,000
Outstanding Expenses	10,000
General Reserve	25,000
4% Government Securities	60,000

Opening Stock	66,000
Furniture and Fixtures	7,200
Debtors	87,000
Goodwill	25,000
Cash in Hand and Bank	30,000
Bills Receivable	10,650
Wages	84,800
Factory Expenses	9,000
General Expenses	7,900
Salaries	14,500
Debenture Interest	18,000
Equity Capital	3,60,000
10% Preference Shares	1,00,000
Bills Payable	38,000
Sales	4,18,000
Sales Returns	3,000
Interest Received	3,500
Advertising	5,000

Other Information:

(a) Depreciate machinery by 10% and furniture by 5%.
(b) Provide final dividend on equity shares at 5% and dividend on preference shares.
(c) Make provision for Income Tax at ₹25,000.
(d) Closing stock on 31-03-2014 is ₹1,01,000.
(e) General expenses include ₹4,000 as selling expenses.
(f) Write off 50% of preliminary expenses.

Solution: **M/s Tax and Trouble Ltd.**

Income Statement for the year ended 31st March, 2014

No.	Particulars	₹	₹	₹
1	Net Sales		4,18,000	
	Less: Sales Return		3,000	4,15,000
2	Cost of Goods Sold:			
	Opening Stock		66,000	
	Add: Purchases		1,80,00	
	Carriage Inward		13,100	
	Wages		84,800	
	Factory Expenses		9,000	
	Depreciation on Plant and Machinery		36,000	
			3,88,900	
	Less: Closing Stock		1,01,000	2,87,900
3	Gross Profit (1 – 2)			1,27,100
4	Operating Expenses:			
	Office and Administrative Expenses:			
	Director's Fees	5,740		
	General Expenses (7,900 – 4,000)	3,900		
	Salaries	14,500		
	Depreciation on Furniture	360	24,500	
	Selling and Distribution Expenses:			
	Selling Expenses	4,000		
	Bad Debts	2,110		
	Advertising	5,000	11,110	

	Finance Expenses:			
	Debenture Interest		18,000	53,610
5	Operating Profit (3 – 4)			73,490
6	Non-operating Income:			
	Interest Received			3,500
7	Non-operating Expenses:			
	Preliminary Expenses w/off			2,500
8	Net Profit Before Tax (5 + 6 – 7)			74,490
	Less: Tax			25,000
9	Net Profit after Tax			49,490
	Add: Operating Retained Earnings b/d			14,500
	Profit Available for Appropriation			63,990
	Less: Interim Dividend Paid		7,500	
	Dividend on Equity Share Capital		18,000	
	Dividend on Preference Share Capital		10,000	35,000
10	Closing Retained Earnings c/d			**28,490**

Financial Position Statement as on 31st March, 2014

No.	Particulars	₹	₹	₹
I.	**Sources of Funds:**			
1	Shareholders' Funds:			
	Equity Share Capital		3,60,000	
	Add: 10% Preference Share Capital		1,00,000	
			4,60,000	
	Add: Reserves and Surplus:			
	Profit and Loss A/c	28,490		
	General Reserve	25,000	53,490	
			5,13,490	
	Less: Fictitious Assets			
	Preliminary Expenses (not w/off)		2,500	5,10,990
2	Long-term Liabilities:			
	6% Debentures			3,00,000
3	Net Fund Employed (1 + 2)			**8,10,990**
II.	**Application of Funds:**			
1	Fixed Assets:			
	Goodwill		25,000	
	Premises		3,07,000	
	Machinery	3,60,000		
	Less: Depreciation	36,000	3,24,000	
	Furniture and Fixtures	7,200		
	Less: Depreciation	360	6,840	6,63,340
2	Investments:			
	4% Government Securities			60,000
3	Working Capital (A – B)			
	(A) Current Assets:			
	Debtors	87,000		
	Cash/Bank	30,000		
	Bills Receivable	10,650		
	Quick Assets:		1,27,650	
	Closing Stock		1,01,000	
	(A)		2,28,650	
	(B) Current Liabilities:			
	Creditors	40,000		

	Outstanding Expenses		10,000		
	Bills Payable		38,000		
	Provision for Tax		25,000		
	Preference Dividend		10,000		
	Equity Dividend	(B)	18,000	1,41,000	
		(A – B)			87,650
	Net Asset Owned (1 + 2 + 3)				**8,10,990**

Illustration 12: The following figures are related to the Sohan Ltd. for the year ended 31st December, 2008.

Particulars	₹	Particulars	₹
Sales	24,00,000	Staff Salaries	40,000
Net Block	10,00,000	Advertisement Expenses	60,000
Bills Receivable	4,00,000	Warehouse Rent	30,000
Bills Payable	2,00,000	Depreciation on Plant	50,000
Cash Balance	85,000	Interest on Overdraft	30,000
Bank Overdraft	2,00,000	Share Capital	8,00,000
Purchases	18,00,000	Reserves (01-01-08)	3,65,000
Other Administrative Expenses	40,000	Stock (01-01-08)	3,60,000
Legal Charges (Paid)	30,000	Laptop Repairs	25,000
		Direct Expenses	15,000

Other Information:

(a) Make a provision for Income Tax of ₹ 2,40,000.
(b) Provide final dividend ₹ 80,000.
(c) Closing stock on 31-12-08 is ₹ 4,00,000

You are required to prepare Balance Sheet and Income Statement in vertical form Suitable for are balance Sheet and Income Statement in vertical form suitable for the year ended 31st December, 2008

Solution: Income Statement for the year ended 31st December, 2008

Particulars	₹	₹
Sales		24,00,000
Less: Cost of Goods Sold		
Opening Stock		
Add: Purchases	3,60,000	
	18,00,000	
Less: Closing Stock	21,60,000	
	4,00,000	
Direct Expenses	17,60,000	
	15,000	
Gross Profit		17,75,000
Less: Administrative Expenses		6,25,000
Legal Charges	40,000	
Staff Salaries	30,000	
Staff Salaries	40,000	
Laptop Repairs	25,000	
Advertising	60,000	
Warehouse Rent	30,000	
Depreciating of Plant	50,000	2,75,000
Net Profit before Interest		3,50,000
Less: Interest on Overdraft		30,000
Net Profit before Tax		3,20,000
Less: Income Tax		2,40,000
Net Profit after Tax		80,000

Balance Sheet as on 31st December, 2008

SOURCES OF FUND		
Shareholders' Fund		
Share Capital	8,00,000	
Reserves	3,65,000	
		11,65,000
Total		**11,65,000**
APPLICATIONS OF FUND		
Fixed Assets		
Net Block		10,00,000
Current Assets		
Bills Receivable	4,00,000	
Closing Stock	4,00,000	
Cash	85,000	
(a)	8,85,000	
***Less:* Current Liabilities**		
Bill Payable	2,00,000	
Bank Overdraft	2,00,000	
Provision for Tax	2,40,000	
Provision for Dividend	80,000	
(b)	7,20,000	
Net Current Assets (a – b)		1,65,000
Total		**11,65,000**

Illustration 13: Maza Ltd. was formed and incorporated on 1st April 2007. You are given the following trial balance as on 31st March 2008 31st March 2009. You are required to prepare vertical statement for the both the years in columnar form.

Particulars	31st March 2008		31st March 2009	
	Dr ₹	Cr ₹	Dr ₹	Cr ₹
Land and Building	25,50,000		25,50,000	
Machinery	5,50,000		8,00,000	
Furniture	2,00,000		3,00,000	
Sundry Debtors	3,00,000		5,00,000	
Cash and Bank Balance	1,00,000		1,00,000	
Sundry Creditors		2,00,000		3,00,000
Outstanding Expenses		20,000		20,000
Sales		20,00,000		30,00,000
Purchases	12,00,000		15,00,000	
Opening Stock	-	-	3,00,000	
Administration Expenses	2,76,000		3,70,000	
P & L Opening Stock	-	-	-	7,44,000
Selling Expenses	80,000		1,10,000	
Share Capital		20,00,000		20,00,000
Unsecured Loan	-	10,36,000	-	4,66,000
	52,56,000	52,56,000	65,30,000	65,30,000

Adjustment:

(a) Closing Stock as on 31st March, 2009 is ₹ 4,00,000.

Solution:

Maza Ltd.

Income Statement for the year ended 31st March

Particulars	2008 ₹	2009 ₹
Sales	20,00,000	30,00,000
Less: Cost of Sales		
Opening Stock		3,0,000

Add: Purchases		12,00,000	15,00,000
		12,00,000	18,00,000
Less: Closing Stock		3,00,000	4,00,000
		9,00,000	14,00,000
Gross Profit	**(a)**	11,00,000	16,00,000
Less: Operating Expenses:			
Administration Expenses		2,76,000	3,70,000
Selling Expenses		80,000	1,10,000
	(b)	3,56,000	4,80,000
Net Profit	**(a – b)**	7,44,000	11,20,000

Balance Sheet as at 31st March

		2008 ₹	**2009** ₹
SOURCES OF FUND			
Shareholders' Fund			
Share Capital		20,00,000	20,00,000
Profit & Loss A/c Balance		-	7,44,000
Add: Profit		7,44,000	11,20,000
		27,44,000	38,64,000
Loan Fund			
Secured		-	-
Unsecured		10,36,000	4,66,000
	Total	37,80,000	43,30,000
APPLICATIONS OF FUND			
Fixed Assets			
Tangible Assets			
Land and Building		25,50,000	25,50,000
Machinery		5,50,000	8,00,000
Furniture		2,00,000	3,00,000
		33,00,000	36,50,000
WORKING CAPITAL			
Current Assets			
Quick Assets			
Sundry Debtors		3,00,000	5,00,000
Bank		1,00,000	1,00,000
Other Current Assets			
Stock		3,00,000	4,00,000
	(a)	7,00,000	10,00,000
***Less:* Current Liabilities**			
Quick Liabilities			
Sundry Creditors		2,00,000	3,00,000
Outstanding Expenses		20,000	20,000
	(b)	2,20,000	3,20,000
	(a – b)	4,80,000	6,80,000
	Total	37,80,000	43,30,000

Illustration 14: From the following Trial Balance of Jyoti Ltd. as on 31st March, 2009, prepare vertical Revenue Statement for the year ended 31st March, 2009 and vertical Balance Sheet as on that date after making the necessary adjustments:

Particulars	₹	₹
Equity Share Capital		11,00,000
Plant and Machinery	12,00,000	
Sales		37,00,000
Purchases	17,00,000	
Sundry Debtors	9,00,000	
Sundry Creditors		8,50,000
Wages	3,50,000	
Opening Stock	1,20,000	

Salaries	1,80,000	
Advertisement	75,000	
Telephone Charges	35,000	
Furniture	2,00,000	
Investment (Long-term)	5,00,000	
Interest Received		40,000
Loss on Sale of Furniture	20,000	
Commission	60,000	
Profit and Loss A/c		1,20,000
Interim Dividend	–	1,00,000
General Reserve	3,20,000	
Cash at Bank	2,00,000	–
Bill Receivable	59,10,000	59,10,000

Adjustments:

(a) Stock on 31st March 2009 was valued ₹ 3,00,000.

(b) Make provision of ₹ 3,00,000 for Income Tax.

(c) Depreciate Plant and Machinery @ 20% and Furniture @ 10%.

Solution: **Jyoti Limited**

Income Statement for the year ended 31st March, 2009

Particulars	₹	₹	₹
Sales			37,00,000
Less: Cost of Good Sold			
Opening Stock		1,20,000	
Purchases		17,00,000	
		18,20,000	
Less: Closing Stock		3,00,000	
		15,20,000	
Wages		3,50,000	
Depreciation on Plant & Machinery		2,40,000	21,10,000
GROSS PROFIT			15,90,000
Less: Operating Expenses			
Office and Administrative:			
Salaries	1,80,000		
Telephone	35,000		
Depreciation on Furniture	20,000	2,35,000	
		–	
Selling and Distribution:			
Advertisement	75,000		
Commission	60,000	1,35,000	3,70,000
OPERATING PROFIT			12,20,000
Add: Non-operating Income (Interest)			40,000
			12,60,000
Less: Non-operating Expenses (Loss on Sale of Furniture)			20,000
Net Profit before Tax			12,40,000
Less: Tax Provision			3,00,000
Net Profit after Tax			9,40,000
Add: Opening Balance of Profit & Loss A/c			1,20,000
			10,60,000
Less: Interim Dividend			50,000
Balance Transferred to Balance Sheet			10,10,000

Illustration 15: Prepare Comparative Balance Sheet as on 31st March, 2014 and comment on it.

Liabilities	2013 (₹)	2014 (₹)	Assets	2013 (₹)	2014 (₹)
Shares Capital	1,40,000	1,60,000	Buildings	1,10,000	1,60,000
Profit and Loss A/c	40,000	40,000	Machinery	86,000	1,00,000
Debentures	40,000	60,000	Stock	50,000	10,000
Other Second Loans	20,000	40,000	Debtors	30,000	20,000
Creditors	20,000	6,000	Cash	4,000	30,000
Bank Overdraft	16,000	8,000			
Outstanding Expenses	4,000	6,000			
	2,80,000	**3,20,000**		**2,80,000**	**3,20,000**

Solution: **Comparative Financial Position as on 31st March, 2014**

No.	Particulars	2013 (₹)	2014 (₹)	Increase/ Decrease (₹)	Increase/ Decrease (%)
I.	**Sources of Funds:**				
1	Shareholders' Funds:				
	Share Capital	1,40,000	1,60,000	20,000	14.29
	Add: Reserves and Surplus:				
	Profit and Loss A/c	40,000	40,000	–	–
		1,80,000	2,00,000	20,000	11.11
2	Long-term Liabilities:				
	Debentures	40,000	60,000	20,000	50.00
	Other Secured Loans	20,000	40,000	20,000	100.00
		60,000	1,00,000	40,000	66.67
3	Net Fund Employed (1 + 2)	**2,40,000**	**3,00,000**	**60,000**	**25.00**
II.	**Application of Funds:**				
1	Fixed Assets:				
	Buildings	1,10,000	1,60,000	50,000	45.45
	Machinery	86,000	1,00,000	14,000	16.28
		1,96,000	2,60,000	64,000	32.65
2	Working Capital (A – B)				
	(A) Currents Assets: (QA + NQA)				
	Debtors	30,000	20,000	(10,000)	(33.33)
	Cash	4,000	30,000	26,000	650.00
		34,000	50,000	16,000	47.06
	Quick Assets:				
	Stock	50,000	10,000	(40,000)	(80.00)
	(A)	84,000	60,000	(24,000)	(28.57))
	(B) Current Liabilities:				
	Creditors	20,000	6,000	(14,000)	(70.00)
	Outstanding Expenses	4,000	6,000	2,000	50.00
		24,000	12,000	(12,000)	(50.00)
	Quick Liabilities				
	Bank Overdraft	16,000	8,000	(8,000)	(50.00)
	(B)	40,000	20,000	(20,000)	(50.00)
	(A – B)	44,000	40,000	(4,000)	(9.09)
	Net Assets Owned (1 + 2)	**2,40,000**	**3,00,000**	**60,000**	**25.00**

Illustration 16 [Comparative Financial Statement]: From the following financial statement of Vaibhav Ltd., prepare Comparative Financial Statements (in vertical form).

Balance Sheet as on _____

Liabilities	31-12-13 ₹	31-12-14 ₹	Assets	31-12-13 ₹	31-12-14 ₹
Equity Share Capital	4,00,000	4,00,000	Land	2,00,000	2,40,000
9% Preference Share Capital	3,00,000	3,00,000	Factory Plant and Building	6,00,000	5,40,000
General Reserves	2,00,000	2,45,000	Stocks	2,00,000	3,00,000
Tax Payable	1,00,000	1,50,000	Debtors	2,00,000	3,00,000
Creditors	2,00,000	2,75,000	Cash	1,00,000	1,40,000
17% Debentures	1,00,000	1,50,000			
	13,00,00	**15,20,000**		**13,00,000**	**15,20,000**

Profit and Loss A/c for the year ended _____

Particulars	31-12-13 ₹	31-12-14 ₹	Particulars	31-12-13 ₹	31-12-14 ₹
Cost of Goods Sold	6,00,000	7,50,000	Sales	8,00,000	10,00,000
Administrative Expenses	30,000	40,000			
Selling Expenses	20,000	20,000			
Net Profit	1,50,000	1,90,000			
	8,00,000	10,00,000			
	8,00,000	**10,00,000**		**8,00,000**	**10,00,000**

Solution: Comparative Income Statement for the year ended_____

Particulars	31-12-13 (₹)	31-12-14 (₹)	Increase/ Decrease (₹)	Increase/ Decrease (%)
1. Net Sales	8,00,000	10,00,000	2,00,000	25.00
2. Cost of Goods Sold	6,00,000	7,50,000	1,50,000	25.00
3. Gross Profit (1 – 2)	2,00,000	2,50,000	50,000	25.00
4. Operating Expenses:				
Administrative Expenses	30,000	40,000	10,000	33.33
Selling Expenses	20,000	20,000	–	–
	50,000	60,000	10,000	20.00
5. Net Profit (3 – 4)	**1,50,000**	**1,90,000**	**40,000**	**26.67**

Comparative Financial Position Statement as on_____

No.	Particulars	31-12-13 (₹)	31-12-14 (₹)	Increase/ Decrease (₹)	Increase/ Decrease (%)
I.	**Sources of Funds:**				
1	Shareholders' Funds:				
	Equity Share Capital	4,00,000	4,00,000	–	–
	Add: 9% Preference Share Capital	3,00,000	3,00,000	–	–
		7,00,000	7,00,000	–	–
	Add: Reserves and Surplus:	2,00,000	2,45,000	45,000	22.50
	General Reserve	9,00,000	9,45,000	45,000	5.00
2	Long-term Liabilities:				
	17% Debentures	1,00,000	1,50,000	50,000	50.00
3	Net Fund Employed (1 + 2)	**10,00,000**	**10,95,000**	**95,000**	**9.50**
II.	**Application of Funds:**				
1	Fixed Assets:				
	Land				

	Factory Plant and Machinery	2,00,000	2,40,000	40,000	20.00
		6,00,000	5,40,000	(60,000)	(10.00)
2	Working Capital (A – B)	8,00,000	7,80,000	(20,000)	(2.50)
	(A) Current Assets:				
	Debtors				
	Cash	2,00,000	3,00,000	1,00,000	50.00
	Quick Assets	1,00,000	1,40,000	40,000	40.00
	Stock	3,00,000	4,40,000	1,40,000	46.67
		2,00,000	3,00,000	1,00,000	50.00
		5,00,000	7,40,000	2,40,000	48.00
	(B) Current Liabilities:				
	Tax Payable				
	Creditors	1,00,000	1,50,000	50,000	50.00
	Quick Liabilities:	2,00,000	2,75,000	75,000	37.50
	(A – B)	3,00,000	4,25,000	1,25,000	41.67
3	Net Assets Owned (1 + 2)	2,00,000	3,15,000	1,15,000	57.50
		10,00,000	**10,95,000**	**95,000**	**9.50**

Comments: The difference in General Reserve is ₹ 45,000 that means out of Net Profit ₹ 1,90,000 and ₹ 45,000 is transferred to General Reserve in 2013. So, the balance P & L A/c = ₹ 1,90,000 – 45,000 = ₹ 1,45,000.

Remaining Balance Sheet Must be Utilised for:

Particulars	₹
Dividend on Preference Shares	27,000
Tax Provision	50,000
Debenture Interest	25,500
Dividend on Equity Share	42,500
	1,45,000
Cash Gross Profit for 2013	2,50,000
Add: Depreciation on Factory Plant and Building	60,000
	3,10,000

Illustration 17: Following are the Balance Sheet of M/s Raj Ltd. as on 31st March, 2010 and 2011.

Balance Sheets as at 31st March

Liabilities	2010 ₹	2011 ₹	Assets	2010 ₹	2011 ₹
Share Capital	9,25,000	9,75,000	Fixed Assets	9,50,000	8,75,000
General Reserve	2,50,000	3,50,000	Investment	2,25,000	3,00,000
Current Liabilities	2,50,000	3,31,000	Current Assets	4,50,000	7,25,000
13% Debentures	2,00,000	2,44,000		–	–
	16,25,000	19,00,000		16,25,000	19,00,000

Prepare a Comparative Balance Sheet from the above in vertical form.

Solution: **Comparative Balance Sheet as on 31st March**

Particulars	2010 ₹	2010 ₹	2011 ₹	2011 ₹	Increase/Decrease ₹		%	
Sources of Fund								
1. Shareholders' Fund								
Share Capital	9,25,000		9,75,000		50,000		5.41	
General Reserve	2,50,000	11,75,000	3,50,000	13,25,000	1,00,000	1,50,000	40.00	12.76
2. Loan Fund								
13% Debentures		2,00,000		2,44,000		44,000		22.00
Total		13,75,000		15,69,000		1,94,000		14.11
Applications of Fund								
3. Fixed Assets		9,50,000		8,75,000		–75,000		–7.89
4. Investments		2,25,000		3,00,000		75,000		33.33

5. Current Assets	4,50,000		7,25,000		2,75,000		61.11	
Less: Current Liabilities	2,50,000	2,00,000	3,31,000	3,94,000	81,000	1,94,000	372.4	97.00
Total		13,75,000		15,69,000		1,94,000		14.11

Illustration 18: Following is the information regarding Chetan Ltd. for the year ended 31st March, 2009 and 31st March, 2010:

Particulars		2009	2010
Sales	₹	4,00,000	5,00,000
Operating Expenses	₹	1,00,000	50,000
Provision for Tax (on PBT)		40%	40%
Gross Profit		50%	40%

From the above information, prepare comparative revenue statement in vertical form suitable for analysis. Do not write comments.

Solution: **Chetan Ltd.**

Comparative Statement in Vertical Form for the year ended 31st March 2010

Particulars	2008-09 ₹	2009-10 ₹	1/(D) ₹	1/(D) %
Sales	4,00,000	5,00,000	1,00,000	25
Less: COGS	2,00,000	3,00,000	1,00,000	50
Gross Profit	2,00,000	2,00,000	0	0
Less: Operating Expenses	1,00,000	50,000	– 50,000	– 50
NPBT	1,00,000	1,50,000	– 50,000	50
Less: Income Tax	40,000	60,000	20,000	50
NPAT	60,000	90,000	30,000	50

Illustration 19: Complete the following Comparative Statement of Sahyadri Products Ltd. by ascertaining the missing figures.

Particulars	Year Ended 31-03-2009 ₹	Year Ended 31-03-2010 ₹	Increase/ (Decrease) ₹	% Increase/ (Decrease)
Operating Net Profit	?	?	1,00,000	100.00
Add: Non-operating Income	?	1,00,000	80,000	400.00
NPBT	1,20,000	?	1,80,000	?
Less: Provision for Tax	36,000	90,000	?	150.00
NPAT	?	?	1,26,000	150.00

Solution: **Comparative Statement of Sahyadri Products Ltd.**

Particulars	As on 31.03.08	As on 31.03.08	Increase/ (Decrease) ₹	% Increase/ (Decrease)
Operating Net Profit	1,00,000	2,00,000	1,00,000	100.00
Add: Non-operating Income	20,000	1,00,000	80,000	400.00
NPBT	1,20,000	3,00,000	1,80,000	150.00
Less: Provision for Tax	36,000	90,000	54,000	150.00
NPBT	84,000	2,10,000	1,26,000	150.00

Illustration 20: Complete the following Comparative Statement of Himalaya Product Ltd. by ascertaining the missing figures.

Particulars	Year ended 31-03-2009 ₹	Year ended 31-03-2010 ₹	Increase/ (Decrease) ₹	% Increase/ (Decrease)
Gross Profit	?	?	?	?
Less: Expenses: Administration	1,00,000	?	20,000	20.00
Selling	50,000	60,000	10,000	?
Financial	?	25,000	5,000	25.00
Operating Net Profit	?	2,00,000	1,00,000	100.00

Solution: **Comparative Statement of Himalaya Products Ltd.**

Particulars	Year ended 31-03-2009 ₹	Year ended 31-03-2010 ₹	Increase/ (Decrease) ₹	% Increase/ (Decrease)
Gross Profit	**2,70,000**	**4,05,000**	**1,35,000**	**50.00**
Less: Expenses: Administration	1,00,000	**1,20,000**	20,000	20.00

Selling	50,000	60,000	10,000	**20.00**
Financial	**20,000**	25,000	5,000	25.00
Operating Net Profit	**1,00,000**	2,00,000	1,00,000	100.00

Illustration 21: Complete the following Comparative Statement of ND Ltd., and offer your comments on working capital.

Particulars	Amount (₹)		Change	
	31.03.2007	31.03.2008	Increase or Decrease (+/–) ₹	Percentage of change (+/–)
SOURCES OF FUND				
Equity Share Capital	?	2,00,000	?	Nil
Preference Share Capital	1,50,000	?	(–) 50,000	?
Reserves and Surplus	?	?	?	?
	5,30,000	?	?	?
Less: Accumulated Losses	?	20,000	?	Nil
Shareholder's Fund	?	?	(–) 1,26,000	?
Loan Fund				
10% Debentures	?	?	?	?
Sources of Funds	7,10,000	?	?	?
APPLICATION OF FUNDS				
Fixed Assets	5,30,000	?	(–) 30,000	?
Investment	?	?	(–) 50,000	?
Working Capital	?	?	(–) 96,000	(–) 120
Application of Funds	?	?	?	?

Solution: Comparative Balance Sheet of ND Ltd. as on 31st March

Particulars	2007	2008	Increase/Decrease (+/–) ₹	% of Change (+/–) `
I. Sources of Funds				
1. Shareholder's Fund				
Equity Share Capital	**2,00,000**	2,00,000	0	0
Preference Share Capital	1,50,000	**1,00,000**	– 50,000	– 33.33
	3,50,000	3,00,000	– 50,000	14.29
Reserves & Surplus	**1,80,000**	1,04,000	– 76,000	– 42.22
	5,30,000	**4,04,000**	– 1,26,000	– 23.77
Less :Accumulated Losses	20,000	20,000	–	–
	5,10,000	3,84,000	– 1,26,000	– 24.71
2. Loan Fund				
10% Debentures	**2,00,000**	1,50,000	– 50,000	– 25.00
Total	7,10,000	5,34,000	– 1,76,000	– 24.79
II. Applications of Funds				
Fixed Assets	5,30,000	**5,00,000**	– 30,000	– 5.66
Investments	**1,00,000**	50,000	– 50,000	– 50.00
Working Capital	**80,000**	– 16,000	– 96,000	– 120.00
Total	7,10,000	5,34,000	– 1,76,000	– 24.79

1. Reserves & Surplus = 5,30,000 – 3,50,000 = 1,80,000
2. Share Capital & Reserves & Surplus = 5,30,000 – 1,26,000 = 4,04,000
3. 10% Debentures = 7,10,000 – 5,10,000 = 2,00,000
4. Fixed Assets = 5,30,000 – 30,000 = 5,00,000
5. Working Capital = $\frac{96,000}{120}$ × 100 = 80,000

= 80,000 – 96,000

= – 16,000

Illustration 22: Xenophobia Ltd. presents with their summarised profit and loss account with a request to convert the same into a common size statement in vertical form after incorporating the Information given thereunder:

Particulars	₹	Particulars	₹
To Opening Balance b/f	2,00,000	By Sales	20,00,000
To Opening Stock:		By Miscellaneous Receipts	1,20,000
Finished Goods	3,00,000	By Closing Stock:	
Raw Materials	3,00,000	Finished Goods	6,00,000
To Purchases:		Raw Materials	4,00,000
Raw Materials	9,00,000		
Finished Goods	1,00,000		
To Salaries and Wages	2,00,000		
To Office and Administration Expenses	3,92,000		
To Audit Fees	5,000		
	31,20,000		**31,20,000**

Solution: **M/s Xenophobia Ltd.**

Common Size Income Statement for the year ended_____

No.	Particulars	₹	₹	% Net Sales	
1.	Net Sales		20,00,000		100.00
2.	Cost of Goods Sold:				
	Opening Stock of Raw Materials	3,00,000		15.00	
	Add: Purchases of Raw Materials	9,00,000		45.00	
		12,00,000		60.00	
	Less: Closing Stock of Raw Materials	4,00,000		20.00	
	Raw Materials Consumed	8,00,000		40.00	
	Add: Opening Stock of Finished Goods	3,00,000		15.00	
	Purchase of Finished Goods	1,00,000		5.00	
		12,00,000		60.00	
	Less: Closing Stock of Finished Goods				
3.	Gross Profit (1 – 2)	6,00,000	6,00,000	30.00	30.00
4.	Operating Expenses (A + B + C):		14,00,000		70.00
	Office and Administrative Expenses:				
	Salaries and Wages	2,00,000		10.00	
	Office and Administrative Expenses (3,92,000 – 12,000)	3,80,000		19.00	
	Audit Fees	5,000		0.25	
	Director's Fees	3,000		0.15	
	Depreciation on Furniture	2,000		0.10	
	Depreciation on Motor Car	3,000		0.15	
	Y2K Expenses	10,000		0.50	
	(A)	6,03,000		30.15	
	Selling and Distribution Expenses:				
	Selling and Distribution Expenses	1,50,000		7.50	
	Bad Assets (Realistic)	8,000			
	(B)	1,58,000			
	Financial Expenses:				
	Interest on Unsecured Loans (C)	13,500			
	(A + B + C)		7,74,500		38.73
5.	Operating Profits (3 – 4)		6,25,500		31.28
	Non-operating Income:				
	Miscellaneous Receipts		1,20,000		6.00
	Non-operating Expenses:				
	Preliminary Expenses w/off		10,000		0.50
	Net Profit Before Tax (5 + 6 – 7)		7,35,500		36.78
	Less: Provision for Tax		3,50,000		17.50
	Net Profit after Tax		3,85,500		19.28
	Less: Opening Balance b/d		2,00,000		10.00
	Profit Available for Appropriation		1,85,500		9.275
	Less: Transfer to General Reserve	20,000			

	Interim Dividend	50,000			
	Proposed Dividend	1,10,000			
	Closing Retained Earnings c/d		1,80,000		9.00
			5,500		0.275

Notes:

1. Y2K Expenses are to be considered as administration expenses.
2. Only realistic bad debts are to be accounted.

Illustration 23: Following is the Balance Sheet of Bofors Incorporation Limited as at 31-3-2014.

Liabilities	₹	Assets	₹
Creditors	2,08,000	Cash	10,000
Advance Income	20,000	Inventory	1,70,000
Provision for Depreciation:		Machinery	4,20,000
on Land and Building	60,000	Advances	14,000
on Machinery	70,000	Furniture	2,10,000
on Furniture	80,000	Goodwill	1,54,000
General Reserve	2,46,000	Investments	98,000
10% Debentures	1,54,000	Bank Balance	56,000
12% Preference Shares	1,00,000	Preliminary Expenses	40,000
Public Deposit	1,00,000	Land and Building	5,08,000
Bank Overdraft	1,04,000	Debtors	2,20,000
Equity Capital	5,00,000	Bills Receivable	50,000
Bills Payable	40,000	Patents and Patterns	1,20,000
Profit and Loss A/c	2,60,000	Discounts on Issue of Debentures	22,000
Capital Redemption Reserve	1,00,000		
Total	**20,92,000**	**Total**	**20,92,000**

Information:

(a) General reserve include ₹ 6,000 being Reserve for bad debts.
(b) Marketable investments included in investments is ₹18,000.

You are required to prepare common size balance sheet in vertical form.

Solution: **M/s Bofors Incorporation Ltd.**

Common Size Financial Position Statement as on 31-03-2014

No.	Particulars	₹	₹	% of NFE/NAO	
				%	%
I.	**Source of Funds:**				
1	Shareholders' Funds:				
	Equity Share Capital		5,00,000		35.92
	Add: 12% Preference Share Capital		1,00,000		7.18
			6,00,000		43.10
	Add: Reserves and Surplus:				
	General Reserve	2,46,000		17.67	
	Less: R.D.D.	6,000		0.43	
		2,40,000		17.24	
	Profit and Loss A/c	2,60,000		18.68	
	Capital Redemption Reserve	1,00,000	6,00,000	7.18	43.10
			12,00,000		86.21
	Less: Fictitious Assets:				
	Preliminary Expenses	40,000		2.87	
	Discount on Issue of Debentures	22,000	62,000	1.58	4.45

				11,38,000		81.75
2	Long-term Liabilities:					
	10% Debentures		1,54,000		11.06	
	Public Deposit		1,00,000	2,54,000	7.18	18.25
3	Net Fund Employed (1 + 2)			**13,92,000**		**100.00**
II	**Application of Funds:**					
1	Fixed Assets:					
	Goodwill			1,54,000		11.06
	Patents and Patterns			1,20,000		8.62
	Land and Buildings		5,08,000		36.49	
	Less: Depreciation Provision		60,000	4,32,000	4.31	32.18
	Machinery		4,20,000		30.17	
	Less: Depreciation Provision		70,000	3,50,000	5.03	25.14
	Furniture		2,10,000		15.09	
	Less: Depreciation Provision		80,000	1,30,000	5.75	9.34
				12,02,000		86.35
2	Investments (98,000 – 18,000)			80,000		5.75
3	Working Capital (A – B)					
	Current Assets:					
	Cash		10,000		0.72	
	Marketable Investments		18,000		1.29	
	Bank Balance		56,000		4.02	
	Debtors	2,20,000				
	Less: R.D.D.	6,000	2,14,000		15.37	
	Bills Receivable		50,000		3.59	
	Quick Assets:			3,48,000		25.00
	Inventory		1,70,000		12.21	
	Advances		14,000	1,84,000	1.01	13.22
		(A)		5,32,000		38.22
	Current Liabilities:					
	Creditors		2,08,000		14.94	
	Provision for Taxation		50,000		3.59	
	Bills Payable		40,000		2.87	
	Quick Liabilities:			2,98,000		21.41
	Advance Income		20,000		1.44	
	Bank Overdraft		1,04,000	1,24,000	7.47	8.91
		(A – B)		1,10,000		7.90
4	Net Assets Owned (1 + 2 + 3)			**13,92,000**		**100.00**

Illustration 24: From the following information, prepare the common size revenue statement with amount and per cent for the year ended on 31st March, 2014 in a vertical form suitable for analysis:

Particulars	**% on Net Sales of ₹ 5,00 000**
Opening Stock	2
Closing Stock	3
Purchases	52
Office Expenses	4.75
Other Administrative Expenses	5.75
Distribution Expenses	6

Selling Expenses	4
Interest (Dr.)	1.50
Indirect Wages	1.50
Direct Wages	2

Provision for income tax is to be made @ 25% on net profit before tax.

Solution: Common Size Revenue Statement for the year ended 31st March, 2014

No.	Particulars	₹	% of Net Sales
1	Net Sales	5,00,000	100.00
2	*Less:* Cost of Goods Sold:		
	Opening Stock	10,000	2.00
	Add: Purchases	2,60,000	52.00
	Direct Wages	10,000	2.00
	Indirect Wages	7,500	1.50
		2,87,500	57.50
	Less: Closing Stock	15,000	3.00
		2,72,500	54.50
3	Gross Profit (1 – 2)	2,27,500	45.50
4	*Less:* Operating Expenses:		
	Office Expenses	2,37,502	4.75
	Other Administrative Expenses	28,750	5.75
	Distribution Expenses	30,000	6.00
	Selling Expenses	20,000	4.00
	Interest (Finance Expenses)	7,500	1.50
		1,10,000	22.00
5	Net Profit before Tax (3 – 4)	1,17,500	23.50
	Less: Provision for Income Tax (25% on 1,17,500)	29,375	5.875
6	Net Profit after Tax	88,125	17.625

Illustration 25: Complete the following Income Statement of Narayan Ltd. for the year ended 31st March, 2010 and also prepare Common Size Revenue statement.

Particulars	₹
Net Sales	16,00,000
Less: Cost of Goods Sold	?
Gross Profit (25% on Sales)	?
Less: Operating Expenses	?
Operating Net Profit	2,00,000
Add: Non-operating Income	1,00,000
Less: Non-operating Expenses	?
Net Profit before Tax	2,80,000

Solution: Narayan Ltd.

Income Statement for the year ended 31.03.2010

Particulars	₹	%
Net Sales	16,00,000	100
Less: Cost of Goods Sold	12,00,000	75
Gross Profit (25% on Sales)	4,00,000	25
Less: Operating Expenses	2,00,000	12.50
Operating Net Profit	2,00,000	12.50
Add: Non-operating Income	1,00,000	6.25
Less: Non-operating Expenses	20,000	1.25
Net Profit before Tax	2,80,000	11.50

Illustration 26: Complete the following common size Income Statement:

Particulars	₹	%
Gross Sales	9,90,000	?
Less: Sales Return	?	10
Net Sales	?	?
Less: Cost of Sales	?	40
Gross Profit	?	?
Less: Operating Expenses		
(a) Administrative Expenses	?	?
(b) Finance Expenses	?	2
(c) Selling and Distribution Expenses	72,000	?
Operating Net Profit	?	?
Add: Non-operating Income	45,000	?
Less: Non-operating Expenses	?	15
Net Profit before Tax	?	30

Solution: **Common Size Income Statement**

Particular	₹	₹
Gross Sales	9,90,000	110
Less: Sales Return	90,000	10
Net Sales	9,00,000	100
Less: Cost of Sales	3,60,000	40
Gross Profit	5,40,000	60
Less: Operating Expenses		
(a) Administrative Expenses	90,000	10
(b) Finance Expenses	18,000	2
(c) Selling and Distribution Expenses	72,000	8
Operating Net Profit	3,60,000	40
Add: Non-operating Income	45,000	5
Less: Non-operating Expenses	1,35,000	15
Net Profit before Tax	2,70,000	30

Illustration 27: Pass and Fail are partners of a firm carrying on business.

(i) Their position are as on 31st December, 2012, 2013 and 2014 are as follows:

Liabilities	31.12.14	31.12.13	31.12.12	Assets	31.12.14	31.12.13	31.12.12
Partner's Capital	4,00,000	3,40,000	3,00,000	Fixed Assets	4,00,000	3,60,000	2,80,000
General Reserve	1,00,000	1,00,000	1,00,000	Current Assets:			
Secured Loans	60,000	60,000	50,000	Stock	1,60,000	1,50,000	1,35,000
Unsecured Loans	1,60,000	1,80,000	1,40,000	Debtors	2,00,000	1,60,000	1,40,000
Sundry Creditors	1,60,000	90,000	45,000	Loan and Advance	1,00,000	80,000	60,000
				Bank Balance	20,000	20,000	20,000
	8,80,000	**7,70,000**	**6,35,000**		**8,80,000**	**7,70,000**	**6,35,000**

(ii) Summarised Income Statement for the year ended:

Particulars	31.12.14	31.12.13	31.12.12
Sales	40,00,000	36,00,000	30,00,000
Less: Cost of Sales	28,00,000	24,00,000	20,00,000
Gross Profit	12,00,000	12,00,000	10,00,000
Less: Expenses	8,00,000	8,00,000	7,00,000
Net Profit	4,00,000	4,00,000	3,00,000

Work out trend percentage and given your interpretation on the same.

Solution:

(i)

M/s PASS and FAIL Firm
Trend Analysis Financial Position Statement

Particulars	₹			₹ In (2012 as base year)		
	31.12.12	31.12.13	31.12.14	31.12.12	31.12.13	31.12.14
I. Sources of Funds:						
1. Shareholders' Funds:						
Partners' Capital	3,00,000	3,40,000	4,00,000	100	113.33	133.33
General Reserve	1,00,000	1,00,000	1,00,000	100	100	100
	4,00,000	4,40,000	5,00,000	100	110	125
2. Long-term Liabilities:						
Secured Loans	50,000	60,000	60,000	100	120	120
Unsecured Loans	1,40,000	1,80,000	1,60,000	100	128.57	114.29
	1,90,000	2,40,000	2,20,000	100	126.32	115.79
3. Net Fund Employed (1 + 2)	**5,90,000**	**6,80,000**	**7,20,000**	**100**	**115.25**	**128.03**
II. Application of Funds:						
1. Fixed Assets	2,80,000	3,60,000	4,00,000	100	128.57	142.36
2. Working Capital (A – B)						
(A) Current Assets (1 + 2)						
Debtors	1,40,000	1,60,000	2,00,000	100	114.29	142.86
Loans and Advances	60,000	80,000	1,00,000	100	133.33	166.67
Bank	20,000	20,000	20,000	100	100	100
(i)	2,20,000	2,60,000	3,20,000	100	118.18	145.45
Quick Assets:						
Stock (ii)	1,35,000	1,50,000	1,60,000	100	111.11	118.52
(i + ii)	3,55,000	4,10,000	4,80,000	100	115.49	135.21
(B) Current Liabilities:						
Sundry Creditors	45,000	90,000	1,60,000	100	200	355.56
(A – B)	3,10,000	3,20,000	3,20,000	100	103.23	103.23
3. Net Assets Owned (1 + 2)	5,90,000	6,80,000	7,20,000	100	115.25	128.03

Trend Analysis
Income Statement for the year 31st March…….

Particulars	₹			₹ in % (2013 as Base Year)		
	31.3.12	31.3.13	31.3.14	31.3.12	31.3.13	31.3.14
1. Net Sales	30,00,000	36,00,000	40,00,000	100	120	133.33
2. Cost of Sales	20,00,000	24,00,000	28,00,000	100	120	140
3. Gross Profit (1 – 2)	10,00,000	12,00,000	12,00,000	100	120	120
4. Operating Expenses	7,00,000	8,00,000	8,00,000	100	114.29	114.29
5. Net Profit (3 – 4)	3,00,000	4,00,000	4,00,000	100	13.33	133.33

Comments: From the above Trend analysis, we can see that there is a consistent increment in Owner's Capital Fund and increased to the level of 133.33% during the last three years. Even there is statistical growth in Loan Fund. Secured Loan has increased by 20%. There is enhancement in unsecured loan also by approximately 29%, but again there is declining trend as compared to Base Year, leads to only 22% enhancement in Total Fund Employee.

There is subsequent growth in Fixes Assets during last three years which has increased by 28% to 42% respectively. Even there is slight enhancement in working capital only by 3% during last three years, leads to only 22% enhancement in total application of Fund during last three years.

Conclusion: From the above trend analysis statement and comments, we can conclude that in Sources of Fund, there is appropriate investment by owners during the last three years and repayment of loan which

leads to less burden of interest in coming years. But in Application of Funds, there is uneven distribution as compared to Fixed Assets and Working Capital, leads to problems in short-term solvencies.

Trend Analysis of M/S Pass & Fail Firm

Particulars	2012 ₹	2013 ₹	2014 ₹	2012 (%)	2013 (%)	2014 (%)
I. Sources of Fund:						
Owner's Fund						
Partner's Capital	3,00,000	3,40,000	4,00,000	100	113.33	133.33
Add: General Reserve	1,00,000	1,00,000	1,00,000	100	100	100
Loan Fund:						
Secured Loan	50,000	60,000	60,000	100	120	120
Unsecured Loan	1,40,000	1,80,000	1,60,000	100	128.57	114.28
Total Fund Employed	5,90,000	6,80,000	7,20,000	100	115.25	128.03
II. Applications of Fund						
Fixed Assets	2,80,000	3,60,000	4,00,000	100	128.57	142.85
Working Capital:						
Current Assets:						
Quick:						
Debtors	1,40,000	1,60,000	2,00,000	100	114.28	142.85
Bank	20,000	20,000	20,000	100	100	100
Non-quick:						
Stock	1,35,000	1,50,000	1,60,000	100	111.11	118.51
Loans and Advances	60,000	80,000	1,00,000	100	133.33	166.66
	3,55,000	4,10,000	4,80,000	100	115.49	155.21
Less: Current Lability:						
Quick: Creditors	(45,000)	(90,000)	(60,000)	100	200	133.33
Working Capital	3,10,000	3,20,000	3,20,000	100	103.22	103.22
Total Fund Employed	5,90,000	6,80,000	7,20,000	100	115.25	128.03

Illustration 28: Rearrange the Balance Sheet in vertical form and calculated the trend percentage taking 1992 figures as 100 and briefly comment on the same.

Solution: **Balance Sheet as on 31st December .....** **(₹ in lakhs)**

Liabilities	2011	2012	2013	2014	Assets	2011	2012	2013	2014
Share Capital	60	60	80	80	Building	50	60	55	80
Reserve	50	45	20	20	Goodwill	50	45	40	40
Surplus	13	32	31	40	Machinery	20	40	43	50
Debentures	10	20	20	30	Stock	05	15	25	05
Secured Loans	12	08	10	20	Debtors	20	14	15	10
Creditors	06	08	10	03	Cash	05	01	02	15
Bank Overdraft	01	02	08	04	Preliminary Expenses	03	02	01	–
Other Liabilities	01	02	02	03					
	153	**177**	**181**	**200**		**153**	**177**	**181**	**200**

Trend Analysis
Financial Position Statement as on 31st December

Particulars	₹ in lakhs				₹ in lakhs			
	2011	2012	2013	2014	2011	2012	2013	2014
I. Sources of Funds:								
1. Shareholders' Fund:								
Share Capital	60	60	80	80	100	100	133.33	133.33
(+) Reserve	50	45	20	20	100	90	40	40
(+) Surplus	13	32	31	40	100	246.15	238.46	307.69
	123	137	131	140	100	111.38	106.50	113.82

Less: Fictitious Assets:								
Preliminary Expenses	03	02	01	-	100	66.67	33.33	-
Debentures	10	20	20	30	100	200	200	300
2. Long-term Liabilities:								
Secured Loans	12	8	10	20	100	8.33	66.67	166.67
	22	28	30	50	100	127.27	136.36	227.27
3. Net Fund Employed (1 + 2)	**142**	**163**	**160**	**190**	**100**	**114.79**	**112.68**	**133.80**
II. Application of Funds:								
1. Fixed Assets:								
Goodwill	50	45	40	40	100	90	80	80
Building	50	60	55	80	100	120	110	160
Machinery	20	40	43	50	100	200	215	250
	120	145	138	170	100	120.33	115	141.67
2. Working Capital (A – B)								
(A) Current Assets								
Debtors	20	14	15	10	100	70	75	50
Cash	05	01	02	15	100	20	40	300
	25	15	17	25	100	60	68	100
Quick Assets:								
Stock	05	15	25	05	100	300	500	100
(A)	30	30	42	30	100	100	140	100
(B) Current Liabilities								
Creditors	06	08	10	03	100	133.33	166.67	50
Other Liabilities	01	02	02	03	100	200	200	300
Quick Liabilities	07	10	12	06	100	142.86	171.43	85.71
Non-quick Liabilities:								
Bank Overdraft	01	02	08	04	100	200	800	400
(B)	08	12	20	10	100	150	250	125
(A – B)	22	18	22	20	100	81.82	100	90.91
3. Net Assets Owned (1 + 2)	**142**	**163**	**160**	**190**	**100**	**114.79**	**112.68**	**133.80**

Exercise

Theory Questions

1. What is fixed assets?
2. What is an intangible assets?
3. What is quick assets?
4. What is a proprietor's fund?
5. What is reserve capital?
6. What is capital reserve ?
7. What is contingent liabilities?
8. What is quick liabilities?
9. What is long-term borrowings?
10. Fictitious Assets
11. Limitations of Financial Statements
12. Non-operating Income and Expenses
13. Cost of Goods Sold

Fill in the Blanks

1. _____ shows financial position of a firm.
2. Calls-in-advance should be shown in balance sheet on _____ side.
3. Calls-in-arrears should be _____ from subscribed capital.
4. Debentures carry fixed rate _____.
5. Public deposits should be shown under_____.
6. Trade mark in an _____asset.
7. Livestock is _____asset.
8. Capital employed = Net Worth plus _____.
9. GP is Sales – _____.

10. Current Liabilities =_____ – Current Assets.
11. Fixed Assets =_____Assets + Intangible Assets.
12. Capital Employed = Fixed Asset + _____ Capital.
13. Securities Premium forms part of_____.
14. Comparative statement is a part of _____ analysis.
15. Common size statement is a _____ analysis.
16. Common size statement is also called as _____ % statement.
17. In common size _____, capital employed is considered equal to 100.
18. In trend analysis, earliest year is considered as _____ year.

Ans.: 1. Balance sheet; 2. liability; 3. deducted; 4. interest; 5. unsecured loan; 6. intangible; 7. fixed; 8. loan fund; 9. cost of goods sold; 10. working capital; 11. tangible; 12. working capital; 13. reserves and surplus; 14. horizontal; 15. vertical; 16. 100; 17. balance sheet; 18. base.

State Whether the Following Statements are True or False

1. Management accounting is a recent development.
2. Profit and Loss A/c shows financial position of an organisation.
3. Subscribed capital is the capital subscribed by the investors.
4. Calls-in-arrears is calls-in-advance.
5. Calls-in-advance is shown under current assets.
6. Debentures may be unsecured only.
7. Goodwill should be shown under fictitious assets
8. Patents and copyright are intangible assets.
9. Loose tools should be shown under current assets.
10. Arrears of preference dividend is a contingent liability.
11. Interest on loan is disclosed separately in the income statement.
12. Profit on sale of machinery is an operating income .
13. Operating expenses are incurred to conduct the operations smoothly.
14. Fictitious assets can be converted into cash.
15. Own fund is external fund.
16. All the quick liabilities are current liabilities.
17. Floating assets are current asset.
18. Comparative statement includes comparative income statement and balance sheet.
19. Comparative balance sheet shows comparative financial status.
20. In common size income statement, capital employed is considered equal to 100.
21. Common size statement is a horizontal analysis.
22. Trend analysis show the trend in financial performance of an organisation.
23. Analysis is a must for interpretation.

Ans.: **True:** 1, 3, 8, 9, 10, 11, 13, 16, 17, 18, 19, 22, 23
False: 2, 4, 5, 6, 7, 12, 14, 15, 20, 21

Match the Columns

(A)	Group A	Group B
1.	Calls in arrears	(a) Discussed under Reserves and Surplus
2.	Oversubscription	(b) Share capital + Reserve – Fictitious assets
3.	Securities premium	(c) Own fund + Loan fund
4.	Proprietors' fund	(d) Intangible fixed assets
5.	Capital employed	(e) Fixed assets
6.	Preliminary expenses	(f) disclosed on liability side

7. Goodwill	(g) Fictitious assets
8. Railway sidings	(h) Subscribed capital is more than issued capital
9. Calls in advance	(i) Deducted from subscribed capital
10. Gross Profit	(j) Trading profit
11. Operating net profit	(k) Profit and Loss A/c balance
12. Retained earnings	(l) Non-operating
13. Loss from speculation	(m) Operating
	(n) Gross Profit less Operating Expenses

Ans.: 1. (i), 2. (h), 3. (a), 4. (b), 5. (c), 6. (g), 7. (d), 8. (e), 9. (f), 10. (j), 11. (n), 12. (k), 13. (l)

(B)

Group A	**Group B**
1. Sources of funds	(a) Fixed assets + Investments + Net current assets
2. Uses of funds	(b) Current assets - Stock
3. Liquid assets	(c) Current liabilities – Bank OD
4. Quick liabilities	(d) Net worth
5. Shareholder funds	(e) Net worth + Loan fund

Ans.: 1. (e), 2. (a), 3. (b), 4. (c), 5. (d)

(C)

Group A	**Group B**
1. An assets which has physical existence	(a) Reserve earmarked
2. An asset which has no physical existence	(b) Deferred revenue expenditure
3. An expenditure which has no future benefits	(c) Unpaid expenditure
4. Revenue expenditure pertaining to future	(d) Not available for divided
5. Capital reserve	(e) Prepaid expenses
6. Revenue expenditure payable	(f) Fictitious asset
7. Expenditure which is carried forward	(g) Intangible assets
8. Fund	(h) Tangible assets
	(i) Capital expenditure

Ans.: 1. (h), 2. (g), 3. (f), 4. (e), 5. (d), 6. (c), 7. (b), 8. (a)

(D)

Group A	**Group B**
1. Calls-in-arrears	(a) Added to share capital
2. Forfeited shares	(b) Fixed asset
3. Capital WIP	(c) Current asset
4. LOOSE TOOLS	(D) Non-operating expenditure
5. Loss on sale of machinery	(e) Deducted from share capital
6. Oil wells and mines	(f) Wasting assets
7. Bank overdraft	(g) Not a quick asset
8. Stock	(h) Not a quick liability
	(i) Secured loan

Ans.: 1. (e), 2. (a), 3. (b), 4. (c), 5. (d), 6. (f), 7. (h), 8. (g)

(E)

Group A	**Group B**
1. Vertical analysis	(a) Comparative statement
2. Horizontal analysis	(b) Method of preparation of comparative
3. Increases/decreases	(c) Method of preparation of comparative
4. % increases/decreases	(d) Basis of common balance sheet
5. Capital employed = 100	(e) Common size statement
6. Sales = 100	(f) Basis of common size income statement
7. Trends analysis	(g) Earlier year as base year
8. Comparative statement	(h) Shows comparative performance

Ans.: 1. (e), 2. (a), 3. (b), 4. (c), 5. (d), 6. (f), 7. (g), 8. (h)

(F)

Group A	**Group B**
1. Land and building	(a) Net worth
2. Equity share capital	(b) Loan fund
3. Debentures	(c) Investments
4. 5% Government securities	(d) Current asset
5. Loose tools	(e) Fixed asset

Ans.: 1. (e), 2. (a), 3. (b), 4. (c), 5. (d)

(G)

Group A	**Group B**
1. Quick asset	(a) Share capital + Reserves and Surplus
2. Own fund	(b) Fixed asset + Investment = Net current asset
3. Working capital	(c) Current asset – Stock
4. Applications of fund	(d) Current asset – Current liability
5. Trend analysis	(e) Comparative statements
6. Horizontal analysis	(f) Common size statements
7. Vertical analysis	(g) Internal analysis
	(h) Dynamic analysis

Ans.: 1. (c), 2. (a), 3. (d), 4. (b), 5. (h), 6. (e), 7. (f)

Multiple Choice Questions

1. Land and building is a
   (a) fixed tangible movable asset (b) fixed intangible movable asset
   (c) intangible asset (d) fixed tangible asset
2. Capital work-in-progress in disclosed under
   (a) fixed asset (b) current assets
   (c) capital (d) intangible asset
3. Stock is a
   (a) current asset (b) quick asset
   (c) fixed asset (d) fictitious asset
4. Bank overdraft is not a
   (a) quick liability (b) current liability
   (c) urgent liability (d) liability
5. Operating profit is
   (a) gross profit plus income
   (b) gross profit less operating expenses plus operating income
   (c) gross profit less non-operating income
   (d) gross profit plus operating losses
6. Bills payable is a
   (a) quick liability (b) long-term liability
   (c) fixed liability (d) non-current liability
7. Provision for taxation is a charge against
   (a) profit (b) income
   (c) retained earning (d) none of the above
8. Staff salary is an
   (a) operating expenditure (b) operating income
   (c) non-operating expenditure (d) capital expenditure

9. Fixed assets are 5,00,000, current asset are ₹ 3,00,,000 and current liabilities are ₹ 1,00,000. There is no investments. Capital employed will be
   (a) ₹ 8,00,000 (b) ₹ 7,00,000
   (c) ₹ 9,00,000 (d) ₹ 6,00,000
10. Natural resources likes mines and oil wells are
   (a) wasting assets (b) fictitious assets
   (c) current assets (d) intangible asset
11. The expenditure which is carried forward is
   (a) deferred revenue expenditure (b) revenue expenditure
   (c) capital expenditure (d) expired cost
12. Following is not a liquid asset
   (a) debtors (b) bills receivable
   (c) stock (d) cash
13. Advances given are shown in the vertical balance sheet under
   (a) current asset (b) current liabilities
   (c) fixed liabilities (d) fictitious assets
14. Depreciation on machinery is shown under
   (a) office expenses (b) selling expenses
   (c) finance expenses (d) cost of goods sold

Ans.: 1. (d), 2. (a), 3. (a), 4. (a), 5. (b), 6. (a), 7. (b), 8. (a), 9. (b), 10. (a), 11. (a), 12. (c), 13. (a), 14. (d)

PRACTICAL QUESTIONS

1. Prepare Comparative Income Statement from the following data:

M/s K 7 Co.

Particulars	2013 (₹)	2014 (₹)
Net Sales	5,00,000	4,00,000
Cost of Goods Sold	3,50,000	3,25,000
Operating Expenses	75,000	60,000

Also comment on the changes.

2. Prepare Comparative Balance Sheet as on 31st March, 2014 and comment on it.

Liabilities	2013 (₹)	2014 (₹)	Assets	2013 (₹)	2014 (₹)
Share Capital	1,40,000	1,60,000	Buildings	1,10,000	1,60,000
Profit and Loss A/c	40,000	40,000	Machinery	86,000	1,00,000
Debentures	40,000	60,000	Stock	50,000	10,000
Other Secured Loans	20,000	40,000	Debtors	30,000	20,000
Creditors	20,000	6,000	Cash	4,000	30,000
Bank Overdraft	16,000	8,000			
Outstanding Expenses	4,000	6,000			
	2,80,000	**3,20,000**		**2,80,000**	**3,20,000**

3. Comparative Financial Position Statement

Balance Sheet of RT Ltd. as on December, 2013 and 2014

Liabilities	2013 (₹)	2014 (₹)	Assets	2013 (₹)	2014 (₹)
Preference Share Capital	–	40,00,000	Fixed Assets	7,00,000	10,00,000
Equity Share Capital	5,00,000	5,00,000	Investments (at Cost)	1,00,000	1,20,000
Reserves and Surplus	1,35,500	1,71,500	Stock	1,50,000	1,80,000
12% Debentures	2,00,000	–	Debtors	2,36,000	2,44,000
Bank Overdraft	50,000	80,000	Cash	24,000	2,500
Sundry Creditors	1,50,000	1,25,000			
Provision for Taxation	75,000	1,20,000			
Proposed Dividend	1,00,000	1,50,000			
	12,10,000	**15,46,500**		**12,10,000**	**15,46,500**

Prepare a Comparative balance sheet and offer your comments. **(Oct. 1996)**

4. Comparative/Financial Statement

From the following financial statements of Vaibhav Ltd., prepare Comparative Financial Statements (in Vertical Form).

Balance Sheet as on _____

Liabilities	31-12-13 (₹)	31-12-14 (₹)	Assets	31-12-13 (₹)	31-12-14 (₹)
Equity Share Capital	4,00,000	4,00,000	Land	2,00,000	2,40,000
9% Preference Share Capital	3,00,000	3,00,000	Factory Plant and Building	6,00,000	5,40,000
General Reserves	2,00,000	2,45,000	Stocks	2,00,000	3,00,000
Tax Payable	1,00,000	1,50,000	Debtors	2,00,000	3,00,000
Creditors	2,00,000	2,75,000	Cash	1,00,000	1,40,000
17% Debentures	1,00,000	1,50,000			
	13,00,000	**15,20,000**		**13,00,000**	**15,20,000**

Profit & Loss A/c for the year ended _____

Particulars	31-12-13 (₹)	31-12-14 (₹)	Particulars	31-12-13 (₹)	31-12-14 (₹)
Cost of Goods Sold	6,00,000	7,50,000	Sales	8,00,000	10,00,000
Administrative Expenses	30,000	40,000			
Selling Expenses	20,000	20,000			
Net Profit	1,50,000	1,90,000			
	8,00,000	**10,00,000**		**8,00,000**	**10,00,000**

Briefly comment on the difference between the stand net profit of 2013 and the increment in General Reserves on 31-12-13 assuming that no amount is paid towards tax in 2013.

Also ascertain the quantum of cash gross profit of 2013, assuming that no depreciation is provided on Land. **(Oct. 1997)**

5. Comparative Financial Position Statement

From the following data, prepare Comparative Balance Sheets in vertical form at 31-03-2013 and 31-03-2014 of M/s APJ Ltd.

Balance Sheet as at 31st March

Liabilities	2013 (₹)	2014 (₹)	Assets	2013 (₹)	2014 (₹)
Share Capital	70,000	80,000	Building	55,000	80,000
Profit and Loss A/c	20,000	20,000	Machinery	43,000	50,000
Debentures	20,000	30,000	Stock	25,000	5,000
Other Secured Loan	10,000	20,000	Debtors	15,000	10,000
Creditors	10,000	3,000	Cash	2,000	15,000
Bank Overdraft	8,000	4,000			
Outstanding Expenses	2,000	3,000			
	1,40,000	**1,60,000**		**1,40,000**	**1,60,000**

(April 1999)

6. Comparative Financial Statements

Prepare Comparative Income Statement and Comparative Balance Sheet in vertical form and offer your brief comments.

Particulars	31-3-13 (₹)	31-3-14 (₹)	Particulars	31-3-13 (₹)	31-3-14 (₹)
To Opening Stock	44,000	40,000	By Sales	1,19,000	2,00,000
To Purchases	84,000	72,000	By Closing Stock	46,000	44,000
To Wages	40,000	36,000	By Interest Received	20,000	–
To Factory Expenses	32,000	28,000			
To Establishment Expenses	8,000	6,000			
To Management Expenses	2,000	2,000			
To Selling Expenses	6,000	10,000			
To Interest	6,000	8,000			

To Loss on Sale of Assets	2,000	2,000			
To Provision for Taxation	22,000	24,000			
To Net Profit transferred to Reserve	10,000	16,000			
	2,56,000	**2,44,000**		**2,56,000**	**2,44,000**

Balance Sheet as at .....

Liabilities	31-3-13 (₹)	31-3-14 (₹)	Assets	31-3-13 (₹)	31-3-14 (₹)
Equity Capital	50,000	70,000	Fixes Assets	70,000	82,000
Preference Capital	20,000	–	Investments	20,000	10,000
Reserves	50,000	68,000	Current Assets		
Secured Loans	22,000	24,000	Excluding Bank Balance	1,00,000	92,000
Unsecured Loans	30,000	–	Bank Balance	10,000	20,000
Creditors	20,000	25,000	Loans and Advance	40,000	30,000
Outstanding Expenses	6,000	5,000	Preliminary Expenses	12,000	10,000
Provision	54,000	50,000			
Unclaimed Dividend	–	2,000			
	2,52,000	**2,44,000**		**2,52,000**	**2,44,000**

(April 2002)

7. Comparative Financial Position Statement

From the following balance sheet as on 31st March, 2013, and 31st March, 2014 of M/s Successful Ltd., prepare Comparative Balance Sheet for analysis purpose in vertical form.

Particulars	31st March, 2013 (₹)	31st March, 2014 (₹)
Assets:		
Cash and Bank Balance	6,00,000	2,00,000
Short-term Investments	2,00,000	9,00,000
Accounts Receivable	13,00,000	10,00,000
Inventories	15,00,000	5,00,000
Prepaid Income Tax	2,50,000	2,00,000
Other Current Assets	3,00,000	2,50,000
	41,50,000	30,50,000
Land and Building	4,00,000	2,50,000
Machinery	6,00,000	5,00,000
Furniture	1,50,000	1,00,000
Leasehold Land	2,50,000	2,50,000
	14,00,000	11,00,000
	55,50,000	**41,50,000**
Liabilities:		
Bills Payable	12,00,000	8,00,000
Account Payable	10,00,000	5,00,000
Accrued Compensation and Employee Benefit	5,00,000	2,00,000
Income Tax Payable	2,00,000	1,00,000
	29,00,000	16,00,000
Equity Capital	20,00,000	20,00,000
Reserve	6,50,000	5,50,000
	26,50,000	25,50,000
	55,50,000	**41,50,000**

(Oct. 2005)

8. Comparative Balance Sheet

Balance Sheet of Star Ltd. for the year ended 31st December, 2013 and 31st December, 2014 are as follows:

Liabilities	31-12-13 (₹)	31-12-14 (₹)	Assets	31-12-13 (₹)	31-12-14 (₹)
Equity Share Capital	8,00,000	8,00,000	Building	6,00,000	5,40,000

10% Preference Share Capital	6,00,000	6,00,000	Land	2,00,000	2,00,000
General Reserves	4,00,000	4,90,000	Plant	6,00,000	5,40,000
15% Debentures	2,00,000	3,00,000	Furniture	2,00,000	2,80,000
Creditors	3,00,000	4,00,000	Stock	4,00,000	6,00,000
Bills Payable	1,00,000	1,50,000	Debtors	4,00,000	6,00,000
Tax Payable	2,00,000	3,00,000	Cash	2,00,000	2,80,000
	26,00,000	**30,40,000**		**26,00,000**	**30,40,000**

Prepare Comparative Balance Sheet in Vertical form and your comments in brief on Fixed Assets. **(April 2008)**

9. Comparative Statement

Prepare Comparative Revenue Statement in Vertical Form from the following details:

Profit and& Loss A/c for the year ended 31st March

Particulars	2013 (₹)	2014 (₹)	Particulars	2013 (₹)	2014 (₹)
To Opening Stock	2,25,000	3,00,000	By Sales	45,00,000	60,00,000
To Purchases	22,50,000	32,10,000	By Closing Stock	3,00,000	3,60,000
To Interest on Debenture	1,50,000	1,50,000	By Dividend	12,000	39,000
To Depreciation:			By Profit on Sale of Machinery	24,000	–
Furniture	15,000	15,000			
Machinery	36,000	30,000			
To Administrative Expenses	2,94,000	4,41,000			
To Selling Expenses	4,56,000	7,53,000			
To Carriage Outward	75,000	3,15,000			
To Loss by Fire	–	15,000			
To Wages	1,95,000	3,00,000			
To Provision for Tax	5,70,000	4,35,000			
	48,36,000	**63,99,000**		**48,36,000**	**63,99,000**

(Oct. 2008)

10. Prepare a comparative revenue statement in vertical form from the following details:

Nilkamal Ltd.

Profit & Loss A/c for the year ended 31st March

Particulars	2008 ₹	2009 ₹	Particulars	2008 ₹	2009 ₹
To Opening Stock	2,25,000	3,00,000	By Sales	45,00,000	60,00,000
To Purchases	22,50,000	32,10,000	By Closing Stock	3,00,000	3,60,000
To Interest on Debentures	1,50,000	1,50,000	By Dividend	12,000	39,000
To Depreciation:			By Profit on Sale of Machinery	24,000	-
Furniture	15,000	15,000			
Machinery	36,000	30,000			
To Administrative Expenses	2,94,000	4,41,000			
To Selling Expenses	4,56,000	7,53,000			
To Carriage Outward	75,000	3,15,000			
To Loss by Fire	-	15,000			
To Wages	1,95,000	3,00,000			
To Provision for Tax	5,70,000	4,43,000			
To Net Profit	5,70,000	4,35,000			
	48,36,000	63,99,000		84,36,000	63,99,000

11. Convert the following financial statements into the common size financial statements:

Profit and Loss A/c for the year ended 2014

Particulars	(₹)	(₹)
Sales		12,00,000
Less: Cost of Sales		
Opening Stock	1,80,000	
Add: Purchases	9,00,000	

	10,80,000	
Less: Closing Stock	2,00,000	8,80,000
Gross Profit		3,20,000
Less: **Other Operating Expenses:**		
(i) Office and Administrative	1,00,000	
(ii) Selling and Distribution	20,000	
(iii) Finance	20,000	1,40,000
Operating Net Profit		1,80,000
Add: Non-operating Income		5,000
		1,85,000
Less: Non-operating Expenditure		10,000
Net Profit before Tax		1,75,000
Less: Provision for Taxation		75,000
Net Profit after Tax		1,00,000
Less: Dividend		40,000
Balance of Net Profit Transferred		60,000

12. Common Size Financial Statement

Prepare Common Size Financial Statement.

Balance Sheet

Liabilities	Year 1 (₹)	Year 2 (₹)	Assets	Year 1 (₹)	Year 2 (₹)
Creditors	33,800	36,400	Land	49,400	49,400
Loans	54,000	37,000	Building	2,73,000	2,47,000
Share Capital	5,20,000	5,20,000	Machinery	1,58,600	1,45,600
Reserves	1,48,200	1,77,650	Inventory	2,10,600	2,34,000
Proposed Dividend	9,000	7,000	Prepaid Expenses	28,600	26,600
Tax Provisions	59,400	36,450	Cash	18,200	33,800
			Debtors	86,000	78,700
	8,24,400	**8,14,500**		**8,24,400**	**8,14,500**

Dr. **Income Statement** **Cr.**

Expenses	Year 1 (₹)	Year 2 (₹)	Income	Year 1 (₹)	Year 2 (₹)
To Cost of Sale	5,46,750	4,91,400	By Gross Sales	9,91,440	8,26,200
To Opening Expenses:			*Less:* Returns	18,900	16,200
Administrative	91,800	81,000	By Net Sales	9,72,540	8,10,000
Sales	1,78,200	1,62,200	By Non-operating Income	10,930	8,100
To Non-operating Expenses	16,320	10,800			
To Tax Provision	59,400	36,450			
To Proposed Dividend	9,000	7,000			
To Retained Earnings	82,000	29,450			
	9,83,470	**8,18,100**		**9,83,470**	**8,18,100**

(Oct. 1995)

13. Common Size Financial Statements

From the following Financial Statements of Moon Ltd. for the year ended 31st December, 1994 and 1995, prepare: (a) Common size Income Statements, (b) Common size Balance Sheets and (c) Comment on the above.

Balance Sheet as at 31st December _____

Liabilities	2013 (₹)	2014 (₹)	Assets	2013 (₹)	2014 (₹)
Equity Share Capital	4,00,000	4,00,000	Land	1,00,000	1,00,000
9% Preference Share Capital	3,00,000	3,00,000	Building	3,00,000	2,70,000
General Reserves	2,00,000	2,45,000	Plant	3,00,000	2,70,000
17% Debentures	1,00,000	1,50,000	Furniture	1,00,000	1,40,000
Creditors	1,50,000	2,00,000	Stock	2,00,000	3,00,000
Bills Payable	50,000	75,000	Debtors	2,00,000	3,00,000

Tax Payable	1,00,000	1,50,000	Cash	1,00,000	1,40,000
	13,00,000	**15,20,000**		**13,00,000**	**15,20,000**

Profit and Loss Account for the year ended 31st December

Particulars	2013 (₹)	2014 (₹)	Particulars	2013 (₹)	2014 (₹)
To Cost of Goods Sold	6,00,000	7,50,000	By Net Sales	8,00,000	10,00,000
To Operating Expenses:					
Administrative Expenses	30,000	40,000			
Selling Expenses	20,000	20,000			
To Net Profit	1,50,000	1,90,000			
	8,00,000	**10,00,000**		**8,00,000**	**10,00,000**

(April 1996)

14. Common Size Financial Statement

The summarised Balance Sheet of two companies are as follows:

Balance Sheet as at 31st March, 2014

Liabilities	Top Ltd. (₹)	Ten Ltd. (₹)	Assets	Top Ltd. (₹)	Ten Ltd. (₹)
Equity Share Capital	1,20,000	3,50,000	Fixed Assets	2,45,000	4,10,000
10% Preference Share Capital	1,00,000	50,000	Current Assets	2,90,500	3,32,800
Reserves	1,40,000	56,000	Preliminary Expenses	10,000	6,000
15% Debentures	50,000	50,000			
Current Liabilities	1,35,500	2,42,800			
	5,45,500	**7,48,800**		**5,45,500**	**7,48,800**

Revenue Statements for the year 31st March, 2014

Particulars	(₹)	(₹)
Sales	10,00,000	12,00,000
Less: Cost of Sales	6,00,000	8,00,000
	4,00,000	4,00,000
Less: Operating Expenses (including interest)	1,40,000	2,05,000
Less: Non-cash Operating Expenses (Depreciation)	10,000	20,000
	2,50,000	1,75,000
Less: Taxes	1,00,000	70,000
Less: Dividend	70,000	75,000
Retained Earning	**80,000**	**30,000**

Prepare:

(i) Common size Balance Sheet (in Vertical Form)

(ii) Common Size Income Statements (in Vertical Form)

(iii) Comments in brief

(iv) Working Capital fund generated before tax from operations of both the companies. **(April 1998)**

15. Common Size Financial Position Statement

Prepare a common size balance sheet of M/s Ram Ltd. in vertical form the following information and comment on it.

Particulars	(₹)
Land and Building	6,00,000
Plant and Machinery	5,00,000
Equity Capital	5,00,000
Preference Capital	2,00,000
Stock	2,40,000
Debtors	2,00,000
Cash and Bank	55,000
Miscellaneous Current Assets	5,000
Profit & Loss A/c (Cr. Bal.)	2,00,000
General Reserve	1,00,000
Sundry Creditors	80,000

Bills Payable	60,000
Miscellaneous Current Liabilities	60,000
Debentures	4,00,000

(Oct. 1999)

16. Trend Analysis – Income Statement

You are furnished with the following revenue statements for the year ended 31-3-2014.

Liabilities	2011	2012	2013	2014
Sales	50,00,000	60,00,000	72,00,000	86,40,000
Less: Cost of Sales	32,00,000	38,00,000	46,00,000	56,00,000
Margin	18,00,000	22,00,000	26,00,000	30,40,000
Management Expenses	3,00,000	3,50,000	4,00,000	4,50,000
Sales Expenses	5,00,000	6,00,000	7,20,000	8,64,000
Interest on Borrowing	3,00,000	4,00,000	5,00,000	6,00,000
Total Expenses	11,00,000	13,50,000	16,20,000	19,14,000
Net Profit before Depreciation and Taxation	7,00,000	8,50,000	9,80,000	11,26,000
Depreciation	5,00,000	4,50,000	6,00,000	6,50,000
Profit before Taxation	2,00,000	4,00,000	3,80,000	4,76,000
Income Tax	80,000	2,00,000	1,85,000	2,40,000
Profit after Tax	**1,20,000**	**2,00,000**	**1,95,000**	**2,36,000**

(a) You are asked to prepare trend analysis.

(b) Comments on the same **(Oct. 1997)**

17. Trend Analysis – Financial Statement

(a) Calculate Trend Percentage from the following information extracted from the financial statements of different entities. Give your appropriate comments on each statement:

Particulars	2011 (₹)	2012 (₹)	2013 (₹)	2014 (₹)
Assets:				
Fixed Assets	2,11,696	2,08,694	2,04,580	1,84,122
Investments	20,000	15,000	10,000	9,000
Cash in Hand	41,680	30,472	20,346	18,312
Sundry Debtors	1,85,040	1,31,346	85,750	77,175
Stock	1,31,474	1,34,684	1,45,172	1,30,655
Prepaid Expenses	1,690	3,236	2,440	2,196
	5,91,580	**5,23,432**	**4,68,288**	**4,21,460**
Liabilities:				
Sundry Creditors	1,40,712	1,32,684	1,17,410	1,05,669
Liabilities for Expenses	5,640	4,094	2,490	2,240
Share Capital	4,45,228	3,86,654	3,48,388	3,13,551
	5,91,580	**5,23,432**	**4,68,288**	**4,21,460**

(b)

Particulars	2011 (₹)	2012 (₹)	2013 (₹)	2014 (₹)
Sales	9,880	13,640	16,400	18,040
Cost of Sales	8,810	12,490	14,970	16,460
Expenses	50	130	80	100
Interest Expenses	200	370	500	540
Tax	450	190	390	450
Profit	?	?	?	?

18. Trend Analysis – Income Statement

You are furnished with the following revenue statements for the year ended 31st December.

Particulars	2011 (₹)	2012 (₹)	2013 (₹)	2014 (₹)
Sales	50,000	60,000	72,000	86,400
Less: Cost of Sales	32,000	38,000	46,000	56,000
Margin	18,000	22,000	26,000	30,400
Management Expenses	3,000	3,500	4,000	4,500

Sales Expenses	5,000	6,000	7,200	8,640
Interest on Loans	3,000	4,000	5,000	6,000
Total Expenses	11,000	13,500	16,200	19,140
Profit before Depreciation	7,000	8,500	9,800	11,260
Depreciation	5,000	4,500	6,000	6,500
Profit before Tax	2,000	4,000	3,800	4,760
Income Tax	800	2,000	1,850	2,400
Profit after Tax	1,200	2,000	1,950	2,360

You are required to make trend analysis (absolute figures need not be shown) and comment in brief on change in Gross Profit, Net Profit before Tax. **(April 2003)**

19. Trend Analysis – Income Statement

From the following, prepare income statement in vertical form showing trend percentages of M/s Supreme Ltd. and comment on gross profit trend.

Particulars	2011	2012	2013	2014
Sales	4,20,000	5,10,000	5,40,000	6,00,000
Cost of Sales	1,92,500	2,33,750	2,47,500	2,75,000
Administrative Expenses	67,500	67,500	75,000	75,000
Selling and Distribution Expenses	42,000	51,000	54,000	60,000
Finance Expenses	20,000	20,000	20,000	20,000
Income Tax Provision	29,400	41,325	43,050	51,000

(Oct. 2005)

20. Trend Analysis – Financial Position Statement

From the following Balance Sheet, prepare vertical Balance Sheet which is suitable for analysis and calculate Trend percentages taking 2003 as base year.

Balance Sheet as at 31st December

Particulars	2014 (₹)	2013 (₹)	2012 (₹)
Share Capital	50,000	50,000	50,000
Reserve and Surplus	5,000	10,000	10,000
Secured Loan	3,000	5,000	5,000
Unsecured Loan	2,000		6,000
Current Liabilities	5,000	5,000	4,000
	65,000	**70,000**	**75,000**
Fixed Assets (Net)	40,000	45,000	50,000
Investment	5,000	7,500	10,000
Stock	7,000	6,000	5,000
Debtors	10,000	9,000	7,000
Cash	3,000	2,500	3,000
	65,000	**70,000**	**75,000**

(Oct. 2006)

21. Prepare Vertical Balance Sheet:

Particulars	2013 (₹)	2013 (₹)
Net Worth	?	65,000
Long-term Debts	10,000	?
Fixed Assets	40,000	50,000
Net Current Assets	20,000	25,000

(Ans: Net Worth ₹ 50,000; LTL ₹ 10,000)

22. Prepare Vertical Profit and Loss A/c.

Particulars	2013 (₹)	2014 (₹)
Net Sales	50,000	?
Cost of Sales	50% on Sales	60% on Sales
Gross Profit	?	30,000
Other Income	?	20% on Sales
Net Profit	30,000	?

(Ans: 2013 = G.P. ₹ 25,000; Other Income ₹ 5,000
2014 = Net Sales = ₹ 75,000; Other Income ₹ 15,000; N/P ₹ 45,000)

23. From the following data, prepare comparative statement:

Particulars	Year 1	Year 2
Sales	5,00,000	6,00,000
Gross Profit	40%	50%
Operating Expenses	1,00,000	1,50,000
Income Tax Rate	50%	50%

(Ans: N/P Year 1 = ₹ 50,000; Year 2 =₹ 75,000)

24. Prepare Comparative Income Statement:

Particulars	2012	2013
Sales	₹ 4,00,000	₹ 6,00,000
Cost of Sales	60% of Sales	70% of Sales
Indirect Expenses	50% of GP	40% of GP
Income Tax	50% of NP before tax	50% of N/P

Ans:

Particulars	2012	2013
Cost of Sales	2,40,000	4,20,000
Indirect Expenses	80,000	72,000
NP after Tax	40,000	72,000

25. Prepare Common Size Balance Sheet as on 31st March, 2013.

Liabilities	X Ltd.	Y Ltd	Assets	X Ltd.	Y Ltd
Share Capital	18,00,000	24,00,000	Fixed Assets	20,00,000	32,00,000
Reserves and Surplus	8,00,000	7,00,000	Current Assets	10,00,000	4,00,000
Current Liabilities	4,00,000	5,00,000			
	30,00,000	**36,00,000**		**30,00,000**	**36,00,000**

(Ans: Total Fund Employed
X Ltd. = ₹ 26,00,000; Y Ltd. = ₹ 31,00,000)

26. From the following data, prepare Common Size Income Statement:

Particulars	Year 1 (₹)	Year 2 (₹)
Sales	20,00,000	24,00,000
Cost of Goods Sold	15,00,000	18,00,000
Operating Expenses	2,00,000	3,00,000
Interest on Loan	50,000	1,00,000
Income Tax	80,000	1,00,000

(Ans: N/P - Year 1 = ₹ 1,70,000; Year 2 = ₹ 1,00,000)

27. Complete the following trend statement

M/s Tail Ltd.

Profit and Loss Accounts for the year ended 31st March

Particulars	Years				Base Year			
	2014		2013		2012		2011	
	₹ (000)	%	₹ (000)	%	₹ (000)	%	₹ (000)	%
Sales	2,000	100	?	80	?	120	?	?
Cost of Goods Sold	1,500	?	1,280	100	?	110	?	?
Trading Profit	?	?	?	?	?	?	?	?

Non-operating Income	?	50	135	90	?	60	?	?
Non-operating Expenses	16	?	8	?	?	40	10	?
Profit before Interest and Tax (PBIT)	?	?	?	?	?	?	?	?
Interest	60	?	120	600	40	?	?	?
Profit before Tax (PBT)	?	?	?	?	?	?	?	?
Tax at 50% of PBT	?	?	?	?	?	?	?	?
Profit after (PAT)	?	?	?	?	?	?	?	?
Dividend	3	30	?	90	?	?	?	?
Net Earning	?	?	?	?	410	?	?	?

28. Complete the following Trend Statement of M/s Ravi Industries Ltd.

Particulars	2014	2013	2012	2014	2013	2012
Net Sale	600	800	1,000	100	?	?
Cost of Goods Sold	400	?	?	?	125	?
Gross Profit	200	?	?	?	?	200
Operating Expenses	100	?	200	?	120	?
Operating Net Profit	?	180	?	?	?	?
Non-operating Income	40	?	?	?	50	150
Non-operating Expenses	?	?	?	100	100	100
Net Profit before Tax	120	?	?	?	150	200
Income Tax	40	?	?	?	?	?
Net Profit after Tax	80	100	120	?	?	?

29. Calculate Trend Percentage from the following information extracted from Financial Statements of the Excellent Fashions Ltd. after arranging in vertical form. Give your comments. Round off percentage**:**

(₹ in '000)

Particulars	2014 ₹	2013 ₹	2012 ₹	2011 ₹
Profit & Loss Accounts				
Sales	10,000	11,000	12,000	13,000
Cost of Sales	7,500	8,175	8,850	9,525
Expenses	800	935	1,140	1,287
Interest	225	300	375	450
Profit before Tax	?	?	?	1,738
Tax	590	636	654	695
Profit after Tax	885	?	?	?
Balance Sheet				
Fixed Assets	?	?	?	?
Current Assets	15,000	?	17,800	?
Current Liabilities	?	10,900	?	12,800
Net Working Capital	5,000	5,500	5,950	6,450
Net Worth	10,000	10,700	11,100	11,600
Loans (Liabilities)	5,000	6,000	7,000	8,000

30. Complete the following Trend Statement of Yuvraj by filling the blanks and comment in very brief.

	₹ in Lakhs				Trend in %			
	2014	2013	2012	2011	2014	2013	2012	2011
Sales	10,000	?	12,000	13,000	100	110	?	130
Less: Cost of Sales	?	?	8,850	?	?	109	?	?
Gross Profit	2,500	?	?	3,475	?	?	126	?
Administrative Expenses	?	?	1,140	?	?	117	?	?
Sales Expenses	225	?	?	450	?	133	?	?
Total Operating Expenses	1,025	?	1,515	1,737	?	?	?	?
Net Profit before Tax	?	?	?	1,738	?	108	?	?
Income Tax	?	636	?	?	?	108	?	118
Net Profit after Tax	885	?	981	?	100	?	?	?

31. From the following balances relating to Kankavli Products Ltd., prepare a Common Size Balance Sheet in vertical form.

Particulars	₹
Shareholders' Fund	7,15,000
10% Debentures	2,00,000
Current Assets	4,15,000
Current Liabilities	2,00,000
Investments (Long Term)	1,30,000
Fixed Assets	?

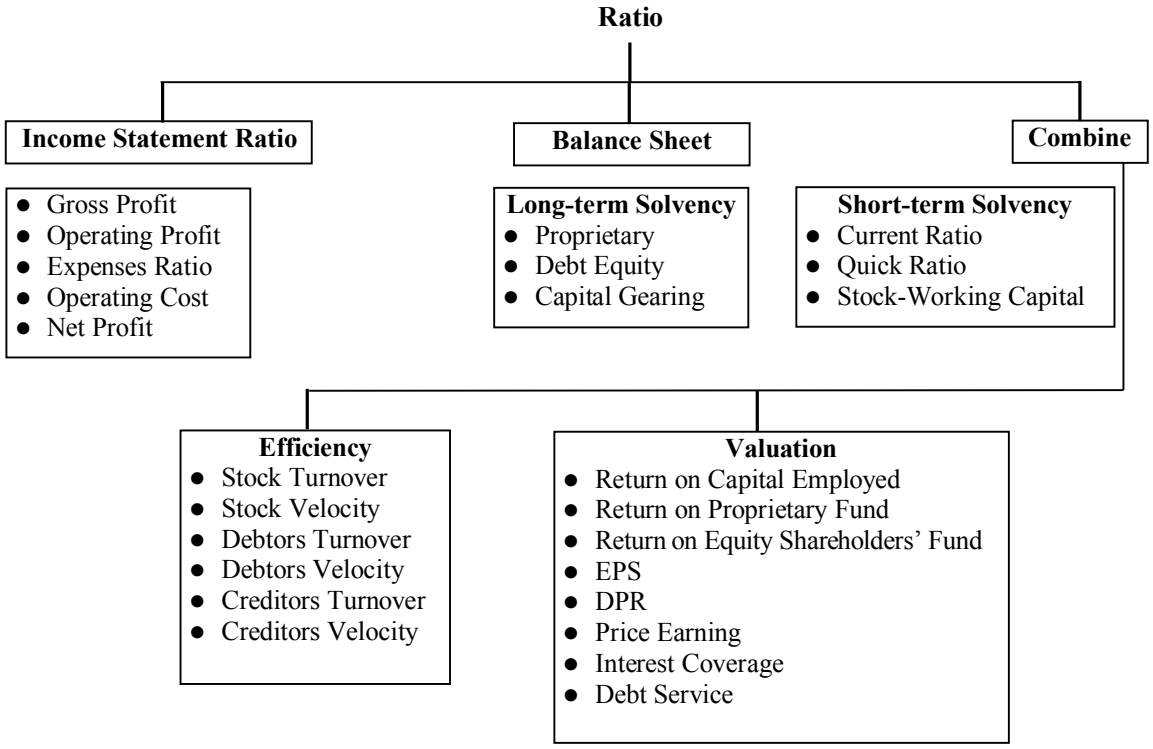
Chapter

3

Ratio Analysis

RATIO ANALYSIS

Ratios are well-known and most widely used tools of financial analysis. A ratio gives the mathematical relationship between one variable and another. Though the computation of a ratio involves only a simple arithmetic operation, its interpretation is a difficult exercise. The analysis of a ratio can disclose relationships as well as bases of comparison that reveal conditions and trends that cannot be detected by going through the individual components of the ratio. The usefulness of ratios is ultimately dependent on their intelligent and skillful interpretation.



Absolute numbers tell very little. Assume that two companies A and B operating within the same industry submit the information:

Particulars	Company A	Company B
Net Profit	10,000	1,00,000

One can easily say that Company B makes the most profit. But which company is most profitable? The answer for this will naturally call for further additional information relating to profit such as size of the company, the total sales it generates or to how much capital is invested in it. Hence, an assessment or a judgement is made based on making some sort of comparison. Extending the example:

Particulars	Company A	Company B
Net Profit	10,000	1,00,000
Sales	2,00,000	5,00,000
Net Worth (Capital Reserve)	1,00,000	2,00,000

If net profit is compared with sales, an assessment can be made on which company generates the most net profit per ₹ 1 received from customers.

Return on Capital Employed:

Particulars	Company A	Company B
Net Profit/Sales × 100	5%	20%
Net Profit/Net Worth × 100	10%	25%

Ratio can be expressed in the following three forms:

1. As proportion
2. As percentage
3. As turnover rate

Simple or pure ratio is merely a quotient arrived by simple division of one number by another. When the current assets of a business firm are ₹ 60,000 and current liabilities is ₹ 15,000.

- The ratio is derived by dividing ₹ 60,000 by ₹ 15,000. It will be expressed as 4 : 1.
- Ratios are expressed as percentage relations when the simple or pure ratios are multiplied by 100 (4 × 100 = 400%).
- Ratios are expressed as rates which refer to ratios over a period of time. Example: Stock has turned over 6 times a year.

Ratio Analysis is "separation or breaking up of anything into its elements or component parts". Ratio analysis is, therefore, a technique of analysis and interpreting various ratios for helping in making certain decisions. It involves the methods of calculating and interpreting financial ratios to assess the firm's performance and status. The ratio analysis is one of the most powerful tools of financial analysis. The analysis is not restricted to any one aspect but takes into account all aspects such as earning capacity of the firm, financial obligation, liquidity and solvency aspects, liquidity and profitability concepts.

Ratios are used by different people for various purposes. As ratio analysis mainly helps in valuing the firm in quantitative terms, two groups of people are interested in the valuation of the firm and they are creditors and shareholders. Creditors are again divided into short-term creditors and long-term creditors.

Short-term creditors hold obligations that will soon mature and they are concerned with the firm's ability to pay its bills promptly. In the short run, the amount of liquid assets determines the ability to clear off current liabilities. These persons are interested in liquidity. Long-term creditors hold bonds or mortgages against the firm and are interested in current payments of interest and eventual repayment of principal. The firm must be sufficiently liquid in the short-term and have adequate profits for the long-term. These persons examine liquidity and profitability.

In addition to liquidity and profitability, the owners of the firm (shareholders) are concerned about the policies of the firm that affect the market price of the firm's stock. Without liquidity, the firm cannot pay cash dividends. Without profits, the firm would not be able to declare dividends. With poor policies, the common stock would trade at low prices in the market.

Considering the above category of users financial ratios fall into three groups:

- Liquidity ratios
- Profitability or efficiency ratios

- Ownership ratios
  - — Earnings ratios
  - — Dividend ratios
  - — Leverage ratios
  - — Capital structure ratios
  - — Coverage ratios

Steps in Ratio Analysis

Ratio analysis can provide you with this information in three steps:

1. Calculate the firm's ratios for the current or recent period. Ratios are calculated from the firm's income statement or balance sheet. It is helpful and sometimes necessary to have the financial statement independently audited.
2. Compare these ratios to those calculated in past records. The purpose of this comparison is to identify tendencies in the firm's ratios. This is known as trend analysis.
3. Compare the ratios to industry averages to show how the company compares to firms of the same size in its industry. This process is known as cross-sectional analysis.

Illustration 1: The following financial statements of KR Ltd. will be used for computing the different ratios:

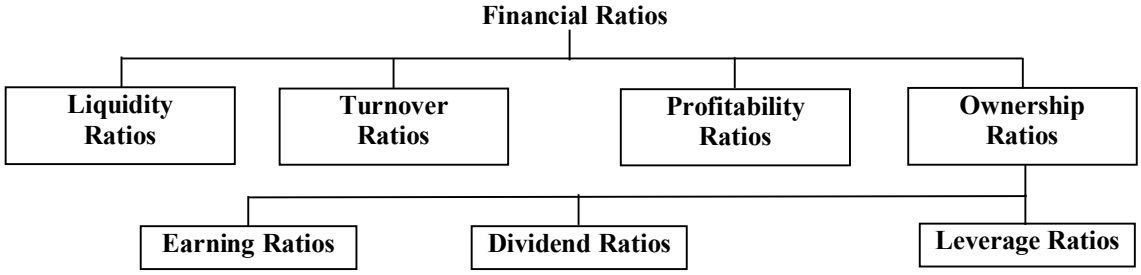
Income Statement for the year ending 31-03-2011

Particulars	₹	₹
Net Sales		
Credit:	7,20,000	
Cash:	4,80,000	12,00,000
Less: Cost of Goods Sold		
Opening Stock	2,00,000	
Add: Purchases	6,00,000	
Less: Closing Stock	2,40,000	
Wages	1,60,000	7,20,000
Gross Profit		4,80,000
Operating Expenses		
Office and Administration Expenses	1,72,000	
Selling and Distribution Expenses	1,50,000	3,12,000
Operating Profit		1,68,000
Interest		8,000
Profit before Tax		1,60,000
Tax		80,000
Profit after Tax		80,000

Balance Sheet of KR Ltd. as on 31-3-2011

Current Liabilities	L/Y	C/Y	Current Assets	L/Y	C/Y
Accounts Payable	1,00,000	1,20,000	Cash	1,20,000	1,60,000
Wages and Taxes Outstanding	60,000	40,000	Accounts receivable	1,20,000	1,20,000
Income Tax Payable	40,000	80,000	Inventories	2,00,000	2,40,000
Long-term Liabilities:			Prepaid Expenses	40,000	40,000
4% Mortgage Debentures	1,60,000	1,60,000	Fixed Assets:		
Share Capital (12,000 shares of ₹ 20 each fully paid)	2,40,000	2,40,000	Land	1,20,000	1,20,000
Retained Earnings	2,40,000	2,80,000	Building and structures	4,80,000	4,80,000
			Less: Accumulated Depreciation on Building and Structures	2,80,000	2,80,000
			Net Buildings and Structures	2,00,000	2,00,000
			Other Assets:		
			Goodwill and Patents	40,000	40,000
Total	**8,40,000**	**8,40,000**	**Total**	**8,40,000**	**8,40,000**

Financial Ratios



Financial ratios can be broadly classified into four categories:

(a) Liquidity ratios
(b) Turnover ratios
(c) Profitability ratios
(d) Ownership ratios.

(a) Liquidity Ratios: It is the ability of a firm to satisfy its short-term obligations as they become due for payment. The liquidity is a prerequisite for the very survival of a firm. It reflects the short-term financial strength or solvency of the firm. The ratios which indicate the liquidity of the firm are:

1. Net Working Capital
2. Current Ratio
3. Acid Test/Quick Ratio
4. Super Quick Ratio
5. Cash Flow from Operations Ratio

1. Net Working Capital: It represents the excess of current assets over current liabilities.

Net Working Capital = Current Assets – Current Liabilities

Although NWC is really not a ratio, it is frequently employed as a measure of a company's liquidity position. The greater is the amount of NWC, the greater is the liquidity of the firm. Inadequate working capital is the first sign of financial problems for a firm.

2. Current Ratio: Current ratio measures the short-term solvency of the firm. It is computed as:

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

$$\text{For KR Ltd., Current Ratio} = \frac{5,60,000}{2,40,000} = 2.33$$

Here, current assets include cash and assets like marketable securities, sundry debtors, inventories, etc. that can be converted into cash within one year. Current liabilities include obligations like sundry creditors, bills payable, accrued expenses, short-term bank loan etc., that have to be repaid within a year.

- The current assets of a firm include cash and bank balances, marketable securities, inventory of raw materials, semi-finished and finished goods, debtors, net of provision for bad and doubtful debts, bills receivable and prepaid expenses.
- The current liabilities include trade creditors, bills payable, bank credit, provision for taxation dividends payable and outstanding expenses.
- As a measure of short-term financial liquidity, it indicates the rupees of current assets available for each rupee of current liability payable.
- Higher ratio, i.e., more than 2 : 1 indicates sound solvency position but at the same time it may be indicative of slack management policies and practices as it might signal excessive inventories or poor credit management.
- Lower ratio, i.e., less than 2 : 1 indicates inadequate working capital. In capital rich countries, where long-term funds from capital market are available in abundance firms dependence on

current liabilities may be less. For public utility companies such as BSNL, MTNL, etc., current ratio is usually very low as they required fewer current assets.

3. Quick Ratio: Quick ratio is also known as liquid ratio or acid test ratio. One defect of the current ratio is that it fails to convey any information on the composition of the current assets of the firm. A rupee of cash is considered equivalent to a rupee of inventory or receivable which may not be so. The acid test ratio is a measure of liquidity designed to overcome this defect by measuring those current assets that can be quickly converted into cash to meet the short-term obligations of current liabilities. In a way, it excludes inventory that are not easily and readily converted into cash.

While computing current ratio, inventory is included as a part of current assets. But inventory normally requires some time for being converted into cash, because of which the true picture of liquidity is not given by current ratio. Quick ratio provides a better measure of liquidity unlike current ratio; it does not take inventories into account. It is computed as:

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Invetories}}{\text{Current Liabilities}}$$

$$\text{For KR Ltd., Quick Ratio} = \frac{3,20,000}{2,40,000} = 1.33$$

- Acid test ratio of 1 : 1 is considered satisfactory. This ratio is a more rigorous and penetrating test of the liquidity position of a firm.
- Higher ratio, i.e., more than 1 : 1 indicates sound financial position.
- Lower ratio, i.e., less than 1 : 1 indicates financial difficulty.

4. Super Quick/Cash Ratio: This ratio is calculated by dividing the super quick assets by the current liabilities of a firm. The super quick current assets are cash and marketable securities. This ratio is the most rigorous and conservative test of a firm's liquidity position.

Super Quick Ratio = Cash and Marketable Securities/Current Liabilities

5. Cash Flow from Operations Ratio: This ratio measures liquidity of a firm by comparing actual cash flows from operations (in lieu of current and potential cash inflows from current assets) with current liability.

Cash Flow from Operations Ratio = Operations from Cash Flow/Current Liabilities

6. Bank Finance to Working Capital Gap: Working capital gap is the difference between current assets and current liabilities (other than short-term borrowings). The bank finance to working capital gap ratio indicates the extent to which the firm relies on short-term bank finance for financing its working capital. It is computed as:

$$\text{Bank Finance to Working Capital Gap} = \frac{\text{Short - term Bank Finance}}{\text{Working Capital Gap}}$$

(a) Activity Ratios or Efficiency Ratios: They are concerned with measuring the efficiency in asset management. The efficiency with which the assets are used would be reflected in the speed and rapidity with which assets are converted into sales.

(b) Turnover Ratio*:* This ratio examines how quickly inventory is converted into cash. This ratio helps the financial manager to evaluate in inventory policy. The ratio reveals the number of times finished stock is turned over during a given accounting period. The three relevant turnover ratios are: (i) Inventory turnover ratio, (ii) Debtors turnover ratio, and (iii) Creditors turnover ratio.

They are also referred to as activity ratios and they indicate the efficiency of the firm in dealing with the current assets. They indicate the pace at which the assets are turned into sales.

1. Average Receivables (Debtors) Turnover Ratio: Accounts receivables indicate the credit sales of the company. The debtors turnover ratio or the receivables turnover ratio gives the number of times receivables are generated and collected during the year. It is computed as:

$$\text{Average Receivables (Debtors) Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Accounts Receivables}}$$

$$\text{For KR Ltd., Average Receivables Turnover Ratio} = \frac{7,20,000}{(2,00,000 + 2,40,000)/2} = 10$$

- Net Credit Sales consist of gross credit sales minus returns from customers. It also includes bills receivables.
- A high ratio is indicative of shorter time lag between credit sales and cash collection.
- A low ratio indicates that debts are not being collected rapidly.

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

The speed at which accounts receivables are collected can be computed using the receivables turnover ratio in the following manner:

$$\text{Average Collection Period} = \frac{360}{\text{Average Accounts Receivable}} = \frac{360}{10} = 36 \text{ days}$$

The average collection period helps in measuring the creditworthiness of the debtors as it indicates the time by which the debtors pay back their obligation arising on account of credit sales.

The higher the turnover ratio and the shorter the average collection period, indicates better trade credit management and the better the liquidity of debtors.

2. Inventory Turnover Ratio: It indicates the efficiency of the firm in producing and selling its product. It is computed as:

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

where, the average inventory is arrived at by taking the average of opening and closing inventory balances.

$$\text{For KR Ltd., Inventory Turnover Ratio} = \frac{7,20,000}{(2,00,000 + 2,40,000)/2} = 3.27$$

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.

Inventory Holding Period = 12 months/Inventory Turnover Ratio

For KR Ltd., Inventory Holding Period =12/3.27 = 3.67 times

3. Creditors Turnover Ratio: It is the ratio between net credit purchase and the average amount of creditors outstanding during the year.

Creditors Turnover Ratio = Net Credit Purchase/Average Creditors

For KR Ltd., Creditor Turnover Ratio = 6,00,00/1,10,000 = 5.45 times

Creditors Collection Period = 12 months/Creditors Turnover Ratio

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. Assets Turnover Ratio: It indicates the efficiency with which firm uses all its assets to generate sales. It is based on the relationship between cost of goods sold and assets of a firm.

This ratio indicates the firm's ability in generating sales from all financial resources committed to total assets. It is computed as:

$$\text{Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Average Assets}}$$

$$\text{For KR Ltd., Asset Turnover Ratio} = \frac{12,00,000}{(8,40,000 + 9,20,000)/2} = 1.36$$

Total Assets Turnover = Cost of goods sold/Average total assets

Fixed Asset Turnover = Cost of goods sold/Average fixed assets

The total assets and fixed assets are net of depreciation and the assets are exclusive of fictitious assets. Higher the ratio, greater is the intensive utilization of fixed assets. Lower ratio means under utilization of total and fixed assets.

5. Capital Turnover Ratio: Cost of goods sold/Average capital employed lower ratio shows lower profit and higher ratio shows higher profit.

Illustration 2: Birla Cements Ltd. provides the following:

Stock: Opening ₹ 75,000; Closing ₹ 1,00,000; Credit Sales ₹ 2,00,000; Cash Sales ₹ 50,000. Gross Profit 25%. Calculate the Inventory Turnover Ratio.

Solution:

Net Sales = Cash Sales + Credit Sales = 2,00,000 + 50,000 = 2,50,000
Gross Profit = 25% of 2,50,000 (Net Sales) = 62,500
COGS = Net Sales – Gross Profit = 2,50,000 – 62,500 = 1,87,500
Average Inventory = (Opening Stock + Closing Stock)/2 = (75,000 + 1,00,000)/2 = 87,500
Inventory Turnover Ratio = COGS/Average Inventory = 1,87,500/87,500 = 2.14 times

Illustration 3: Total sales of a firm ₹ 5,00,000 of which the credit sales are ₹ 3,65,000. Sundry Debtors and Bills receivable are ₹ 50,000 and ₹ 2,000 respectively. Calculate the Debtors Velocity.

Solution:

Debtors Turnover Ratio	=	Net Credit Sales/(Debtors + Bills Receivables)
	=	3,65,000/(50000 + 2000) = 7.02
Debtors Velocity	=	No. of Days in a Year/Debtors Turnover Ratio
Debtors Collection Period	=	365/7.02 = 52 days

Note: No. of days in a year is taken as 365 days.

Illustration 4: Total purchases ₹ 1,00,000. Cash purchases ₹ 20,000. Discount provision on creditors ₹ 1,000. Purchase returns ₹ 2,000. Creditors at close ₹ 30,000. Bills payable at close ₹ 25,000. Calculate Creditors Velocity.

Solution:

Credit Purchases	=	Total Purchase – Cash Purchase – Purchase Return
	=	1,00,000 – 20,000 – 2,000 = ₹ 78,000
Creditors Turnover Ratio	=	Net Credit Purchases/(Creditors + Bills Payable)
	=	78,000/(30,000 + 25,000) = 1.42
Creditors Velocity	=	No. of Days in a Year/Creditors Turnover Ratio
Creditors Collection Period	=	365/1.42 = 257 days

Note: The Reserve for discount on creditors should not be considered for calculating the net credit sales.

Illustration 5: Total sales of a firm ₹ 50,00,000 of which the credit sales are ₹ 36,50,000. Sundry Debtors and Bills receivable are ₹ 5,000 and ₹ 2,000 respectively. Calculate the Debtors Velocity.

Solution:

Debtors Turnover Ratio	=	Net Credit Sales/(Debtors + Bills Receivables)
	=	36,50,000/(5,000 + 2,000) = 70.02
Debtors Velocity	=	No. of days in a year/Debtors turnover ratio (Debtors collection period)
	=	365/70.02 = 5.2 days

Note: No. of days in a year is taken as 365 days.

Illustration 6: Total purchases ₹ 1,00,000. Cash purchases ₹ 20,000. Discount provision on creditors ₹ 1,000. Purchase returns ₹ 2,000. Creditors at close ₹ 25,000. Bills payable at close ₹ 15,000. Calculate Creditors Velocity.

Solution:

Credit Purchases	=	Total Purchase – Cash Purchase – Purchase Return
	=	1,00,000 – 20,000 – 2,000 = ` 78,000
Creditors Turnover Ratio	=	Payable Bills Creditors (Purchases + Bills Payable)
	=	78,000/(25,000 + 15,000) = 1.95
Creditors Velocity	=	Period Collection Creditors (No. of Days in a Year)
Creditors Collection Period	=	365/1.95 = 187 days

Note: The Reserve for discount on creditors should not be considered for calculating the net credit sales

(c) Profitability Ratios: The management of the firm is interested in the financial soundness of a firm. They are designed to provide answers to questions such as: (i) Is the profit earned by the firm adequate? (ii) What rate of return does it represent? (iii) What is the rate of profit for various divisions and segments of the firm? (iv) What was the amount paid in dividends? (v) What was the amount paid in dividends? (vi) What is the rate of return to equity holders?

Profitability ratios help in measuring the operating efficiency of the firm. Besides the management of the company, creditors, owners and shareholders are also interested in the profitability of the firm. There are two categories of profitability ratios: (a) gross profit margin and (b) net profit margin.

1. Profit in Relation to Sales

Gross Profit Margin: It measures the percentage of each sales rupee remaining after the firm has paid for its goods. The gross profit margin or gross margin measures the relationship between profit and sales. There are two types of margins-gross profit margin and net profit margin. It indicates the efficiency with which the firm produces each unit of the product. It is computed as:

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

where, Net Sales = Sales – Excise Duty

$$\text{For KR Ltd., Gross Profit Margin} = \frac{4,80,000}{12,00,000} = 0.40, \text{ i.e., } 40\%$$

A high ratio of gross profit to sales is a sign of good management as it implies that the cost of production is relatively low. A relatively low gross margin is definitely a danger signal, a need for careful and detailed analysis of the factors responsible for it.

Net Profit Margin: It indicates the overall efficiency of the firm in manufacturing, administering and selling the product. It is computed as:

Net Profit Margin = Net Profit/Net Sales × 100

$$\text{For KR Ltd., Net Profit Margin} = \frac{80,000}{12,00,000} = 0.067, \text{ i.e., } 6.7\%$$

This measures the relationship between net profits and sales of a firm. It measures the percentage of each sales rupee remaining after all costs and expenses including interest and taxes have been deducted.

Operating Profit Ratio = EBIT/Net Sales × 100

For KR Ltd., Operating Profit Ratio = 1,68,000/12,00,000 × 100 = 14%

Net Profit Ratio = EAT/Net Sales × 100

The net profit margin is indicative of management's ability to operate the business with sufficient success not only to recover all the cost but also to leave a margin of reasonable compensation to the owners. Higher the ratio of net operating profit to sales better is the operational efficiency of the concern.

Expenses Ratio: These ratios indicate the relationship of various expenses to net sales. It is computed by dividing expenses by sales. Operating expenses include cost of goods sold, administrative expenses, selling, distribution expense and financial expenses but excludes taxes, dividends and extraordinary losses.

Operating Ratio = Cost of Goods Sold + Operating Expenses/Net Sales × 100

Cost of Goods Sold = Opening Stock + Purchase – Closing Stock

Operating Expenses = Administrative Expenses + Financial Expenses + Selling Expenses

The expenses ratio should be compared over a period of time with the industry average. A low ratio is preferable to high one is unfavorable. For manufacturing concern, an operating ratio between 75% and 80% is expected.

Expense Ratio = Administrative Expenses or Selling and Distribution Expenses or Financial Expenses/Net Sales × 100

Earning Power: It is a measure of a firm's operating performance. It is equal to:

$$\text{Earning Power} = \frac{\text{Earnings Before Interest and Taxes}}{\text{Average Total Assets}}$$

$$\text{For KR Ltd., earning power} = \frac{1,68,000}{(8,40,000 + 9,20,000)/2} = 0.19$$

Return on Equity (ROE): ROE indicates how well the firm has used the resources of the owners. It is computed as:

$$\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Average Equity}}$$

A higher return on equity indicates the efficiency of the firm in utilising the shareholder's resources.

$$\text{For KR Ltd., ROE} = \frac{80,000}{(4,80,000 + 5,20,000)/2} = 0.16.$$

Return on Capital Employed: It refers to long-term funds supplied by the lenders and owners of the firm. The capital employed provides a test of profitability related to the source of long-term funds. A comparison of this ratio with similar firms, with the industry average and over time would provide sufficient insight into how efficiently the long-term funds of owners and lenders are being used.

ROCE = EBIT/Capital employed × 100

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

Return on Shareholders' Equity: It measures the return on the total equity funds of ordinary shareholders. This ratio judges whether the firm has earned a satisfactory return for its equity holders or not.

ROEF = Net Profit after Tax – Preference Dividends/Shareholders' Equity or Net Worth × 100

Illustration 7: Ranjandas Ltd. provides the following information:

Cash Sales ₹ 8,00,000; Credit Sales ₹ 10,00,000; COGS ₹ 15,80,000 and Return Inwards ₹ 20,000. Calculate Gross Profit Ratio and ratio of COGS.

Solution:

Gross Sales = Cash Sales + Credit Sales = 8,00,000 + 10,00,000 = 18,00,000

Net Sales = Gross Sales – Return Inwards = 18,00,000 – 20,000 = 17,80,000

Gross Profit = Net Sales – COGS = 17,80,000 – 15,80,000 = 2,00,000

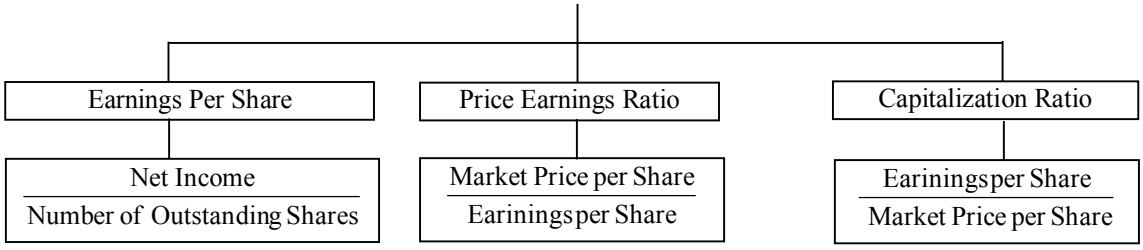
1. Gross Profit Ratio = (Gross Profit/Net Sales) × 100 = [2,00,000/17,80,000] × 100 = 11.2%
2. Ratio of COGS = 100 – GP Ratio = 100 – 11.2 = 88.8%

(d) Ownership Ratios: Ownership ratios help in analyzing the value of the shareholders' investments in the firm. They help in evaluating the firm's value with respect to different aspects like earnings of the firm, dividends declared, debt employed by the firm, market price of the firm, etc. Ownership ratios can be divided into three different categories:

1. Earnings Ratios
2. Leverage Ratios
3. Dividend Ratios

Earnings Ratios

They reflect the earnings of the firm and its affect on the market price of the stock



1. Earnings Ratios: These ratios help in indicating the earnings of the firm and its effect on the price of the share.

Earnings per Share (EPS): EPS helps in computing the profitability of shareholder's investments in the firm. It is computed as:

$$\text{Earnings per Share (EPS)} = \frac{\text{Profit after Tax}}{\text{Number of Outstanding Shares}}$$

$$\text{For KR Ltd., EPS} = \frac{80{,}000}{12{,}000} = 6.67$$

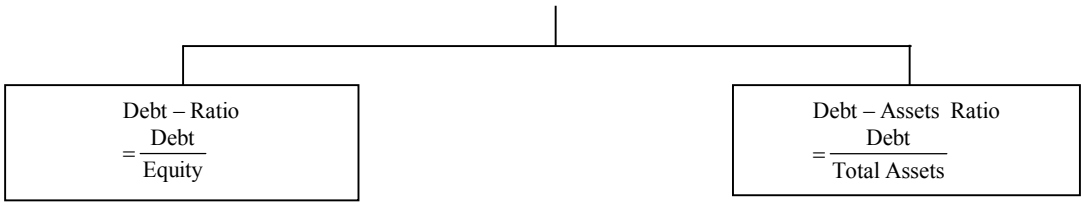
Price-earnings Ratio (P/E Ratio): P/E ratio helps in studying the affect of the earnings of the firm on the market price of the share. It is calculated as:

$$\text{Price-earnings Ratio (P/E Ratio)} = \frac{\text{Market Price of the Share}}{\text{Earnings per Share}}$$

Capitalisation Rate: It is the reciprocal of P/E ratio. It indicates the rate of return expected by the investors.

2. Leverage Ratios: Leverage ratios help in analysing the long-term solvency of the firm. They are divided into two categories: Capital structure ratios and Coverage ratios.

Capital Structure Ratios



Solvency/Capital Structure Ratios: These ratios indicate the proportions of debt and equity in the capital structure of the firm. Debt-equity ratio and Debt-assets ratio fall under this category.

The long-term lenders/creditors would judge the soundness of a firm on the basis of the long-term financial strength measured in terms of its ability to pay the interest regularly as well as repay the installment of the principal on due dates or in one lump sum at the time of maturity. There are two aspects of the long-term solvency of a firm: (i) the ability to repay the principal when due, and (ii) regular payment of the interest. Accordingly, there are two different but mutually dependent and interrelated types of leverage ratios.

Balance Sheet Ratios	Capital Structure Ratios
Debt-equity ratio	Interest coverage ratios
Debt-asset ratio	Dividend coverage ratios
Equity-asset/Proprietors' fund ratio	Total fixed charges coverage ratios
	Cash flow coverage ratios
	Debt service coverage ratios

Debt-equity Ratio: It describes the lender's contribution in the capital structure in relation to that of the owner. It is computed as:

$$\text{Debt-equity Ratio} = \frac{\text{Debt}}{\text{Equity}}$$

In the above ratio, debt in the numerator includes both long-term as well as current liabilities and the denominator is composed of net worth and preference capital that is not redeemable within one year.

$$\text{For KR Ltd., Debt-equity Ratio} = \frac{4,00,000}{5,20,000} = 0.77$$

The D/E ratio is an important tool to appraise the financial structure of a firm. The ratio reflects the relative contribution of creditors and owners of business in its financing. If D/E ratio is 1 : 2 it implies that for every rupee of outside liability (debt) the firm has two rupees of owner's capital or the stake of the creditors is one-half of the owners. Therefore a safety margin of 66.67 per cent is available to the creditors of the firm. A higher debt-equity ratio say 2 : 1 implies low safety margin to the creditors. It would lead to inflexibility in the firm's operation.

Treatment of Preference Share Capital in D/E Ratio: The inclusion or exclusion of preference share capital depends upon the purpose for which the D/E ratio is computed. If the objective is to examine the financial solvency of a firm in terms of its ability to avoid financial risk, preference capital should be clubbed with equity capital. On the other hand, if D/E ratio is calculated to show the effect of the use of fixed-interest/dividend sources of funds on the earnings available to the ordinary shareholders, preference capital should be clubbed with debt.

Trading on Equity: A high debt-equity ratio denotes the use of larger proportion of debt capital in the financial structure of the firm. The debt capital is cheaper to equity capital because interest on debt is a tax deductible expense. The equity shareholders stands to gain for two reasons: (i) Higher returns, (ii) Limited stake would be enable them to retain control. Trading on equity or leverage is the use of borrowed funds in expectation of higher returns to equity shareholders.

Debt Assets Ratio: It helps in finding the extent to which the assets of the firm are funded by borrowed funds. Debt Asset Ratio = Total Debt/Total assets.

$$\text{For KR Ltd., Debt Assets Ratio} = \frac{4,00,000}{9,20,000} = 0.43$$

- A low ratio of debt to total assets is desirable from the point of creditors/lenders as there is sufficient margin of safety available to them.
- A high ratio would expose the creditors to high risk. The implications of the ratio of equity capital to total capital are exactly opposite to that of the debt to total assets. A firm should have neither a very high ratio nor a very low ratio.

Proprietary Ratio: This ratio indicates the proportion of total assets financed by the owners.

Proprietary Ratio = Fund's Proprietor/Assets Total

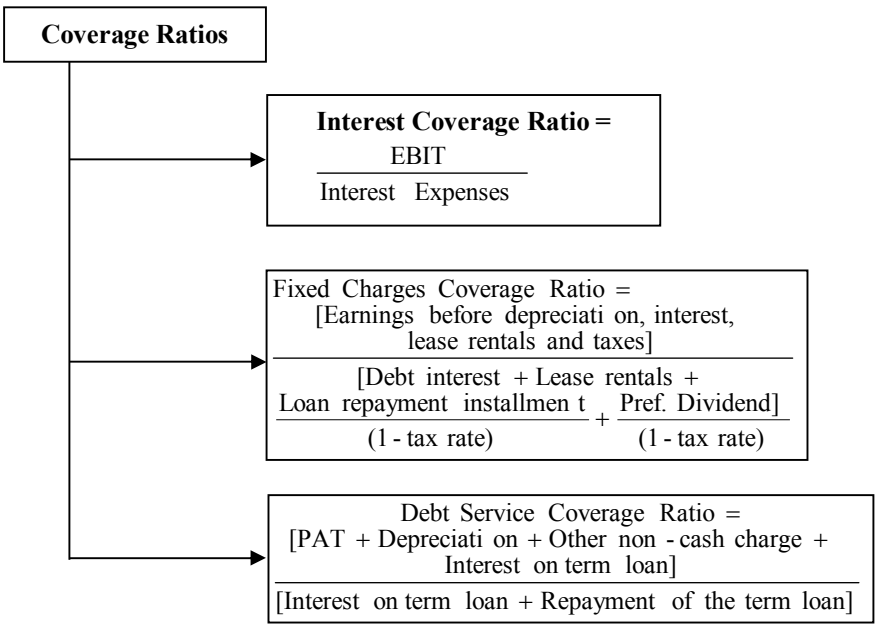
- Higher ratio, say more than 75% shows lesser dependence on external sources.
- Lower ratio, say less than 60% shows more dependence on external sources.

Capital Gearing Ratio: It shows the mix of finance employed in the firm.

Capital Gearing Ratio = Fixed Income bearing Securities/Total Equity

Important Concepts

Equity Capital = Loan Capital = Even Gear
Equity Capital > Loan Capital = Low Gear = Overcapitalisation
Equity Capital < Loan Capital = Higher Gear = Undercapitalisation



Coverage Ratios: These ratios help in evaluating the ability of the firm to meet its financial obligations. Interest Coverage Ratio, Fixed Charges Coverage Ratio and Debt Service Coverage Ratio come under this category. These ratios measure the firm's ability to pay certain fixed charges. In the ordinary course of business, the obligations of the creditors are met out of the earnings or operating profits. These claims consist of: (i) interest on loans, (ii) preference dividend, and (iii) amortization of principal or repayment of the installment of loans or redemption of preference capital on maturity. The important coverage ratios are: (i) interest coverage, (ii) dividend coverage, (iii) total coverage, (iv) total cash flow coverage, and (v) debt service coverage ratio.

Interest Coverage Ratio: It indicates the ability of the firm to meet the interest payments associated with debt. It is computed as:

$$\text{Interest Coverage Ratio} = \frac{\text{EBIT}}{\text{Interest Expense}}$$

It can also be computed as:

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings Before Depreciation, Interest and Taxes}}{\text{Interest Expense}}.$$

An interest coverage of five times indicates that a fall in EBIT level to one-fifth of the present level, the operating profits available for servicing the interest on loan would still be equivalent to the claims of the lenders. From the lenders point of view higher the coverage, better is the position of long-term creditors. It also highlights the ability of the firm to raise additional funds in future.

Fixed Charges Coverage Ratio: It is a more comprehensive ratio as it measures the ability of the firm to pay its interest charges as well as principal repayments, lease payments and preference dividends. It is computed as:

Fixed Charges Coverage Ratio =

$$\frac{\text{Earning Before Depreciation, Interest and Taxes}}{\text{Debt Interest + Lease rentals} + \frac{\text{Loan Repayment Installment}}{(1 - \text{tax rate})} + \frac{\text{Preference Dividends}}{(1 - \text{tax rate})}}$$

Debt Service Coverage Ratio: It is considered a more comprehensive and apt measure to compute debt service capacity of the firm. It is the ability of a firm to make the contractual payments required on a scheduled basis over the life of the debt. It helps in measuring the ability of the post-tax earnings to meet the total obligations of the firm. It is calculated as:

Debt Service Coverage Ratio =

$$\frac{\text{PAT + Depreciation + Other Non - cash Charges + Interest on Term Loan}}{\text{Interest on Term Loan + Repayment of the Term Loan}}$$

The higher the ratio, the better it is. A ratio of less than one may be taken as a sign of long-term solvency problem as it indicates that the firm does not generate enough cash internally to service debt. Financial Institutions consider 2 : 1 as satisfactory ratio.

3. 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 (Preference) = Net Profit after Tax/Preference Dividend

Dividend Coverage (Equity) = EBIT – Preference Dividend/Equity Dividend

Illustration 8: The Balance Sheet of Dravid Ltd. is as follows:

Assets:	
Fixed Assets	10,00,000
Current Assets	5,00,000
Represented by:	
Liabilities:	
Trade Creditors	1,00,000
Reserves and Surplus	1,00,000
10% Debentures	2,00,000
6% Preference Share Capital	3,00,000
Equity Share Capital	8,00,000

Calculate the Debt Ratio and Debt-equity Ratio.

Solution:

1. Debt Ratio = Total Liabilities to Outsiders/Total Assets
   = (Debentures + Trade Creditors)/(Fixed Assets + Current Assets)
   = (2,00,000 + 1,00,000)/(10,00,000 + 5,00,000)
   = 3,00,000/15,00,000 = 1 : 5
2. Debt-equity Ratio = Outsiders Funds/Equity Shareholders or
   = (Debentures + Trade Creditors)/(Eq. Sh. Capital + Pref. Sh. Cap. + Reserves)
   = 3,00,000/12,00,000 = 1 : 4

Dividend Ratios: The equity holders of a firm are interested in the dividend policy of the firm. The two dividend ratios, i.e., Dividend Payout ratio (D/P ratio) and the Dividend Yield ratio help the shareholders in evaluating the dividend policy of the firm.

Dividend Payout Ratio: It indicates the proportion of total earnings that are declared as dividends to shareholders. It is computed as:

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend per Share}}{\text{Earnings per Share}}$$

Dividend Yield: This ratio helps in analyzing dividends with respect to the market price of the share. It indicates the current return earned by the shareholder on his investment. It is computed as:

$$\text{Dividend Yield} = \frac{\text{Dividend per Share}}{\text{Market Price of the Share}}.$$

Advantages of Ratio Analysis

The various advantages of ratio analysis are as follows:

(a) Financial Forecasting and Planning: Ratio analysis helps in the financial forecasting and planning activities. Ratios based on the past sales are useful in planning the financial position. Based on these future trends are set.

(b) Decision Making: Ratio analysis throws light on the degree of efficiency. It is also concerned with the management and utilisation of the assets. Thus, it enables for making strategic decisions.

(c) Comparison: With the help of ratio analysis, ideal ratios can be composed. These can be used for comparison in respect of the firm's progress and performance, inter-firm comparison with industry average.

(d) Financial Solvency: It indicates the trends in the financial solvency of the firm. Long-term solvency refers to the financial liability of a firm. It can also evaluate the short-term liquidity position of the firm.

(e) Communication: The financial strength and weaknesses of a firm are communicated in a more easy and understandable manner by the use of ratios. The information contained in the financial statements is conveyed in a meaningful manner. It thus helps in the communication and enhances the value of the financial statements.

(f) Efficiency Evaluation: It evaluates the overall efficiency of the business entity. Ratio analysis is an effective instrument which, when properly used, is useful to assess important characteristics of business liquidity, solvency, profitability. A critical study of these aspects may enable conclusions relating to capabilities of business.

(g) Control: It helps in making effective control of the business. Actual results can be compared with the established standard and to take corrective action at the right time.

(h) Other Uses: Financial ratios are very helpful in the early and proper diagnosis and financial health of the firm.

Limitations of Ratio Analysis

Undoubtedly, ratios are precious tools in the hands of the analyst. But its significance comes from proper use of these ratios. Misuse or mishandling of these ratios and using them without proper context may lead the analyst or management to a wrong direction. The limiting factors are:

1. The user should possess the practical knowledge about the concerns and the industry in general.
2. Ratios are not an end. They are only means to an end.
3. A single ratio in itself is not important. The trend is more significant in the analysis. Comparison of ratios should be made.
4. For comparative purposes, there should be a standard ratio. There are no such standards prescribed for the ratios.
5. The accuracy and correctness of ratios are totally dependent upon the reliability of the data contained in the financial statement on the basis of which ratios are calculated.
6. To use ratios, first of all there should be uniformity in the accounting plan used by both the firms. In addition. There must be consistency in the preparation of financial statement and recording the transactions from year to year within that concern.
7. Ratios become meaningless if detached from the details from which they are derived. The should be used as supplementary and not substitution of the original absolute figures.
8. Time lag in calculation and communicating the same should not be unnecessarily too much.

9. The method of presentation should be precise and without any ambiguity.
10. Price level changes make the ratio analysis meaningless.
11. Inter-firm comparison should never be undertaken in the case of concerns which are not associated or comparable.
12. All techniques concerning the ratio analysis should be taken into account.

Summary Accounting Ratios

Sr.	Ratios	Formula	Expressed as	Suitability	Purpose	Remarks
REVENUE STATEMENT RATIOS						
1	Gross Profit Ratio	$\frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$	Percentage	High Ratio	To judge profitability	Operating efficiency of company
2.	Net Profit Ratio (a) Operating Net Profit Ratio	$\frac{\text{Op. Net Profit}}{\text{Net Sales}} \times 100$	Percentage	High Ratio	To judge profitability	
	(b) Net Profit Before Tax Ratio	$\frac{\text{NPBT}}{\text{Net Sales}} \times 100$	Percentage	High Ratio	To judge profitability	
	(c) Net Profit After Tax Ratio	$\frac{\text{NPAT}}{\text{Net Sales}} \times 100$	Percentage	High Ratio	To judge profitability	
3.	Operating Ratio	$\frac{\text{Cos.} + \text{Op. Exp.}}{\text{Net Sales}} \times 100$	Percentage	Low Ratio	To know operating cost and profit	
4.	Expenses Ratio	$\frac{\text{Adm. Exp./S \& D Exp./Fin.Exp./ Dep.Exp.}}{\text{Net Sales}} \times 100$	Percentage	Low Ratio	To know operating cost and profit	All operating expenses
		$\frac{\text{Total Op. Exp.}}{\text{Net Sales}} \times 100$	Percentage	Low Ratio	To know operating cost and profit	
5.	Stock T/O Ratio (Stock Velocity Ratio)	$\frac{\text{COS}}{\text{Average RM Stock}}$	Times	High Ratio	To know stock T/O and management	
	(a) Raw Materials T/O Ratio	$\frac{\text{Raw Material Consumed}}{\text{Average RM Stock}}$	Times	High Ratio	To know stock T/O and management	
	(b) Work-in-progress T/O Ratio	$\frac{\text{COP}}{\text{Average WIP Stock}}$	Times	High Ratio	To know stock T/O and management	Cost of production
BALANCE SHEET RATIOS						
6.	Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	Pure Ratio (Std 2 : 1)	High Ratio	To know short-term solvency	

7.	Quick Ratio	$\frac{\text{Quick Assets}}{\text{Quick Liabiliies}}$	Pure Ratio (Std 1 : 1)	High Ratio	To know immediate solvency (liquid ratio)	CA – STK – PP EXP – CL – Bank OD – CC
8.	Stock to Working Capital Ratio	$\frac{\text{Closing Stock}}{\text{Working Capital}} \times 100$	Percentage (Std < 100%)	Low Ratio	To know extent of WC invested in stock	WC = CA – CL (net WC)
9.	Proprietary Ratio/Equity Ratio	$\frac{\text{Prop's Funds}}{\text{Total Assets (Excl. Misc.Exp.)}} \times 100$	Percentage (Std > 50%)	High Ratio	To judge long-term solvency and stability of co.	FA + CA + Invt.
10.	Debt-Equity Ratio	$\frac{\text{Debt (Long - term Loans)}}{\text{Equity (Shareholders Funds)}}$	Pure Ratio (Std < 2 : 1)	Low Ratio	To judge long-term solvency and stability of co.	
COMBINED/MISCELLENEOUS RATIOS						
11.	Capital Gearing Ratio	$\frac{\text{Funds with Fix Interest}}{\text{Funds with Fluctuating Interest}}$	Pure Ratio (Std < 1)	Low Ratio	To judge long-term solvency and stability of co.	Fix Int. = Loans + Pref Sh – Non-fix Int = Eq. Sh. – Pref. Sh.
12.	Return on Interest Capital Employed	$\frac{\text{Op Net Profit + Int.}}{\text{Capital Employed (SHF + Long - term Loans)}} \times 100$	Percentage	Low Ratio	To know overall profitability earned compared to T.F.	(Shareholders' Funds + Long-term Loans)
13.	Return on Total Assets/Total Resources	N.P.B.T. + Interest Total Assets (Except Misc. Exp.) (Total Resources)	Percentage	High Ratio	To know overall profitability earned to T.F.	Total Assets = FA + Inv + CA OR SHF + LTR + CL
14.	Return on Prop. Funds	$\frac{\text{NPAT + Interest}}{\text{Shareholders Fund}} \times 100$	Percentage	High Ratio	% of profit earned on prop. funds	
15.	Return on Eq. Shareholders' Fund	$\frac{\text{NPAT – Pref. Dividend}}{\text{Prop. Fund – Pref. Sh. Cap.}} \times 100$	Percentage	High Ratio	% of Profit Earned on Eq. Sh. H. Fund	
16.	Debtors T/O Ratio	$\frac{\text{Net Credit Sales}}{\text{Average Drs. + Bills Rec.}}$	Times	High Ratio	Collection from debtors in year	Op. Drs + CL Drs/2 IF no Op. Drs given, take Cl. Drs
	Avg. Collection Period/Age of Debtors	$\frac{\text{Avg. Drs. \& B.R}}{\text{Net Credit Sales}} \times 365\ \text{D}$	D/M	Short Period	Credit Period Allowed to Debtors	Or Divide by 12 M/52 Weeks
17.	Creditors T/O Ratio	$\frac{\text{Net Credit Purchases}}{\text{Average Crs. + Bills Pay}}$	Times	High Ratio	Payments to creditors in year	

	Avg. Payment Period/Age of Creditors	$\frac{\text{Avg. Drs. \& B.R}}{\text{Net Credit Sales}} \times 365$ D	Times	High Ratio	Credit period allowed by creditors	OR Divide by 12 months/52 weeks
18	Earning Per Share (EPS)	$\frac{\text{NPAT} - \text{Pref. Dividend}}{\text{No of Equity Shares}}$	₹	High Ratio	To know profit and market price of shares	
19	Price Earning Ratio (PE)	$\frac{\text{Market Price of Shares}}{\text{E.P.S}}$	Times	Low Ratio	Provide guidance for investments	
20	Dividend Pay Out Ratio (D/P Ratio)					
	(a)	$\frac{\text{Total Dividend on Eq. \& Pref. Share}}{\text{NPAT}} \times 100$	Percentage	High Ratio	% of NP distributed by way of Dividend High Ratio Liberal Dividend Policy and Low Ratio Conservative Dividend Policy	
	(b)	$\frac{\text{Eq. Dividend per Shares}}{\text{EPS}} \times 100$				
21	Yield Ratio					
	(a) Dividend	$\frac{\text{Eq. Dividend per Shares}}{\text{MKT Price}} \times 100$	Percentage	High Ratio	It gives divided and earning % on the market price of the shares; also represents the real dividend rate/earning rate	
	(b) Earning Yield Ratio	$\frac{\text{EPS}}{\text{Market Price}} \times 100$				
22	Debt Service Coverage Ratio	NPAT + Dep. and Other Non-cash Expenses + Int. Interest + p.a.	> 1 or < 1	High Ratio	To judge the capacity of borrower to pay interest and loan instalment	
23	Interest Coverage Ratio	$\frac{\text{NPBT} + \text{Interest}}{\text{Interest}}$	Times	High Ratio	To judge profit available for paying interest and instalment	NPBT – Tax and Int = NPAT + Tax Int on Loans

24	FA T/O to Ratio	Sales / COS / Net FA				
25	Capital Turnover Ratio	Sales / COS / Capital Employed				
26	Working Capital T/O Ratio	Sales / COS / Working Capital				
27	Assets T/O Ratio	Sales Average / Assets				
28	Preference Dividend Coverage Ratio	NPAT (before) Preference Dividend / Equity Dividend				
29	Equity Dividend Coverage Ratio	NPAT – Pref. Div. / EQ Dividend				
30	Fixed Assets to Shareholders' Fund Ratio	Fixed Assets / Shareholders Funds				
31	Debt Assets Ratio	Debt Assets				
32	Return on Assets Ratio	Net Profit Average Assets or Sales				

Illustration 9: The following is the Trading and Profit and Loss Account of a Limited Company for the year ended 31st March, 2014.

Profit and Loss Account

Particulars	₹	Particulars	₹
To Stock	76,250	By Sales	5,00,000
To Purchases	3,15,250	By Stock	98,500
To Carriage and Freight	2,000		
To Wages	5,000		
To Gross Profit	2,00,000		
	5,98,500		**5,98,500**

Particulars		₹	particulars		₹
To Administrative Expenses		1,00,000	By Gross Profit		2,00,000
To Finance Expenses:			By Non-operating Income:		
Interest	2,200		Interest on Security	1,500	
Discount	2,400		Dividend on Shares	3,750	
Bad Debts	3,400	8,000	Profit on Sale of Shares	750	6,000
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		84,000			
		2,06,000			**2,06,000**

Convert the above Profit and Loss A/c into vertical form and calculate following ratios:

(i) Expenses ratio
(ii) Gross profit ratio
(iii) Net profit ratio
(iv) Operating net profit ratio

(v) Operating ratio
(vi) Stock turnover ratio.

Solution: **In the Books of Ltd. Company**
Vertical Income Statement for the year 31st March, 2014

Particulars	Amount	Amount
Sales		5,00,000
Less: **Cost of Goods Sold**		
Opening Stock	76,250	
(+) Purchases	3,15,250	
(+) Carriage and Freight	2,000	
(+) Wages	5,000	
(–) Closing Stock	98,500	3,00,000
Gross Margin		2,00,000
Less: **Operating Expenses**		
(i) Office Expenses		
Administrative Expenses	1,00,000	
(ii) Selling and Distribution Expenses	12,000	
(iii) Financial Expenses		
Interest	2,200	
Discount	2,400	
Bad Debts	3,400	1,20,000
Operating Profit		80,000
Add: **Non-operating Income**		
Interest on Security	1,500	
Dividend on Shares	3,750	
Profit on Sale of Shares	750	6,000
		86,000
Less: **Non-operating Expenses**		
Loss on Sale of Security	350	
Provision for Legal Suit	1,650	2.000
Net Profit before Tax		84.000

Ratios:

(i) Expenses Ratio: (a) $\frac{\text{Cost of Goods Sold}}{\text{Net Sales}} \times 100 = \frac{3,00,000}{5,00,000} \times 100 = 60\%$

$$\text{Expense Ratio} = \frac{\text{Expenses}}{\text{Net Sales}} \times 100$$

(b) Office Expenses Ratio $= \frac{\text{Office Expenses}}{\text{Net Sales}} \times 100 = \frac{1,00,000}{5,00,000} \times 100 = 20\%$

(c) Selling and Distribution Expenses Ratio $= \frac{\text{Selling \& Distribution}}{\text{Net Sales}} \times 100$

$$= \frac{12,000}{5,00,000} \times 100 = 2.4\%$$

(d) Financial Expenses Ratio $= \frac{\text{Financial Expenses}}{\text{Net Sales}} \times 100 = \frac{8,000}{5,00,000} \times 100 = 1.6\%$

(ii) Gross Profit Ratio $= \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{2,00,000}{5,00,000} \times 100 = 40\%$

(iii) $\text{Net Profit Ratio} = \frac{\text{Net Profit Before tax}}{\text{Net Sales}} \times 100 = \frac{84,000}{5,00,000} \times 100 = 16.8\%$

(iv) $\text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100 = \frac{80,000}{5,00,000} \times 100 = 16\%$

(v) $\text{Operating Ratio} = \frac{(\text{Cost of Goods sold} + \text{Operating Expenses})}{\text{Net Sales}} \times 100$

$\text{Operating Ratio} = 3,00,000 + 1,20,000 = 4,20,000 = \frac{4,20,000}{5,00,000} \times 100 = 84\%$

(vi) $\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$

$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{76,250 + 98,500}{2} = \frac{1,74,750}{2} = 87,375$

$\text{Stock Turnover Ratio} = \frac{3,00,000}{87,375} = 3.43 \text{ times}$

Illustration 10: From the following Financial Statements of Rimzim Ltd., calculate all the 16 Accounting Ratios and comment on their significance.

Rimzim Ltd.

Manufacturing, Trading and Profit and Loss Account the year ended 31st March, 2014

Particulars	₹	Particulars		₹
To Opening Stock	5,00,000	By Sales:		
To Purchases	11,00,000	Cash	3,00,000	
To Wages	3,00,000	Credit	17,00,000	20,00,000
To Factory Overheads	2,00,000	By Closing Stock		6,00,000
To Gross Profit c/d	5,00,000			
	26,00,000			**26,00,000**
To Administrative expenses	75,000	By Gross Profit b/d		5,00,000
To Selling and Distribution Expenses	50,000	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 c/d	3,20,000			
	5,30,000			**5,30,000**
To Pref. 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			
	5,91,000			**5,91,000**

Balance Sheet as at 31st March, 2014

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

Solution:

Profit and Loss Related Ratios

1. Gross Profit Ratio $= \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{5,00,000}{20,00,000} \times 100 = 25\%$

2. Net Profit Ratio

   (a) $\frac{\text{Net Profit before Tax}}{\text{Net Sales}} \times 100 = \frac{3,20,000}{20,00,000} \times 100 = 16\%$

   (b) $\frac{\text{Net Profit after Tax}}{\text{Net Sales}} \times 100 = \frac{1,44,000}{20,00,000} \times 100 = 7.2\%$

3. Operating Profit Ratio $= \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$

   $\therefore$ Operating Profit Ratio $= \frac{2,95,000}{20,00,000} \times 100 = 14.75$

4. Operating Ratio $= \frac{\text{Operating Cost}}{\text{Net Sales}} \times 100$

   Operating Cost = Cost of Goods Sold + Operating Expenses
   = 15,00,000 + 2,05,000 = 17,05,000

   Operating Ratio $= \frac{17,05,000}{20,00,000} \times 100 = 85.25\%$

5. Expenses Ratio

   (a) $\frac{\text{Administrative Expenses}}{\text{Net Sales}} \times 100 = \frac{1,35,000}{20,00,000} \times = 6.75\%$

   (b) $\frac{\text{Selling and Distribution Expenses}}{\text{Net Sales}} \times 100 = \frac{50,000}{20,00,000} \times = 2.5\%$

   (c) $\frac{\text{Finance Expenses}}{\text{Net Sales}} \times 100 = 1\%$

   (d) $\frac{\text{Cost of Goods Sold}}{\text{Net Sales}} \times 100 = \frac{15,00,000}{20,00,000} \times 100 = 75\%$

6. Stock Turnover Ratio $= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$

   Average Stock $= \frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{5,00,000 + 6,00,000}{2} = \frac{11,00,000}{2} = 5,50,000$

   Stock Turnover Ratio $= \frac{15,00,000}{5,50,000} = 2.73$ times

Balance Sheet Related Ratios

7. Current Ratio $= \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{10,00,000}{7,00,000} = 1.43 : 1$

8. Quick Ratio $= \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$

   Quick Assets = CA – Stock – Prepaid Expenses = 10,00,000 – 6,00,000 – Nil = 4,00,000
   Quick Liabilities = CL – Bank OD = 7,00,000 – 1,20,000 = 5,80,000

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{4,00,000}{5,80,000} = 0.69 : 1$$

9. $$\text{Proprietory Ratio} = \frac{\text{Owners' Fund}}{\text{Total Assets}} \times 100$$

TA = FA + CA = 19,00,000 + 10,00,000 = 29,00,000

$$\text{Proprietory Ratio} = \frac{20,00,000}{29,00,000} \times 100 = 68.97\%$$

10. $$\text{Stock Working Capital Ratio} = \frac{\text{Closing Stock}}{\text{Working Capital}} \times 100$$

Working Capital = Current Assets – Current Liabilities = 10,00,000 – 7,00,000 = 3,00,000

$$\text{Stock Working Capital Ratio} = \frac{\text{Closing Stock}}{\text{Working Capital}} \times 100 = 200\%$$

11. $$\text{Debt - equity Ratio} = \frac{\text{Debt}}{\text{Equity}} = \frac{\text{Borrowed Funds}}{\text{Own Funds}} = \frac{2,00,000}{20,00,000} = 0.1 : 1$$

12. $$\text{Capital Gearing Ratio} = \frac{\text{Borrowed Funds} + \text{Preference Share Capital}}{\text{Equity Capital} + \text{Reserves}}$$

$$= \frac{2,00,000 + 5,00,000}{15,00,000} = \frac{7,00,000}{15,00,000} = 0.47$$

Combined Ratios

13. Debtors Turnover Ratio

(a) $$\text{No. of Times} = \frac{\text{Credit Sales}}{\text{Average Account Receivable}}$$

$$\text{Average Accounts Receivable} = 1,50,000 + 30,000 = 1,80,000$$

$$\therefore \text{No. of Times} = \frac{17,00,000}{1,80,000} = 9.4 \text{ times}$$

(b) $$\text{Age of Debtors} = \frac{365 \text{ Days}}{\text{Debtors Turnover Ratio}} = \frac{365}{9.44} = 39 \text{ days approx.}$$

14. Creditors Turnover Ratio

(a) $$\text{No. of Times} = \frac{\text{Credit Purchases}}{\text{Average Account Payable}}$$

$$\text{Average Accounts Payable} = \text{Creditors} + \text{B/P} = 2,80,000 + 1,24,000 = 4,04,000$$

$$\therefore \text{No. of Times} = \frac{11,00,000}{4,04,000} = 2.72 \text{ times}$$

(b) $$\text{Average Payment Periods} = \frac{365 \text{ Days}}{\text{Creditors Turnover Ratio}} = \frac{365}{2.72} = 135 \text{ days approx.}$$

15. $$\text{Return on Total Assets} = \frac{\text{Net Profit Before Interest and Tax}}{\text{TotalAssets}} \times 100$$

Total Assets = Fixed Assets + Investment + Current Assets
= 19,00,000 + Nil + 10,00,000 = 29,00,000

Net Profit before Interest and Tax = Net Profit After Tax + Tax + Interest
= 1,44,000 + 1,76,000 + 20,000 = 3,40,000

$$\text{Return on Total Assets} = \frac{3,40,000}{29,00,000} \times 100 = 11.72\%$$

16. $$\text{Return on Capital Employed} = \frac{\text{Net Profit Before Interest and Tax}}{\text{Capital Employed}} \times 100$$

Capital Employed = Owners' Fund + Borrowed Fund
= 20,00,000 + 2,00,000 = 22,00,000

$$\text{Return on Capital Employed} = \frac{3,40,000}{22,00,000} \times 100 = 15.45\%$$

Illustration 11: The following are abridged accounting reports prepared for P. Ltd.

Revenue Statement for the year ended 30th June, 2014

Particulars		(₹ '000)
Sales (all credit)		300
Less: Cost of Goods Sold		
Opening Inventory	100	
Purchases	205	
	305	
Less: Closing Inventory	80	225
Gross Margin		75
Operating Expenses		57
Net Profit before Taxation		18
Provision for Taxation		8
Net Profit		10

Balance Sheet as on 30th June, 2014 (₹ '000)

Liabilities	₹	₹	Assets		₹	₹
Current Liabilities			Current Assets			
Accounts Payable	87		Cash		30	
Provision for Taxation	8		Accounts Receivable		60	
Accrued Expenses	5	100	Inventory		80	170
Long-term Liabilities		25	Fixed Assets:			
Long on Mortgage		25	Land and Building		65	
Shareholder's Funds			Plant	40		
Paid-up Capital	80		*Less:* Provision for Depreciation	25	15	80
Reserves	30					
Unappropriated Profits	15	125				
		250				250

Name and calculate the ratios which indicate:

1. The rapidity with which accounts receivable are collected.
2. The ability of the company to meet its current obligations.
3. What 'mark-up' has been attained.
4. The efficiency with which funds represented by inventories are being utilised and managed;
5. The ability of the company to meet quickly demands for payment of amounts due.
6. The relative importance of proprietorship and liabilities as sources of funds.

Solution:

1. Debtors Turnover Ratio

(a) $$\text{No. of Times} = \frac{\text{Credit Sales}}{\text{Average Account Receivable}}$$

$$\text{Average Accounts Receivable} = \frac{60,000}{\text{Credit Sales}} = 3,00,000$$

$$\therefore \text{No. of Times} = \frac{3,00,000}{60,000} = 5 \text{ times}$$

(b) $$\text{No. of Days} = \frac{\text{AverageAccounts Receivable}}{\text{Credit Sales}} \times 365$$

$$= \frac{60,000}{3,00,000} \times 365 = 73 \text{ days}$$

2. $$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{1,70,000}{1,00,000} = 1.7 : 1$$

3. $$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{75,000}{3,00,000} \times 100 = 25\%$$

4. (a) $$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$$

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{1,00,000 + 80,000}{2} = \frac{1,80,000}{2} = 90,000$$

$$\text{Stock Turnover Ratio} = \frac{2,25,000}{90,000} = 2.5 \text{ Times}$$

(b) $$\text{Stock Working Capital Ratio} = \frac{\text{Closing Stock}}{\text{Working Capital}} \times 100$$

Working Capital = C. Assets – Current Liabilities = 1,70,000 – 1,00,00 = 70,000

$$\text{Stock Working Capital Ratio} = \frac{80,000}{70,000} \times 100 = 114.29\%$$

5. $$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$$

Quick Assets = CA – Stock – Prepaid Expenses = 1,70,000 – 80,000 – Nil = 90,000
Quick Liabilities = CL – Bank OD = 1,00,000 – Nil = 1,00,000

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{90,000}{1,00,000} = 0.9 : 1$$

6. $$\text{Proprietory Ratio} = \frac{\text{Proprietors' Funds}}{\text{Total Assets}} \times 100$$

Total Assets = Fixed Assets + Current Assets = 80,000 + 1,70,000 = 2,50,000

Illustration 12: The following is the Balance Sheet of Urmila Limited as on 31st March, 2014.

Liabilities	₹	Assets	₹
Share Capital	3,00,000	Goodwill	80,000
Reserves and Surplus	1,50,000	Land and Building	1,50,000
10% Mortgage Debentures	2,15,000	Plant and Machinery	2,00,000
Sundry Creditors	1,30,000	Patent Right	21,500
Bank Overdraft	40,000	Stock-in-trade	1,43,500
Provision for Tax	35,000	Sundry Debtors	2,40,000
		Cash in Hand	5,000
		Cash at Bank	10,000
		Preliminary Expenses	20,000
Total	**8,70,000**	**Total**	**8,70,000**

Additional Information:

1. Stock in Trade as on 1st April, 2013 1,56,500
2. Turnover Sales for the year ended 31st March, 2014 10,95,000
3. Rate of Gross Profit: 33-1/3%
4. Net Profit (before interest and tax) 99,000
5. Net Profit (after interest and tax) 43,000

(a) Present the balance sheet in vertical form.

(b) Calculate the following ratios:

(i) Capital Gearing (ii) Stock Turnover Ratio

(iii) Return on Total Resources (iv) Return on Proprietors' Funds

(v) Return on Ordinary Capital (vi) Turnover of Debtors.

Solution: **Vertical Balance Sheet as on 31st March, 2014**

Particulars		Amount	Amount
Source of Funds			
I. Owners' Fund			
(a) Share Capital		3,00,000	
(b) *Add:* Reserves and Surplus		1,50,000	
(c) *Less:* Miscellaneous Expenses			
Preliminary Expenses		20,000	4,30,000
II. Borrowed Fund			
(a) Secured Loan			
10% Mortgage Debentures			2,15,000
Capital Employed			6,45,000
Application of Funds			
I. Fixed Assets			
(a) Tangible Assets			
Land and Building		1,50,000	
Plant and Machinery		2,00,000	
(b) Intangible Assets			
Goodwill		80,000	
Patent Rights		21,500	4,51,500
II. Working Capital			
(a) Current Assets			
Cash in Hand		5,000	
Cash at Bank		10,000	
Debtors		2,40,000	
Quick Assets		2,55,000	
Stock		1,43,500	
	(a)	3,98,500	
(b) *Less:* Current Liabilities			
Creditor		1,30,000	
Provision for Tax		35,000	
Quick Liabilities			
Bank Overdraft		40,000	1,93,500
Working Capital	**(b)**	2,05,000	
Total Assets	**(a – b)**		6,45,000

1. $$\text{Quick Gearing Ratio} = \frac{\text{Borrowed Funds + Preference Share Capital}}{\text{Equity Holders' Funds}}$$

$$= \frac{2,15,000 + \text{Nil}}{4,30,000 - \text{Nil}} = 0.50:1$$

2. $\text{Stock Turnover Ratio} = \dfrac{\text{Cost of Goods Sold}}{\text{Average Stock}}$

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

$$= \frac{1,56,500 + 1,43,500}{2} = \frac{3,00,000}{2} = 1,50,000$$

Gross Profit is 33-1/3%
If Sales is 100 > 10,95,000
Gross Profit 33-1/3 > ?
Cost of Goods Sold 66-2/3 > ?

$$\text{Gross Profit} = \frac{33\text{-}1/3 \times 10,95,000}{100} = \frac{100 \times 10,95,000}{300} = 3,65,000$$

Sales	10,95,500
(–) GP	3,65,000
COGS	7,30,000

$$\therefore \text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = \frac{7,30,000}{1,50,000} = 4.87 \text{ times}$$

3. $\text{Return on Total Resources} = \dfrac{\text{Net Profit Before Interest and Tax}}{\text{Total Assets}} \times 100$

Total Assets = Fixed Assets + Current Assets = 4,51,500 = 3,98,500 = 8,50,000

$$\text{Return on Total Resource} = \frac{99,000}{8,50,000} \times 100 = 11.65\%$$

4. Return on Proprietors' Fund

$$\text{Return on Propreitors' Fund} = \frac{\text{Profit after Tax}}{\text{Proprietors' Funds}} \times 100 = \frac{43,000}{4,30,000} \times 100 = 10\%$$

5. $\text{Return on Ordinary Capital} = \dfrac{\text{PAT} - \text{Preference Dividend}}{\text{Ordinary Capital}} = \dfrac{43,000 - \text{Nil}}{3,00,000} \times 100 = 14.33\%$

6. Turnover of Debtors
Debtors Turnover Ratio

(a) $\text{No. of Times} = \dfrac{\text{Credit Sales}}{\text{Average Accounts Receivable}} = \dfrac{10,95,000}{2,40,000} = 4.56 \text{ times}$

(b) $\text{No. of Days} = \dfrac{\text{Average Accounts Receivable}}{\text{CreditSales}} \times 365$

$$= \frac{2,40,000}{10,95,000} \times 365 = 80.04 = 81 \text{ days approx.}$$

Illustration 13: The summarised balance sheet of D Ltd. as on 30th September, 2014 is as follows:

Liabilities	₹	Assets	₹
Equity Share Capital	60,000	Fixed Assets	90,000
Reserves	20,000	Inventory	30,000
6% Debentures	50,000	Marketable Investments	10,000
Current Liabilities	30,000	Debtors	15,000
		Cash and Bank Balances	10,000
		Preliminary Expenses	5,000
	1,60,000		**1,60,000**

The Net Profit before tax for the year was ₹ 7,500.

Prepare a Statement suitable for analysis and indicate the soundness of the financial position of the company by calculating the following ratios together with your comments on the same:

(i) Current Ratio (ii) Liquid Ratio
(iii) Proprietory Ratio (iv) Return on Total Resources
(v) Return on Proprietors' Fund (vi) Return on Equity Share Capital.

Solution:

1. $\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{65,000}{30,000} = 2.17 : 1$

2. $\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities} - \text{Bank O/D}} = \frac{35,000}{30,000} = 1.17 : 1$

3. $\text{Proprietory Ratio} = \frac{\text{Proprietory Funds}}{\text{TotalAssets}} \times 100 = \frac{75,000}{1,55,000} \times 100 = 48.39\%$

4. $\text{Return on Total Assets} = \frac{\text{Net Profit Before Interest Tax}}{\text{Total Assets}} \times 100$

   Net Profit Before Interest Tax = Net Profit Tax + Interest = 7,500 + 3,000 = 10,500

   $\therefore \text{Return on Total Assets} = \frac{10,500}{1,55,000} \times 100 = 6.77\%$

5. $\text{Return on Proprietors' Fund} = \frac{\text{PAT}}{\text{Proprietors' Funds}} \times 100$

   Net Profit after Tax = Net Profit before Tax – Tax = 7,500 – 50% = 3,750

   $\therefore \text{Return on Propreitors' Fund} = \frac{3,750}{75,000} \times 100 = 5\%$

6. $\text{Return on Equity Share Capital} = \frac{\text{Net Profit after Tax} - \text{Preference Dividend}}{\text{Equity Share Capital}} \times 100$

   $= \frac{3,750 - \text{Nil}}{60,000} \times 100 = 6.25\%$

Note: It is assumed that tax rate is 50% for the given company.

Illustration 14: Following are the extracts from the financial statement of M/s Urmi Ltd. as on 31st December, 2013 and 2014.

Particulars	31.12.2014 ₹	31.12.2013 ₹
Closing Stock	20,000	50,000
Debtors	40,000	40,000
Bills Receivable	20,000	10,000
Advance Receivable in Cash or Kind	4,000	10,000
Creditors	50,000	60,000
Bills Payable	30,000	40,000
Bank Overdraft	–	4,000
Cash on Hand	36,000	30,000
9% Debentures (1988)	10,00,000	10,00,000
Sales for the Year	7,00,000	6,00,000
Gross Profit	1,40,000	1,00,000

You are required to compute for each of the years:

Current Ratio (b) Liquid Ratio (c) Stock Turnover Ratio (d) Debtors Turnover Ratio (e) Stock to Working Capital Ratio and write in two to three lines your observation on these ratios.

(T.Y. B.Com, Modified)

Solution:

		1990	1991
1. Current Ratio	$= \frac{\text{Current Assets}}{\text{Current Liabilities}}$	$= \frac{1,40,000}{1,04,000}$	$= \frac{1,20,000}{80,000}$
		= 1.35 : 1	= 1.5 : 1
2. Quick Ratio	$= \frac{\text{Quick Assets}}{\text{Qick Liabilities}}$	$= \frac{90,000}{1,00,000}$	$= \frac{90,000}{1,00,000}$
		= 0.9 : 1	= 1.25 : 1
3. Debtors Turnover Ratio (a) No. of times	$= \frac{\text{Credit Sales}}{\text{Average Accounts Rec.}}$	$= \frac{6,00,000}{50,000}$	$= \frac{7,00,000}{55,000}$
Average Accounts Rec.	= Drs. + B/R	= 12 times	= 12.73 times
(b) No. of days	$= \frac{365}{\text{No. of Times}}$	$= \frac{365}{12}$	$= \frac{365}{12.73}$
		= 30.42	= 28.67
		= 31 days (approx.)	= 29 days (approx.)
4. Stock Turnover Ratio	$= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$	$= \frac{5,00,000}{50,000}$	$= \frac{5,60,000}{35,000}$
		= 10 Times	= 16 Times
5. Stock to Working Capital Ratio	$= \frac{\text{Colsing Stock}}{\text{Working Capital}} \times 100$	$= \frac{50,000}{36,000} \times 100$	$= \frac{20,000}{40,000} \times 100$
Working Capital	= Current Assets – C.L	= 138.89%	= 50%

Note: While calculating Stock Turnover Ratio, Average Stock is taken. However, opening stock of 1990 is not given, closing stock is taken. Hence, for 1991, closing stock is to be taken to maintain equality of the base to be compared.

Illustration 15: From the information given below, prepare a Balance Sheet in a vertical form suitable for analysis and calculate the following ratio:

(i) Capital Gearing Ratio (ii) Proprietory Ratio

(iii) Current Ratio (iv) Liquid Ratio.

Particulars	31.12.2014 ₹
Current Account with Bank of India	50,000
Land and Building	8,00,000
Advance Payments	62,000
Stock	2,73,000
Creditors	4,06,000
Debtors	5,23,000
Bills Receivable	21,000
Plant and Machinery	5,44,000
12% Debentures	2,50,000

Loan from a Director	52,000
Equity Share Capital	10,00,000
Profit and Loss Account	2,17,000
Trade Investments	20,000
Proposed Dividend	86,000
Advance Tax	1,00,000
Provision for Taxation	2,64,000
Bills Payable	18,000
General Reserve	1,00,000

(T.Y. B.Com., Modified)

Solution: **Vertical Balance Sheet**

Particulars	Amount	Amount
Source of Funds		
I. Owners' Fund		
(a) Share Capital		
Equity Share Capital	10,00,000	
(b) *Add:* Reserves and Surplus	1,00,000	
Profit & loss	2,17,000	
(c) Miscellaneous Expenses	–	13,17,000
II. Borrowed Fund		
(a) Secured Loan		
12% Debentures	2,50,000	
(b) Unsecured Loan		
Loan from Directors	52,000	3,02,000
Capital Employed		16,19,000
Application of Funds		
I. Fixed Assets		
Land and Building	8,00,000	
Plant and Machinery	5,44,000	
Investment	20,000	13,64,000
II. Working Capital		
(a) Current Assets:		
Advance Payments	62,000	
Bank Balance	50,000	
Debtors	5,23,000	
Bill Receivable	21,000	
Add: Stock	2,73,000	
Add: Prepaid Expenses Advance Tax	1,00,000	
Total Current Asset	10,29,000	
(b) *Less:* Current Liabilities:		
Creditors	4,06,000	
Proposed Dividend	86,000	
Provision for Tax	2,64,000	
Bill Payable	18,000	
	7,74,000	
∴ Working Capital		2,55,000
		16,19,000

1. Capital Gearing Ratio $= \frac{\text{Borrowed Funds + Preference Share Capital}}{\text{Equity Holders' Funds}} = \frac{3,02,000 + \text{Nil}}{13,17,000 + \text{Nil}} = 0.23$

2. Proprietory Ratio = $\frac{\text{Proprietor s' Funds}}{\text{Total Assets}} \times 100$

Total Assets = Fixed Assets + Current Assets = 23,93,000

Proprietory Ratio = $\frac{13,17,000}{23,93,000} \times 100 = 55.035\%$

3. Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{10,29,000}{7,74,000} = 1.33 : 1$

4. Liquid Ratio = $\frac{\text{Quick Assets}}{\text{Quick Liabilities}}$

Quick Assets = Current Assets – Stock – Prepayment
= 10,29,000 – 2,73,000 – 1,00,000 – 62,000 = 5,94,000

Quick Liabilities = Current Liabilities – Overdraft to the Extent Advance Tax Paid
= 7,74,000 – 1,00,000 = 6,74,000

$\therefore$ Liquid Ratio = $\frac{5,94,000}{6,74,000} = 0.88 : 1$

Illustration 16: Rearrange the Balance Sheet given below in a vertical form suitable for analysis and calculate the following:

(i) Current Ratio (ii) Liquid Ratio
(iii) Capital Gearing Ratio (iv) Proprietory Ratio.

Liabilities	₹	Assets	₹
Preference Share Capital	2,00,000	Goodwill	30,000
Equity Share Capital	4,00,000	Building	3,00,000
12% Debentures	3,00,000	Machinery	2,60,000
Bank Overdraft	1,14,000	Stock	3,89,000
Creditors	78,000	Debtors	4,00,000
Income Tax Provision	30,000	Prepaid Expenses	5,000
General Reserve	2,00,000	Bank Balance	1,000
	28,000	Preliminary Expenses	25,000
	60,000		
	14,10,000		14,10,000

(T.Y. B.Com., Modified)

Solution: **In the Books of Vertical Balance Sheet as at _____**

Particulars	Amount	Amount	Amount
Sources of Fund			
(I) Owners' Fund			
(a) Share Capital			
Equity Share Capital	4,00,000		
Preference Share Capital	2,00,000	6,00,000	
(b) *Add:* Reserves and Surplus			
General Reserve	2,00,000		
Profit and Loss Account	28,000	2,28,000	
(c) *Less:* Miscellaneous Expenditure and Fictitious Assets			
Preliminary Expenses		25,000	8,03,000
(II) Borrowed Fund			
(a) Secured Loan			

12% Debentures		3,00,000	
(b) Unsecured Loan			
Capital Employed		–	3,00,000
			11,03,000
Applications of Fund			
(I) Fixed Assets			
(a) Tangible Assets			
Building	3,00,000		
Machinery	2,60,000	5,60,000	
(b) Intangible Assets			
Goodwill		30,000	
(c) Capital W.I.P.		–	5,90,000
(II) Working Capital			
(a) Current Assets:			
Bank	1,000		
Debtors	4,00,000		
Quick Assets	4,01,000		
Add: Stock	3,89,000		
Add: Prepaid Expenses	5,000	7,95,000	
(b) *Less:* Current Liabilities:			
Creditors	78,000		
Income Tax Provision	30,0000		
Proposed Divided	60,000		
Quick Liabilities	1,68,000		
Add: Bank OD	1,14,000	2,82,000	
Working Capital			5,13,000
Total Assets			**11,03,000**

(i) $$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{7,95,000}{2,82,000} = 2.82 : 1$$

(ii) $$\text{Liquid Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{4,01,000}{1,68,000} = 2.39 : 1$$

(iii) $$\text{Capital Gearing Ratio} = \frac{\text{Borrowed Funds + Preference Share Capital}}{\text{Equity Holders Funds}} = \frac{3,00,000 + 2,00,000}{8,03,000 - 2,00,000}$$

$$= \frac{5,00,000}{6,03,000} = 0.829 : 1$$

(iv) $$\text{Proprietory Ratio} = \frac{\text{Owners' Funds}}{\text{Total Assets}} \times 100$$

Total Assets = Fixed Assets + Current Assets = 5,90,000 + Nil + 7,95,000 = 13,85,000

$$\text{Proprietory Ratio} = \frac{8,03,000}{13,85,000} \times 100 = 57.98\%$$

Illustration 17: The following is the incomplete Trading Account of M/s Sameena Ltd. for the year ended 31st March, 2011.

Dr. **Trading Account** **Cr.**

Particulars		₹	Particulars		₹
To Opening Stock		?	By Sales:		
To Purchases:			Cash	?	
Cash	?		Credit	?	?
Credit	?	?	By Goods Destroyed by Fire		50,000
To Gross Profit c/f		?	By Closing Stock		?
		?			?

The following information is available:

(i) Creditors ₹ 3,00,000, Bills payable ₹ 2,00,000 and Debtors ₹ 2,00,000.
(ii) Debtors Turnover Ratio 30 days (360 days in a year).
(iii) Total Sales ₹ 32,00,000.
(iv) Gross Profit Ratio 25%
(v) Creditors Turnover Ratio 4 times.
(vi) Stock Turnover Ratio 4.8 times.
(vii) Opening Stock is ₹ 50,000 higher than the closing stock.

You are required to complete the above Trading Account.

Solution: **Trading A/c**

Particulars	₹	₹	Particulars	₹	₹
To Opening Stock		5,25,000	By Sales		
To Purchases			Cash	8,00,000	
Cash	4,00,000		Credit	24,00,000	32,00,000
Credit	20,00,000	24,00,000	By Goods Destroyed by Fire		50,000
To Gross Profit c/d		8,00,000	By Closing Stock		4,75,000
		37,25,000			37,28,000

(i) Total Sales 32,00,000
Gross Profit = 25%
= 8,00,000

(ii) Debtors Turnover $= \frac{2,30,000}{30} \times 360$

Credit Sales = 24,00,000
Total Sales 32,00,000
– Credit Sales 24,00,000
Cash Sales 8,00,000

(iii) Creditors Turnover = 4

$$4 = \frac{\text{Credit Purchases}}{5,00,000}$$

Credit Purchases = 20,00,000

$$\text{Stock TO} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$$

Cost of Goods Sold = Sales – Gross Profit
= 32,00,000 – 8,00,000
= 24,00,000

$$= \frac{24,00,000}{\text{Average Stock}} = 4.8$$

$$\text{Average Stock} = \frac{24,00,000}{4.8}$$

= 5,00,000

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

$$5,00,000 = \frac{50,000 + x + x}{2}$$

10,00,000 = 50,000 + x + x
10,00,000 = 50,000 + 2x

$$2x = 10,000 - 50,000$$
$$= 9,50,000$$
$$x = \frac{9,50,000}{2}$$
$$= 4,75,000$$
$$\text{Opening Stock} = 4,75,000 + 50,000$$
$$= 5,25,000$$

Illustration 18: Complete the following Balance Sheet of ABC Ltd. with the help of accounting ratios:

Balance Sheet as on 31st March, 2010

Liabilities	₹	Assets		₹
Share Capital	?	Fixed Assets		?
Reserve and Surplus	80,000	Current Assets:		
Sundry Creditors	?	Stock	?	
Bank Overdraft	?	Debtors	?	
		Cash Balance	?	

(a) Cash Balance is 10% of total current assets.
(b) Fixed Assets to working capital 3 : 1
(c) Current Ratio 2.5 : 1
(d) Quick Ratio 1.5 : 1
(e) Working Capital is ₹ 60,000/-
(f) Working Capital/Bank Overdraft 6 : 1

Solution:

ABC Ltd.
Balance Sheet as on 31st March 2010

Liabilities	₹	Assets		₹
Share Capital	1,60,000	Fixed Assets		1,80,000
Reserves and Surplus	80,000	Current Assets:		
Current Liabilities:		Stock	55,000	
Sundry Creditors	30,000	Debtors	35,000	
Bank Overdraft	10,000	Cash	10,000	1,00,000
	2,80,000			2,80,000

Working Note:

1. Current Ratio = 2.5 : 1 = CA – CL = WC = 2.5 – 1 = 1.5 = ₹ 60,000
   CA = ₹ 1,00,000 and CL = ₹ 40,000
2. Cash Balance = 10% of ₹ 1,00,000. = ₹ 10,000
3. Bank Overdraft = $\frac{\text{Working Capital}}{\text{BOD}} = 6:1 = \frac{60,000}{1}$ = ₹ 10,000
4. Creditors = CL – BOD = 40,000 – 10,000 = ₹ 30,000
5. Fixed Assets = $\frac{\text{Fixed Assets}}{\text{Working Capital}} = 3:1$ = 60,000 × 3 = ₹ 1,80,000
6. Debtors = Quick Ratio = 1,5:1 = 30,000 × 1.5 = 45,000 – 10,000 = 35,000
7. Stock = 1,00,000 – 10,000 – 35,000 = 55,000
8. Share Capital = Total of Balance Sheet = 2,80,000 – 10,000 – 30,000 – 80,000 = 1,60,000

Illustration 19: Complete the following Balance Sheet of XYZ Ltd. with the help of accounting ratios:

Balance Sheet as on 31-3-2010

Liabilities	₹	Assets	₹
Equity Share Capital	?	Fixed Assets	?
General Reserve	20,000	Investment	1,00,000

Loan Fund	?	Current Assets:		
Current Liabilities	?	Stock	?	
		Debtors	?	
	–	Cash Balance	?	?
	?			?

1. Debtors Turnover 8 times
2. Stock Turnover 8 times
3. Debt/Net Worth 0.6
4. Fixed Assets/Shareholder's Fund 0.6
5. Total Sales (Credit)/General Reserve 32 times
6. Gross Profit Ratio 25%
7. Current Ratio 2
8. General Reserve/Net Worth 0.1
9. Bank Balance is 30% of Total Current Assets

Solution: **XYZ Ltd. Balance Sheet as on 31-03-2010**

Liabilities	₹	₹	Assets	₹	₹
Equity Share Capital (W.N. 1)		1,80,000	Fixed Assets (W.N. 5)		1,20,000
General Reserve		20,000	Investment		1,00,000
Current Liabilities:			Current Liabilities:		
Loan Fund (W.N. 2)		1,20,000	Stock (W.N. 3)	60,000	
Current Liabilities (W.N. 7)		1,00,000	Debtors (W.N. 4)	80,000	
		–	Bank Balance (W.N. 6)	60,000	2,00,000
		4,20,000			4,20,000

Working Note:

1. $\frac{\text{General Reserve}}{\text{NetWorth}} = \frac{1}{10}$

Net Worth = 20,000 × 10 = 2,00,000

Net Worth = Equity Share Capital + General Reserve

Equity Capital = Net Worth – General Reserve

= 2,00,000 – 20,000

= 1,80,000

2. $\frac{\text{Debt}}{\text{Net Worth}} = \frac{6}{10}$

$\text{Debt} = \frac{6}{10} \times \text{Net Worth}$

$= \frac{6}{10} \times 2{,}00{,}000$

= 1,20,000

3. $\frac{\text{Total Sales}}{\text{General Reserve}} = 32$

Total Sales = 32 × General Reserve

= 32 × 20,000

= 6,40,000

$\text{Gross Profit Ratio} = \frac{\text{COGS}}{\text{Closing Stock}}$

$= \frac{4{,}80{,}000}{\text{Closing Stock}}$

$$= 8$$

$$\text{Closing Stock} = \frac{4,80,000}{8}$$

$$= 60,000$$

4. $$\text{Debtors Turnover} = \frac{\text{Credit Sales}}{\text{Debtors}}$$

$$= \frac{6,40,000}{\text{Debtors}} = 8$$

$$\text{Debtors} = 80,000$$

5. $$\frac{\text{Fixed Assets}}{\text{Shareholders' Fund}} = \frac{6}{10}$$

$$\text{Fixed Assets} = \frac{6}{10} \times \text{Shareholders' Fund}$$

$$= \frac{6}{10} \times 2,00,000$$

$$= 1,20,000$$

6. Current Assets = Stock + Debtors + Bank Balance

Let Current Assets = 100 × Bank Balance = 30x and Stock + Debtors = 70x

Stock + Debtors = 60,000 + 80,000

= 1,40,000 = 70x

x = 20,000

30x = 60,000 = Bank Balance

7. $$\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{2}{1}$$

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

$$= \frac{2,00,000}{2}$$

$$= 1,00,000$$

Illustration 20: The following financial information of Prasad Ltd .is available for the year ended 31st March, 2010.

Current Ratio	2.5
Quick Ratio	1.5
Fixed Assets to Proprietor's Fund	0.6
Gross Profit Ratio	25%
Stock Turnover Ratio	5 times
Debtors Collection Period (360 days in a year)	45 days
Net Profit Ratio (NPAT)	15%
Equity Share Capital (₹ 10 each)	₹ 2,00,000
Working Capital	₹ 1,56,000
Bank Overdraft	` 24,000
Fictitious Assets and Loan Fund	Nil
Fixed Assets	₹ 2,34,000

There were also free reserve bought forward from earlier year. Current Assets included stock, debtors and cash only.

Closing stock was 25% higher than opening stock.

All the Purchases and Sales are on credit basis.

Prepare Balance Sheet from the above information.

Solution:

Prasad Ltd.
Balance Sheet as on 31st March, 2010

Liabilities	₹	Assets	₹
Share Capital (given)	2,00,000	Fixed Assets (given)	2,34,000
Reserve (Balance Figure)	64,000	Stock	1,40,000
Profit and Loss A/c	1,26,000	Debtors	1,05,000
Quick Liabilities	80,000	Cash-in-hand	15,000
Bank Overdraft (given)	24,000		–
	4,94,000		4,94,000

Working Note

1. Current Ratio = $\frac{C.A}{C.L} = \frac{2.50}{1}$ C.A. = 2.5 × C.L.

   Working Capital = C.A. – C.L. = 2.5 C.L. – C.L. = 1.5 C.L. = 1,56,000

   Current Liabilities = $\frac{1,56,000}{1.5}$ = ₹ 1,04,000

   Quick Liabilities = C.L. – Bank Overdraft = 1,04,000 – 24,000 = ₹ 80,000

   Current Assets = 2.5 × C.L. = 2.5 × 1,04,000 = ₹ 2,60,000

2. Quick Ratio = $\frac{Q.A.}{Q.L.} = \frac{1.5}{1}$ Quick Assets = 1.5 × Q.L. = 1.5 × 80,000 = ₹ 1,20,000

   Closing Stock = Current Assets – Quick Assets = 2,60,000 – 1,20,000 = ₹ 1,40,000

   Opening Stock = 1,40,000 × $\frac{100}{125}$ = ₹ 1,12,000

   Average Stock = $\frac{1,12,000 + 1,40,000}{2}$ = ₹ 1,26,000

   Stock Turnover Ratio = C.O.G.S./Average Stock = 5

   C.O.G.S = 5 × Average Stock = 5 × 1,26,000 = ₹ 6,30,000

   Gross Profit Ratio = 25%, C.O.G.S./Sales × 100 = 75%,

   Total Sales = 6,30,000/75 × 100 = ₹ 8,40,000

   Debt Collection Period = 360/Credit Sales × Debtors = 45

   Debt = 45 × $\frac{8,40,000}{360}$ = ₹ 1,05,000

   Current Assets = Closing Stock + Debt + Cash Balance

   2,60,000 = 1,40,000 + 1,05,000 + Cash Balance Cash Balance = ₹ 15,000

3. Net Profit Ratio = 15% = 8,40,000 × 15% Net Profit = ₹ 1,26,000

4. Fixed Assets/Proprietor's Fund = 0.6 : 1 Proprietor's Fund = Fixed Assets × 0.60
   = 2,34,000 × 0.60
   = ₹ 3,90,000

   Proprietor's Fund = Share Capital + Reserves + Profit and Loss A/c Balance

   3,90,000 = 2,00,000 + Reserve + 1,26,000

   Reserve = ₹ 64,000

Illustration 21: From the following information for the year ended 31st March, 2010 of M/s Nitin Ltd., prepare Balance Sheet with as many details as possible.

Current Ratio	2
Gross Profit Ratio	25%
Debtors Turnover	4 times
Cost of Goods Sold to Creditors (COGS/Creditors)	6
Stock Turnover (Cost of Goods Sold/Closing Stock)	6 times
Cash Balance is 10% of Total Current Asset (Including Cash)	

Fixed Asset at cost	₹ 6,00,000
Accumulated Depreciation on Fixed Assets	1/4th of cost
Current Liabilities	₹ 1,25,000
Reserve and Surplus is 25% of Equity Share Capital	
Debt Equity Ratio (Debt/Equity)	2:3

All purchases and sales are on credit basis.

Current liabilities include only Creditors and Bills Payable.

Solution:

1. Let Sales = 100x
   C.O.G.S. = 75x
   G.P. = 25x
2. Current Liabilities = 1,25,000 Current Ratio = 2: 1
   Current Assets = 1,25,000 × 2 = 2,50,000
   Cash Balance = 10% × 2,50,000 = 25,000
3. Debtors Turnover Ratio = $\frac{\text{Total Credit Sales}}{\text{Dr.s}} = 4 \quad \frac{100x}{4} = \text{Debtors}$

   Debtors – 25x
4. Stock Turnover Ratio = $\frac{\text{C.O.G.S}}{\text{Closing Stock}} = 6 \quad \frac{75x}{6} = \text{Closing Stock}$

   Closing Stock = 12.5x

Illustration 22: Complete the Income statement and the Balance Sheet given below with the help of the following ratios and further information given.

Income Statement as on 31st March, 2008

Particulars	Amount ₹	Amount ₹
Sales		?
Less: Cost of Sales:		
Opening Stock	?	
Purchases	?	
	?	
Less: Closing Stock	?	
Cost of Sales		?
Gross Profit		?
Less: Expenses		?
Net Profit before Tax		?
Less: Income Tax Provision (@ 50 on NPBT)		?
Net Profit after Tax		?
Add: Opening Balance		10,000
Less: Appropriation		
Proposed Dividends		60,000
Balance transferred to Balance Sheet		?

Balance Sheet as at 31st March, 2008

Funds Available		
Shareholders' Fund		
Share Capital		?
Add: Reserves and Surplus (including P & L A/c balance)		2,00,000
		5,00,000
Borrowed Fund		
Secured Loans		?
Total Funds		?
Funds Applied		
Fixed Assets		2,00,000

Working Capital		
Current Assets		
Closing Stock	1,00,000	
Debtors	?	
Other Current Assets	?	
Total Current Assets		?
Less: Current Liabilities		
Creditors	?	
Provision for Income Tax (Current Year)	?	
Provision Dividend (Current Year)	?	
Total Current Liabilities		?
Working Capital		?
Total Funds		?

Other Information:

1. Gross Profit Ratio 30%
2. Net Profit after Tax Ratio 12.50%
3. Stock Turnover Ratio (on Average Stock) 10
4. Debtors Turnover Ratio 2
5. Net Profit after Tax/Shareholders' Fund * 100 20%
6. Current Ratio 2
7. Creditors Turnover Ratio 2.5

Solution: Income Statement for the year ended 31st March, 2008

Particulars	Amount ₹	Amount ₹
Sales		8,00,000
Less: Cost of sales:		
Opening Stock	12,000	
Purchases	6,48,000	
Less: Closing Stock	6,60,000	
Gross Profit	1,00,000	5,60,000
		2,40,000
Less: Expenses		40,000
Net Profit before Tax		2,00,000
Less: Income Tax Provision		1,00,000
Net Profit after Tax		1,00,000
Add: Opening Balance		10,000
		1,10,000
Less: Appropriation		
Proposed Dividends		60,000
Balance carried to Balance Sheet		50,000

Balance Sheet as on 31st March, 2008

Particulars	₹	₹	₹
Funds Available:			
Shareholders' Fund:			
Share Capital		3,00,000	
Add: Reserves and Surplus		2,00,000	5,00,000
Loan Fund			
Secured Loans			1,19,200
Total			6,19,200
Funds Applied			
Fixed Assets			2,00,000
Working Capital			
Current Assets:			
Closing Stock	1,00,000		
Debtors	4,00,000		

Other Current Assets	3,38,400	8,38,400	
Total Current Assets			
Less: **Current Liabilities**			
Creditors		2,59,200	
Provision for Income Tax	1,00,000		
Provision for Dividend	60,000		
Total Current Liabilities		4,19,200	
Working Capital			4,19,200
Total			6,19,200

Working Note:

1. N.P. after Tax to Shareholders' Fund = 20% Shareholders' Fund ₹ 5,00,000.

   N.P. = 20% of ₹ 5,00,000
   = 1,00,000

2. Share Capital = 5,00,000 – 2,00,000
   = 3,00,000

3. N.P. before Tax = N.P. after Tax + Provision for Tax
   100 = 50 + 50
   Provision for Tax = N.P. after Tax
   = 1,00,000
   N.P. before Tax = 1,00,000 + 1,00,000
   = 2,00,000

4. G.P. Ratio = 30% of Sales
   Sales = 100
   G.P. = 30
   COGS = 70

5. N.P. after Tax Ratio = 12.50%
   N.P. after Tax = ₹ 1,00,000
   Sales = $\frac{100}{12.50} \times 1{,}00{,}000$
   = 8,00,000
   G.P. = 30% of Sales
   = 30% of 8,00,000
   = 2,40,000
   COGS = Sales – GP
   = 8,00,000 – 2,40,000
   = 5,60,000

6. Creditors Turnover = $\frac{\text{Purchases}}{\text{Creditors}} = 2.5$

   = $\frac{6{,}48{,}000}{\text{Creditors}} = 2.5$

   Creditors = $\frac{6{,}48{,}000}{2.5} = 2{,}59{,}200$

7. Debtors Turnover Ratio = $\frac{\text{Sales}}{\text{Debtors}}$

   = $\frac{8{,}00{,}000}{\text{Debtors}} = 2$

   Debtors = $\frac{8{,}00{,}000}{2}$

		=	4,00,000
	Stock Turnover	=	$\frac{\text{Cost of Goods Sold}}{\text{AverageStock}}$
		=	$\frac{5,60,000}{\text{Average Stock}} = 10$
	Average Stock	=	$\frac{5,60,000}{10}$
		=	56,000
	Average Stock	=	$\frac{\text{Opening Stock} + \text{Closing Stock}}{2}$
	56,000	=	$\frac{\text{Opening Stock} + 1,00,000}{2}$
	1,12,000	=	Opening Stock + 1,00,000
	Opening Stock	=	1,12,000 – 1,00,000
		=	12,000
8.	6,60,000	=	Opening Stock + Purchases
	Purchases	=	6,60,000 – 12,000
		=	6,48,000
	Current Liabilities	=	Creditors + Provision for Tax + Provision for Dividend
		=	2,59,200 + 1,00,000 + 60,000
		=	4,19,200
9.	Current Ratio	=	2
	Current Liabilities	=	4,19,200
	Current Ratio	=	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$
		=	$\frac{\text{Current Assets}}{4,19,200} = 2$
	Current Assets	=	8,38,400
10.	Other Current Assets	=	Total Current Assets – Closing Stock – Debtors
		=	8,38,400 – 1,00,000 – 4,00,000
		=	3,38,400
11.	Working Capital	=	Current Assets – Current Liabilities
		=	8,38,400 – 4,19,200
		=	4,19,200
12.	Total Fund	=	Fixed Assets + Working Capital
		=	2,00,000 + 4,19,200
		=	6,19,200
13.	Loan Fund	=	Total Fund – Shareholders' Fund
		=	6,19,200 – 5,00,000
		=	1,19,200

Illustration 23: From the following information, find out missing and rewrite the Balance Sheet.

Current Ratio 2 : 1
Acid Test Ratio 5 : 3
Reserves and Surplus are 50% of Equity Share Capital
Long-term Debts are 60% of Equity
Stock Turnover Ratio 10 times

Gross Profit Ratio on Sales 20%
Sales are ₹ 15,62,500 (25% Cash sales and balance on credit)
Closing stock is ₹ 50,000 more than Opening Stock
Accumulated depreciation is 1/6th of original Cost of Fixed Assets.

Balance Sheet as at March, 2007

Liabilities	₹	Assets		₹
Equity Share Capital	?	Fixed Assets (at cost)	?	
Reserves and Surplus	?	*Less:* Accumulated Deprecation	?	?
Long-term Loans	9,00,000	Stock		?
Bank Overdraft	50,000	Debtors		2,00,000
Creditors	?	Cash		?
	?			?

Solution:

Liabilities	W.N.	₹	Assets	W.N.	₹
Equity Share Capital	5	10,00,000	Fixed Assets (at Cost)		26,40,000
Reserves and Surplus	5	5,00,000	*Less*: Accumulated Depreciation		
Long-term Loans		9,00,000	(1/6th on Cost)		4,40,000
Bank Overdraft		50,000			22,00,000
Creditors	4	1,50,000	Stock	3	1,50,000
			Debtors		2,00,000
		–	Cash	4	50,000
		26,00,000			26,00,000

Working Note:

1. Cost of Goods Sold = Sales – G.P.
   = 15,62,500 – 3,12,500
   = 12,50,000

2. Stock Turnover = $\frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = 10 \text{ times}$

   Average Stock = $\frac{12,50,000}{10} = 1,25,000$

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

   Closing Stock is 50,000 more than Opening Stock.

   Average Stock = $\frac{\text{Opening Stock} + \text{Opening Stock} + 50,000}{2}$

   1,25,000 = $\frac{2\,\text{Opening Stock} + 50,000}{2}$

   Opening Stock = $\frac{2,50,000 - 50,000}{2} = 1,00,000$

   Closing Stock = 1,00,000 + 50,000 = 1,50,000

4. Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}} = 2$

   Acid Test Ratio = $\frac{\text{Q.A.}}{\text{Q.L.}} = \frac{\text{C.A.} - \text{Stock}}{\text{C.L.} - \text{Bank Overdraft}} = \frac{5}{3}$

$$\frac{\text{C.A.}-1,50,000}{\text{C.L.}-50,000}=\frac{5}{3}$$

3 (C.A. – 1,50,000) = 5 (C.L. – 50,000)
C.A. are two times of C.L.
C.A. = 2 C.L.
3 (2 C.L. – 1,50,000) = 5 (C.L. – 50,000)
6 C.L. – 4,50,000 = 5 C.L. – 2,50,000
C.L. = 4,50,000 – 2,50,000
C.L. = 2,00,000
Q.L. = Creditors
Creditors = C.L. – Bank OD = 2,00,000 – 50,000
Q.L. = 1,50,000
Q.A. : Q.L.
5 : 3

$$\text{Q.A.} = \frac{5}{3}\times 1,50,000$$

$$= 2,50,000$$

Cash = Q.A. – Debtors = 2,50,000 – 2,00,000 = 50,000

5. Long-term Debts are 60% of Equity
Long-term Loans are ₹ 9,00,000

$$\text{Equity} = \frac{9,00,000}{60}\times\frac{100}{1}=15,00,000$$

Equity = Equity Share Capital + Reserves and Surplus
Reserves and Surplus are 50% of Equity share Capital

Equity Capital	100
Add: Reserves and Surplus (50%)	50
Equity	150

$$\text{Equity Share Capital}=\frac{15,00,000}{150}\times\frac{100}{1}=10,00,000$$

R & S = Equity – Equity Capital
= 15,00,000 – 10,00,000
= 5,00,000
Total Liabilities = Equity + Loan + Bank OD + Creditors
= 15,00,000 + 9,00,000 + 50,000 + 1,50,000
= 26,00,000

6. Total Liabilities – C.A. = W.D.V. of Fixed Assets
26,00,000 – 4,00,000 = 22,00,000
Accumulated Depreciation is 1/6th of Cost
If cost is 6. Depreciation is 1 and W.D.V. is 5,

$$\text{Cost of F.A.} = \frac{22,00,000}{5}\times\frac{6}{1}=26,40,000$$

$$\text{Accumulated Depreciation} = \frac{1}{6}\times 26,40,000=4,40,000$$

Illustration 24: While preparing the financial statements for the year ended 31-3-2009 of XYZ Ltd., it was discovered that a substantial portion of the records were missing. However, the account was able to gather the following data:

Liabilities	₹	₹	Assets	₹	₹
Paid-up Share Capital			Land		3,60,000
Shares of ₹ 10 each)		6,00,000	Plant & Machinery:		
Reserves and Surplus:			Cost	9,00,000	
Balance on 1-4-2008	1,80,000		*Less*: Depreciation	3,60,000	5,40,000
Add: Transfer during the year	1,20,000	3,00,000	Current Assets:		
10% Loan		6,00,000	Stock	?	
Current Liabilities:			Debtors	?	
Proposed Dividend	?		Cash and Bank	?	?
Provision for Tax	?				
Creditors	?	6,00,000			–
		?			?

The following other information is available:

Current Ratio	2 : 1
Cash and Bank	30% of Total Current Assets
Debtors Turnover (Sales/Debtors)	12 Times
Stock Turnover (Cost of Goods Sold/Stock)	12 Times
Creditors Turnover (Cost Goods Sold/Creditors)	12 Times
Gross Profit Ratio on Sales	25
Proposed Dividend	20%

You are required to complete the balance sheet as on 31-3-2009 with available information. Working notes shall form part of your answer.

Solution: **Balance Sheet as on 31st March, 2009**

Liabilities	₹	₹	Assets	₹	₹
Paid-up Share Capital			Land		3,60,000
(60,000 Equity Shares of			Plant & Machinery		
₹ 10 each)		6,00,000	Cost	9,00,000	
Reserves and Surplus:			*Less:* Depreciation	3,60,000	5,40,000
Balance on 1-4-2008	1,80,000		Current Assets:		
Add: Transfer during the year	1,20,000	3,00,000	Stock (WN 5)	3,60,000	
10% Loan		6,00,000	Debtors (WN 5)	4,80,000	
Current Liabilities:			Cash & Bank (WN 2)	3,60,000	
Proposed Dividend (WN 7)	1,20,000		Total (WN 1)		12,00,000
Provision for Tax (WN 8)	1,20,000				
Creditors (WN 6)	3,60,000	6,00,000			–
		21,00,000			21,00,000

Working Note:

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

$$\frac{2}{1} = \frac{\text{Current Assets}}{6,00,000}$$

$\therefore$ Current Assets $= 6,00,000 \times 2 = 12,00,000$

2. Cash/Bank = 30% Total Current Assets
   = 30% 12,00,000
   Cash/Bank = 3,60,000
3. Gross Profit Ratio on Sales = 25% on Sales = 25x
   $\therefore$ Cost of Goods Sold = Sales – Gross Profit
   = 100x – 25x
   $\therefore$ Cost of Goods Sold = 75x

4. Stock Turnover $= \frac{\text{Cost of Goods Sold}}{\text{Stock}}$

$12 = \frac{75x}{\text{Stock}}$

$\therefore$ Stock $= \frac{75x}{12}$

5. Debtors Turnover $= \frac{\text{Sales}}{\text{Debtors}} (\text{Let Sales} = 100x)$

$12 = \frac{100x}{\text{Debtors}}$

$\therefore \text{Debtors} = \frac{100x}{12} = \text{Stock} = \frac{75x}{12}$

$\therefore$ Debtors = 100x

Stock = 75x

But, Debtors + Stock + Cash = Current Assets

Debtors + Stock + 3,60,000 = 12,00,000

$\therefore$ Debtors + Stock = 12,00,000 – 3,60,000

100x + 75x = 8,40,000

175x = 8,40,000

$x = \frac{8,40,000}{175} = 4,800$

$\therefore$ Debtors = 100x = 100 × 4,800 = ₹ 4,80,000

Stock = 75x = 75 × 4,800 = ₹ 3,60,000

6. Creditors Turnover $= \frac{\text{Cost of Goods Sold}}{\text{Creditors}}$

$12 = \frac{75x}{\text{Creditors}}$

$\therefore$ Creditors $= \frac{75x}{12} = \text{Stock (See 4th working)}$

$\therefore$ Creditors = Stock

$\therefore$ Creditors = 3,60,000

7. Proposed Dividend = 20% (Share Capital)
   = 20% (6,00,000) = ₹ 1,20,000

8. Provision for Tax = Current Liabilities – Creditors – Proposed Dividend
   = 6,00,000 – 3,60,000 – 1,20,000
   = ₹ 1,20,000

Illustration 25: From the following information, calculate inventory turnover ratios.

Particulars	₹
Opening Stock:	
Raw Material	12,000
WIP	20,000
Finished Goods	30,000
	62,000
Raw Material Purchased	1,00,000
Direct Wages – Paid	70,000
Outstanding	20,000

Production Expenses – Paid	10,000
Outstanding	10,000
Depreciation	50,000
	2,60,000
Closing Stock:	
Raw Material	24,000
WIP	10,000
Finished Goods	20,000
	54,000

(T.Y. B.Com., Modified)

Solution: Working Note:

Cost of Goods Sold

Opening Stock	62,000
Add: Purchases	1,00,000
Add: Wages (70,000 + 20,000)	90,000
Add: Production Expenses	70,000
Less: Closing Stock	54,000
Cost of Goods Sold	2,68,000

(a) Average Stock of Finished Good $= \frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{30,000 + 20,000}{2}$

$= \frac{50,000}{2} = 25,000$

Inventory Turnover Ratio $= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = \frac{2,68,000}{25,000} = 10.7 \text{ times}$

Illustration 26: The following information are available for a firm for the year ended 31.01.2009:

(a)	Gross Profit Ratio	25%
(b)	Net Profit Ratio	20%
(c)	Stock Turnover Ratio	10 times
(d)	Net Profit/Capital	1/5
(e)	Capital/Other Liabilities	1/2
(f)	Fixed Asset/Capital	5/4
(g)	Fixed Asset/Current Assets	5/7
(h)	Fixed Assets	₹ 5,00,000
(i)	Stock at the end	₹ 40,000 more than the stock in the beginning

Find out:

(a)	Cost of Goods Sold	(b)	Gross Profit
(c)	Net Profit	(d)	Current Assets
(e)	Capital	(f)	Total Liabilities
(g)	Closing Stock	(h)	Total Assets

Solution:

Fixed assets (Given) = ₹ 5,00,000

1. $\frac{\text{Fixed assets}}{\text{Capital}} = \frac{5}{4} \therefore \frac{5,00,000}{\text{Capital}} = \frac{5}{4} \therefore \text{Capital} = \frac{5,00,000 \times 4}{5} = 4,00,000$

2. $\frac{\text{Fixed assets}}{\text{Current assets}} = \frac{5}{7} \therefore \frac{5,00,000}{\text{Current assets}} = \frac{5}{7} \therefore \text{Current assets} = \frac{5,00,000 \times 7}{5} = 7,00,000$

3. $\frac{\text{Capital}}{\text{Other liabilities}} = \frac{1}{2} \therefore \frac{4,00,000}{\text{Other liabilities}} = \frac{1}{2} \therefore \text{Other liabilities} = \frac{4,00,000 \times 2}{1} = 8,00,000$

4. $\frac{\text{Net profit}}{\text{Capital}} = \frac{1}{5} \therefore \frac{\text{Net profit}}{4,00,000} = \frac{1}{5} \therefore \text{Net profit} = \frac{4,00,000 \times 1}{5} = 80,000$

5. Net profit ratio = 20%

$$\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100 \ \therefore 0.20 = \frac{80,000}{\text{Net Sales}} \therefore \text{Net Sales} = \frac{80,000}{0.20} = 4,00,000$$

6. G.P. Ratio = 25% on sales = $\frac{25}{100} \times 4,00,000 = 1,00,000$

7. Cost of goods sold = Sales – GP = 4,00,000 – 1,00,000 = 3,00,000

Illustration 27: From the following information, determine Debtors Turnover and Average Collection Period.

Particulars	₹
Sales (40% Cash Sales) during 2013-14	6,00,000
Debtors as on 1.4.2013	50,000
Cash Collections	3,20,000
Discount	5,000
Bad Debt	5,000
Return	10,000
Take 1 year = 360 days	

(T.Y. B.Com., Modified)

Solution: **Debtors Accounts**

Particulars	₹	Particulars	₹
To Opening Balance b/d	50,000	By Cash	3,20,000
To Credit Sales (60% of 6,00,000)	3,60,000	By Discount	5,000
		By Bad Debts	5,000
		By Sales Return	10,000
		By Closing Balance	70,000
	4,10,000		**4,10,000**

Debtors Turnover Ratio

(a) No. of times = $\frac{\text{Credit Sales}}{\text{Average Accounts Receivable}}$

$$\text{Average Accounts Receivable} = \frac{\text{Opening Debtors} + \text{Closing Debtors}}{2} = \frac{50,000 + 70,000}{2}$$

$$= \frac{1,20,000}{2} = 60,000$$

$$\text{No. of times} = \frac{3,60,000}{60,000} = 6 \text{ times}$$

(b) $\text{No. of days} = \frac{\text{Average Accounts Receivable}}{\text{Credit Sales}} \times 360 = \frac{60,000}{3,60,000} \times 360 = 60 \text{ days}$

Illustration 28: (a) From the following details, prepare statement of working capital with as many details as possible:

1. Stock Turnover Ratio 6
2. Gross Profit Ratio 20%
3. Debtors Turnover Ratio 2 months

4. Creditors Turnover Ratio 73 days
5. Gross Profit ₹ 60,000/-
6. Closing Stock was ₹ 5,000/- in excess of opening stock

(b) Calculate detailed working capital from following information:

1. Current Ratio 2.5
2. Liquid Ratio 1.5
3. Stock Turnover Ratio (Cost of Sales/Closing Stock) 6 times
4. Debtors Collection Period 2 months
5. Gross Profit Ratio 20%
6. Net Working Capital ₹ 3,00,000/-

(There is no bank overdraft or prepaid expenses).

Solution: **Statement of Working Capital**

Particulars	W.N.	₹
Current Assets		
Stock	(2)	42,500
Debtors		50,000
Gross Working Capital		92,500
Less: Creditors		49,000
Working Capital		43,500

Working Note:

(a)

1. Total Sales = $60,000 \times \frac{100}{20} = 3,00,000$
2. Cost of Sales = 3,00,000 – 20% = 2,40,000
   (∴ Debtors for 2 months = ₹ 50,000/-) (3)
3. Average Stock = 2,40,000 ÷ 6 = 40,000
   Closing Stock = $40,000 + \frac{5,000}{2}$ = (1) 42,500
4. Creditors = Cost of Sales + Increase in Stock = Purchase
   = 2,40,000 + 5,000 = 2,45,000
   Creditors : 73 days purchases = $2,45,000 \times \frac{73}{365}$ = (2) 49,000

(b) Working Capital

Particulars		₹
Current Assets = Stock		2,00,000
Debtors	2,50,000	
Cash	50,000	
Liquid Assets		3,00,000
Gross Working Capital		5,00,000
Less: Current Liabilities		2,00,000
Net Working Capital		3,00,000

Working Note

1. If current liabilities are 1 and current assets are 2.5, Working Capital is 1.5
   Working Capital is 3,00,000
   ∴ Current Liabilities = 2,00,000 (1)
   Current Assets = 5,00,000 (2)
2. Liquid Ratio is 1.5
   ∴ Liquid Assets are 3,00,000

3. Stock = Current Assets – Liquid Assets (4)
   5,00,000 – 3,00,000 = 2,00,000 (3)
4. Cost Sales = 2,00,000 × 6 = 12,00,000
5. Sales = Cost of Sales + G.P.
   12,00,000 + 3,00,000 = 15,00,000
6. Debtors = $\frac{15,00,000}{12} \times 2 = 2,50,000$ (5)
7. Cash = Quick Assets – Debtors
   = 3,00,000 – 2,50,000 = 50,000

Illustration 29: (a) From the following Profit and Loss A/c, calculate three profitability ratio.

Profit and Loss A/c

Particulars	000 ₹	000 ₹
Sales		40,00
Less: Cost of Goods Sold:		
Raw Material Consumed	10,00	
Wages	15,00	
Production Expenses	2,50	27,50
		12,50
Less: Indirect Expenses:		
Administrative Expenses		
Selling Expenses	2,00	
Distribution Expenses	1,00	
Finance Charge	50	
Tax Charge	4,00	
Tax Provision	2,00	9,50
		3,00
Less: Non-operational Adjustment		30
Net Profit		2,70

(b) From the figures given question no. (a) and the following balance sheet, calculate:
(i) Return on Capital Employed (ii) EPS
(iii) Yield (Dividend and Earning) (iv) Dividend Payout Ratio

Balance Sheet

Particulars	₹ '000
Liabilities:	
Equity Share Capital (Shares of ₹ 100 each)	8,00
10% Preference Share Capital	1,00
General Reserve	50
14% Debentures	1,00
16% Term Loan	1,00
Cash Credit	50
Sundry Creditors	20
Tax Provision (Net of Advance Tax)	150
Proposed Dividend:	
Preference	10
Equity	1,60
	15,40
Assets:	
Fixed Assets less Depreciation	
Investments	8,00

Inventories	3,00
Sundry Debtors	1,00
Cash and Bank	2,20
Profit and Loss A/c	20
	15,40

Note: Closing market price of equity shares was ₹ 150.

(T.Y. B.Com., Modified)

Solution:

(a) The three profitability ratios are:
(i) Gross Profit Ratio
(ii) Net Profit Ratio
(iii) Operating Profit Ratio

(i) Gross Profit Ratio $= \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{12,50,000}{40,00,000} \times 100 = 31.25\%$

(ii) Net Profit Ratio

$= \frac{\text{Net Profit before Tax}}{\text{Net Sales}} \times 100$

$= \frac{\text{Net Profit after Tax}}{\text{Net Sales}} \times 100$

Here Net Profit after Tax is 2,70,000 and Tax is ₹ 2,00,000

∴ Net Profit before Tax is 4,70,000

$= \frac{4,70,000}{40,00,000} \times 100 = 11.75\%$

$= \frac{2,70,000}{40,00,000} \times 100 = 6.75\%$

(iii) Operating Profit Ratio $= \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$

Operating Profit = Gross Profit – Operating Expenses = 12,50,000 – 7,50,000 = 5,00,000

Operating Profit Ratio $= \frac{5,00,000}{40,00,000} \times 100 = 12.5\%$

(b)

(i) Return on Capital Employed $= \frac{\text{Net Profit before Interest Tax}}{\text{Capital Employed}} \times 100$

Net Profit after Tax	2,70,000
Add: Tax	2,00,000
Net Profit before Tax	4,70,000
Add: Interest and Financial Expenses	4,00,000
Net Profit before Interest and Tax	8,70,000
Capital Employed:	
Owners' Fund	
Equity Share Capital	8,00,000
Add: Preference Share Capital	1,00,000
Add: General Reserve	50,000
Less: Profit and Loss A/c	20,000
	9,30,000
Borrowed Fund:	

Debentures	2,00,000
Add: Term Loan + Cash Credit	50,000
	11,80,000

$$\text{Return on Capital Employed} = \frac{8,70,000}{11,80,000} \times 100 = 73.73\%$$

(ii) $$\text{Earnings Per Share} = \frac{\text{Net Profit after Tax} - \text{Preference Dividend}}{\text{No. of Equity Shares}}$$

$$= \frac{2,70,000 - 10,000}{8,000} = ₹\ 32.5 \text{ per share}$$

(iii) Yield (Dividend and Earning)

(a) $$\text{Dividend Yield Ratio} = \frac{\text{Dividend per Share}}{\text{Marketing Price per Share}} \times 100 = \frac{20}{150} = 13.33\%$$

(iv) $$\text{Dividend Payout Ratio} = \frac{\text{Equity Dividend} + \text{Preference Dividend}}{\text{Profit after Tax}} \times 100$$

$$= \frac{1,60,000 + 10,000}{2,70,000} \times 100 = 62.9\%$$

OR

$$= \frac{\text{Dividend per share}}{\text{Earning per share}} = \frac{20}{32.50} = 0.62 : 1$$

Illustration 30: The Balance Sheet of Ganga Ltd. as on 31st December, 2014 is as follows:

Liabilities		₹	Assets	₹
Equity Share Capital		80,000	Goodwill	30,000
Capital Reserve		16,000	Fixed Assets	1,20,000
8% Loan on Mortgage		44,000	Stock	24,000
Unsecured Loans		20,000	Debtors	28,000
Creditors		30,000	Investments (Trade)	8,000
Bank Overdraft		10,000	Cash on Hand	20,000
Taxation: Current		8,000	Miscellaneous Expenditure	10,000
Future		8,000		
Profit and Loss A/c				
Profit of 2014 after Taxation and				
Interest on Loan		48,000		
Less: Transfer to Reserve	16,000			
Dividend	8,000	24,000		
		2,40,000		2,40,000

The stock on 1.1.2014 was ₹ 40,000. Total Sales and Gross Profit for the year ended was₹ 4,80,00 and 1,60,000. Calculate the following ratios:

1. Gross Profit Ratio
2. Current Ratio
3. Liquidity Ratio
4. Return on Capital Employed
5. Stock Turnover Ratio
6. Debtors Ratio

(360 days to be considered for the year). **(T.Y. B.Com., Modified)**

Solution: In the Book of Ganga Ltd.

(i) $$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{1,60,000}{4,80,000} \times 100 = 33.33\%$$

(ii) $\text{Current Ratio} = \dfrac{\text{Current Assets}}{\text{Current Liabilities}} = \dfrac{72,000}{56,000} = 1.28:1$

(iii) $\text{Liquidity Ratio} = \dfrac{\text{Quick Assets}}{\text{Quick Liabilities}} = \dfrac{48,000}{46,000} = 1.04:1$

Quick Liabilities = Current Liabilities – Bank OD
= 56,000 – 10,000 = 46,000

(iv) $\text{Return on Capital Employed} = \dfrac{\text{Net Profit before Interest and Tax}}{\text{Capital Employed}} \times 100$

Note:

Net Profit after Tax	48,000
Add: Provision for Tax	8,000
Add: Interest on Mortgage Loan (8% on 44,000)	3,520
Net Profit before Interest and Tax	59,520

$\therefore$ $\text{Return on Capital Employed} = \dfrac{59,520}{1,74,000} \times 100 = 34.21\%$

Capital Employed = Total Assets – Current Liabilities

(v) $\text{Stock Turnover Ratio} = \dfrac{\text{Cost of Goods Sold}}{\text{Avarage Stock}}$

Note: Cost of Goods Sold = Net Sales – Gross Profit
= 4,80,000 – 1,60,000 = 3,20,000

$\text{Average Stock} = \dfrac{\text{Operating Stock} + \text{Closing Stock}}{2} = \dfrac{40,000 + 24,000}{2} = \dfrac{64,000}{2} = 32,000$

$\therefore$ $\text{Stock Turnover Ratio} = \dfrac{3,20,000}{32,000} = 10 \text{ times}$

Debtors Turnover Ratio

(a) $\text{No. of Times} = \dfrac{\text{Credit Sales}}{\text{AverageAccounts Receivable}}$

$\text{No. of Days} = \dfrac{\text{Average Accounts Receivable}}{\text{Credit Sales}} \times 100$

Credit Sales = ₹ 3,60,000 (given)

Average Accounts Receivable $= \dfrac{\text{Operating [Debtors + B/R]} + \text{Closing Debtors [Debtors + B/R]}}{2}$

= 28,000 (since only closing debtors given)

Debtors Ratio

(a) $\text{No. of Times} = \dfrac{3,60,000}{28,000} = 12.86 \text{ times}$

(b) $\text{No. of Days} = \dfrac{28,000}{3,60,000} \times 360 = 28 \text{ days approx.}$

Illustration 31: From the following figures of RKR Ltd., prepare Vertical Revenue Statement and Vertical Balance Sheet and calculate the following ratios:

(a) Operating Ratio
(b) Debtors Turnover Ratio
(c) Stock Turnover Ratio
(d) Current Ratio
(e) Liquid Ratio

Particulars	2013 ₹	2014 ₹
Sales (Credit)	12,00,000	15,00,000
Fixed Assets (Net)	5,00,000	8,00,000
Debtors	2,00,000	2,95,000
Creditors	1,00,000	2,00,000
Bank Balance	50,000	20,000
Closing Stock	2,00,000	4,00,000
Bank Overdraft	1,00,000	2,50,000
Purchase	9,00,000	12,00,000
Depreciation	75,000	1,20,000
Expenses	1,00,000	1,50,000
Interest on Overdraft	15,000	40,000
Loan		2,00,000
Interest on Loan		35,000
Equity Share Capital	3,00,000	3,00,000
8% Preference Capital	1,00,000	1,00,000
Reserves and Surplus	1,90,000	2,08,500
Income Tax Provision	1,20,000	1,98,500
Proposed Divided	40,000	60,000

Further information:

(i) Stock 1.1.2013 ₹ 1,80,000

(ii) Income Tax Provision 1.1.2013 ₹ 55,000

(iii) Tax Provision for 2013 and 2014 should be made 50% of Net Profit.

Solution:

In the Book of RKT Ltd.

Vertical Revenue Statement

Particulars	2013		2014		
	₹	₹	₹	₹	₹
SOURCE OF FUNDS:					
Sales					
Less: Cost of Goods Sold					
Operating Stock	1,80,000			2,00,000	
(+) Purchases	9,00,000			12,00,000	
	10,80,000			14,00,000	
(–) Closing Stock	2,00,000	8,80,000		4,00,000	10,00,000
GROSS PROFIT		3,20,000			5,00,000
Less: Operating Expenses					
(A) Administration Expenses	1,00,000			1,50,000	
(B) Financial Expenses					
Interest on					
Overdraft 15,000			40,000		
Interest on Loans –	15,000		35,000	75,000	
(C) Depreciation	75,000	1,90,000		1,20,000	3,45,000
NPBT/NET Operating Profit		1,30,000			1,55,000
Less: Provision for tax		65,000			77,500
NET PROFIT AFTER TAX		65,000			77,500

Vertical Balance Sheet as on .....

Particulars	2013		2014		
SOURCE OF FUNDS					
(A) Shareholders' Fund					

	Share Capital (Eq. Sh. Capital)	3,00,000			3,00,000		
	Pref. Sh. Capital 8%	1,00,000	4,00,000		1,00,000	4,00,000	
	Add: Reserves and Surplus		1,90,000	5,90,000		2,07,500	6,07,5000
(B)	Loan Funds			–			2,00,000
TOTAL SOURCES				5,90,000			8,07,500
(A)	Fixed Assets:						
	Gross Block						
	Less: Depreciation						
	Net Block			5,00,000			8,00,000
	Investment						
	Working Capital						
	Total Current Assets:						
	Bank	50,000			20,000		
	Debtors		2,00,000			2,95,000	
	Closing Stock	2,00,000	4,50,000		4,00,000	7,15,000	
	Less: Total Current Liabilities:						
	Creditors	1,00,000			2,00,000		
	Bank OD	1,00,000			2,50,000		
	Income Tax Prov.	1,20,000			1,97,500		
	Proposed Dividend	40,000	3,60,000	90,000	60,000	7,07,500	7,500
TOTAL APPLICATIONS				5,90,000			8,07,500

Working Note:

	2013	2014
1. Operating Ratio		
$= \frac{\text{Cost of Goods Sold + Operating Expenses}}{\text{Sales}} \times 100$	$= \frac{8,80,000 + 1,90,000}{12,00,000} \times 100$	$= \frac{10,00,000 + 3,45,000}{15,00,000} \times 100$
	= 89.17%	= 89.67%
2. Debtors Turnover Ratio		
$= \frac{\text{Credit Sales}}{\text{Debtor + Bills Receivable}}$	$= \frac{12,00,000}{2,00,000} \times 100$	$= \frac{15,00,000}{2,95,000} \times 100$
	= 6 times	= 5 times
In the Second Year, Average Debtors may be taken.		
3. Stock Turnover Ratio		
$= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$		
$= \text{Average Stock} = \frac{\text{Op. Stock + Cl. Stock}}{2}$	$= \frac{1,80,000 + 2,00,000}{2}$	$= \frac{2,00,000 + 4,00,000}{2}$
	= 1,90,000	= 3,00,000
	$= \frac{8,80,000}{1,90,000}$	$= \frac{10,00,000}{3,00,000}$
	= 4.63 times = 5 times	= 3.33 times = 3 times

4. Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$	$= \frac{4,50,000}{3,60,000} = 1.25 : 1$	$= \frac{7,15,000}{7,07,500} = 1.01 : 1$
5. Liquid Ratio = $\frac{\text{Liquid Assets}}{\text{Liquid Liabilities}}$	$= \frac{2,50,000}{2,60,000} = 0.96 : 1$	$= \frac{3,15,000}{4,57,500} = 0.69 : 1$
Liquid Assets = Current Assets – (Closing Stock + Prepaid Expenses)	= 4,50,000 – 2,00,000 = 2,50,000	= 7,15,000 – 4,00,000 = 3,15,000
Liquid Liabilities = Current Liabilities – Bank Overdraft	= 3,60,000 – 1,00,000 = 2,60,000	= 7,06,500 – 2,50,000 = 4,56,500

Illustration 32: The following are the Balance Sheets of Krishna Limited for the two years 2013 and 2014.

Particulars	2013 ₹	2014 ₹
Sources of Funds:		
1. Proprietary Funds:		
(A) Equity Share Capital	4,00,000	5,00,000
(B) 10% Preference Share Capital	2,00,000	2,00,000
(C) Reserves	2,50,000	3,50,000
	8,50,000	10,50,000
2. Loan Funds:		
13.5% Debentures	2,50,000	2,50,000
Capital Employed	11,00,000	13,00,000
Application of Funds:		
1. Fixed Assets		
2. Investments		
3. Current Assets:		

	2013 ₹	2014 ₹		
(A) Stock	1,00,000	1,20,000		
(B) Debtors	1,50,000	2,00,000		
(C) Cash and Bank	50,000	80,000	3,00,000	4,00,000
Less: Current Liabilities:				
(A) Creditors	90,000	1,20,000		
(B) Bank Overdraft	70,000	80,000	1,60,000	2,00,000
Net Current Assets			1,40,000	2,00,000
		₹	11,00,000	13,00,000

Additional Information:

	2013 ₹	2014 ₹
1. Total Sales (Cash Sales are 20% of Total Sales)	40,00,000	30,00,0000
2. Gross Profit	8,00,000	11,00,000
3. Net Profit before Interest and Taxes (Rate of tax is 50%)	3,30,000	4,55,000
4. Opening Stock	90,000	1,00,000

From the above information, calculate the following ratios for both the years:

1. Current Ratio
2. Debtors Turnover Ratio
3. Return on Capital Employed
4. Return on Proprietors' Funds
5. Proprietary Ratio
6. Stock Turnover Ratio
7. Gross Profit Ratio
8. Net Profit (after Tax) Ratio

(T.Y. B.Com., Modified)

Solution:

	2013	2014
1. Current Ratio		
$= \frac{\text{Current Assets}}{\text{Current Liabilities}}$	$= \frac{3,00,000}{1,60,000} = 1.875 : 1$	$= \frac{4,00,000}{2,00,000} = 2 : 1$
2. Debtors Turnover Ratio		
$= \frac{\text{Credit Sales}}{\text{B/Rec. + Drs.}}$	$= \frac{24,00,000}{1,50,000} = 16 \text{ times}$	$= \frac{32,00,000}{2,00,000} = 16 \text{ times}$
3. Return on capital Employed		
$= \frac{\text{Net Profit before Tax \& Int.}}{\text{Capital Employed}} \times 100$	$= \frac{3,30,000}{11,00,000} \times 100 = 30\%$	$= \frac{4,55,000}{33,00,000} \times 100 = 35\%$
4. Return on Proprietor's Fund		
$= \frac{\text{Net Profit after Tax}}{\text{Shareholders' Fund}} \times 100$	$= \frac{1,48,125}{8,50,000} \times 100 = 17.43\%$	$= \frac{2,10,625}{10,50,000} \times 100 = 20.06\%$
5. Proprietory Ratio		
$= \frac{\text{Shareholders' Fund}}{\text{Total Assets}} \times 100$	$= \frac{8,50,125}{12,60,000} \times 100 = 67.46\%$	$= \frac{10,50,000}{15,00,000} \times 100 = 70\%$
6. Stock Turnover Ratio		
$= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$	$= \frac{22,00,000}{95,000} = 23.16 \text{ times}$	$= \frac{29,00,000}{1,10,000} = 26.3 \text{ times}$
$\text{Average Stock} = \frac{\text{Op. Stock} + \text{Cl. Stock}}{2}$	$= \frac{90,000 + 1,00,000}{2} = 95,000$	$= \frac{1,00,000 + 1,20,000}{2} = 1,00,000$
7. Gross Profit Ratio		
$= \frac{\text{Gross Profit}}{\text{Sales}} \times 100$	$= \frac{8,00,000}{30,00,000} \times 100 = 26.67\%$	$= \frac{11,00,000}{40,00,000} \times 100 = 27.5\%$
8. Net Profit After Tax Ratio		
$= \frac{\text{Net Profit after Tax}}{\text{Sales}} \times 100$	$= \frac{1,48,125}{30,00,000} \times 100 = 4.94\%$	$= \frac{2,10,625}{40,00,000} \times 100 = 5.27\%$

Illustration 33: You have been supplied financial information for the Kaveri Ltd. and its industry average ratios. Calculate the indicated accounting ratios and make brief comment on each.

Balance Sheet as on 31st March, 2014

Liabilities	₹	Assets	₹
Equity Share Capital, ₹ 10 each	20,00,000	Land and Building	19,00,000
12% Preference Share Capital	6,00,000	Machinery	6,00,000
Retained Earnings	3,00,000	Furniture	50,000
15% Debentures	5,00,000	Stock	7,50,000
Public Fixed Deposits	1,00,000	Debtors	6,00,000
Creditors	5,00,000	Cash and Bank	1,50,000
Bills Payable	80,000	Other Current Assets	1,00,000
Unpaid Expenses	20,000	Preliminary Expenses	50,000
Bank Overdraft	1,00,000		
	42,00,000		42,00,000

Statement of Profit for the year ended on 31st March, 2014

	₹	₹
Total Sales (out of which 90% are Credit Sales)		48,00,000
Less: Cost of Goods Sold	28,80,000	
Operating Expenses	7,80,000	36,60,000
Net Profit		11,40,000
Less: Taxes @ 50%		5,70,000
		5,70,000

Stock in the beginning of the year was ₹ 5,50,000.

	Industry's Average
1. Current ratio	2.4
2. Stock turnover	4
3. Debtor's ratio (360 days to the taken for the year)	60 days
4. Debt-equity ratio	0.4 : 1
5. Net profit ratio	72%
6. Rate of return of proprietors' fund.	10.5%
7. Rate of return of proprietors' fund.	**(T.Y. B.Com., Modified)**

Solution: **In the Book of Kaveri Ltd.**
Vertical Balance as on 31st March, 2014

Particulars	Amount	Amount	Amount
SOURCES OF FUNDS			
(A) Shareholders' Fund			
Share Capital			
Equity Share Capital	20,00,000		
12% Preference Share Capital	6,00,000	26,00,000	
Add: Reserves and Surplus		3,00,000	
Retained Earnings		29,00,000	
Less: Miscellaneous Expenses			
Preliminary Expenses		50,000	28,50,000
(B) Loan Funds			
Secured Loans – 15% Debentures		5,00,000	
Unsecured Loans – Public Fixed Deposits		1,00,000	6,00,000
TOTAL SOURCES			34,50,000
APPLICATION OF FUNDS			
(A) Fixed Assets			
Gross Block		25,50,000	
Less: Depreciation		–	
Net Block			25,50,000
(B) Investment			Nil
(C) Working Capital			
Total Current Assets			
Stock	7,50,000		
Debtors	6,00,000		
Cash and Bank	1,50,000		
Other Current Assets	1,00,000	16,00,000	
Less: Total Current Liabilities			
Creditors	5,00,000		
Bills Payable	80,000		

Unpaid Expenses	20,000		
Book Overdraft	1,00,000	7,00,000	9,00,000
TOTAL APPLICATIONS			34,50,000

Working Note:

Gross Block	
Land and Building	19,00,000
Machinery	6,00,000
Furniture	50,000
	25,50,000

1. $\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{16,00,000}{7,00,000} = 8.28 : 1$

2. $\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{5,50,000 + 7,50,000}{2} = \frac{13,00,000}{2} = 6,50,000$$

$$\text{Stock Turnover Ratio} = \frac{28,80,000}{6,50,000} = 4.43 \text{ times}$$

3. $\text{Debtors' Ratio} = \frac{\text{Debtors + Bills Rec.}}{\text{Credit Sales}} \times 360 = \frac{6,00,000}{43,20,000} \times 360 = 49.99 = 50 \text{ days}$

4. $\text{Debt - equity Ratio} = \frac{\text{Loan Funds}}{\text{Shareholders' Fund}} = \frac{6,00,000}{28,50,000} = 0.21:1$

5. $\text{Proprietory Ratio} = \frac{\text{Shaeholders' Funds}}{\text{Total Assets}} \times 100 = \frac{28,50,000}{41,50,000} \times 100 = 68.67\%$

6. $\text{Net Profit Ratio} = \frac{\text{Net Profit after Tax}}{\text{Sales}} \times 100 = \frac{5,70,000}{48,00,000} \times 100 = 11.87\%$

7. $\text{Rate of Return of Proprietor's Funds} = \frac{\text{Net Profit after Tax}}{\text{Shareholders' Fund}} \times 100 = \frac{5,70,000}{28,50,000} \times 100 = 20\%$

Particulars	**Industry Ratio**	**K Ltd.**
1. Current Ratio	2.4 : 1	2.28 : 1
2. Stock Turnover	4 times	4.43 times
3. Average Collection Period	60 days	50 days
4. Debit-equity Ratio	40%	21%
5. Proprietory Ratio	72%	68.67%
6. Net Profit Ratio (NPAT)	10.5%	11.87%
7. Rate of Return of Proprietor's Fund	–	20%

Standard Ratio for the industry on given in the problems and actual ratios of K Ltd. we have calculated. It is necessary to compare term with each other.

1. Current Ratio

Standard Ratio available for this 2.4 : 1, whereas actual Ratios of K Ltd. is 2.28 : 1 which is short by 0.12. It is necessary for the company to improve is financial position in respect of current liabilities.

2. Stock Turnover Ratio

Appropriately Actual Ratio is equal to the standard Ratio. It is more by 0.43 which includes better position of the company.

3. **Average Collection Period**
   Recovery from the debtors is to be made within a period of 60% days but K Ltd. is able to recover amount from debtors within 50 days which indicated efficiency of its credit department.
4. **Debit-equity Ratio**
   It indicate proportion in between own funds and loan funds for every ₹ 100/- as ₹ 40. But K Ltd. having loan funds only of ₹ 21. It means company can utilise more outside funds and can expand the business.

Illustration 34: The summarised final final accounts of two companies are as follows:

Liabilities	X Ltd.	Y Ltd.	Assets	X Ltd.	Y Ltd.
Share Capital	88,000	88,000	Fixed Assets	1,21,000	96,800
Reserves	42,900	35,200	Current Assets	1,25,400	1,03,400
8% Debentures	22,000	22,000	*Less:* Current Liabilities	93,500	31,900
	1,52,900	1,45,200		1,52,900	1,45,200

Revenue Statement for the year .....

Income	X Ltd. ₹	Y Ltd. ₹
Sales	3,30,000	2,64,000
Less: Cost of Sales	2,37,600	1,98,000
Gross Profit	92,400	66,000
Operating Expenses	63,800	44,000
Net Profit before Tax	28,600	22,000
Tax	12,100	9,240
Profit after Tax	16,500	12,760
Dividend	8,800	6,600
Retained Earning	7,700	6,160

You are required to calculate the following ratios and comment

1. Proprietory Ratio
2. Capital Gearing Ratio
3. Gross Profit Ratio
4. Operating Ratio
5. Return on Total Resources Ratio
6. Return on Proprietors' Equity Ratio
7. Expenses Ratio
8. Net Profit Ratio.

(T.Y. B.Com., Modified)

Solution:

(i) $$\textbf{Proprietory Ratio} = \frac{\text{Shareholders' Funds}}{\text{Total Assets}} \times 100$$

$$= \frac{\text{Equity Share Capital} + \text{Preference Capital} + \text{R \& S} - \text{ME}}{\text{FA} + \text{CA}} \times 100$$

$$\text{For 'X' Ltd.} = \frac{88,000 + 42,900 - \text{Nil}}{1,21,000 + 1,25,400} \times 100 = \frac{1,30,900}{2,46,400} \times 100 = 53.13\%$$

$$\text{For 'Y' Ltd.} = \frac{88,000 + 35,200 - \text{Nil}}{96,800 + 1,03,400} \times 100 = \frac{1,23,200}{2,00,200} \times 100 = 61.54\%$$

(ii) $$\textbf{Capital Gearing Ratio} = \frac{\text{Long - term Borrowing} + \text{Preference Capital}}{\text{Shareholders' Fund}}$$

$$\text{For 'X' Ltd.} = \frac{22,000}{1,30,900} = 0.17 : 1$$

$$\text{For 'Y' Ltd.} = \frac{22,000}{1,23,200} = 0.18 : 1$$

(iii) **Gross Profit Ratio** $= \dfrac{\text{Gross Profit}}{\text{Net Sales}} \times 100$

For 'X' Ltd. $= \dfrac{92,400}{3,30,900} \times 100 = 28\%$

For 'Y' Ltd. $= \dfrac{66,000}{2,64,000} \times 100 = 25\%$

(iv) **Operating Ratio** $= \dfrac{\text{COGS} + \text{Other Operating Expenses}}{\text{Sales}} \times 100$

For 'X' Ltd. $= \dfrac{2,37,600 + 63,800}{3,30,000} \times 100 = \dfrac{3,01,400}{3,30,000} \times 100 = 91.33\%$

For 'Y' Ltd. $= \dfrac{1,98,000 + 44,000}{2,64,000} \times 100 = \dfrac{2,42,000}{2,64,000} \times 100 = 91.67\%$

(v) **Return on Total Resources Ratio** $= \dfrac{\text{Net Profit before Tax and Interest}}{\text{Total Assets}} \times 100$

For 'X' Ltd. $= \dfrac{28,600 + 1,760}{2,46,400} \times 100 = \dfrac{30,360}{2,46,400} \times 100 = 12.32\%$

For 'Y' Ltd. $= \dfrac{22,000 + 1,760}{2,00,200} \times 100 = \dfrac{23,760}{2,00,200} \times 100 = 11.87\%$

(vi) **Return on Prop. Equity Ratio** $= \dfrac{\text{Net Profit after Tax} - \text{Pref. Share Dividend}}{\text{Equity Share Capital} + \text{Reserves and Surplus}} \times 100$

For 'X' Ltd. $= \dfrac{16,500 - \text{Nil}}{1,23,200} \times 100 = 12.61\%$

For 'Y' Ltd. $= \dfrac{12,760 - \text{Nil}}{1,23,200} \times 100 = 10.36\%$

(vii) **Expenses Ratio** $= \dfrac{\text{Operating Expenses}}{\text{Sales}} \times 100$

For 'X' Ltd. $= \dfrac{63,800}{3,30,000} \times 100 = 19.33\%$

For 'Y' Ltd. $= \dfrac{44,000}{2,64,000} \times 100 = 16.67\%$

(viii) **(a)** **Net Profit Ratio** $= \dfrac{\text{Net Profit before Tax}}{\text{Sales}} \times 100$

For 'X' Ltd. $= \dfrac{28,600}{3,30,000} \times 100 = 8.67\%$

For 'Y' Ltd. $= \dfrac{22,000}{2,64,000} \times 100 = 8.33\%$

(b) $\dfrac{\text{Net Profit after Tax}}{\text{Sales}} \times 100$

For 'X' Ltd. $= \dfrac{16,500}{3,30,000} \times 100 = 5\%$

For 'Y' Ltd. $= \dfrac{13,760}{2,64,000} \times 100 = 4.83\%$

Illustration 35: Current Liabilities and Current Assets of D.K. Ltd. were as under:

Current Liabilities	₹	Current Assets	₹
Creditors	1,00,000	Stock (at Cost)	75,000
Bank Overdraft	25,000	Debtors	1,25,000
Total Current Liabilities	1,25,000	Total Current Assets	2,00,000

Notes:

The company can avail the overdraft facility upto ₹ 75,000.

Explain in detail the effects of the following transactions on Current Ratio and Working Capital of the company.

Consider each transaction separately. (Do not give cumulative effects of the transactions).

1. Purchased Goods worth ₹ 25,000 and issued a cheque of ₹ 25,000 against the said purchases.
2. Received a cheque of ₹ 30,000 from one of the customers and deposited the same into bank in overdraft A/c.
3. Sold Goods costing ₹ 25,000 for ₹ 35,000 on credit.
4. Bills Receivable of ₹ 15,000 which was discounted in the Bank is now dishonoured.

Solution:

$$\text{A. Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{2,00,000}{1,25,000} = 1.6 : 1$$

Working Capital = Current Assets – Current Liabilities

= 2,00,000 – 1,25,000 = ₹ 75,000

1. Purchase of goods of ₹ 25,000

(a) Effect on Current Ratio

Purchase of goods increases Stock by ₹ 25,000

Current Assets = 2,00,000 + 25,000 = ₹ 25,000

Issue of cheque increases the Bank Overdraft by ₹ 25,000

Current Liabilities = 1,25,000 + 25,000 = ₹ 1,50,000

$$\text{Revised Current Ratio} = \frac{2,25,000}{1,50,000} = 1.5 : 1$$

Thus, the transaction will decrease the Current Ratio.

(b) Effect on Working Capital

This transaction will increase the Current Assets and Current Liabilities by the same amount of ₹ 25,000. Hence, Working Capital will not change.

2. Receipt of ₹ 25,000 from the customer and deposited in the bank.

(a) Effect on Current Ratio

Receipt of ₹ 25,000 reduces Debtors by ₹ 25,000

Current Assets = 2,00,000 – 25,000 = ₹ 1,75,000

Depositing the cheque in the Bank reduces the Bank Overdraft by ₹ 25,000

Current Liabilities = 1,25,000 – 25,000 = ₹ 1,00,000

$$\text{Revised Current Ratio} = \frac{1,75,000}{1,00,000} = 1.75 : 1$$

Thus, the transaction will increase the Current Ratio.

(b) Effect on Working Capital

This transaction will decrease the Current Assets and Current Liabilities by the same amount of ₹ 25,000. So, Working Capital will not change.

3. Sale of goods costing ₹ 25,000 for ₹ 35,000 on credit.

(a) Effect on Current Ratio

Sale of goods costing ₹ 25,000 reduces Stock by ₹ 25,000
Stock = 75,000 – 25,000 = ₹ 50,000
It increase the debtors by ₹ 35,000 as Sale is for ₹ 35,000
Debtors = 1,25,000 + 35,000 = ₹ 1,60,000
Revised Current Assets = 50,000 + 1,60,000 = ₹ 2,10,000
(Increase in Current Assets of ₹ 10,000)
Current Liabilities remain same at ₹ 1,25,000

$$\text{Revised Current Ratio} = \frac{2,10,000}{1,25,000} = 1.88 : 1$$

Thus, the transaction will increase the Current Ratio.

(b) Effect on Working Capital

This transaction will increase the Current Assets only by ₹ 10,000. So, Working Capital will increase from ₹ 75,000 to ₹ 85,000.

4. Discounted bills receivable of ₹ 15,000 dishonoured.

(a) Effect on Current Ratio

Dishonour of discounted bill receivable increases Debtors by ₹ 15,000.
Current Assets = 2,00,000 + 15,000 = ₹ 2,15,000
It also increases the Bank Overdraft by ₹ 15,000
Current Liabilities = 1,25,000 + 15,000 = ₹ 1,40,000

$$\text{Revised Current Ratio} = \frac{2,15,000}{1,40,000} = 1.54 : 1$$

Thus, the transaction will decrease the Current Ratio.

(b) Effect on Working Capital

This transaction will increase the Current Assets and Current Liabilities by the same amount of ₹ 15,000. So, Working Capital will remain unchanged.

Exercise

Answer in One Sentence

1. What is ratio?
2. What is the objective of ratio analysis?
3. what is a current ratio?
4. What is quick ratio?
5. What is proprietary ratio?
6. What is stock to working capital ratio?
7. What is capital gearing ?
8. What is debt-equity ratio?
9. What is a gross profit ratio?
10. What is operating ratio?
11. What is net profit ratio?
12. What is stock turnover ratio?
13. What is return on capital?
14. What is a earning per share?
15. What is a price earning ratio?
16. What is debt service ratio?
17. What is collection period?
18. What is a creditors turnover?
19. What is the purpose of quick ratio?
20. What is the purpose of current ratio?
21. What is the purpose of gross profit?
22. What is the importance of stock turnover ratio?
23. What is the purpose of stock to working capital ratio?
24. Debtors Turnover Ratio
25. Creditors Turnover Ratio
26. Limitations of Ratio Analysis

Fill in the Blanks

1. _____ is a proportion between two figures.
2. One figure is divided by another figure to get _____ ratio.
3. Turnover ratios are expressed in _____.
4. Balance sheet ratio is a ratio between two figures from _____.
5. Combined ratio is a ratio between one figure from _____ and another figure from _____.
6. Current Ratio = _____.
7. Current Ratio shows _____ financial position.
8. Liquid ratio is a relationship between Liquid assets and _____.
9. _____ are near cash assets.
10. Working capital is an excess of current assets over _____.
11. Debt-equity ratio shows proportion between _____ and _____.
12. Proprietary Ratio = _____.
13. Cost of goods sold is divided by average stock to get _____.
14. _____ shows trading efficiency.
15. _____ shows operating efficiency.
16. _____ capital employed shows overall profitability of the organisation.
17. Dividend payment is calculated by dividing dividend of share by _____.
18. Stock _____ shows the speed of movement of stock.
19. _____ ratio shows ability of a firm to service.
20. _____ shows the period for which amount of sales remains invested in debtors.
21. NP ratio is a relationship between NP and _____.
22. Standard Current Ratio is _____.
23. Standard Liquid Ratio is _____.
24. Capital Gearing Ratio is also called as _____.
25. Operating Cost = _____ .
26. Operating ratio is a relationship between operating profit and _____.
27. Quick ratio is also known as _____ ratio.
28. Net Profit Ratio is an indicator of _____.
29. Quick Ratio indicates _____.
30. Current Ratio indicates _____.
31. Standard stock turnover rate is _____ times.
32. Stock turnover indicates _____.
33. Proprietary Ratio indicates _____.
34. _____ Period indicates time taken to collect dues from customers.
35. Marketable securities is _____ Assets.
36. Return on capital employed = _____ × 16.
37. Stock to working capital ratio indicates relationship between stock and _____ capital.
38. Standard debt-equity ratio is _____.
39. Average stock = _____.
40. Prepaid expenses are not _____ assets.

Ans.: 1. Ratio; 2. Pure; 3. No. of times; 4. Balance Sheet; 5. Balance Sheet, Profit and Loss A/c; 6. Current Assets; 7. Short-term; 8. Current Liabilities; 9. Liquid Assets; 10. Current Liabilities; 11. Long-

term debt-equity; 12. Proprietors' Fund; 13. Stock Turnover; 14. Gross Profit; 15. Operating Ratio; 16. EPS; 17. Turnover; 18. Turnover; 19. Debt Service; 20. Collection Period; 21. Net Sales; 22. 1 : 1; 23. 1 : 1; 24. Capital Structure Ratio; 25. Cost of Goods Sold + Operating Expenses; 26. Sales; 27. Liquid; 28. Profitability; 29. Liquidity; 30. Short-term solvency; 31. 6; 32. Stock Velocity; 33. Financial Stability; 34. Collection; 35. Liquid; 36. NPBIT; 37. Working; 38. 2 : 1; 39. closing stock; 40. Liquid.

State Whether the Following Statements are True or False

1. Current ratio and acid test ratio are the same.
2. Acid test ratio test the acid.
3. Short-term solvency ratio measures the ability of the firm to pay current liabilities.
4. Equity fund includes debentures.
5. In general, low turnover ratio is desirable.
6. It is conceptually correct to decide stock turnover ratio by dividing cost of goods sold by average stock.
7. Excess of sales over cost of goods sold is gross profit.
8. Proprietary ratio examines short-term solvency position.
9. Capital gearing ratio shows the speed of capital.
10. Debt-equity is a proportion between short-term debt and equity.
11. Operating ratio must be higher for measurement of profitability.
12. Net profit ratio is a measure of profitability.
13. Capital employed is equal to fixed assets.
14. Preference share capital is a loan capital.
15. Dividend payout ratio shows dividend paying ability of the firm.
16. Debt service ratio shows the servicing of debt.
17. Debt collection period sows the period taken by debtors to pay.
18. Stock to working capital ratio is a relationship between stock and working capital.
19. Activity of the management is judged by debtors turnover ratio.
20. Expense ratio is a relationship between expenses and sales.
21. Higher GP ratio shows higher trading efficiency of an organisation.
22. Liquid ratio indicates liquidity position.
23. Public Deposit is unsecured loans.
24. Interest coverage ratio indicates firm's ability to meet interest.
25. Debt collection period indicates time taken by debtors to settle the account.
26. Net worth means capital employed.
27. All current liabilities are quick liabilities.
28. Stock is a liquid asset.
29. Prepaid expenses are included in liquid assets.
30. Contingent liabilities appear in the Balance Sheet.
31. Overvaluation of closing stock increases gross profit.
32. Overvaluation of opening stock increases gross profit.
33. Undervaluation of closing stock increases gross profit.
34. Current ratio is also known as working capital ratio.
35. Stock turnover ratio indicates the speed of collection of debt.
36. Bank overdraft is a liquid liability.
37. Net Assets means working capital.

38. Preference share capital is a part of own fund.
39. Working capital is lifeblood of an organisation,
40. Return on Investment shows overall profitability of the organisation.
41. EPS shows managerial efficiency in use of resource.
42. Proprietary ratio indicates short-term financial position.
43. Higher capital gearing shows lower commitment on account of interest.
44. Higher stock turnover means higher cost of goods sold.
45. Higher stock to working capital ratio indicates higher incidence of inventory in working capital.

Ans.: True: 3, 6, 7, 12, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 31, 34, 38, 39, 40, 41, 45
False: 1, 2, 4, 5, 8, 9, 10, 11, 13, 14, 26, 27, 28, 29, 30, 32, 33, 35, 36, 37, 42, 43, 44

Match the Columns

(A)

Group A	Group B
1. Ratio	(a) Short-term position
2. Current ratio	(b) Liquidity position
3. Liquid ratio	(c) Investment of stock in working capital
4. Stock to working capital ratio	(d) Long-term financial position
5. Proprietary ratio	(e) Dependence on debt and equity
6. Debt-equity ratio	(f) Gearing of capital structure
7. Capital gearing ratio	(g) Trading efficiency
8. Gross profit ratio	(h) % of expenses to sales
9. Expenses ratio	(i) Operating efficiency
10. Operating ratio	(j) Profitability position
11. Net profit ratio	(k) Operating profitability
12. Net operating profit ratio	(l) Financial stability
	(m) Proportion between two figures
	(n) Overall profitability

Ans.: 1. (m), 2. (a), 3. (b), 4. (c), 5. (d), 6. (e), 7. (f), 8. (g), 9. (h), 10. (i), 11. (j), 12. (k)

(B)

Group A	Group B
1. Return on capital employed	(a) Utilisation of proprietors' fund
2. Return on proprietor's fund	(b) Utilisation of equity capital
3. Return on equity capital	(c) Dividend paying ability
4. Dividend payout	(d) Overall profitability
5. Debt service ratio	(e) Debt service ability
6. Debtors turnover	(f) Efficiency in collection from debtors
	(g) Promptness in payment

Ans.: 1. (d), 2. (a), 3. (b), 4. (c), 5. (e), 6. (f).

(C)

Group A	Group B
1. Liquid ratio	(a) Liquid assets ÷ Current liabilities
2. Debt equity ratio	(b) Operating cost ÷ Sales
3. Operating ratio	(c) Stock ÷ Working capital
4. Stock to working capital ratio	(d) Long-term Debt ÷ Equity
5. Net profit ratio	(e) Dividend per share ÷ EPS
6. Dividend payout	(f) NP ÷ Capital employed
7. Return on equity capital	(g) NP ÷ Proprietors' fund
8. Return on capital employed	(h) NP ÷ Equity capital
9. Return on proprietor's fund	(i) NP ÷ Sales

Ans.: 1. (a), 2. (d), 3. (b), 4. (c), 5. (i), 6. (e), 7. (h), 8. (f), 9. (g)

Multiple Choice Questions

1. A very high current ratio will
   (a) Increase profitability (b) Decrease profitability
   (c) Not affect profitability (d) None of the above
2. A very high current ratio may be due to
   (a) Overvaluation of inventory (b) Inefficiency in collection of debt
   (c) Cash and bank balance without (d) All the above investment
3. Current ratio shows
   (a) Short-term financial position (b) Inefficiency in collection of debt
   (c) Collection efficiency (d) Higher profitability
4. One of the following is not an absolute liquid asset.
   (a) Cash balance (b) Bank balance
   (c) Bills receivable (d) Marketable securities
5. Liquid ratio which is equal to the following is favourable.
   (a) 2 : 1 (b) 1 : 1
   (c) 1 : 3 (d) 2 : 5
6. Proprietary ratio shows
   (a) Long-term financial position (b) Short-term financial position
   (c) Liquidity position (d) All of the above
7. Higher proprietary ratio shows that
   (a) Small portion of assets is financed by the proprietors
   (b) Larger portion of assets is financed by the proprietors
   (c) Longer portion of assets is finance by loans
   (d) None of the above
8. Higher gearing means
   (a) Capital structure is high geared (b) Capital structure is low geared
   (c) Capital structure is optimum (d) None of the above
9. High geared company exposes to
   (a) Business risk (b) Financial risk
   (c) Inflation risk (d) Interest risk
10. Shareholders' equity includes
    (a) Equity share capital (b) Preference share capital
    (c) Reserves and surplus (d) All of the above
11. Fixed interest bearing funds do not include one of the following.
    (a) Debenture (b) Long-term investment
    (c) Preference capital (d) Public deposit
12. Loan fund does not include one of the following.
    (a) Debentures (b) Loans
    (c) Provision for taxation (d) Public deposits
13. The ratio that indicates ability of the company to pay urgent obligations immediately is
    (a) Current ratio (b) Debt-equity ratio
    (c) Liquidity ratio (d) Proprietary ratio

14. A low inventory turnover ratio indicates
    (a) Investment tied up in stock (b) Absolute goods on hand
    (c) Adverse liquidity (d) All of the above
15. Higher turnover ratio as compared to indicates that
    (a) The stock is moving fast in the market (b) Buying and selling policies are effective
    (c) Inventory management is efficient (d) All of the above
16. A longer payment period indicates that
    (a) Suppliers are prepared to allow longer period of credit
    (b) Operations are being financed by suppliers
    (c) Damages credit standing of the company
    (d) Spoils relationship with suppliers
17. Longer collection period indicates that
    (a) Debtors are not prompt in payment
    (b) Creditors are allowing longer period of credit
    (c) Short-term financial position is good
    (d) Long-term position is good
18. Higher GP Ratio may be due to
    (a) Higher rate of profitability (b) Strict control over cost of goods sold
    (c) Sales and working capital (d) All of the above
19. Stock to working capital ratio is a proportion between
    (a) Closing stock and working capital (b) Opening stock and wrong capital
    (c) Sales and working capital (d) Sales and current assets
20. One of the reasons responsible for decrease in gross profit ratio is
    (a) Undervaluation of closing inventory (b) Overvaluation of closing inventory
    (c) Excess depreciation on fixed assets (d) Additional interest on loan
21. Return on capital employed is a relationship between
    (a) Net operating profit and loan (b) Net operating profit and capital employed
    (c) Gross profit and sales (d) Gross profit and total assets
22. Return on capital employed is also known as
    (a) Return on total assets (b) Return on fixed assets
    (c) Return on investment (d) Return on shareholders' fund
23. Debt-equity ratio is a relationship between
    (a) Short-term debt and equity (b) Long-term debt and equity
    (c) Current liabilities and share capital (d) Preference capital and equity capital
24. Debt service ratio shows
    (a) Short-term financial position of the company
    (b) Financial stability
    (c) Debt servicing ability
    (d) Liquidity position
25. Dividend payout ratio is a proportion between
    (a) Dividend per share and earning per share (b) Preference dividend and equity capital
    (c) Equity dividend and equity capital (d) Total dividend and capital employed

26. Operating ratio is a proportion between
    (a) Operating cost and purchases (b) Operating cost and sales
    (c) Total cost and sales (d) Net profit and sales
27. Shareholders' equity does not include
    (a) Equity capital (b) Reserves and surplus
    (c) Debentures (d) Preliminary expenses
28. Net profit ratio indicates
    (a) Overall profitability (b) Profitability
    (c) Trading efficiency (d) Liquidity
29. Proprietary ratio is a proportion between
    (a) Proprietary and equity capital (b) Proprietary fund and sales
    (c) Proprietors' fund and total assets (d) Proprietors' fund and sales
30. Return on proprietors' fund indicates
    (a) Utilisation of capital employed (b) Utilisation of assets
    (c) Utilisation of proprietors fund (d) Utilisation of total resources
31. Operating performance is best measured by
    (a) Operating profit ratio (b) Return on capital
    (c) Return on fixed assets (d) Return on equity
32. Current ratio is 2.5 working capital is ₹ 60,000. Current assets will be.
    (a) ₹ 1,00,000 (b) ₹ 1,40,000
    (c) ₹ 50,000 (d) ₹ 1,25,000
33. Refer to Q. No. 32 current liabilities will be
    (a) ₹ 60,000 (b) ₹ 40,000
    (c) ₹ 75,000 (d) ₹ 40,000
34. G.P. ₹ 1,00,000, Total sales ₹ 5,25,000 sales return ₹ 25,000. GP ratio will be
    (a) 25% (b) 21%
    (c) 20% (d) 28%
35. Proprietary ratio is a
    (a) Balance sheet ratio (b) Revenue statement ratio
    (c) Combined ratio (d) None of the above
36. Debt-equity ratio is a
    (a) Revenue statement Ratio (b) Balance sheet ratio
    (c) Combined ratio (d) None of the above
37. Stock to working capital ratio is a
    (a) Revenue statement ratio (b) Balance sheet ratio
    (c) Combined ratio (d) None of the above
38. Administrative expense ratio is a
    (a) Revenue statement ratio (b) Balance sheet ratio
    (c) Combined ratio (d) None of the above
39. Net operating profit ratio is a
    (a) Balance sheet ratio (b) Revenue statement ratio
    (c) Combined ratio (d) None of the above

40. Operating ratio is a
    (a) Balance sheet ratio (b) Revenue statement ratio
    (c) Combined ratio (d) None of the above
41. ROI is a
    (a) Balance sheet ratio (b) Revenue statement ratio
    (c) Combined ratio (d) None of the above
42. Creditors turnover ratio is a
    (a) Balance sheet ratio (b) Revenue statement ratio
    (c) Combined ratio (d) None of the above
43. Debtors turnover ratio is a
    (a) Balance sheet ratio (b) Revenue statement ratio
    (c) Combined ratio (d) None of the above
44. Liquidity ratios include
    (a) Current ratio and Liquidity ratio (b) P/E, EPS, Dividend payout ratio
    (c) ROI, Net profit ratio, Operating ratio (d) None of the above
45. Profitability ratios include
    (a) Debt-equity ratio (b) Current ratio
    (c) Liquid ratio (d) None of the above
46. 2 : 1 is a standard
    (a) Debt-equity ratio (b) Current ratio
    (c) Liquid ratio (d) None of the above
47. 1 : 1 is a standard
    (a) Debt-equity ratio (b) Current ratio
    (c) Liquid ratio (d) None of the above

Ans.: 1. (b), 2. (d), 3. (a), 4. (c), 5. (b), 6. (a), 7. (b), 8. (a), 9. (b), 10. (d), 11. (b), 12. (c), 13. (c), 14. (d), 15. (d), 16. (a), 17. (a), 18. (d), 19. (a), 20. (a), 21. (b), 22. (c), 23. (b), 24. (c), 25. (a), 26. (b), 27. (c), 28. (b), 29. (c), 30. (c), 31. (a), 32. (a), 33. (b), 34. (c), 35. (a), 36. (b), 37. (b), 38. (a), 39. (b), 40. (b), 41. (c), 42. (c), 43. (c), 44. (a), 45. (b), 46. (b), 47. (c).

PRACTICAL QUESTIONS

1. Calculate from the following details furnished by Swaraj Ltd.: (a) Current Ratio, (b) Liquid Ratio, (c) Creditors Turnover Ratio and Average Credit Period, (d) Debtors Turnover Ratio and Average Credit Period and (e) Stock Turnover Ratio.

Particulars	₹
Stock	8,00,000
Debtors	1,70,000
Cash	30,000
Creditors	3,00,000
Bank Overdraft	40,000
Outstanding Expenses	60,000
Total Purchases	9,30,000
Cash Purchases	30,000
Gross Profit Rates	25%

Offer your comments on short-term credit position of the company. Comments on individual ratio are not desirable. **(T.Y. B.Com., Modified)**

2. Calculate from the following details furnished by Pardeshi Ltd.: (a) Current Ratio, (b) Liquid Ratio, (c) Credit Turnover Ratio and Average Credit Period, (d) Debtors Turnover Ratio and Average Credit Period and (e) Turnover Ratio.

Particulars	₹
Stock	1,00,000
Debtors	1,40,000
Cash	60,000
Creditors	1,60.000
Bank Overdraft	30,000
Outstanding Expenses	10.000
Total Purchases	6.60,000
Cash Purchases	20,000
Gross Profit Ratio	33 1/3%

Offer your comments on short-term credit position of the company. Comment on individual ratio is not desirable. **(T.Y. B.Com., Modified)**

3. Following financial statements of 'JAY Ltd.' are given to you. Rearrange them into vertical form and compute following ratios: (a) Operating ratio, (b) Net profit ratio, (c) Liquid ratio, (d) Proprietory ratio and (e) Capital gearing ratio.

Trading and Profit and Loss A/c for the year ended 31.3.2014

Particulars	Amt. ₹	Particulars	Amt. ₹
To Opening Stock	45,000	By Sales	4,00,000
To Purchases less Returns	2,20,000	By Closing Stock	95,000
To Wages	1,00,000	By Non-operating income	12,000
To Salaries	40,000		
To Office Rent	17,000		
To Interest	3,000		
To Non-operating Expenses	2,000		
To Advertisement	6,000		
To Transport on Sales	4,000		
To Net Profit	70,000		
₹	**5,07,000**	₹	**5,07,000**

Balance Sheet as on 31.3.2014

Liabilities	Amt. ₹	Assets		Amt. ₹
12% Preference Share Capital	40,000	Fixed Assets:		
Equity Share Capital	1,90,000	Original Cost	2,30,000	
Capital Reserve	15,000	(–) Depreciation	40,000	1,90,000
General Reserve	45,000	Investments (Short-term)		50,000
Profit and Loss A/c	10,000	Stock		95,000
15% Debentures	30,000	Debtors		85,000
Bank Loan	15,000	Prepaid Expenses		20,000
Creditors	70,000			
Bills Payables	5,000			
Bank Overdraft	20,000			
₹	**4,40,000**		₹	**4,40,000**

4. Following is the Balance Sheet of 'EVER GROWTH LTD.' as on 31.3.2014:

Liabilities	Amt. ₹	Assets	Amt. ₹
Equity Share Capital	4,50,000	Goodwill	35,000
Share Premium	45,000	Land and Buildings	2,75,000
General Reserve	1,60,500	Plant and Machinery	3,60,800

Profit and Loss A/c	1,28,500	Furniture and Fixtures	1,28,200
12% Debentures	2,60,000	Long-term investments	1,75,000
M.S.F.C. Loan	1,50,000	Short-term investments	48,500
Bank Overdraft	49,800	Sundry Debtors	1,69,700
Creditors	68,000	Bills Receivable	12,500
Bills Payable	5,400	Closing Stock	98,000
Provisions for Tax	35,800	Prepaid Expenses	27,500
Outstanding Expenses	17,000	Cash Balance	29,300
		Preliminary Expenses	10,500
₹	**13,70,000**	₹	**13,70,000**

You are required to:

(a) Rearrange the above Balance Sheet in vertical form to show following: (i) Proprietors' funds, (ii) Borrowed funds, (iii) Fictitious assets, (iv) Intangible assets, (v) Quick liabilities and (vi) Working capital.

(b) Comment on long-term stability of the company by calculating two relevant ratios.

5. Given below are extracts of Financial Statements of M/s Kiran Ltd.

Particulars	**31-3-2014** ₹
Stock	2,60,000
Debtors	1,00,000
Cash	1,40,000
Bills Receivable	1,00,000
Creditors	1,00,000
Bank Balance (Cr.)	30,000
Outstanding Expenses	10,000
Bills Payable	50,000
Total Purchases	8,00,000
Cash Purchases	2,00,000
Cash Sales	3,00,000
Credit Sales	12,00,000
Credit Allowed to Customers	11/2 months
Credit Allowed by Suppliers	3 months

From the above find out the following ratios and give your comment for the year ended 31.3-2014: (a) Current Ratio, (b) Liquid Ratio, (c) Debtors Turnover Ratios and Age of Debtors and (d) Creditors Turnover Ratios and Age of Creditors. **(T.Y. B.Com., Modified)**

6. Following Balance Sheet of Roland Ltd.

Liabilities	**Amt. ₹**	**Assets**	**Amt. ₹**
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 Deposits	20,000	Debtors	70,000
Bank Overdraft	40,000	Stock	40,000
Creditors	60,000	Loose Tools	20,000
Proposed Dividend	10,000	Furniture	30,000
Proposed Expense	7,000	Machinery	1,00,000
Reserves	1,50,000	Land and Building	2,20,000
Provision for Tax	20,000	Goodwill	30,000
Profit and Loss Account	20,000	Preliminary Expenses	10,000
		Cash in Arrears in Equity Shares	5,000
₹	**5,67,000**	₹	**5,67,000**

Convert the above Balance Sheet in vertical form and calculate: (i) Current Ratio, (ii) Quick Ratio, (iii) Proprietary Ratio, (iv) Capital Gearing Ratio and (v) Stock to Working Capital Ratio. Given your comments.

7. The following is the Trading and Profit and Loss A/c and Balance Sheet of Sunder Mumbai Ltd.

Trading and Profit and Loss Account as on 31st March, 2014

Liabilities	Amount	Assets	Amount
To Opening Stock	10,000	By Sales	1,50,000
To Purchases	55,000	By Closing Stock	15,000
To Wages	20,000		
To Power and Fuel	10,000		
To Gross Profit c/d	70,000		
	1,65,000		1,65,000
To Administration Expenses	15,000	By Gross Profit b/d	70,000
To Interest	3,000	By Rent Received	1,500
To Depreciation on Machinery	5,000		
To Selling Expenses	12,000		
To Loss by Fire	2,000		
To Provision for Tax	14,500		
To Net Profit	20,000		
	71,500		71,500
To Interim Dividend	10,000	By Opening Balance	15,000
To Closing Balance	25,000	By Net Profit	20,000
₹	**35,000**	₹	**35,000**

Balance Sheet as on 31st March, 2014

Liabilities	₹	Assets	₹
Equity Share Capital	1,00,000	Land and Buildings	50,000
Profit and Loss A/c	25,000	Plant and Machinery	30,000
Creditors	15,000	Furniture	20,000
Secured Loans	10,000	Stock	15,000
Bank Overdraft	25,000	Debtors	15,000
Provision for Tax	5,000	Investments	12,500
Outstanding Expenses	5,000	Cash	17,500
		Goodwill	20,000
		Miscellaneous Expenditure	5,000
₹	**1 ,85,000**	₹	**1,85,000**

Calculate the following ratios after converting above financial statements in vertical form: (a) Inventory Turnover Ratio, (b) Current Ratio, (c) Gross Profit Ratio, (d) Proprietary Ratio, (e) Operating Ratio and (f) Liquid Ratio. **(T.Y. B.Com., Modified)**

8. The following are balance sheets as on 31st March, 2014 of two different companies.

Liabilities	Tiny ₹	Giant ₹	Assets	Tiny ₹	Giant ₹
Equity Share Capital	1,000	2,000	Trade Marks and Copyright	200	500
General Reserve	200	500	Building	500	1,000
Profit and Loss A/c	300	600	Machinery	400	900
Preference Share Capital	400	800	Furniture	10	50
Secured Loan	250	600	Stock	700	1,500
Provision for Income Tax	100	200	Trade Investment	100	150
Bank Overdraft	50	100	Debtors	600	1,400
Creditors	400	1,000	Bills Receivable	100	200
Provision for Doubtful Debts	10	20	Goods with Consignee	10	20
			Share Issue Expenses	90	100
₹	**2,710**	**5,820**	₹	**2,710**	**5,820**

Investment depreciated by 10% which effect is required to be given. Prepare Common Size Balance Sheet in vertical form. Also compute following ratios and give your comments: (a) Debt-equity Ratio and (b) Stock to Working Capital Ratio.

9. The following is the Balance Sheet of Arjun Ltd. as on 31st March 2014.

Liabilities	Amount	Assets	Amount
Equity Share Capital	2,00,000	Building	2,00,000
Preference Share Capital	1,00,000	Machinery	1,00,000
10% Debentures	2,00,000	Intangible Assets	1,00,000
General Reserves	1,50,000	Marketable Investment	50,000
Profit and Loss A/c	1,00,000	Debtors	1,50,000
Bank Overdraft	60,000	Stock	1,10,000
Provision for Tax	80,000	Bank Balance	1,50,000
Creditors	1,20,000	Advance for Goods	1,00,000
		Preliminary Expenses	50,000
₹	**10,10,000**	₹	**10,10,000**

Other information for the year ended 31st March, 2014:

(a) Sales ₹ 40,00,000 cost of goods sold was 92.5% of sales.
(b) Total operating expenses were ₹ 1,50,000 out of which finance expenses were ₹ 30,000 and balance office expenses and selling expenses were in the ratio of 2 : 3.
(c) Non-operating income was 2.5 times the amount of non-operating expenses, total non-operating expenses were ₹ 20,000 incurred during the year.
(d) Income tax provision ₹ 40,000 transferred to general reserve ₹ 40,000.
(e) Contingent liabilities on 31st March, 2001 was ₹ 1,50,000 not provided for.
(f) Closing Stock on 31st March, 2001 was more than opening stock by ₹ 10,000.
(g) Debtors on 1st April, 2000 were ₹ 2,50,000. Assume 360 days in a year.

Arrange the Balance Sheets and Profit and Loss A/c in a vertical form and calculate the following ratios: (a) Current ratio, (b) Liquid ratio, (c) Stock turnover ratio, (d) Debtors turnover ratio and Collection period, (e) Capital gearing ratio and (f) Proprietary ratio. **(T.Y. B.Com., Modified)**

10. Following is the Balance Sheets of Bharat Ltd. for the year ended 31st December, 2013 and 2014.

Liabilities	2013 ₹	2014 ₹	Assets	2013 ₹	2014 ₹
Equity Capital	1,00,000	1,00,000	Fixed Assets (Cost)	1,60,000	2,30,000
8% Preference Share Capital	–	65,000	Stock	20,000	25,000
Reserves	10,000	15,000	Debtors	50,000	62,500
Profit and Loss A/c	7,500	10,000	Bills Receivable	–	30,000
10% Debentures	50,000	75,000	Prepaid Expenses	5,000	6,000
Bank Overdraft	25,000	25,000	Cash at Bank	21,000	13,000
Creditors	20,000	25,000	Cash in Hand	5,000	15,000
Provision for Taxation	10,000	12,500	Calls in Arrears	4,000	3,000
Proposed Dividend	7,500	12,500	Share Issue Expenses	5,000	10,500
Depreciation Provision	40,000	55,000			
₹	**2,70,000**	**3,95,000**	₹	**2,70,000**	**3,95,000**

Prepare a Comparative Balance Sheet in vertical form and interpret the same after calculating following ratios: (i) Capital Gearing Ratio, (ii) Stock to Working Capital Ratio, (iii) Liquid Ratio and (iv) Debt-equity Ratio.

11. X Ltd and Y Ltd. are in the same line of business. Followings are their Balance Sheets as on 31st December, 2014:

Balance Sheet as on 31st December, 2014

Liabilities	X Ltd. ₹	Y Ltd. ₹	Assets	X Ltd. ₹	X Ltd. ₹
Equity Share Capital	7,00,000	2,00,000	Land	1,00,000	80,000
Reserve and Surplus	1,00,000	1,00,000	Building	2,50,000	2,00,000
12% Debentures	2,00,000	5,00,000	Plant and Machinery	5,00,000	3,00,000
Creditors	1,20,000	70,000	Debtors	2,10,000	1,10,000
Bills Payable	40,000	20,000	Stock	1,00,000	2,00,000
Proposed Dividend	20,000	20,000	Cash and Bank	55,000	40,000
Provision for Tax	35,000	20,000			
₹	**12,15,000**	**9,30,000**	₹	**12,15,000**	**9,30,000**

You are required to rearrange the Balance Sheets (in vertical form) and calculate the following ratios for both the companies and comment thereon (any three): (a) Proprietory ratio, (b) Capital-Gearing ratio, (e) Current ratio or (d) Stock to Working Capital ratio. **(T.Y. B.Com., Modified)**

12. The summarized Balance Sheet of Good Luck Ltd. as on 31st March, 2010 is as follows:

Liabilities	₹ in lakhs	Assets		₹ in lakhs
Equity Share Capital (₹ 100 each)	150	Fixed Assets (at cost)	420	
10% Preference Share Capital	80	*Less:* Depreciation	50	370
Reserve and Surplus	90	Stock		50
Profit and Loss A/c	40	Debtors		60
10% Debentures	50	Cash at Bank		30
Provision for Taxation	20			
Sundry Creditors	80			–
	510			510

The following particulars are also given for the year.

	in lakhs
Net Sales (Credit)	240
Profit before Interest and Tax	65
Net Profit after tax	40

Market Price per Equity Share is ₹ 150

Calculate the following ratios: (i) Acid Test Ratio, (ii) Debtors Turnover Ratio (360 days in a year), (iii) Capital Gearing Ratio, (iv) Debt Service Ratio and (v) Return on Proprietor's Fund.

Give your comments on Acid Test Ratio only.

Note: Preparing balance sheet in vertical form is not required.

13. "Cosmos India Ltd."

Balance Sheet as on 31st December, 2014

Liabilities	₹	Assets	₹
Capital Reserve	1,26,000	Copyright	1,00,000
General Reserve	1,20,000	Cash	21,000
Provision for Tax	50,000	Calls in Arrears	9,575
Commission received in Advance	10,875	Plant and Machinery	4,20,000
15% Debentures	1,60,000	Debtors	3,00,425
12% Bank Loan	40,000	Prepaid Insurance	15,375
6% Preference Share Capital	2,00,000	Land and Building	5,00,000
Equity Share Capital	10,00,000	Fixtures	25,000
Bills Payable	49,125	Furniture	75,000
Profit and Loss A/c	9,000	Preliminary Expenses	18,625
Bank Overdraft	10,740	Goodwill	1,00,000
Share Premium	15,000	Investments (Long-term)	1,75,000
Sundry Creditors	1,89,260	Stock	2,00,700
		Market Investments	19,300
	19,80,000		**19,80,000**

You are required to rearrange above Balance Sheet in vertical from and compute the following ratios: (a) Current Ratio, (b) Proprietory Ratio and (c) Capital Gearing Ratio. **(T.Y. B.Com., Modified)**

14. Following financial statements are of XYZ Ltd. for 2014:

Trading and Profit and Loss A/c for the year ended 31st March, 2014

Liabilities	₹	Assets	₹
To Opening Stock	70,000	By Sales	16,60,000
To Purchases	15,00,000	By Closing Stock	1,60,000
To Gross Profit	2,50,000		
	18,20,000		**18,20,000**
To Depreciation	36,000	By Gross Profit	2,50,000
To Other Expenses	74,000	By Commission	10,000
To Tax Provision	40,000		
To Proposed Dividend	16,000		
To Net Profit	94,000		
	2,60,000		**2,60,000**

Balance Sheet as at 31st March, 2014

Liabilities	₹	Assets	₹
Share Capital	3,00,000	Cash	48,000
Bank Overdraft	38,000	Stock	1,60,000
Creditors	34,000	Debtors	1,38,400
Provision for Depreciation	54,000	Land and Building	92,000
Provision for Tax	40,000	Machinery	1,28,600
Proposed Dividend	16,000	Goodwill	20,000
Profit and Loss A/c	1,80,000	Loan and Advance	60,000
		Preliminary Expenses	15,000
	6,62,000		**6,62,000**

Rearrange the above in a vertical from and also calculate: (a) Stock Turnover Ratio, (b) Debtors Turnover Ratio and (c) Creditors Turnover Ratio. **(T.Y. B.Com., Modified)**

15. Given below are some of the information of Parekar Ltd. as on 31st March, 2014:

	₹
Debtors	30,000
Outstanding Manufacturing Expenses	17,000
Cash Balance	23,000
Bills Payable and Creditors	38,000
Machinery (Imported)	30,000
Income Earned but not Received	6,000
Bank Overdraft	15,000
Bills Receivable	7,000
Prepaid Travelling Expenses	4,000

Using above data, calculate current ratio and liquid ratio and comment on it.

16. Calculate Return on Capital Employed and Return on Proprietors' Fund from following information:

	₹	
Equity Capital	3,00,000	
General Reserves	4,00,000	
Profit and Loss A/c	1,50,000	(Cr.)
Sundry Creditors	2,00,000	

Operating Profit	3,50,00	(before Interest and Tax)
Long-term Loan	3,50,000	(at 12% p.a. Interest)
Tax Rate is 30%		

17. The following items appear in the financial statements of M Ltd. as on 31st December, 2014.

Particulars	₹	Particulars	₹
Cash	45,000	Land and Buildings	8,00,000
Bills Receivable	60,000	Stock	2,75,000
Creditors	4,00,000	Prepaid Expenses	60,000
General Reserve	1,00,000	Debtors	5,00,000
Plant and Machinery	5,50,000	Debentures	3,00,000
Bank Overdraft	50,000	Equity Share Capital	10,00,000
Profit and Loss A/c (Credit)	2,25,000	Proposed Dividend	90,000
Long Term Investments	20,000	Advance Tax	1,00,000
Provision for Tax	2,00,000	Bills Payable	45,000
Preliminary Expenses not yet w/off	25,000	Unclaimed Dividend	25,000

You are required to arrange the above items in the form of vertical (columnar) Balance Sheet and determine: (a) Current Assets, (b) Fixed Assets, (c) Current Liabilities, (d) Proprietory Funds, (e) Quick Assets and (f) Quick Liabilities.

18. From the following data, prepare the Balance Sheet of ABC Co. Ltd. as at 31st March, 2009:

Current Ratio	1.75
Liquid Ratio (Current Assets less Stock to Current Liabilities Ratio)	1.25
Gross Profit Ratio	25%
Debt Collection Period	1.5 months
Sales for the Year	₹ 12,00,000
Stock Turnover Ratio (Based on Closing Stock)	9
Capital Gearing Ratio (Long-term Debt/Share Capital)	0.60
Fixed Assets to Net Worth	1.25
Cost of Sales to Fixed Assets	1.20
Reserves and Surplus to Share Capital	0.20

(Assume all sales are on credit, and the year is of 360 operating days)

19. Following are the Balance Sheet of X Ltd. and A Ltd. as on 31st March, 2014 together with supplementary information for the year ended on that date:

Balance Sheet as on 31st March, 2014

Liabilities	X Ltd. ₹	Y Ltd. ₹	Assets	X Ltd. ₹	X Ltd. ₹
Paid up Share Capital	2,00,000	3,50,000	Goodwill	30,000	50,000
Reserves	50,500	60,000	Building	1,20,000	2,40,000
Profit and Loss A/c	12,250	1,02,200	Plant and Machinery	29,000	42,000
Bank Overdraft	11,250	14,800	Stock	66,000	93,000
Sundry Creditors	36,000	58,000	Debtors	85,000	1,75,000
Provisions for Taxation	20,000	15,000			
	3,30,000	**6,00,000**		**3,30,000**	**6,00,000**

Additional Information:

	X Ltd.	**A Ltd.**
Sales for the year	8,40,000	10,50,000
Stock on 31st March, 2003	60,000	1,07,000
Gross Profit	2,10,000	2,50,000

You are required to compute the following ratios of both companies: (a) Current Ratio, (b) Liquid Ratio, (c) Proprietory Ratio, (d) Stock Turnover Ratio and (e) Debtors Turnover Ratio in number of times.

Also give your opinion on short-term and immediate financial solvency. All sales are on credit basis.

20. Classify the following accounts and state whether it is: (i) Current Assets, (ii) Fixed Assets, (iii) Current Liability, (iv) Long-term Liability, (v) Shareholders' Fund and (vi) None of these:

(a) Delivery truck
(b) Accounts payable
(c) Bills payable (90 days)
(d) Delivery expenses
(e) Equity capital
(f) Prepaid insurance
(g) Trade mark
(h) Short-term investment
(i) Income tax payable
(j) Debenture redeemable after seven years
(k) Tsunami relief fund deducted from employee' salary
(l) Depreciation

21. From the information given below, prepare Balance Sheet in a vertical form, suitable for analysis and calculate the following ratios: (a) Capital Gearing Ratio, (b) Proprietory Ratio, (c) Current Ratio, (d) Liquid Ratio and (e) Stock of Working Capital.

Liabilities	₹	Assets	₹
Cash at Bank	12,500	Land and Building	2,00,000
Expenses Paid in Advance	15,500	Stock	68,250
Creditors	1,01,500	Debtors	1,30,750
Bills Receivable	5,250	Plant and Machinery	1,36,000
12% Debentures	62,500	Loan from Director	1,00,000
Equity Share Capital	2,50,000	(Repayable after three years)	
Profit and Loss A/c	54,250		

22. Complete the following balance sheet from the information given below:

Liabilities	₹	Assets	₹
Equity Share Capital (₹ 10 each)	?	Fixed Assets	?
Reserve and Surplus	?	Current Assets:	
20% Debentures	5,00,000	Stock	?
Current Liabilities:		Debtors	?
Sundry Creditors	?	Bank/Cash Balance	?
Provision for Tax (Current Year)	?		–
	?		?

Following information is available:
(a) Gross profit ratio is 25% and G.P. is ₹ 12,00,000.
(b) Operating expenses (including debentures interest) ₹ 8,00,000.
(c) Rate of Income tax is 50%.
(d) Purchases and sales are on credit basis.
(e) Debtors turnover ratio (Sales/Debtors) = 12 times.
(f) Creditors turnover ratio (Cost of Sales/Creditors) = 12 times.
(g) Earning per share ₹ 20.
(h) Stock turnover ratio = 10 times.
(i) Debt-equity ratio 0.25 : 1.
(j) Current ratio 2 : 1.

23. Following is the Profit and Loss A/c and Balance Sheet of Adhiraj Ltd.:

Profit and Loss A/c for the year ended 31st December, 2014

Particulars	₹	Particulars	₹
To Opening Stock	20,000	By Sales	4,50,000
To Purchases	2,00,000	By Closing Stock	80,000
To Wages	50,000		
To Factory Expenses	70,000		
To Gross Profit c/d	1,90,000		
	5,30,000		5,30,000
To Administration Expenses	60,000	By Gross Profit b/d	1,90,000
To Selling Expenses	40,000	By Interest Received	5,000
To Interest on Loan	5,000		

To Debenture Interest	8,000		
To Net Profit	82,000		
	1,95,000		1,95,000
To Tax Provision	20,000	By Net Profit	82,000
To Proposed Dividend	20,000		
To Balance Profit	42,000		
	82,000		82,000

Balance Sheet as on 31st December, 2014

Liabilities	₹	Liabilities	₹
Equity Share Capital (₹ 10)	2,00,000	Land and Building	1,75,000
9% Preference Share Capital	1,50,000	Machinery	1,50,000
8% Debentures	1,00,000	Furniture	1,00,000
Reserve	50,000	Goodwill	50,000
Profit and Loss A/c	30,000	Patents	50,000
Short-term Loan (Repaid within one year)	1,00,000	Vehicles	1,40,000
Bank Overdraft	75,000	Investment	50,000
Sundry Creditors	1,40,000	Stock	80,000
Bills Payable	30,000	Debtors	90,000
Provision for Tax	20,000	Bills Receivable	30,000
Proposed Dividend	20,000		
	9,15,000		**9,15,000**

Market price of equity share is ₹ 7.

Calculate the following ratios:

(a) Acid Test Ratio
(b) Capital Gearing Ratio
(c) Stock Turnover Ratio
(d) Debtors Turnover Ratio
(e) Creditors Turnover Ratio
(f) Return on Capital Employed Ratio
(g) Stock to Working Capital Ratio
(h) Operating Ratio.

Note: Vertical final accounts need not be prepared.

24. Following are the financial statements of two similar companies:

Balance Sheet as at 31st December, 2014

Liabilities	X Ltd. ₹	Y Ltd. ₹	Assets	X Ltd. ₹	X Ltd. ₹
Share Capital			Land and Building	1,400	1,200
Equity Shares of ₹ 10 each	4,000	4,000	Plant	4,100	3,200
Revenue Reserve	1,950	1,000	Stock	2,850	2,100
8% Debentures	1,000	1,000	Debtors	2,600	1,900
Trade Creditors	2,800	1,400	Investment (Long-term)	–	300
Other Creditors	250	200	Bank	100	300
Provision for Tax	900	700	Deposits	150	100
Proposed Dividend	300	200			
	11,200	**9,100**		**11,200**	**9,100**

Income Statement for 2014

Particulars	X Ltd.	Y Ltd.	Particulars	X Ltd.	X Ltd.
Cost of Sales	10,800	9,000	Sales	15,000	12,000
Operating Expenses	2,900	2,000			
Taxation	550	410			
Net Profit after Tax	750	590			
	15,000	**12,000**		**15,000**	**12,000**

On the basis of above information, you are required to compute separately the following ratios: (a) Capital Gearing Ratio, (b) Current Ratio, (c) Debtors Turnover Ratio and (d) Return on Proprietory Fund.

Note: Vertical final accounts need not be prepared **(T.Y. B.Com., Modified)**

25. From the following information, calculate:

(a) Return on Capital Employed (b) Debtors Turnover Ratio (in times)

(c) Stock to Working Capital Ratio (d) Current Ratio

(e) Proprietory Ratio (on the basis of Total Fund)

Some of relevant balances as on 31st March, 2014 are given below:

Particulars	₹
Equity Share Capital (of ₹ 10each)	2,00,000
6% Preference Share Capital	1,00,000
8% Debentures	1,50,000
Debtors	18,000
Creditors	15,000
Cash in Hand	20,000
Bills Receivable	12,000
Bank Overdraft	8,000
Reserves and Surplus	43,000
Closing Stock	32,500
Provision for Taxation	35,000
Proposed Dividend	10,000

Other information for the year 2013-14:

Particulars	₹
Sales	10,00,000
Cost of Sales	7,50,000
Net Profit before Tax	1,00,000

26. Pawan Ltd. has the following Trading and Profit and Loss Account for the year ended 31st December, 2014 and Balance Sheet as at that date.

Trading and Profit and Loss Account for the year ended 31st December, 2014

Particulars	₹	₹	Particulars	₹	₹
To Opening Stock		3,50,000	By Sales		
To Purchases – Credit		16,50,000	Cash	6,00,000	
To Carriage – Inward		5,00,000	Credit	24,00,000	30,00,000
To Gross Profit c/d		8,00,000	By Closing Stock		3,00,000
Total		**33,00,000**	**Total**		**33,00,000**
To Administrative Expenses		1,92,000	By Gross Profit b/d		8,00,000
To Selling Expense		50,000	By Other Income		18,000
To Depreciation		1,00,000			
To Interest		94,000			
To Income Tax		1,30,000			
To Net Profit c/d		2,52,000			
Total		**8,18,000**	**Total**		**8,18,000**

Balance Sheet as on 31st December, 2014

Liabilities	₹	Assets	₹	₹
Equity Share Capital (₹ 10)	7,00,000	Plant and Machinery	20,00,000	
10% Preference Share Capital	4,00,000	*Less:* Depreciation	5,00,000	
Reserve and Surplus	4,00,000			15,00,000
Long-term Loan	1,00,000	Goodwill		2,80,000
Debentures	6,00,000	Stock		3,00,000
Creditors	1,20,000	Debtors		2,00,000
Bills Payable	40,000	Prepaid Expenses		50,000
Accrued Expenses	40,000	Marketable Securities		1,50,000
Provision for Tax	1,30,000	Cash		50,000
Total	**25,30,000**	**Total**		**25,30,000**

The market price of the share of the company on 31st December, 2014 was ₹ 9.25.

Particulars	₹	₹
Reserves at the beginning	2,93,000	
Net Profit during the year	2,52,000	5,45,000
Interim Dividend		1,45,000
Reserves at the close of the year		4,00,000

Calculate the following ratios: (a) Return on Proprietors' Fund, (b) Acid Test Ratio, (c) Inventory Net Current Asset Ratio, (d) Capital Gearing Ratio, (e) Debt Service Ratio, (f) Creditors Turnover Ratio, (g) Opening Ratio and (h) Stock Turnover Ratio.

Note: No need to convert the statements into vertical form. **(T.Y.B.Com., Modified)**

27. Following are the Balance Sheets of X Ltd. as on 31st March, 2014 and 31st March, 2015.

Liabilities	31-3-2014 ₹	31-3-2015 ₹
Share Capital	4,50,000	6,60,000
Retained Earnings	2,31,000	2,00,000
Provision for Income	84,000	–
Debentures	2,20,000	1,80,000
Accounts Payable	58,000	64,000
Other Current Liabilities	21,000	33,000
	10,64,000	**11,37,000**
Assets		
Building and Equipments	4,50,000	5,00,000
Land	80,000	80,000
Patents	55,000	65,000
Accounts Receivables	54,000	46,000
Inventories	3,00,000	3,12,000
Prepaid Expenses	6,000	4,000
Cash	1,19,000	1,30,000
	10,64,000	**11,37,000**

Calculate following ratios for two years and make comparison: (i) Debt-equity Ratio, (ii) Quick Ratio, (iii) Stock to Working Capital Ratio and (iv) Proprietary Ratio.

28. Following is the Balance Sheet of Star Products Ltd.

Liabilities	As on 31/03/2014 (₹)	Assets	As on 31/03/2014 (₹)
Equity Share Capital	5,00,000	Fixed Assets	13,00,000
General Reserve	3,00,000	Investments	4,00,000
Securities Premium	25,000	Stock	8,50,000
10% Debentures	7,50,000	Sundry Debtors	5,00,000
Profit and Loss A/c	7,40,000	Prepaid Expenses	40,000
Sundry Creditors	2,30,000	Advance Income Tax	78,000
Bank Overdraft	3,95,000	Cash and Bank Balances	62,000
Provision for Taxation	1,80,000	Share Issue Expenses	10,000
Proposed Equity Dividend	1,50,000	Preliminary Expenses	30,000
Total	**32,70,000**	**Total**	**32,70,000**

You are required to compute the following ratios and give your comments on each ratio with reference to standard ratio: (i) Current Ratio, (ii) Liquid Ratio, (iii) Proprietary Ratio and (iv) Stock to Working Capital Ratio.

Preparing Balance Sheet in vertical form is not required. **(T.Y. B.Com., Modified)**

29. Following is the Revenue statement of PRODENT LTD.:

Trading, Profit and Loss Account for the year ended 31st March, 2014

Particulars	₹	Particulars	₹
To Opening Stock	27,150	By Sales	2,55,000
To Purchases	1,63,575	By Closing Stock	42,000
To Carriage Inward	4,275	By Interest Received on Investment	2,700
To Office Expenses	45,000		
To Sales Expenses	13,500		
To Loss on Sale of Fixed Asses	1,200		
To Net Profit c/d	45,000		
Total	**2,99,700**	**Total**	**2,99,700**

Calculate the following ratios: (a) Gross Profit Ratio, (b) Operating Ratio, (c) Stock Turnover Ratio, (d) Office Expenses Ratio and (e) Net Profit before Tax Ratio.

Note: Vertical revenue statement need not be prepared. **(T.Y. B.Com., Modified)**

30. M/s. MILIND PRODUCT LTD. furnishes you their Profit and Loss Account for year ending 31st March, 2014 and Balance Sheet as on that date.

Dr. Profit and Loss Account Cr.

Particulars	₹	Particulars	₹
To Cost of Goods Sold	9,50,000	By Sales	16,00,000
To Opening Expenses	2,57,000		
To Interest	43,000		
To Provision for Taxation	1,75,000		
To Net Profit c/d	1,75,000		
	16,00,000		**16,00,000**
To Provision for dividend	70,000	By Balance b/f	50,000
To Balance c/f	1,55,000	By Net Profit b/d	1,75,000
Total	**2,25,000**	**Total**	**2,25,000**

Balance Sheet

Liabilities	₹	Assets	₹
Equity Share Capital (₹ 10 each)	2,50,000	Land and Building	5,00,000
10% Preference Share Capital (₹ 100 each)	2,00,000	Plant and Machinery	3,50,000
General Reserves	2,50,000	Cop Rights	1,00,000
Profit and Loss A/c	1,55,000	Furniture	2,00,000
Securities Premium	50,000	Stock	3,00,000
9% Debentures	2,00,000	Debtors	2,00,000
Public Deposits	2,50,000	Bills Receivables	1,00,000
Accounts Payable	2,50,000	Cash and Bank	50,000
Bank Overdraft	50,000	Advance Tax	1,00,000
Provision for Taxation	1,75,000		
Provision for Dividend	70,000		
Total	**19,00,000**	**Total**	**19,00,000**

Market price per Equity Share ₹ 25.

Closing Stock is ₹ 1,00,000 less than the opening stock.

Calculate following ratios:

(a) Opening Ratio (b) Stock Turnover Ratio

(c) Stock to Working Capital Ratio (d) Dividend Payment Ratio

(e) Return on Equity Share Capital.

Vertical statement of account not expected. **(T.Y. B.Com., Modified)**

31. Calculate Stock Turnover Ratio from the following:

Particulars	₹	Particulars	₹
To Opening Stock	1,75,000	By Sales	25,00,000
To Purchases	16,50,000	By Closing Stock	1,50,000
To Wages	3,00,000		
To Carriage Inward	25,000		
To Gross Profit	5,00,000		
	26,50,000		**26,50,000**

32. Following is the Balance Sheet of Bills and Happiness Ltd. as at 31st March, 2014.

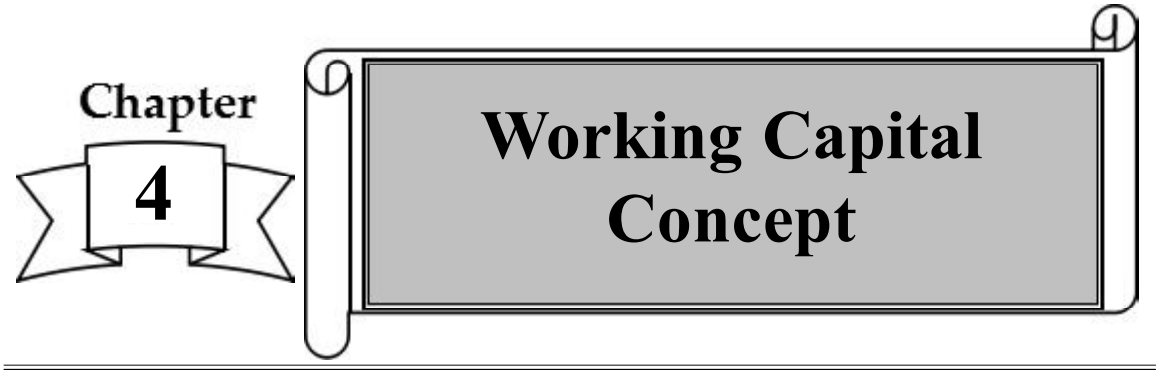
Liabilities	₹	Liabilities	₹
Equity Share Capital	1,00,000	Machinery	2,96,000
General Reserve	70,000	Investment	1,12,000
10% Preference Cap[ital	1,80,000	Stock in Trade	1,01,000
15% Debentures	1,20,000	Bills Receivable	20,000
Trade Payables	1,22,000	Trade Receivable Cash and Bank	49,000
Bank Overdraft	20,000	Profit and Loss A/c	38,000
Provision for Tax	18,000		14,000
Total	**6,30,000**	**Total**	**6,30,000**

Sales for the year ₹ 7,00,000; Gross profit Rate – 25% and opening stock is ₹ 1,09,000. Profit before Tax for the year ending 31st March, 2014 is ₹ 2,10,000.

You are required to compute the following and comment on:

(i) Current Ratio
(ii) Acid Test Ratio
(iii) Stock Turnover Ratio
(iv) Capital Gearing Ratio
(v) Proprietory Ratio
(vi) Debt-equity Ratio (Debt/Net Worth)
(vii) Return on Capital Employed

Redrafting the given Balance Sheet in vertical format is not expected. **(T.Y. B.Com., Modified)**



Working Capital Concept

INTRODUCTION

Sound Working Capital Management has become a necessity in an era of information technology for a company to succeed. The best example to support this argument is the performance of Dell computers as reported in one of the recent Fortune article.

A perusal of the article will give us an insight into how Dell could use technology for improving the performance of components of working capital.

1. Use of Internet as a tool for reducing costs of linking manufacturer with their suppliers and dealers.
2. Outsourcing an operations if the firm's core competence does not permit the performance of the operation effectively.
3. Train the employees to accept change.
4. Introduction of Internet business
5. Releasing capital by reduction in investment in inventory for improving the profitability of operating capital.

A financial manager spends a large part of his time in managing working capital.

There are two important elements of working capital management.

1. Decisions on the amount of current assets to be held by a firm for efficient operations of its business.
2. Decisions on financing working capital requirement.

Inadequacy or mismanagement of Working Capital is the leading cause of many business failures. Working Capital is that portion of asset of a business which are used in current operations. They are used in the operating cycle of the firm. It is defined as the excess of Current Assets over Current Liabilities and Provisions.

Components of Current Assets and Current Liabilities

Current Assets are: 1. Inventories 2. Sundry Debtors, 3. Bills Receivables, 4. Cash and Bank Balances, 5. Short-term Investments, 6. Advances such as advances for purchase of raw materials, components and consumable stores, prepaid expenses etc.

Current Liabilities are: 1. Sundry Creditors, 2. Bills Payable, 3. Creditors for outstanding expenses, 4. Provision for tax, 5. Other provisions against the liabilities payable within a period of 12 months.

Working Capital Management is concerned with managing the different components of current assets and current liabilities. A firm must have adequate Working Capital neither excess nor shortage. Maintaining adequate Working Capital at the satisfactory level is crucial for maintaining the competitiveness of a firm. Any lapse of a firm on this account may lead a firm to the state of insolvency.

Concepts of Working Capital: There are two important concepts of Working Capital – Gross Working Capital and Net Working Capital.

Gross Working Capital: Gross Working Capital refers to the amounts invested in the various components of current assets. This concept has the following practical relevance.

(a) Management of current assets is the crucial aspect of Working Capital Management.
(b) It is an important component of operating capital. Therefore, for improving the profitability on its investment, a finance manager of a company must give top priority to efficient management of current assets.
(c) The need to plan and monitor the utilization of funds of a firm demands working capital management as applied to current assets.
(d) It helps in the fixation of various areas of financial responsibility.

Net Working Capital: Net Working Capital is the excess of current assets over current liabilities and provisions. Net Working Capital is positive, when current assets exceed current liabilities and negative when current liabilities exceed current assets. This concept has the following practical relevance.

1. It indicates the ability of the firm to effectively use the spontaneous finance in managing the firm's Working Capital requirements.
2. A firm's short-term solvency is measured through the Net Working Capital position it commands.

Permanent Working Capital: Permanent Working Capital is the minimum amount of investment required to be made in current assets at all times to carry on the day-to-day operation of firm's business. This minimum level of current assets has been given the name of core current assets by the Tandon Committee. It is also known as Fixed Working Capital.

Temporary Working Capital: It is also known as Variable Working Capital or Fluctuating Working Capital. The firm's working capital requirements vary depending upon the seasonal and cyclical changes in demand for a firm's products. The extra Working Capital required as per the changing production and sales levels of a firm is known as Temporary Working Capital.

Objective of Working Capital Management: The basic objective of financial management is maximizing the net wealth of shareholders. A firm must earn sufficient returns from its operations to ensure the realization of this objective. There exists a positive correlation between sales and firm's return on its investment. The amount of earnings that a firm earns depends upon the volume of sales achieved. There is the need to ensure adequate investment in current assets, keeping pace with accelerating sales volume. Firms make sales on credit. There is always a time gap between sale of goods on credit and the realization of proceeds of sales from the firm's customers. Finance manager of a firm is required to finance the operation during this time gap. Therefore, objective of Working Capital Management is to ensure smooth functioning of the normal business operations of a firm. The firm has to decide on the amount of Working Capital to be employed.

The firm may have a conservative policy of holding large quantum of current assets to ensure larger market share and to prevent the competitors from snatching any market for their products. But such a policy will affect the firm's return on its investment. The firm will have higher than the required amount of investment in current assets. This excess funds locked in current assets will reduce the firm's profitability on operating capital.

On the other hand a firm may have an aggressive policy of depending on spontaneous finance to the maximum extent. Credit obtained by a firm from its suppliers is known as spontaneous finance. Here a firm will try to reduce its investments in current assets as much as possible but without affecting the firm's ability to meet working capital needs for sales growth targets. Such a policy will ensure higher return on its investment as the firm will not be locking in any excess funds in current assets. However, any error in forecasting can affect the operations of the firm unfavorably if the error is fraught with the down side risk. There is also another risk of firm losing on maintaining its liquidity position.

Objective of working capital management is achieving a trade-off between liquidity and profitability of operations for the smooth conduct of normal business operations of the firm.

Need for Working Capital

The need for working capital arises on account of two reasons:

(a) To finance operations during the time gap between sale of goods on credit and realization of money from customers of the firm.

(b) To finance investments in current assets for achieving the growth target in sales.

Therefore finance for the operations in operating cycle of a firm, working capital is required.

Operating Cycle: Operating cycle of a firm has the following elements.

1. Acquisition of resources from suppliers.
2. Making payments to suppliers.
3. Conversion of raw materials into finished products.
4. Sale of finished products to customers.
5. Collection of cash from customers for the goods sold.

The time gap between acquisition of resources and collection of cash from customers is known as the operating cycle. These five phases occur on a continuous basis. There is no synchronization between the activities in operating cycle. Cash outflows occur before the occurrences of cash inflows in operating cycle. Cash outflows are certain. On the other hand cash inflows are uncertain because of uncertainty associated. With effecting sales as per the sales forecast and ultimate timely collection of amount due from the customers to whom the firm has sold its goods. Since cash inflows do not match with cash outflows, firm has to invest in various current assets to ensure smooth conduct of day-to-day business operations. Therefore, the firm has to assess the operating cycle time of its operation for providing adequately for its working capital requirements.

Operating cycle = IC period + RC period

IC period = Inventory conversion period

RC period = Receivables conversion period

Inventory conversion period is the average length of time required to produce and sell the product.

1. Inventory Conversion period = $\frac{\text{Average Inventory} \times 365}{\text{Annual Cost Goods Sold}}$

2. Receivables conversion period = $\frac{\text{Average Accounts Receivable} \times 365}{\text{Annual Sales}}$

   Accounts payables period is also known as payables deferral period.

3. Accounts payables period = $\frac{\text{Average Creditors}}{\text{Purchases per day}}$

   (Payables deferral period)

   Purchases per day = $\frac{\text{Total Purchases for year}}{365}$

   Receivables conversion period is the average length of time required to convert the firm's receivables into cash.

4. Cash Conversion Cycle: Is the length of time between the firm's actual cash expenditure and its own cash receipt. The cash conversion cycle is the average length of time a rupee is tied up in current assets.

Illustration 1: The following details are available for XYZ Ltd. for the year ended 31.03.13

Sales	80,000	Inventory	
Cost of goods	56,000	31.03.12	9,000
		31.03.13	12,000
		Accounts Receivables	
		31.03.12	12,000
		31.03.13	16,000
		Accounts Payable	
		31.03.12	7,000
		31.03.13	10,000

What is the length of the operating cycle?
What is the cash cycle?
Assume 365 days in the year **(T.Y. B.Com., Modified)**

Solution:

Operating Cycle = Inventory Conversion Period + Accounts Receivables conversion Period

Inventory Conversion Period

$$\frac{\text{Average inventory}}{\text{Cost of goods sold}} \times 365$$

$$\frac{(9{,}000 + 12{,}000)/2}{56{,}000} \times 365$$

$$\frac{10{,}500 \times 365}{56{,}000} = 68.4 \text{ days}$$

$$\text{Receivables Conversion Period} = \frac{\text{Average Accounts Receivables}}{\text{Annual Sales}} \times 365$$

$$\frac{(12{,}000 + 16{,}000)/2 \times 365}{80{,}000} = 63.9 \text{ days}$$

$$\text{Payables Conversion Period} = \frac{\text{Average Accounts Payables}}{\text{Annual Cost of Goods Sold}} = 365s$$

$$\frac{8{,}500 \times 365}{56{,}000} = 55.4 \text{ days}$$

Operating Cycle = ICP + RCP
= 68.4 + 63.9 = 132.3 days
Cash Conversion Cycle = OC – PDP = 132.3 – 55.4 = 76.9 days

The Cash conversion cycle shows the time interval over which additional non-spontaneous sources of working capital financing must be obtained to carry out firm's activities. An increase in the length of operating cycle, without a corresponding increase in payables deferral period, increases the cash conversion cycle. Any increase in cash conversion cycle leads to additional working capital needs of the firm.

Determinants of Working Capital

A large number of factors influence Working Capital needs of a firm. The basic objective of a firm's Working Capital management is to ensure that the firm has adequate working capital for its operations, neither too much nor too little. Investing heavily in current assets will drain the firm's earnings and inadequate investment in current assets will reduce the firm's credibility as it affects the firm's liquidity. Therefore, the need to strike a balance between liquidity and profitability cannot be ignored. The following factors determine a firm's working capital requirements.

1. Nature of Business: Working Capital requirements are basically influenced by the nature of business of the firm. Trading organizations are forced to carry large stocks of finished goods, accounts receivables and accounts payables. Public utilities require lesser investment in working capital.

2. Size of Business Operation: Size is measured in terms of a scale of operation. A firm with large-scale of operation normally requires more Working Capital than a firm with a low scale of operation.

3. Manufacturing Cycle: Capital intensive industries with longer manufacturing process will have higher requirements of Working Capital because of the need to run their sophisticated and long production process.

4. Products Policy: Production schedule of a firm influences the investments in inventories. A firm, exposed to seasonal changes in demand when following a steady production policy will have to face the costs and risks associated with inventory accumulation during the off-season periods. On the other hand, a firm with

a variable production policy will be facing different dimensions of management of working capital. Such a firm may have to effectively handle problem of production planning and control associated with utilization of installed plant capacity under conditions of varying volumes of production of products of seasonal demand.

5. Volume of Sales: There is a positive direct correlation between the volume of sales and the size of working capital of a firm.

6. Term of Purchase and Sales: A firm which allows liberal credit to its customers will need more working capital than that of a firm with strict credit policy. A firm which enjoys liberal credit facilities from its suppliers requires lower amount of working capital when compared to a firm which does not have such a facility.

7. Operating Efficiency: The firm with high efficiency in operation can bring down the total investment in working capital to lower levels. Here effective utilization of resources helps the firm in bringing down the investment in working capital.

8. Price Level Changes: Inflation affects the working capital levels in a firm. To maintain the operating efficiency under an inflationary set up a firm should examine the maintenance of working capital position under constant price level. The financial capital maintenance demands a firm to maintain higher amount of working capital keeping pace with rising price levels. Under inflationary conditions same levels of inventory will require increased investment. The ability of a firm to revise its products prices with rising price levels will decide the additional investment to be made to maintain the working capital intact.

9. Business Cycle: During boom, sales rise as business expands. Depression is marked by a decline in sales. During boom, expansion of business can be achieved only by augmenting investment in various assets that constitute working capital of a firm. When there is a decline in business on account of depression in economy, inventory glut forces a firm to maintain working capital at a level far in excess of the requirements under normal conditions.

10. Processing Technology: Longer the manufacturing cycle, larger the investment in working capital. When raw material passes through several stages in the production process, work in process inventory will increase correspondingly.

11. Fluctuations in the Supply of Raw Materials: Companies which use raw materials available only from one or two sources are forced to maintain buffer stock of raw materials to meet the requirements of uncertainty in lead time. Such firms normally carry more inventory than it would have, had the materials been available in normal market conditions.

Estimation of Working Capital: The best approach to estimate is based on operating cycle. Therefore, the two components of working capital are current assets and current liabilities. This approach is based on the assumption that production and sales occur on a continuous basis and all costs occur accordingly.

Estimation of Current Assets:

1. Raw materials inventory: Average investment in raw material is estimated.
2. Average investment in work-in-progress inventory is estimated.
3. Average investment in finished goods inventory is estimated.
4. Average investment in receivables (i.e., both in debtors and bills receivables) is estimated based on credit policy that the firm wishes to pursue.
5. Based on the firm's attitude towards risk, access to borrowing sources, past experience and nature of business, firms decide on the policy of maintaining the minimum cash balances.

Estimation of Current Liabilities:

1. Trade Creditors: Based on production budget, raw material consumption, credit period enjoyed from suppliers, average amount of financing available to the firm is estimated.

2. Direct Wages: Based on production budget, direct labour cost per unit, average time-lag in payment of wages, estimation is made on total wages to be paid on an average basis.

3. Overheads: Based on production budget, overhead cost per unit and average time-lag in payment of overhead, an estimation on an average basis of the amount outstanding to be paid to creditors for overhead is estimated.

Illustration 2: A proforma cost sheet of a company provides the following data:

Cost per unit:

Raw material	52.00
Direct labour	19.50
Overheads	39.00
Total Cost	110.50
Profit	19.50
Selling price	130.00

The following additional information is available:

(a) Average raw material in stock: One month

(b) Average materials in process: Half a month

(c) Credit allowed by suppliers: One month

(d) Credit allowed to debtors: Two months

(e) Time lag in payment of wages: one and a half weeks

(f) Time lag in payment of overheads: one month

(g) One-fourth of sales on cash basis

(h) Cash balance expected to be maintained is ₹ 1,20,000

You are required to prepare a statement showing the working capital required to finance a level of activity of 70,000 units of output. You may assume that production is carried on evenly throughout the year and wages and overheads occur similarly. Assume 360 days in a year. **(T.Y. B.Com., Modified)**

Solution: Estimation of Working Capital

(a) Investment in inventory

1. Raw material

$$\frac{RMC}{360} \times RMCP = \frac{70,000}{300} \times 30 = 3,03,333.33$$

2. Work-in process inventory

$$\frac{COP}{360} \times WRCP = \frac{70,000 \times 110.5}{360} \times 15 = 3,22,291.67$$

3. Finished goods inventory

$$\frac{COS}{360} \times FGCP = \frac{70,000 \times 110.5 \times 30}{360} = 6,44,583.33$$

(b) Investment in debtors

$$\frac{\text{Cost of Credit Sales}}{300} \times DCP$$

$$\frac{52,500 \times 110.5}{360} \times 00 = 9,00,375.00$$

(c) Cash balance 120000

(d) Total current Asset (A + B + C) 23,57,083.33

(e) Current Liabilities

1. Creditors

$$\frac{\text{Purchase of raw materials} \times PDP}{300}$$

$$70,000 \times \frac{52 \times 30}{360} = 3,03,333.33$$

2. Wages

$$70,000 \times \frac{195. \times 10}{360} = 37,916.67$$

3. Overheads

$$70,000 \times \frac{39 \times 30}{360} = 2,27,500.00$$

(f) Total Current Liabilities 5,68,750.00

(g) Net working Capital (D – F) 17,88,958.33

Illustration 3: The following annual figures relate to XYZ:

	(₹)
Sales (at two months credit)	36,00,000
Materials consumed (Suppliers extend two months credit)	9,00,000
Wages paid (monthly in arrears)	7,20,000
Manufacturing expenses outstanding at the end of the year	80,000
(Cash expenses are paid one month in arrears)	
Total administrative expenses paid, as above	2,40,000
Sales promotion expenses, paid quarterly in advance	1,20,000

The company sells its products on gross profit of 25% counting depreciation as part of the cost of production. It keeps one month's stock each of raw materials and finished goods, and a cash balance of ₹ 1,00,000.

Assume a 20 per cent safety margin. Calculate the working capital requirements of the company on cash cost basis. Ignore work in process. **(T.Y. B.Com., Modified)**

Solution:

Working Notes

Computation of manufacturing expenses

Sales		36,00,000
Less: Gross profit at 25%		9,00,000
Total manufacturing cost		27,00,000
Less: Materials	9,00,000	
Wages	7,20,000	16,20,000
Manufacturing expenses		10,80,000
Cash manufacturing expenses		9,60,000

Depreciation:

Total manufacturing expenses – Cash manufacturing expenses

10,80,000 – 9,60,000 = ₹ 1,20,000

Total cash cost

Total manufacturing cost	27,00,000
Less: depreciation	1,20,000
Cash manufacturing cost	25,80,000
Total manufacturing expenses	2,40,000
Sales promotion expenses	1,20,000
Total cash cost	29,40,000

Solution: **Statement Showing the Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)	Amt. (₹)
Current Assets				
Cash and Bank Balance			40,000	
Stock-in-Trade:				
Raw Material	10 × 1,56,000 × 2/52	1,20,000		
Work-in-progress	(10 + 5.50) × 1,56,000 × 2/52	93,000		
Finished Goods	21 × 1,56,000 × 3/52	1,89,000	4,02,000	
Debtors	23 × 1,56,000 × 5/52 × 3/4		2,58,750	
Gross Working Capital				**7,00,750**
***Less:* Current Liabilities**				
Creditors	10 × 1,56,000 × 2/52		6,000	
Outstanding Wages	3.50 × 1,56,000 × 1/52		10,500	
Outstanding Overheads	7.50 × 1,56,000 × 2/52		45,000	
				61,500
Working Capital				**5,85,250**

Notes: Work-in-progress is calculated 100% of Raw materials and 50% of Direct Labour and Overheads.

Illustration 4: A proforma cost sheet of a company provides the following particulars:

Particulars	**Rate per unit (₹)**
Raw Material Cost	10.00
Direct Labour Cost	3.50
Overheads Cost	7.50
Total	21.00
Profit	2.00
Selling Price	23.00

1. The company keeps raw materials in stock, on an average for 4 weeks; work in progress on an average for 2 weeks; and finished goods in stock on an average for 3 weeks.
2. The credit allowed by suppliers is 2 weeks and company allows 5 week credit to its debtor. The lag in payment of wages is 1 week and lag in payment of overhead expenses is 2 weeks.
3. The company sells 1/4 of the output against cash and Cash in hand and at Bank put together a ₹ 40,000.

You are required to prepare a statement showing estimate of working capital needed to finance an activity level of 1,56,000 units of production. Assume that production is carried on evenly throughout the year and wages and overheads accrue similarly. **(T.Y. B.Com., Modified)**

Solution: **Statement Showing the Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)	Amt. (₹)
Current Assets				
Cash and Bank Balance			40,000	
Stock-in-Trade:				
Raw Material	10 × 1,56,000 × 4/52	1,20,000		
Work in Progress	(10 + 5.50) × 1,56,000 × 2/52	93,000		
Finished Goods	21 × 1,56,000 × 3/52	1,89,000	4,02,000	
Debtors	23 × 1,56,000 × 5/52 × 3/4		2,58,750	
Gross Working Capital				7,00,750

***Less:* Current Liabilities**				
Creditors	10 × 1,56,000 × 2/52		60,000	
Outstanding Wages	3.50 × 1,56,000 × 2/52		10,500	
Outstanding Overheads	7.50 × 1,56,000 × 2/52			45,000
Working Capital				**5,85,250**

Notes: Work in progress is calculated 100% of Raw materials and 50% of Direct Labour and Overheads.

Illustration 5: Prepare a statement of working capital requirement for a level of activity of 1,80,000 units of production. The following information is available. (per unit):

	(₹)
Raw Materials	120
Direct Labour	60
Overheads	45
Selling Price	300

1. Raw materials are in stock on average of 3 weeks.
2. Materials are in process on average of 2 weeks.
3. Finished goods are in stock, on average of 5 weeks.
4. Credit allowed by supplier for 4 weeks.
5. Time lag in payment from debtors for 8 weeks.
6. Lag in payment of wages for 1½ weeks.
7. Lag in payment of overheads for 3 weeks.

20% of output is sold against cash. Cash in hand and Bank is expected to be ₹ 40,000. Wages and overheads accrue evenly and a time period of 50 weeks to be considered for a year.

(T.Y. B.Com., Modified)

Solution: **Statement of Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash and Bank Balance			40,000
Stock-in-Trade			
Raw Material	1,80,000 × 120 × 3/50	12,96,000	
Work-in-Progress	1,80,000 × [120 + 50% (60 + 45)] × 2/50	12,42,000	
Finished Goods	1,80,000 × (120 + 60 + 45) × 5/50	40,50,000	65,88,000
Debtors	1,80,000 × 300 × 80% × 8/50		69,12,000
Gross Working Capital			1,35,40,000
***Less:* Current Liabilities**			
Creditors	1,80,000 × 120 × 4/50	17,28,000	
Outstanding Wages	1,80,000 × 60 × 1.5/50	3,24,000	
Outstanding Overheads	1,80,000 × 45 × 3/50	4,86,000	
			25,38,000
Working Capital			**1,10,02,000**

Illustration 6: Radhika Manufacturing Limited presents the following information for 2011-2012.

Estimated Yearly Production and Sales = 60,000 units

Estimated Cost Elements per unit.

Raw materials	₹ 5
Wages	₹ 3
Overheads	₹ 2
Selling Price	₹ 12

Further Information:

1. The company extends two months credit to the debtors.
2. The company maintains one month's stock of Raw materials.
3. The company maintains one month's stock of finished goods.
4. The processing period is one month.
5. The company is allowed two months credit by suppliers.
6. Wages and Overheads are paid one month in arrears.
7. The cash and bank balance is expected to be equal to ₹ 25,000.
8. There is regular purchase, production and sales cycle.
9. During production process wages and overheads accrue evenly.
10. Debtors are to be calculated on cost basis.
11. 20% of the customers pay one month in advance.

Prepare statement showing an estimate of working capital.

Solution: **Statement Showing Estimate of Working Capital for the year ending 31st March, 2012**

	₹	₹	₹
Current Assets			
Stock of Materials		25,000 × 1	25,000
Stock of WIP			
Materials	25,000 × 1	25,000	
Wages	$15{,}000 \times 1\frac{1}{2}$	7,500	
Overheads	$10{,}000 \times 1\times\frac{1}{2}$	5,000	37,500
Stock of Finished Goods			
Materials	25,000 × 1	25,000	
Wages	15,000 × 1	15,000	
Overheads	10,000 × 1	10,000	50,000
Debtors			
Materials	25,000 × 2 × .80	40,000	
Wages	15,000 × 2 × .80	24,000	
Overheads	10,000 × 2 × .80	16,000	80,000
Cash and Bank			25,000
			2,17,500
Less: Current Liabilities			
Creditors	25,000 × 2	50,000	
Wages Payable	15,000 × 1	15,000	
Overheads Payable	10,000 × 1	10,000	
Advance from Customers	60,000 × 2 × .20	24,000	90,000
Working Capital			1,18,500

Working Note:

$$\text{Monthly Production \& Sales} = \frac{60{,}000}{12} = 5{,}000 \text{ units}$$

Monthly Cost

Raw Materials	5,000 × 5	= 25,000
Wages	5,000 × 3	= 15,000
Overheads	5,000 × 2	= 10,000
Sales	5,000 × 12	= 60,000

Illustration 7: From the following information provided by M/s. P & Co. Pvt. Ltd., prepare a statement showing working capital requirements for the year 2010-2011:

(a) Estimated sales for the year 2010-2011 ₹ 21,60,000.
(b) Estimated cost structure ratios to selling price: Raw materials 60%, Labour 20% and Overheads 10%.
(c) Selling price ₹ 20 per unit.
(d) Raw Materials remain in stock for 2 months.
(e) Materials remain in process for 1 month.
(f) Finished Goods remain in stock for 1 month.
(g) Customers are allowed 2 months credit.
(h) Suppliers allow 1 month credit.
(i) Time lag in payment of wages is one month.
(j) Time lag in payment of overheads is half month.
(k) Cash & Bank Balance is expected to be 25% of the Debtors.
(l) Provide a margin of safety at 10%.
(m) Debtors are to be calculated at selling price.
(n) During the manufacturing process labour and overheads accrue evenly.

Solution:

M/s P and Co. Ltd
Working Capital Estimate for 2010-11

		₹	₹
A. Current Assets			
Stock of Raw Materials	1,08,000 × 2		2,16,000
Stock of WIP			
RM	1,08,000 × 1	1,08,000	
Lab	36,000 × 1 × 50%	18,000	
OH	18,000 × 1 × 50%	9,000	1,35,000
Stock of Finished goods	1,62,000 × 1		1,62,000
Sundry Debtors	1,80,000 × 2		3,60,000
Cash and Bank	25% of 3,60,000		90,000
		9,63,000	
B. Current Liabilities			
Creditors	1,08,000 × 1	1,08,000	
O/s Wages	36,000 × 1	36,000	
O/s Overheads	18,000 × 0.5	9,000	1,53,000
Working Capital (A – B)			8,10,000
Add – Margin of safety			81,000
Total Working Capital			8,91,000

Working Note:

	₹	₹
Annual Budgeted Sates – 2010-11 in		21,60,000
Annual Budgeted Sales – 2010 - 11 in Units	$\frac{21,60,000}{20}$	1,08,000
Monthly Budgeted Sales in Units	$\frac{1,08,000}{12}$	9,000
Cost of RM per month	9,000 × 12	1,08,000
Cost of Labour per month	9,000 × 4	36,000
Cost of Overheads per month	9,000 × 2	18,000
Total Cost per month	9,000 × 18	1,62,000
Profit per month	9,000 × 2	18,000
Sales per Month	9,000 × 20	1,80,000

Illustration 8: From the following information given by M/s. Q & Co. Pvt. Ltd., prepare an estimate of Working capital for the year ended 31st March, 2011.

1. Estimated level of activity – 1,04,000 units for the year 52 weeks.
2. Cost of raw Material per unit – ₹ 5.
3. Cost of labour per unit – 40% of Raw Material
4. Cost of Overheads per unit – 50% of the labour cost
5. Profit per unit is 200% of overheads.
6. Stock of Raw materials – 4 weeks.
7. Processing period – 4 weeks.
8. Stock of Finished Goods – 4 weeks
9. Credit to the Debtors – 6 weeks
10. Credit by the Creditors – 4 weeks
11. Time lag in payment of wages – 4 weeks
12. Time lag in payment of overheads – 2 weeks
13. Cash and Bank Balance required – 40,000
14. Debtors are calculated on sales basis.
15. Purchases against cash – 20%
16. All the activities are spread evenly throughout the year.
17. During processing, Labour and Overhead accrue evenly.

Solution: **Working Capital Estimate for 2010 - 11**

Particulars	Working	₹	₹
A. Current Assets			
1. Stock			
(a) Raw Material	(10,000 × ₹ 4)		40,000
(b) Work-in-Progress			
– Raw Material	(10,000 × ₹ 4)	40,000	
– Labour	(4,000 × ₹ 4 × 50%)	8,000	
– Overheads	(2,000 × 4 × 50%)	4,000	52,000
(c) Finished Goods	(16,000 × ₹ 4)		64,000
2. Sundry Debtors	(20,000 × ₹ 6)		1,20,000
3. Cash and Bank Balance			40,000
Total Current Account			3,16,00
B. Less: Current Liabilities			
1. Creditors	(10,000 × ₹ 4 × 80%)	32,000	
2. Outstanding Wages	(4,000 × ₹ 4)	16,000	
3. Outstanding Overheads	(2,000 × ₹ 2)	4,000	
Total Current Liabilities			52,000
C. Estimated Working Capital (A – B)			2,64,000

Working Note:

Annual Budgeted Sales 2010-11 in units (1,04,000)

Weekly Budgeted Sales in units (1,04,000/52) = 2,000

	Per unit ₹	₹
Cost of Raw Materials per week	5	10,000
Cost of Labour per week	2	4,000
Cost of overheads per week	1	2,000
Total Cost per week	8	16,000
Profit per week	2	4,000
Sales per week	10	20,000

Illustration 9: The following information is presented by Data and Sons Ltd. for the year 2010-11.

Estimated Yearly Production = 30,000 units

Estimated Cost Sheet per unit.

	₹
Raw Materials	5
Wages	3
Overheads	2
Selling Price	12

Further Information:

1. The company extends two months credit to the customers.
2. The company maintains one month's stock of finished goods.
3. The company maintains two month's stock of finished goods.
4. The processing period is half a month.
5. The company is allowed one month's credit by suppliers.
6. Wages and Overheads are paid one month in arrears.
7. The cash and bank balance is expected to be ₹ 8,125.
8. There is regular purchase, production and sales cycle.
9. During production process wages and overheads acrrue evenly.
10. Debtors are to be calculated on sale price basis.

Prepare an estimate of working Capital.

Solution:

Data and Sons Ltd.

Estimate of Working Capital for the year 2010-11

			₹
Current Assets			
Stock of Raw Materials	2500 × 1 × 5		12,500
Stock of Finished Goods.	2500 × 2 × 10		50,000
Work-in-Process Materials	2500 × 0.5 × 5	6,250	
Wages	2500 × 0.5 × 3 × 0.5	1,875	
Overheads	2500 × 0.5 × 2 × 0.5	1,250	9,375
Debtors	2500 × 2 × 12		60,000
Cash and Bank	Given		8,125
Total		A	1,40,00
Current Liabilities			
Creditors	2,500 × 1 × 5		12,500
Outstanding Wages	2,500 × 1 × 3		7,500
Outstanding Overheads	2,500 × 1 × 2		5,000
Total		B	25,000
Working Capital		(A – B)	1,15,000

Working Note

$$\text{Level of Activity } \frac{30,000}{12} = 2,500$$

Cost Sheet = RM 5 + W 3 + O/H 2 + P 2 = SP12

Illustration 10: The Management of Kaka Ltd. Has asked you to prepare an estimate showing the working capital requirement for 2010-11, along with estimated cost sheet.

Present position : 2009-10

Operating Capacity 40%, giving output of 40,000 units for the year:

Cost Structure per unit:

Raw Material	₹ 20
Direct labour	₹ 15
Overheads	₹ 10
Profit	₹ 5

Estimates for the next year 2010-11
Operating Capacity 60%
Cost Structure –
Raw Material cost to increase by 10%
Direct Labour cost to increase by 20%
Overheads to increase by 20%
Selling Price to increase by 20%

The following further information is available:

1. The purchase, production and sales pattern is assumed be even throughout the year.
2. The Raw Materials will remain in stock for 1 month.
3. The production process will take 1 month wherein labour and overheads will accrue evenly during the process.
4. The Finished Goods will remain in the stock for 2 months.
5. The Customers will be allowed a credit of 2 months.
6. The Suppliers will allow a credit of 1 month.
7. The time-lag in payment of labour will be 1 month.
8. The time-lag in payment of overheads will be half a month.
9. The Cash and Bank Balance is expected to be ₹ 25,000.
10. Calculate debtors on cost basis.
11. 20% of the purchase will be on cash basis.

Solution:

Kala Ltd.
Estimated Cost Sheet for the year 2010-11
Units for the Year = 60,000
Units for the Month = 5,000

Cost Sheet		**Per Unit ₹**
Raw Material	20 + 2	22
Direct Labour	15 + 3	18
Overheads	10 + 2	12
Total Cost		52
Profit		8
Selling Price	50 + 10	60

Estimate showing the Working Capital Requirement for the year 2010-11

		₹
Current Assets		
Raw Material Stock - (5,000 × 22)		1,10,000
Work in Process		
Raw Materials 5,000 × 22 × 1		1,10,000
Direct Labour - 5,000 × 18 × 1 × 50%		45,000
Overheads - 5,000 × 12 × 1 × 50%		30,000
Finished Goods - 5,000 × 52 × 2		5,20,000
Debtors - 5,000 × 52 × 2		5,20,000
Cash & Bank Balance Given		25,000
Total Current Assets	A	13,60,000
Current Liabilities		
Creditors - 5,000 × 22 × 1 × 80%		88,000
Outstanding D Labour - 5,000 × 18 × 1		90,000
Outstanding Overheads - 5,000 × 12 × 0.5		30,000
	B	2,08,000
Working Capital (A – B)		11,52,000

Illustration 11: The management of RT Ltd. has called for a statement showing the working capital need to finance a level of activity of 2,00,000 units of output for the year. The cost structure for the company's product for the above level of activity is (per unit):

Particulars (₹)	
Raw Materials	30
Direct Labour	15
Overhead (Including Depreciation @ ₹ 6 per unit)	15
Selling Price	80

Other Information:

1. Minimum desired cash balance is ₹ 4,00,000.
2. Raw materials are held in stock, on an average for 1 month.
3. Work in progress (assume 50% completion stage) will appropriate to 1 month's production.
4. Finished goods remain in warehouse, on an average for 2 months.
5. Supplier of materials extend a months Credit and Debtors are provided 2 months credit. Cash sales are 20 sales and Credit purchase is 75% of purchases.
6. There is a time lag in payment of wages of half a month in case of overheads.

Prepare a statement of working capital requirement. **(T.Y. B.Com., Modified)**

Solution: **RT Ltd. Statement of Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash and Bank Balance			4,00,000
Stock-in-Trade:			
Raw Material	2,00,000 × 30 × 1/12	5.00,000	
Work-in-progress	2,00,000 × 50% (30 + 15 + 15) × 1/12	5,00,000	
Finished Goods	2,00,000 × 60 × 2/12	20,00,000	30,00,000
Debtors	2,00,000 × 80 × 80% × 1/12		21,33,333
Gross Working Capital			55,33,333
***Less:* Current Liabilities**			
Creditors	2,00,000 × 30 × 1/12 × 75%	3,75,000	
Outstanding Wages	2,00,000 × 14 × 1/12	2,50,000	
Outstanding Overheads (excluding depreciation)	2,00,000 × 9 × 0.5/12	75,000	
			7,00,000
Working capital			**48,33,333**

Illustration 12: HM Ltd. had an annual sale of 50,000 units at ₹ 100 per unit. The company works for 50 weeks in the year. The cost details of the company are as given below:

Particulars	**Rate per unit (₹)**
Raw Materials	200
Direct Labour	100
Overheads	150
Total	450
Profit	50
Selling Price	500

The company has the practice of storing raw materials for 2 weeks requirement. The wages and other expenses are paid bio weekly, i.e., by third week and fifth week for the first and second weeks and third and

fourth weeks, respectively. Further the debtors enjoy a credit of 3 weeks and the same is available from suppliers. The processing time is 2 weeks and finished goods inventory is maintained for 4 weeks.

From the above information prepare a working capital estimate allowing for a 15% contingency.

(T.Y. B.Com., Modified)

Solution: **HM Ltd. Statement Showing the Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)	Amt. (₹)
Current Assets				
Stock-in-trade:				
Raw Materials	200 × 50,000 × 2/50	4,00,000		
Work-in-progress	(200 + 125) × 50,000 × 2/50	6,50,000		
Finished Goods	450 × 50,000 × 4/50	18,00,000	28,50,000	
Debtors	500 × 50,000 × 3/50		15,00,000	
Gross Working Capital				43,50,000
***Less:* Current liabilities**				
Creditors	200 × 50,000 × 3/50		6,00,000	
Outstanding Wages & Overheads	(100+150)×50,000×2/50		5,00,000	
				11,00,000
Working Capital				**32,50,000**

Notes: Work in progress is calculated 100% of Raw materials and 50% of Direct Labour and Overheads.

Illustration 13: From the following information prepare a statement of working capital requirement. Annual sale are estimated 3,00,000 units at ₹ 35 p.u. Production quantities coincide with sales and will be carried on evenly throughout the year and production cost is,

Materials	₹ 15 p.u.
Labour	₹ 8 p.u.
Expenses	₹ 5.75 p.u.

Customers are given 60 days credit and 50 days credit is taken from suppliers, 45 days supply of raw material and 30 days supply of finished goods are kept. Production cycle is 20 days and all materials is issued at the commencement of each production cycle. A cash balance equivalent to 1/3 of average of other working capital requirement is kept for contingency.

(T.Y. B.Com., Modified)

Solution: **Statement of Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash Balance	1/3 (16,23,288 + 17,26,027 – 6,16,438)		
Stock-in-trade:			
Raw Material	3,00,000 × 15 × 45/365	5,54,795	
Work-in-progress	3,00,000 × [15 + 50% (8 + 5.75)] × 20/365	3,59,589	
Finished Goods	3,00,000 × (15 + 8 + 5.75) × 30/365	7,08,904	16,23,288
Debtors	3,00,000 × 35 × 60/365		17,26,027
Gross Working Capital			42,60,274
***Less:* Current liabilities**			
Creditors	3,00,000 × 15 × 50/365		6,16,438
Working Capital			**36,43,836**

Note: Cash balance = 1/3 (Stock + Debtors – Creditors)

Illustration 14: From the following details you are required to make on assessment of required amount of working capital requirement of AB Ltd.

Particulars	Average Period of Credit	Estimate for the Year (₹)
Purchase of raw material	4 Weeks	13,00,000
Wages	1 Week	3,25,000
Outstanding:		
Rent, Rates and Taxes	3 months	50,000
Salaries	2 months	40,000
Overheads	1 month	80,000
Sales	Cash Basis	5,00,000
Credit sales	3 months	47,00,000
Average amount of stock and WIP		5,00,000
Average amount of undrawn profit		1,00,000

(T.Y. B.Com., Modified)

Solution: **AB Ltd. Statement of Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Stock and WIP (Given)			5,00,000
Debtors	47,00,000 × 3/12		11,75,000
Gross Working Capital			16,75,000
***Less:* Current liabilities**			
Creditors	13,00,000 × 4/52	1,00,000	
Outstanding Expenses:			
Wages	3,25,000 × 1/52	6,250	
Rent, Rates and Taxes	50,000 × 3/12	12.500	
Salaries	40,000 × 2/12	6,667	
Overheads	80,000 × 1/12	6,667	1,32,084
			15,42,916
Less: Undrawn Profit			1,00,000
Working Capital Required			**14,42,916**

Illustration 15: The cost sheet of BA Ltd. reveals the following information concerning with the proportion of various elements of cost to the selling price.

Materials 40%

Labour 30%

Overheads 10%

The management of the concern intends to maintain during 2014, production level of 2013, which was 24,000 units. The following further information is available.

1. Raw materials are expected to remain in store for an average period of 2 months before issue of production.
2. Each unit of production will be in process for 1 month on an average.
3. Finished goods are to be stayed in the ware house for 2 months on the average before being sold and sent to customers.
4. Credit allowed by the suppliers from the date of delivery of materials is 1 month.
5. Debtors are allowed 2 months credit from the date of the sale of the goods.

6. The selling price is ₹ 100 per unit.

Production and sale is even throughout the year. **(T.Y. B.Com., Modified)**

Solution: **BA Ltd. Statement of Working Capital Required during 2014**

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Stock-in-trade:			
Raw Materials	24,000 × 40 2/12	1,60,000	
Work-in-progress	24,000 × (40 + 50% (30 + 10) × 1/12	1,20,000	
Finished Goods	24,000 × 80 × 2/12	3,20,000	6,00,000
Debtors	24,000 × 100 × 2/12		4,00,000
Gross Working Capital			10,00,000
***Less:* Current Liabilities**			
Creditors	24,000 × 40 × 1/12		80,000
Net Working Capital Required			**9,20,000**

Working Note:

1. Cost p.u.
   Raw material = 40% of S.P. of ₹ 100 = 40
   Labour = 30% of S.P. = 30
   Overheads = 10% = 10

Illustration 14: A Ltd. Manufactured and sold 30,000 machines in the year 2008 at 100% capacity. Following information is available for the same year.

Materials	₹	7,50,00,000	Labour	3,00,00,000
Sales	₹	15,00,00,000	Gross Profit	20% on Sales

Due to slow down in economy the company has decided to reduce its production to 50% of its capacity during the year 2009.

It is estimated that.

(a) Price of Raw material will be reduced by 10% per unit.
(b) Wages will be reduced by 20% per unit.
(c) Overheads will be increased by 10% per unit.
(d) Selling price per unit to be estimated to maintain profit on sales at 20%

Additional informations for the year 2009.

1. Raw material will remain in stock for one month.
2. Finished goods will remain in wearhouse for 2 months.
3. Customers (at selling price) will enjoy one month credit.
4. Suppliers will allow 2 months credit.
5. Time lag in payment of wages and overheads will be 1 month.
6. Processing period one month.
7. Cash and bank balance should be ₹ 30,00,000.

You are required to forcast working capital requirement for the year 2009.

Solution: **Statement of Cost (30,000 Machines) for the year**

	2008		2009		
	Total ₹	Per Unit ₹	Revised		Per Unit
Materials	7,50,00,000	2,500	2,500 – 10%	=	2,250
Labour	3,00,00,000	1,000	1,000 – 20%	=	800
Overheads	1,50,00,000	500	500 + 10%	=	550
Total Cost	12,00,00,000	4,000			3,600
Profit	3,00,00,000	1,000			900
Sales	15,00,00,000	5,000			4,500
Sales	100				
Profit 20%	20				
Cost	80				

Selling Price = $\frac{100}{80} \times 3,600 = 4,500$

Cost Statement for the year 2009
15,000 Machines

	₹	₹
Materials	15,000 × 2,250	3,37,50,000
Labour	15,000 × 800	1,20,00,000
Overheads		82,50,000
Total		5,40,00,000
Profit		1,35,00,000
Sales		6,75,00,000

Forecast Working Capital Requirement for the year 2009

		₹	₹
Current Assets			
Stock of Raw Materials	$2,250 \times 15,000 \times \frac{1}{12}$	28,12,500	
Stock of WIP:			
Materials	$15,000 \times 2,250 \times \frac{1}{12}$	28,12,500	
Labour	$15,000 \times 800 \times \frac{1}{12} \times \frac{1}{2}$	5,00,000	
Overheads	$15,000 \times 550 \times \frac{1}{12} \times \frac{1}{2}$	3,43,750	36,56,250
Stock of Finished Goods:			
Materials	$15,000 \times 2,250 \times \frac{2}{12}$	56,25,000	
Labour	$15,000 \times 800 \times \frac{2}{12}$	20,00,000	
Overheads	$15,000 \times 550 \times \frac{2}{12}$	13,75,000	90,00,000
Cash & Bank balance		30,00,000	
Debtors	$\frac{6,75,00,000}{12}$		56,25,000
			2,40,93,750
Less: **Current Liabilities:**			
(i) Suppliers	$2,250 \times 15,000 \times \frac{1}{12} \times 2$	56,25,000	

(ii) Lag in Payment			
Wages	$15,000 \times 800 \times \frac{1}{12}$	10,00,000	
Overheads	$15,000 \times 550 \times \frac{1}{12}$	6,87,500	73,12,500
			1,67,81,250

Illustration 15: Prepare a working capital requirement of M/s F Ltd.

1. All activities of business are centralised at one place only.
2. The management of the company has decided to keep ₹ 25,000 cash in hand for all business contingencies and requirements.
3. Production during the previous year was 60,000 units and selling price p.u. was ₹ 40.
4. The same level of activity is intended to be maintained during the current year. However, selling price p.u. is estimated at 25% more than previous year.
5. The expected elements of cost to selling price are:

Raw material	55%
Wages	16.50%
Overhead	20%

6. The raw materials normally remain in stores for 1½ months before production.
7. Every unit of production remains in production process for 1 month.
8. Finished goods remain in warehouse for 2 months.
9. 20% of raw material requirements are obtained from a subsidiary company on 4 months credit and 60% from the suppliers by making 2 months advance payment. Balance are purchased on cash basis.
10. All sales are on cash against delivery basis except one special customer (who is lifting 50% of the sales turnover) to whom 3 months credit is extended.
11. Time lag in payment of wages and overhead is 1 month. **(T.Y. B.Com., Modified)**

Solution:

Production 60,000 units p.a.

Selling price = (40 + 25%) = 50 p.u.

Cost per unit:

		(₹)
Raw material	55% of ₹ 50	27.50
Wages	16.50% of ₹ 50	8.25
Overhead	20% of ₹ 50	10.00
		45.75

M/s F Ltd. Statement of Working Capital Requirement

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash in hand		25,000	
Raw materials	60,000 × 27.50 × 1/5/12	2,06,250	
Work-in-progress	60,000 × [27.50 + 50% (8.25 + 10)] × 1/12	1,83,125	
Finished Goods	60,000 × 45.75 × 2/12	4,57,500	8,46,875
Advance to Supplier	60% × 60,000 × 50 × 3/12		1,65,000
Debtors	50% × 60,000 × 50 × 3/12		3,75,000
Gross Working Capital			14,11,875

***Less:* Current Liabilities**			
Creditors	20% × 60,000 × 27.50 × 4/12	1,10,000	
Outstanding Wages and Overhead	60,000 × (8.25 + 10) × 1/12	91,250	
			2,01,250
Working Capital			**12,10,625**

Illustration 16: Production of a company during the previous year was 25,000 units. The same level of activity is intended to be maintained during the current year:

The expected ratios of cost to selling price:

Raw material = 45%, Direct wages = 15% and Overhead = 20%

The raw materials ordinarily remain in stock for 1 month before production. Every unit of production remain in the process for 1½ months and is assumed to be consisting of 100% raw material and wages and overheads. Finished goods remain in warehouse for 2 months. Credit allowed by the creditors is 2 months from the date of delivery of raw materials and credit given to debtors is 2½ months from the dispatch.

Estimated balance of cash	₹ 50,000
Lag in payment of wages	1/2 month
Lag in payment of expenses	1/2 month

Selling price is ₹ 25 per unit. Both production and sales are in a regular cycle. You are required to make a provision of 10% for contingency. (Except cash) **(T.Y. B.Com., Modified)**

Solution:

Cost per unit:

		(₹)
Raw Materials	45% of ₹ 25	11.25
Direct Wages	15% of ₹ 25	3.75
Overhead	20% of ₹ 25	5.00
Total cost		**20.00**

Statement of Working Capital Requirement

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash and Bank Balance			50,000
Stock-in-trade:			
Raw Materials	25,000 × 11.25 × 1/12	23,438	
Work-in-progress	25,000 × 20 × 1.5/12	62,500	
Finished Goods	25,000 × 20 × 2/12	83,333	1,69,271
Debtors	25,00,000 × 25 × 2.5/12		1,30,208
Gross Working Capital			3,49,479
Current Liabilities			
Creditors	25,000 × 11.15 × 2/12	46,875	
Outstanding Wages	25,000 × 3.75 × 0.5/12	3,906	
Outstanding Overheads	25,000 × 5 × 0.5/12	5,208	
			55,989
Working capital			**2,93,490**
Add: Contingency (10% of Working capital except cash)			24,349
Net Working Capital			**3,17,839**

* Contingency = 10% of (293,490 – 50,000)

Illustration 17: Tata Manufacturing Co. started for production of NANO cars at Calcutta in March 2008 and purchased Land for ₹ 10,00,000 and incurred ₹ 5,00,000 on its factory construction. However before production was started due to labour problems the Company has shifted its factory to Maharashtra, where it had benefit of low overheads. Overheads are 50% of labour expenses in Maharashtra.

Following is cost structure per car in Maharashtra for the year 2009-10.

Steel	50 kgs @ ₹ 1,000 per kg.
Spare Parts	10 kgs @ ₹ 200 per kg.
Engine	1 Engine @ ₹ 20,000 per engine.
Labour Charges	100 Hrs. @ ₹ 20 per hour.

From the following additional information calculate Working Capital requirement for the company to be started in Maharashtra for the year 2009-10.

1. Steel remains in stock for 2 months, Spare parts remain in stock for 1 month and Engine for 6 months.
2. Suppliers of Steel allow credit for 1 month, suppliers of Spare Parts allow credit for 15 days and suppliers of Engine allow credit for 2 months.
3. Time lag for payment of Labour and Overhead is 1 month
4. Cars will be in stock for 15 days after production.
5. Production Cycle is for 1 Month.
6. Estimated Production during year 2009-10 will be 5,000 NANO cars.

Solution: **Statement of Working Capital for the year 2009-10**

	₹	₹
Current Assets		
Stock of Materials		
Steel $\frac{25,00,00,000}{12} \times 2$	4,16,66,666.67	
Spare $\frac{1,00,00,00\ 0}{12} \times 1$	8,33,333.33	
Engine $\frac{10,00,00,00}{12} \times 6$	5,00,00,000.00	9,25,00,000
Stock of W.I.P.		
Steel $\frac{25,00,00,0\ \ 00}{12}$	2,08,33,333.33	
Spare $\frac{1,00,00,00\ \ 0}{12}$	8,33,333.33	
Engine $\frac{10,00,00,000}{12}$	83,33,333.33	
Labour $\frac{1,00,00,00}{12} \times \frac{1}{2}$		4,16,666.67
Overheads $\frac{50,00,000}{12}$	2,08,333.33	3,06,25,000
Finished Goods		
$\frac{37,50,0,00\ \ 0}{12} \times \frac{1}{2}$		1,56,25,000
(a)		13,87,50,000
Less: Current Liabilities		
Creditors		
Steel $\frac{25,00,00,0\ \ 00}{12}$	2,08,33,333.33	

Spare $\frac{1,00,00,00\ 0}{12} \times \frac{1}{2}$		4,16,666.67	
Engine $\frac{10,00,00,0\ 00}{12} \times 2$		1,66,66,666.67	3,79,16,666.67
Outstanding			
Labour $\frac{1,00,00,00\ 0}{12}$		8,33,333.33	
Overheads $\frac{50,00,000}{12}$		4,16,666.67	12,50,000.00
	(b)		3,91,66,666.67
Working Capital			9,95,83,333.33

Working Note

Cost Statement

Material:		
Steel 50 kgs. @ ₹ 1,000	=	50,000
Spare 10 kgs. @ ₹ 200	=	2,000
Engine 1 × 20,000	=	20,000
		72,000
Labour 100 hrs. @ ₹ 20 per hr.	=	2,000
Overheads 50% of Labour	=	1,000
Cost per Car		75,000

Yearly Cost for 5,000 units:

Materials:	
Steel 50,000 × 5,000	25,00,00,000
Spare 2,000 × 5,000	1,00,00,000
Engine 20,000 × 5,000	10,00,00,000
Labour 2,000 × 5,000	1,00,00,000
Overheads 50% of Labour	50,00,000
	37,50,00,000

Illustration 18: From the following information prepare a statement of working capital requirement for the month of February 2015.

Raw material cost	₹ 1 p.u.
Overhead	₹ 18,000 p.a.
Labour	60 paise p.u.
Output and sale	6,000 units p.m.
Selling price	₹ 6 p.u.

Stocks to be carried:

Raw material — 3 weeks production

Finished goods — 4 weeks supply

The debtors on an average take $2^{1}/_{4}$ months credit. Raw materials are received in uniform deliveries daily and suppliers have to be paid at the end of the month goods are received.

Other expense creditors allow on average of 2 weeks credit.

Solution:

Cost per unit

	(₹)
Raw Material Cost	1.00
Overhead (l8,000/12 = 1,500 p.m. 1,500/6,000)	0.25
Labour	0.60
Total Cost	**1.85**

Statement of Working Capital Requirement for the Month of February 2015

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Stock-in-trade:			
Raw Materials	6,000 × 1 × 34	4,500	
Finished Goods	6,000 × 1.85 × 4/4	11,100	15,600
Debtors	6,000 × 6 × 2.25		81,000
Gross Working Capital			96,600
***Less:* Current Liabilities**			
Creditors (WN 1)	6,000 × 1 × 15/29	3,103	
Creditors for Expenses	6,000 × (0.25 + 0.60) × 2/4	2,550	
			5,653
Working Capital			**90,947**

Working Note:

1. Raw materials are received daily and paid at the end. So, materials purchased on first day will be paid on last day of month = 29 days credit
   Materials purchased on second day and paid on last day = 28 days credit
   So, average 15 days taken
   February 2015 has 29 days

Illustration 19: You are required to calculate working capital requirements for M/s. A Ltd. from the following details.

1. Average amount locked up in stock:
   Finished goods ₹ 3,500 p.a.
   Raw materials ₹ 36,000 p.a.
2. Average credit given:
   For inland sales 1½ months credit ₹ 18,00,000 p.a.
   For export sales 2 months credit ₹ 6,00,000 p.a.
3. Lag in payment of wages and other expenses:

Wages	1/2 month	₹ 3,12,000 p.a.
Rent, Royalties etc.	4 months	₹ 1,20,000 p.a.
Salary to Clerical staff	1/2 month	₹ 84,000 p.a.
Salary to Managers	1 month	₹ 96,000 p.a.
Miscellaneous expenses	1 month	₹ 2,000 p.m.

4. Advance payment:
   Advertisement quarterly ₹ 6,000 p.a.
5. Undrawn profits on the average throughout the year ₹ 19,500

(T.Y. B.Com., Modified)

Solution: **M/s A Ltd. Statement of Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Stock-in-trade:			
Raw materials		36,000	
Finished Goods		3,500	39,500
Debtors			
Inland Debtors	18,00,000 × 1.5/12	2,25,000	
Export Debtors	6,00,000 × 2/12	1,00,000	3,25,000
Prepaid Advertisement	6,000 × 1/4		1,500
Gross Working Capital			**3,66,000**
***Less:* Current liabilities**			
Outstanding Expenses:			
Wages	3,12,000 × 0.5/12	13,000	
Rent, Royalties	1,20,000 × 4/12	40,000	
Salary to Clerical Staff	84,000 × 0.5/12	3,500	
Salary to Managers	96,000 × 1/12	8,000	
Miscellaneous Expenses	2,000 × 12 × 1/12	2,000	66,500
			2,99,500
Less: Undrawn Profits			19,500
Working Capital			**2,80,000**

Illustration 20: A company intend to manufacture a product. The estimates of the proposed business are:

1. Expected monthly sales ₹ 70,000
2. Estimated rate of profit on cost 25%
3. Fixed overheads are estimated to be ₹ 72,000 p.a.
4. Variable overheads are expected to be 10% of sales.
5. Wages amount to ₹ 15,000 p.m.
6. Stock turnover is 2 times a month
7. Debtors turnover is 1 time a month
8. 70% of purchases and 75% of sales will be estimated to be made on credit
9. There will be a lag of payment of 1/2 month for fixed and variable overheads
10. Labour expenses will be outstanding for a month
11. Supplier will extend credit of 1½ months.

Estimate the working capital requirement of a firm. **(T.Y. B.Com., Modified)**

Solution:

Sales = ₹ 70,000 p.m.

Profit = 25% on cost

Cost + Profit = Sales

100 + 25 = 125

S	C
125	100
70,000	(?)

Total cost = ₹ 56,000 p.m.

Cost per month:

		(₹)
Fixed Overheads	72,000/12	6,000
Variable Overheads	10% of 70,000	7,000
Wages		15,000
Material	(Balance)	28,000
Total Cost (as above)		**56,000**

1. Stock turnover = 2
   Cost of sales/Stock = 2
   56,000/Stock = 2
   Stock = 28,000
2. Debtors turnover = 1
   Credit sales/Debtors = 1
   (75% × 70,000)/Debtors = 1
   Debtors = 52,500
3. Outstanding fixed overhead
   = 6,000 × 0.5
   = 3,000
4. Outstanding variable overhead
   = 7,000 × 0.5
   = 3,500
5. Outstanding labour expenses
   = 15,000 × 1
   = 15,000
6. Creditors
   = 28,000 × 1.5
   = 42,000

Statement of Working Capital Requirement

Particulars	Amt. (₹)	Amt. (₹)
Current Assets		
Stock		28,000
Debtors		52,500
Gross Working Capital		80,500
***Less:* Current Liabilities**		
Creditors	42,000	
Outstanding Expenses:		
Fixed Overhead	3,000	
Variable Overhead	3,500	
Labour Expenses	15,000	
		63,500
Working Capital		**17,000**

Illustration 21: DT Ltd. has an installed capacity of 7,500 units p.m. So far it was operating at 75% of its normal capacity. From the information given below calculate the working capital requirement for the available capacity. Raw material ₹ 8 per unit, Direct Labour ₹ 4 per unit and Overheads are 100% of Direct Labour. Profit per unit is 1/6 selling price.

Raw materials storage period is 2 months. Processing time is 1/2 months. Finished goods in stores are for 3 months. Credit to debtors is for 2 months. Credit by creditors is for 1/2 month. Lag in wage payment is 1 month.

Production and Overheads accrue evenly throughout the year. **(T.Y. B.Com., Modified)**

Solution:

Production = 7,500 × 12 = 90,000 units p.a.

Cost per unit:

	(₹)
Raw Materials	8
Direct Labour	4
Overheads (100% of Direct Labour)	4
Total Cost	16
Profit	3.20
Selling Price	**19.20**

Profit = 1/6 of selling price

If selling price = x

P = x/6

Total cost + Profit = Sales

$16 + x/6 = x$

$(96 + x)/6 = x$

$96 + x = 6x$

$96 = 5x$

x = ₹ 19.20

Selling price = 19.20 per unit.

DT Ltd. Statement of Working Capital Requirement

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Stock-in-Trade:			
Raw Materials	90,000 × 8 × 2/12	1,20,000	
Work-in-Progress	90,000 × [8 + 50%(4 + 4)] × 1.5/12	1,35,000	
Finished Goods	90,000 × 16 × 3/12	3,60,000	6,15,000
Debtors	90,000 × 19.20 × 2.12		2,88,000
Gross Working Capital			9,03,000
***Less:* Current liabilities**			
Creditors	90,000 × 8 × 0.5/12	30,000	
Outstanding Wages	90,000 × 4 × 1/12	30,000	
			60,000
Working Capital			**8,43,000**

Illustration 22: KG Associates intend to manufacture electric tube lights. The estimates of the proposed business are:

(i) Expected annual sales ₹ 8,00,000.

(ii) Estimated rate of profit on cost of goods sold 25%.

(iii) Fixed expenses are estimated to be ₹ 15,000 per month and variable administration and selling expenses are expected to be 10% of his turnover. There will be a lag of payment of 1 month for both fixed and variable expenses.
(iv) Labour expenses amount to ₹ 8,000 per month and will be outstanding for 1½% months.
(v) Stock turnover is 4 times a year.
(vi) Debtors turnover is 4 times a year.
(vii) It is estimated that 70% of the purchases and 80% of sales will be made on credit. Purchases will be on one month's credit.
(viii) Sales and purchases will be evenly spread throughout the year.

Estimate the working capital requirements of firm. **(T.Y. B.Com., Modified)**

Solution:

Sales = 8,00,000

Profit = 25% on cost

Cost + Profit = Sales

S		C
125	:	100
8,00,000	:	(?)

Total cost = 6,40,000

Fixed Expenses = 15,000 × 12 = 1,80,000

Variable Administrative and Selling Expenses = 10% of sales of 8,00,000 = 80,000

Labour = 8,000 × 12 = 96,000

Materials = Total cost – Fixed Expenses – Variable Administrative and Selling Expenses – Labour

Materials = 6,40,000 – 1,80,000 – 80,000 – 96,000 = 2,84,000

(i) Outstanding fixed expenses = 1,80,000 × 1/12 = 15,000
(ii) Outstanding variable administrative and selling expenses = 80,000 × 1/12 = 6,667
(iii) Outstanding labour charges = 96,000 × 1.5/12 = 12,000
(iv) Stock turnover ratio = 4

Cost of sales/Stock = 4

6,40,000/4 = Stock

Stock = 1,60,000

(v) Debtors Turnover Ratio = 4

Credit sales/Debtors = 4

80% × 8,00,000/4 = Debtors

Debtors = 1,60,000

(vi) Creditors = 2,84,000 × 70% × 1112 = 16,567

Statement of Working Capital Requirement

Particulars	Amt. (₹)	Amt. (₹)
Current Assets		
Closing Stock	1,60,000	
Debtors	1,60,000	
Gross Working Capital		3,20,000
***Less:* Current Liabilities**		
Creditors	16,567	
Outstanding Expenses		
Fixed Expenses	15,000	

Variable Administrative and Selling Expenses	6,667	
Labour Charges	12,000	
		50,234
Working Capital		**2,69,766**

Illustration 23: From the following information, you are required to prepare a statement of working capital requirement.

Particulars	Amt. (₹)	Amt. (₹)
Budget Sales		15,00,000
Less: **Expenses:**		
Cost of raw materials	6,60,000	
Direct Labour	3,60,000	
Overheads (Including Depreciation of ₹ 60,000)	1,80,000	12,00,000
Profit		**3,00,000**

It is estimated that:

(i) Raw materials are carried in stock for 30 days and finished goods for 15 days only.
(ii) The production cycle takes 45 days.
(iii) 45 days credit is granted both for purchase and sale.
(iv) Creditors for overheads are paid after 15 days.
(v) Cash on hand is estimated to be 10% of Net working capital after considering cash on hand (Total days in a year to be considered 360). **(T.Y. B.Com., Modified)**

Solution: **Statement of Working Capital Requirement**

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash and Bank Balance			35,694
Stock-in-trade:			
Raw Material	6,60,000 × 30/360	55,000	
Work-in-progress	[6,60,000 + 50% (3,60,000 + 1,80,000)] × 45/360	1,16,250	
Finished Goods	12,00,000 × 15/360	50,000	2,21,250
Debtors	15,00,000 × 45/360		1,87,500
Gross Working Capital			4,44,444
Current Liabilities			
Creditors	6,60,000 × 45/350	82,500	
Outstanding Overheads (excluding depreciation)	1,20,000 × 15/360	5,000	87,500
Working Capital			**3,56,944**

Working Note:

Cash and Bank Balance = 10% of Working Capital

Working Capital = Current Assets + Cash and bank – Current liabilities

$x = 321{,}250 + 0.10x$

$x - 0.10x = 3{,}21{,}250$

$0.90x = 3{,}21{,}250$

$x = 3{,}56{,}944$

Working capital = 3,56,944

Cash and bank = 10% of 3,56,944

Cash and bank balance = 35,694

Illustration 24: You are required to prepare a statement showing the working capital required to finance the level of activity of 12,000 Units per year from the following information:

1. Raw materials are in stock on an average for 2 months.
2. Materials are in process on an average for half a month.
3. Finished goods are in stock on an average for one month.
4. Credit allowed by the suppliers is 1 1/2 months of purchase of raw materials and credit allowed to the customers is 2 1/2 months.
5. Lag in payment of wages and overheads is one month.
6. Cash and Bank balance is expected to be 10% of Net Working Capital before considering the Cash and Bank balance.
7. Activities are spread evenly throughout the year.

Cost per unit:	₹
Raw material	10
Wages	5
Total cost	30

Profit is 20% on selling price.

Solution: **Cost Statement of 12,000 Units per Year**

	Per Unit ₹	Per Year ₹	Per Month ₹
Element of Cost			
Raw Materials	10.00	1,20,000	10,000
Wages	5.00	60,000	5,000
Overheads	15.00	1,80,000	15,000
Cost of Production	30.00	3,60,000	30,000
Profit (25% on Cost)	7.50	90,000	7,500
Selling Price	37.50	4,50,000	37,500

Working Capital Requirement for the year

			₹	₹	₹
I. Current Assets Stocks					
Raw Material	10,000	2.00		20,000	
Work-in-progress					
(a) Materials	10,000	0.50	5,000		
(b) Labour	5,000	0.25	1,250		
(c) Overheads	15,000	0.25	3,750	10,000	
Finished Goods @ COP 60,000	30,000	1.00		30,000	
Debtors (at SP)	37,500	2.50		93,750	
					1,53,750
II. Less: Current Liabilities					
Creditors	10,000	1.50		15,000	
Outstanding Wages	5,000	1.00		5,000	
Outstanding Overheads	15,000	1.00		15,000	
Total Current Liabilities					35,000
Net Working Capital = I - II					1,18,750
Add: **Cash & Bank**	1,18,750 × 10%				11,875
Working Capital Requirement					1,30,625

Illustration 25: Z Ltd. sells its goods in domestic as well as in foreign market. Domestic selling prices are at 25 gross profit on sales and export prices are 10% below the domestic prices. Following are the estimated annual figure for the next year.

Particulars	Amt. (₹)	Amt. (₹)
Sales:		
Domestic	5,40,000	
Export	1,80,000	7,20,000
Material Consumption		2,91,000
Wages (Time Lag 1 month)		1,72,000
Manufacturing Expenses (1 month in arrears)		68,000
Depreciation on Assets		24,000
Administrative Expenses (1 month in arrears)		80,000
Sales Promotion Expenses (1 month in advance)		40,000

The company maintains 2 months stock of raw materials and 1½ months stock finished goods and cash balance ₹ 40,000. Domestic customers are allowed 3 months credit and foreign customers get 2 months credit. Suppliers extend credit for 2 months. Ascertain the funds required as Working Capital on above estimates keeping an additional 10% as a safety margin. **(T.Y. B.Com., Modified)**

Solution: Calculation of cost:

Export sales = 1,80,000 = 90%
100% = 2,00,000
Total sales = 5,40,000 + 2,00,000 = 7,40,000
Gross Profit = 25% of sales = 1,85,000
Cost of sales = Sales – Gross profit
Cost of sales = 7,40,000 – 1,85,000
Cost of sales = 5,55,000

Total cost can be calculated as under:

Material	2,91,000
Wages	1,72,000
Manufacturing expenses	68,000
Depreciation	24,000
	5.55,000

Z Ltd. Statement of Working Capital Requirement

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash Balance			40,000
Stock-in-Trade:			
Raw Material	2,91,000 × 2/12	48,500	
Finished Goods	5,55,000 × 1.5/12	69,375	1,17,875
Debtors			
Foreign	1,80,000 × 2/12	30,000	
Domestic	5,40,000 × 3/12	1,35,000	1,65,000
Advance Sales Promotion Expenses	40,000 × 1/4		10,000
Gross Working Capital			3,32,875
***Less:* Current Liabilities**			
Creditors	2,91,000 × 2/12	48,500	
Outstanding Expenses:			

Wages	1,72,000 × /12	14,333	
Manufacturing Expenses	68,000 × 1/12	5,667	
Administrative Expenses	80,000 × 1/12	6,667	75,167
Working Capital			2,57,708
Add: 10% of Safety Margin			25,771
Net Working Capital			**2,83,479**

Illustration 26: A company plans to manufacture and sell 400 units of domestic appliances per month at price of ₹ 600 each for the calendar year 2009. The ratio of costs to selling price are as follows:

Particulars	% of Selling Price
Raw Material	30
Packing Material	20
Direct Labour	15
Direct Expenses	5

Fixed overheads are estimated at ₹ 4,32,000 per annum.

Stock were maintained as per following:

Raw Material	30 Days
Packing Material	15 Days
Working-in-progress	7 Days
Finished Goods	200 Units

Following additional information is given:

1. Credit sales represent 80% and customers enjoy 30 working days credit. Balance 20% are cash sales.
2. Creditors allow 21 working days credit for payment.
3. Lag in payment in overhead and expenses is 15 working days.
4. Cash requirements to be 12% of net working capital excluding cash.
5. Working days in a year are taken as 300.

Prepare working capital requirement for the year 2009.

Solution:

Level of activity per month = 400 units

∴ Level of activity per annum = 4,800 units (300 Working days)

Cost Sheet for Year 2009

Particulars	(A) %	(B) Per Unit	(C) = B × 4,800 Per Annum ₹	(D) = C/300 Per Days ₹
Raw Material	30	180	8,64,000	2,880
Packing Material	20	120	5,76,000	1,920
Direct Labour	15	90	4,32,000	1,440
Direct Expenses	5	30	1,44,000	480
Fixed Overheads	-	90	4,32,000	1,440
Total Cost		510	24,48,000	8,160
Add: Profit	-	90	4,32,000	1,440
Sales	100	600	28,80,000	9,600

Estimate of Working Capital for the year 2009

		₹	₹	₹
A. Current Assets				
1. Stock				
(a) Raw Material	(2,880 × 30)		86,400	
(b) Packing Material	(1,920 × 15)		28,800	
(c) **Work-in-progress**				
Raw Material	(2,880 × 7)	20,160		
Packing Material	(1,920 × 7)	13,440		
Direct Labour	(1,440 × 7 × 50%)	5,040		
Direct Expenses	(480 × 7 × 50%)	1,680		
Fixed Overheads	(1,440 × 7)	10,080	50,400	

(d) Finished Goods	(200 × 510)		1,02,000	2,67,600
2. Debtors	(9,600 × 80% × 30)			2,30,400
3. Cash	(3,46,800 × 12%) (WN – 1)			41,616
				5,39,616
B. ***Less:* Current Liabilities**				
1. Creditors	(2,880 × 21)	60,480		
	(1,920 × 21)	40,320	1,00,800	
2. Outstanding Expenses				
Overheads	(1,440 × 15)	21,600		
Expenses	(480 × 15)	7,200		
Labour	(1,440 × 15)	21,600	50,400	
				1,51,200
C. Estimated Working Capital (A - B)				3,88,416

Working Note

1. Cash Balance

	₹
Current Asset (Excluding Cash)	4,98,000
Less: Current Liabilities	1,51,200
Working Capital (Excluding Cash)	3,46,800
Add: Cash 12%	41,616
Working Capital (Including Cash)	3,88,416

Illustration 27: The data of ABC Ltd. is as under:

Production for the year	33,000 units
Finished Goods Inventory	2 months
Raw Material Inventory	1 month
Production Process	l½ months
Credit allowed by Creditors	1 month
Credit given to Debtors	2 months
Selling Price per unit	₹ 145
Raw Material	40% of Selling Price
Direct Wages	20% of Selling Price
Overheads	20% of Selling Price

Wages and Overheads accrue evenly. Wages are paid in the next month of accrual. Material is introduced in the beginning of production cycle. Work-in-process involves full unit of raw material in the beginning of manufacturing process and other costs equivalent to 50%. The Cash and Bank balance will be 10% of net working capital requirement before Cash/Bank Balance. Prepare statement of working capital requirement.

(T.Y. B.Com., Modified)

Solution: **Cost per unit:**

		(₹)
Raw Materials	40% of Selling Price of ₹ 145	58
Wages	20% of Selling Price of ₹ 145	29
Overheads	20% of Selling Price of ₹ 145	29
		116

ABC Ltd. Statement of Working Capital Requirement

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash and Bank Balance			17,463
Stock-in-Trade:			
Raw Material	33,000 × 58 × 1/12	1,59,500	
Work-in-Progress	33,000 × [58 + 50% (29 + 29)] × 1.5/12	3,58,875	
Finished Goods	33,000 × 116 × 2/12	6,38,000	11,56,375
Debtors	33,000 × 145 × 2/12		7,87,500
Gross Working Capital			21,25,338
***Less:* Current Liabilities**			
Creditors	33,000 × 58 × 1/12	1,59,500	
Outstanding Wages	33,000 × 29 × 1/12	79,750	
			2,39,250
Working Capital			**18,86,088**

Cash and bank balance = 10% of net working capital before Cash and Bank Balance
= 10% (1,59,500 + 3,58,875 + 6,38,000 + 7,97,500 – 2,39,250)
= 1,71,400

Illustration 28: From the following information prepare a statement of working capital requirements of Z Ltd.

Sales to customers ₹ 7,20,000 p.a. (cost plus 20%)
Sales to retailers ₹ 6,00,000 p.a. (cost plus 25%)
Sales to wholesalers ₹ 4,60,000 p.a. (cost plus 15%)

Raw materials and Labour is 50% and 30% of the total cost. Raw materials remain in stores for 12 months. Processing period is 1 month. Finished goods remain in stores for 2 months. Almost 80% sales to customers are on cash basis and credit allowed to customers is 1 month. Sales to retailers take 1½ months for realisation. Credit allowed to wholesalers is 2 months. Suppliers for raw materials extend 1 month credit. Minimum Cash and Bank Balance is 10,000. Margin for safety is 5%. Almost 20% sales to retailers are on cash basis. **(T.Y. B.Com., Modified)**

Solution:

1. Sales to customers at cost plus 20%
   Sales = 120 = 7,20,000
   Cost = 100 = (?) 6,00,000
   Sales to retailers at cost plus 25%
   Sales = 125 = 6,00,000
   Cost = 100 = (?) 4,80,000
   Sales to wholesaler at cost plus 15%
   Sales = 115 = 4,60,000
   Cost = 100 = (?) 4,00,000

   Total cost **14,80,000**

2. Raw Material = 50% of cost
   = 50% × 14,80,000 = 7,40,000
   Labour = 30% of cost = 4,44,000
   Overheads = 25% of cost = 2,96,000

Z Ltd. Statement of Working Capital Requirement·

Particulars		Amt. (₹)	Amt. (₹)
Current Assets			
Cash and Bank Balance			10,000
Stock-in-trade:			
Raw Material	7,40,000 × 1.5/1 2	92,500	
Work-in-progress	[7,40,000 + 50%(4,44,000 + 2,96,000)] × 1/12	92,500	
Finished Goods	14,80,000 × 2/12	2,46,667	4,31,667
Debtors:			
Customers	20% × 7,20,000 × 1/12	12,000	
Retailers	80% × 6,00,000 × 1.5/12	60,000	
Wholesales	4,60,000 × 2/12	76,667	1,48,667
Gross Working Capital			5,90,334
***Less:* Current Liabilities**			
Creditors	7,40,000 × 1112		61,667
Working Capital			5,28,867
Add: 5% of Safety Margin			26,443
Net Working Capital			**5,55,310**

Illustration 29: Amruta Enterprises (having installed capacity of 2,00,000 units p.a.) produced 1,00,000 units in the financial year 2008-2009. The cost-structure in 2008-2009 was as under:

(a)	Raw Materials	200	40%
(b)	Wages	75	15%
(c)	Factory Overheads	50	10%
(d)	Administrative and Selling Overheads	75	15%
	Total Cost	400	80%
(e)	Profit	100	20%
	Selling Price	500	100%

The selling price, which was ₹ 500 per unit in 2008-09, is estimated to be fixed as at ₹ 600 per unit for the year 2009-2010; and production and sale expected to increase by 40,000 units. Its is, further, anticipated that raw materials cost per unit would increase by 10% due to price rise, whereas wage rate per unit would decrease by 20% due to automation. 56% of all the overheads are fixed and balance are variable. As a Management Accountant your are required to prepare (a) Cost statement for the year 2009-2010 after considering the following additional information:

(a) Raw materials stock equivalent to two and half months consumption would be stored.
(b) Production time is one month. Raw materials are introduced at the begining of the process, whereas wages and factory overheads accrue evenly during the production period.
(c) Two months stock of finished goods (valued at factory cost) would be carried in stock.
(d) 20% of raw materials would be imported from China and advance payment of two months would be made thereagainst. 15% of indigenous raw materials requirement would be procured locally against immediate cash payment. Suppliers of balance of indigenous raw materials, allow a credit of one month.
(e) 50% of customers would enjoy a credit of one month, whereas balance 50% of customers would accept a bill of exchange payable after three months. These bills of exchange are immediately hyphothecated with the bank against which overdraft facility would be available equal to 70% of amount of bills of exchange.
(f) Time-lag in payment of wages would be one month and for all overheads, it would be half month.
(g) The company would carry cash balance of ₹ 40,000 in its currency chest. Debtors are to be estimated at selling price.
(h) The activities are spread evenly throughout the year. Degree of completion of work-in-progress is 50%.

Solution

Cost Statement

	2008-09 : 1,00,000 Units				2009-10 : 1,40,000 Units			
	Per Unit		Total		Per Unit		Total	
Element of cost	**Working**	**₹**	**₹**	**₹**	**Working**	**₹**	**₹**	**₹**
A. Raw Materials	500 × 40%	200		2,00,00,000	200 × 110%	220		3,08,00,000
B. Wages	500 × 15%	75		75,00,000	75 × 80%	60		84,00,000
C. Factory Overheads								
1. Fixed	500 × 10% × 56%	28		28,00,000	Same Amount	20		28,00,000
2. Variable	500 × 10% × 44%	22		22,00,000	Same Rate	22		30,80,000
	500 × 10%		50	50,00,000			42	58,80,000
D. Factory Cost			325	3,25,00,000			322	4,50,80,000
E. Admn. & Selling Overheads								
1. Fixed	500 × 15% × 56%	42		42,00,000	Same Amount	30		42,00,000
2. Variable	500 × 15% × 44%	33		33,00,000	Same Rate	33		46,20,000
	500 × 15%		75	75,00,000			63	88,20,000
F. Cost of Sales	500 × 80%		400	4,00,00,000			385	5,39,00,000
G. Profit	500 × 20%		100	1,00,00,000			215	3,01,00,000
H. Sales	Given		500	5,00,00,000	Given		600	8,40,00,000

Working Capital Estimated for the year 2009-2010

		₹	₹
A. Current assets			
1. Stock			
(a) Raw Material	(3,08,00,000/12 × 2.5 months)		64,16,667
(b) **Work-in-Progress**			
Materials	(3,08,00,000/12 × 1 month)		25,66,667
Labours	(84,00,000/12 × 0.5 month)		3,50,000
Factory Overheads	(58,80,000/12 × 0.5 month)	2,45,000	31,61,667
(c) Finished Goods @ COP	(4,50,80,00/12 × 2 months)		75,13,333
			1,70,91,667
2. Debtors	(8,40,00,000/12 × 0.5 month)		35,00,000
3. Bills Receivable	(8,40,00,000/12 × 1.5 months)		1,05,00,000
4. Advance for Imports	(3,08,00,000/12 × 20% × 2 months)		
5. Cash & Bank Balance	(Given)		40,000
			3,21,58,334
B. ***Less:*** **Current Liabilities**			
1. Creditors for Raw Materials	(3,08,00,000/12 × 80% × 85% × 1 month)		17,45,333
2. Outstanding Wages	(84,00,000/12 × 1 month)	7,00,000	
3. Outstanding Factory Overheads	(58,80,000/12 × 0.5 month)	2,45,000	
4. Outstanding Admn. Overheads	(88,20,000/12 × 0.5 month)	3,67,500	
5. Bank Overdraft	(8,40,00,000 × 50% × 70% × 3/12)		
		73,50,000	
			1,04,07,833
C. Estimated Working Capital (A – B)			2,17,50,501

Illustration 30: From the following information prepare a statement of working capital requirement of QA Ltd. A safety margin of 10% should be added to the estimated working capital.

1. Sales to dealers 'X' ₹ 1,20,000 p.a. at the credit of 1 month. Goods are sold at cost plus 33^{1}/3%.
2. Sales to dealer 'Y' ₹ 2,12,500 p.a. at the credit of 2 months. Goods are sold at cost plus 25%.
3. Sales to customers (30% cash) ₹ 2,40,000 p.a. on 1 month credit. Goods are sold at cost plus 50%.
4. Total cost ₹ 20 per unit, material constitute 50% of Total Cost, Wages constitute 30% of Total Cost and Overheads 20%.
5. Raw material remains in stock for 2 months.
6. Work in process are 1 month. Valuation to be made at material cost plus 50% each of labour and overheads.
7. Finished goods stock to be maintained for 2 months.
8. Suppliers of materials will be given 1 month credit.
9. Time lag in payment of Wages and Overheads is half a month.
10. Bank balance to be maintained ₹ 20,000. **(T.Y. B.Com., Modified)**

Solution: **QA Ltd. Statement of Working Capital Requirement**

Particulars		(₹)
Current Assets		
Debtors		
'X' Dealers	1,20,000/12 × 1/12	10,000
'Y' Dealers	2,12,500/12 × 2/12	35,417
Customers	2,40,000/12 × 70% × 1/12	14,000
		59,417
Stock of Raw Materials	10 × 21,000 units × 2/12	35,000

Stock of W.I.P (1 month)	[10+ 50%(6 + 4)] 21,000 × 1/12	26,250
Stock of Finished Goods	20 × 21,000 × 2/12	70,000
Bank Balance	Given	20,000
Gross Working Capital		**2,10,667**
***Less:* Current Liabilities**		
Creditors	10 × 21,000 × 1 mth/12. = 17,500	
Outstanding Wages	6 × 21,000 × 0.5/12.= 5,250	
Outstanding Overheads	4 × 21,000 × 0.5/12 = 3,500	26,250
Net Working Capital		1,84,417
Add: Safety Margin (10%)		18,442
Estimated Working Capital		**2,02,859**

Working Notes:

1. Statement of cost and goods sold

		(₹)	
(a)	Sales to dealer 'X'	1,20,000	
	Less: Gross Profit (33.33% of cost = 1/4 of sales)	(30,000)	90,000
(b)	Sales to dealer 'Y'	2,12,500	
	Less: Gross Profit (25% of cost = 1/5 of sales)	(42,500)	1,70,000
(c)	Sales to customers	2,40,000	
	Less: Gross Profit (50% of cost = 1/3 of sales)	(80,000)	1,60,000
	Total cost of goods sold		4,20,000

2. Annual sales (unit) = 420,000/20 = 21,000 units
3. Elements of cost per units.

	(₹)
Material (50% of ₹ 20)	10
Wages (30% of ₹ 20)	6
Overheads (20% of ₹ 20)	4
Total Lost	20

Illustration 31: D Ltd. provides you with the following information with the request to prepare a statement of working capital.

A. Cost Records: Total cost of product is ₹ 42 per unit of which 50% is accounted by materials, overheads are 1/3 of the total cost per unit and balance comprises wages.

B. Sales Target (Annual):

Zone A – (Cost + 25%)	₹ 10,00,000	Cash
Zone B – (Cost + 20%)	₹ 8,40,000	1 month credit
Zone C – (Cost + 10%)	₹ 4,40,000	2 months credit

C. Other Details:

(i) Stocks of both raw materials and finished goods are to be kept for 1½ months, while processing takes 1 month.

(ii) A total of 20% of supplies of materials are ensured on cash payment, 25% of supplies are taken on advance payment for 15 days and remaining suppliers have agreed to extend 2 months credit.

(iii) Time lag in payment of wages and overheads is 1/2 month.

(iv) Debtors are valued at sales.

(v) Cash balance is always kept at 10% of net working capital inclusive of cash.

(T.Y. B.Com., Modified)

Solution: **Cost Sheet**

Particulars	Zone A	Zone B	Zone C	Total
Sales	10,00,000	8,40,000	4,40,000	
Less: Gross Profit	(10,00,000 × 25/125)	(8,40,000 × 20/120)	(4,40,000 × 10/110)	
	2,00,000	1,40,000	40,000	
Cost	8,00,000	7,00,000	4,00,000	19,00,000
Material (50% Cost)	4,00,000	3,50,000	2,00,000	9,50,000
Labour (1/3 of Cost)	2,66,667	2,33,333	1,33,333	6,33,333
Overheads (Bal)	1,33,333	1,16,667	66,667	3,16,667

Statement Showing the Working Capital Requirement

Particulars		Amt. (₹)	Amt. (₹)	Amt. (₹)
Current Assets:				
Cash and Bank Balance (WN)			55,729	
Stock-in-Trade:				
Raw Material	9,50,000 × 1.5/12	1,18,750		
Work in Progress	9,50,000 + 50% (6,33,333 + 3,16,667) × 1/12	1,18,750		
Finished Goods	19,00,000 × 1.5112	2,37,500	4,75,000	
Debtors:				
Zone A		NIL		
Zone B	8,40,000 × 1/12	70,000		
Zone C	4,40,000 × 2/12	73,333	1,43,333	
Advances to Suppliers	9,50,000 × 25% × 0.5/12		9,896	
Gross Working Capital				6,83,958
***Less:* Current Liabilities**				
Creditors	9,50,000 × 55% × 2/12		87,083	
Outstanding Wages and Overheads	(6,33,333 + 3,16,667) × 0.5/12		39,583	1,26,666
Working Capital				**5,57,292**

Working Note:

Net working capital 100

Cash balance 10

Working capital before cash balance 90

90 = (Stock + Debtors + Advances – Creditors – Outstanding expenses)

90 = 5,01,563

100 = (?)

Net working capital = 5,57,292

Cash balance = 55,729

Illustration 32: From the following particulars of Super Market Limited, estimate their working capital requirement for the year ended 31st March, 2009.

Balance as on 1st April, 2008	₹
Debtor	70,000
Bills Receivable	5,000
Creditors	55,000
Bills Payable	4,000
Stock	25,000
Bank Balance (Credit)	1,000

Transaction during the year ended 31st March, 2009	₹
Sales for the year (with uniform profit of 25% on sales)	3,00,000
Purchases for the year	2,10,000
Payment to creditors during the year	1,70,000
Receipt from debtors during the year	2,50,000
Bills Receivable received during the year	3,000
Bills Payable accepted during the year	2,000
Amount received against Bills Receivable	2,000
Amount paid against Bills Payable	1000
Overheads on aanual basis (one sixth to remain outstanding)	24,000
Purchased fixed assets by cheque payment	
Contingencies to be kept at 10%	50,000

Solution:

Statement Showing Estimate of Working Capital

		₹
A. Current Assets		
1. Stock [WN 3]	10,000	
2. Debtors [WN 1]	1,17,000	
3. Bills Receivable [WN 5]	6,000	
4. Bank [WM 4]	10,000	1,43,000
B. *Less:* Current Liabilities		
1. Creditors [WN 2]	93,000	
2. Bills Payable [WN 6]	5,000	
3. Outstanding Expenses (1/5 × 20,000)	4,000	1,02,000
Net Working Capital		41,000
Add: Contingencies @ 10%		4,100
		45,100

Working Note

1.

Dr. **Debtors A/c** **Cr.**

	₹		₹
To Balance b/d (given)	70,000	By Bank	2,50,000
To Sales	3,00,000	By Bills Receivable	3,000
	–	By Balance c/d (Bal. Fig.)	1,17,000
	3,70,000		3,70,000

2.

Dr. **Creditors A/c** **Cr.**

	₹		₹
To Bank	1,70,000	By Balance b/d	55,000
To Bills Payable	2,000	By Purchases	2,10,000
To Balance c/d (Bal. Fig.)	93,000		–
	2,65,000		2,65,000

3.

Dr. Stock (Trading) A/c Cr.

	₹		₹
To Balance b/d (Opening Stock)	25,000	By Sales	3,00,000
To Purchases	1,10,000	By Closing Stock (Bal. Fig.)	10,000
To Gross Profit	75,000		–
	3,10,000		3,10,000

4.

Dr. Bank A/c Cr.

	₹		₹
To Debtors	2,50,000	By Opening Balance b/d	1,000
To Bills Receivable	2,000	By Creditors	1,70,000
		By Overheads	20,000
		By Fixed Assets	50,000
		By Bills Payable	1,000
	–	By Balance c/d	10,000
	2,52,000		2,52,000

5.

Dr. Bills Receivable A/c Cr.

	₹		₹
To Opening Balance b/d	5,000	By Bank	2,000
To Debtors	3,000	By Closing Balance c/d	6,000
	8,000		8,000

6.

Dr. Bills Payable A/c Cr.

	₹		₹
To Bank	1,000	By Balance b/d	4,000
To Balance c/d	5,000	By Creditors	2,000
	6,000		6,000

Illustration 33: SC Ltd. has an installed capacity of producing 100 lakh tonnes of cement per annum; its present capacity utilisation is 8O%. The major raw material to manufacture cement is limestone which is obtained on cash basis from a company located near the plant. The company produces cement in 1 tonne drum. From the information given below, determine the net working capital requirement of the company for the current year. Cost structure per drum of cement is as under:

	(₹)
Gypsum	200
Limestone	100
Coal	50
Packing Materials	20
Direct Labour	180
Factory Overheads	
(Including Depreciation of ₹ 10)	45
Administrative Overheads	40

Selling Overheads	10
Total Cost	645
Profit Margin	155
Selling Price	800
Add: Sales Tax (4% of Selling Price)	32
Invoice Price to Consumer	832

Additional information:

1. Desired holding period of raw material:

Gypsum	1½ months
Limestone	2 months
Coal	1 month
Packing materials	1.5 months

2. The product is in process for a period of 1 month (Assume full units of materials namely — Gypsum, Limestone and Coal are required in the beginning; other conversion costs are to be taken at 50%).
3. Finished goods are in stock for a period of 1½ months before they are sold.
4. Debtors are extended credit for a period of 2 months.
5. Average time lag in payment of wages is approximately 1/2 month and of overheads 1 month.
6. Average time lag in payment of sales tax is 1½ months.
7. The credit periods extended by various suppliers are:

Gypsum	1½ months
Coal	1 month
Limestone	2 months
Packing material	1/2 month

8. Minimum desired Cash Balance is ₹ 10 lakhs. **(T.Y. B.Com., Modified)**

Solution: **SC Ltd. Statement Showing the Working Capital Requirement**

(Amt. in Lakhs)

Particulars		(₹)	(₹)	(₹)
Current Assets:				
Bank Balance			10	
Stock-in-Trade:				
Gypsum	200 × 80 × 1.5/12	2,000		
Limestone	100 × 80 × 2/12	1,333		
Coal	50 × 80 × 1/12	333		
Packing Material	20 × 80 × 1.5/12	200		
Work in Progress				
	80 × [200 + 100 + 50 + 50%(20 + 180 + 45) × 1/12	3,150		
Finished Goods	80 × (200 + 100 + 50 + 20 + 180 + 45) × 1.5/12	5,950	12,966	
Debtors	80 × 832 × 2/12		11,093	
Gross Working Capital				24,069
***Less:* Current Liabilities**				

Creditors				
Gypsum	200 × 80 × 1.5/12	2,000		
Limestone	100 × 80 × 2/12	1,333		
Coal	50 × 80 × 1/12	333		
Packing Material	20 × 80 × 0.5/12	67	3,733	
Outstanding Wages	180 × 80 × 0.5/12		600	
Outstanding Overheads (Excluding Depreciation)	35 × 80 × 1/12		233	
Outstanding Sales Tax	32 × 80 × 1.5/12		320	
				4,886
Working Capital				**19,183**

Notes:

1. Packing Material is considered as Factory Overhead and hence included in cost of production.
2. Depreciation is also considered as cost of production.

Working Note:

Capacity = 1,00,00,000 tonnes

Utilisation = 80% × 100 lakh tonnes

= 80 lakhs tonnes

Illustration 34: A business having its office at Vashi, has the following assets and liabilities as on 31st March 2015.

Liabilities	Amt. (₹)	Assets	Amt. (₹)
Capital	8,00,000	Cash	55,000
Creditors	72,000	Banks	25,000
		Debtors	1,80,000
		Stock	60,000
		Fixed assets	5,52,000
	8,72,000		**8,72,000**

The business decides to open a branch at Thane. It is expected that Thane branch will require a total capital of ₹ 4,00,000 of which ₹ 80,000 would be towards Fixed Assets. You are asked to compute the Working Capital of business after opening of Thane branch.

Solution: **Statement of Working Capital Requirement**

Particulars	Amt. (₹)
Current Assets	
Cash	55,000
Bank	25,000
Debtors	1,80,000
Stock	60,000
Gross Working Capital	3,20,000
***Less:* Current Liabilities**	
Creditors	72,000
Working Capital of Vashi Branch	2,48,000
Add: Working Capital of Thane Branch (4,00,000 – 80,000)	3,20,000
Total Working Capital	**5,68,000**

Illustration 32: From the following information, extracted from the books of manufacturing company, compute the operational cycle in days. (Period covered to be taken 365 days in a year)

Particulars	₹ in '000
Average amount of Debtors	912.50
Stock of Raw Materials	182.50
Stock of Finished Goods	273.75
Average amount of creditors	135
Cost of Raw Materials	1,095
Total Cost	5,000
Sales	8,000

Solution:

1. Stock of raw materials = Cost of raw materials × Number of days/365
   182.50 = 1,095 × Number of days/365
   182.50 × 36511,095 = Number of days
   Number of days = 61 days
2. Stock of finished goods = Total cost × Number of days/365
   273.75 = 5,000 × Number of days/365
   273.75 × 365/5,000 = Number of days
   Number of days = 20 days
3. Debtors = Sales × Number of days/365
   912.50 = 8,000 × Number of days/365
   912.50 × 365/8,000 = Number of days
   Number of days = 42 days
4. Creditors = Cost of Raw materials × Number of days/365
   135 = 1,095 × Number of days/365
   135 × 36511,095 = Number of days
   Number of days = 45 days

Illustration 26: Calculate the Cost of sales if stock of work in progress is ₹ 3,60,000 and its average conversion period is 6 days.

Solution:

Average amount of work in progress = Cost of sales × umber of days/365
3,60,000 = Cost of sales × 6/365
Cost of sales = ₹ 2,19,00,000

Illustration 27: Calculate Inventory conversion period if,

Particulars	(₹)
Raw Material Inventory	50,000
Raw Material Consumption	4,00,000
WIP Inventory	20,000
Total Cost	5,00,000
Finished Goods Inventory	40,000

Total days in a year to be considered 360.

Solution:

1. Stock of Raw Material = Raw Material Consumption × Number of days/360
   50,000 = 4,00,000 × Number of days/360
   Number of days = 45 days
2. Stock of WIP = Total cost × Number of days/360
   20,000 = 5,00,000 × Number of days/360
   Number of days = 14 days
3. Stock of Finished Goods = Total cost × Number of days/360
   40,000 = 5,00,000 × Number of days/360
   Number of days = 29 days

Exercises

Self-assessment Questions 1

1. Maintaining adequate working capital at the satisfactory level is crucial for ..... the ..... of a firm.
2. Prepaid expenses are .....
3. Provision for tax is .....
4. A firm must have ..... neither excess nor shortage.

Self-assessment Questions 2

1. ..... refers to the amounts invested in current assets.
2. To ..... and monitor the utilization of funds of a firm ..... is to be given top priority.
3. When current assets exceed current liabilities the net working capital is .....
4. Permanent working is called ..... working capital.

Self-assessment Questions 3

1. Objective of working capital management is achieving a tradeoff between ..... and .....
2. Credit obtained by firm from its suppliers is known as .....
3. An aggressive policy of working capital management means depending on ..... to the maximum extent.
4. To prevent the competitors from snatching any market for their products the firm may have a ..... policy of holding ..... of current assets.

Self-assessment Questions 4

1. To finance the operations in ..... of a firm working capital is required.
2. To finance operations during the time gap between ..... and ..... working capital is required.

Self-assessment Questions 5

1. The time gap between acquisition of resources from suppliers and collection of cash from customers is known as .....
2. ..... is the average length of time required to produce and sell the product.
3. ..... is the average length of time required to convert the firms receivables into cash.
4. ..... is conversion cycle is the length of time between firm's actual cash expenditure and its own receipt.

Self-assessment Questions 6

1. Capital intensive industries require ..... amount of working capital.
2. There is a ..... between volume of sales and the size of working capital of a firm.
3. Under inflationing conditions same level of inventory will require ..... investment in working capital
4. Longer the manufacturing cycle the investment in working capital.

Self-assessment Questions 7

1. ..... is used to estimate working capital requirements of a firm.
2. Operating cycle approach is based on the assumption that production and sales occur on a .....

Terminal Questions 1

1. Examine the Components of working capital.
2. Explain the concepts of working capital.
3. What are the objectives of working capital management ?
4. Briefly explain the various elements of operating cycle.
5. Gross working capital and Net working capital.

Answer for Self-assessment Questions

Self-assessment Questions 1

1. Maintaining, Competitiveness.
2. Current assets.
3. Current Liabilities
4. Adequate working capital

Self-assessment Questions 2

1. Gross working capital
2. Plan, working capital management as applied.
3. Positive
4. Fixed

Self-assessment Questions 3

1. Liquidity, Profitability.
2. Spontaneous finance.
3. Spontaneous finance.
4. Conservative, Large quantum.

Self-assessment Questions 4

1. Operating cycle
2. Sale of goods on credit, realization of money from customers.

Self-assessment Questions 5

1. Operating cycle
2. Inventory conversion period
3. Receivables conversion period
4. Cash Conversion cycle

Self-assessment Questions 6

1. Higher
2. Positive direct correlation.
3. Increased
4. Larger

Self-assessment Questions 7

1. Operating cycle
2. Continuous bases

Self-assessment Questions 8

Multiple Choice Questions:

1. Working capital is defined as:
   (a) Excess of Current Assets over Current Liabilities
   (b) Excess of Current Liabilities over Current Assets
   (c) Excess of Fixed Assets over Long-term Liabilities
   (d) None of the above.
2. Working Capital is also known as 'Circulating Capital, Fluctuating Capital and Revolving Capital'. The aforesaid statement is:
   (a) Correct (b) Incorrect
   (c) Cannot say
3. The basic objectives of working capital management are:
   (a) Optimum utilisation of resources for profitability
   (b) To meet day-to-day current obligations
   (c) Ensuring marginal return on current assets is always more than cost of capital
   (d) Select anyone of the above statement
4. The term gross working capital is known as:
   (a) The investment in Current Liabilities
   (b) The investment in Long-term Liability
   (c) The investment in Current Assets
   (d) None of the above
5. The term net working capital refers to the difference between the Current Assets minus Current Liabilities.
   (a) The statement is correct (b) The statement is incorrect
   (c) Cannot say
6. The term 'Core Current Assets' was coined by
   (a) Chore Committee (b) Tandon Committee
   (c) Jilani Committee (d) None of the above.
7. The concept operating cycle refers to the average time which elapses between the acquisition of raw materials and the final cash realisation. This statement is
   (a) Correct (b) Incorrect
   (c) Partially True (d) Cannot say
8. Over trading arises when a business expands beyond the level of funds available. The statement is
   (a) Incorrect (b) Correct
   (c) Partially correct (d) Cannot say

Answers:

1. (a), 2. (a), 3. (b), 4. (c), 5. (a), 6. (b). 7. (a), 8. (b)

Self-assessment Questions 9

True or False

1. Current assets are likely to be convertible in to cash with in short period normally, within 12 months.
2. Working capital concept refers to net Current Assets i.e. excess of current assets over current liabilities.
3. Net Working Capital refers to the total Current Assets.
4. Gross Working Capital refers to excess of Current Assets over Current Liabilities.
5. Cash Working Capital indicates the Working Capital at cash cost.
6. Working Capital over and above permanent working capital would be termed as temporary working capital.
7. Working Capital Management is concerned with the problems that arise in managing the current assets, current liabilities and the interrelationships between them.

8. The main objective of management of working capital is to maintain the Working Capital at minimum level.
9. The basic objectives of working capital management are to optimum utilisation of resources for profitability
10. There are two concepts of working capital.
11. Net working capital means total current assets.
12. Net Working Capital means the difference between Current Assets and Current Liabilities.
13. The need for working capital arises due to operating cycle prevailing in the business.
14. The operating cycle refers to the time required to convert the cash into inventory, inventory into receivables and receivables into cash.
15. Working Capital can be permanent and temporary.
16. Current Assets include: stocks of raw materials, work-in-progress, finished goods, trade debtors, prepayments, cash balances etc.
17. Current Liabilities include: trade creditors, accruals, taxation payable, bills payables, outstanding expenses, dividends payable, short-term loans.
18. Permanent or fixed working capital is the minimum amount of working capital required to run the business continuously.
19. Temporary working capital: The amount of working capital over and above the Permanent working capital is variable/fluctuating/temporary working capital.
20. If the firm has inadequate working capital, it is said to be undercapitalised.
21. If a firm has insufficient working capital and tries to increase sales, it can easily overstretch the financial resources of the business. This is called overtrading.
22. Operating Cycle = R + W + F + D – C.

Answers:

1. (T), 2. (T), 3. (F), 4. (F), 5. (T), 6. (T), 7. (T), 8. (F), 9. (T), 10. (T), 11. (F), 12. (T), 13. (T), 14. (T), 15. (T), 16. (T), 17. (T), 18. (T), 19. (T), 20. (T), 21. (T), 22. (T)

Self-assessment Questions 10

Fill in the Blanks

1. The main objective of management of working capital is to maintain the working capital at ..... level (satisfactory level/adequate level.)
2. The term gross working capital is known as investment in ..... assets. (current)
3. Working capital = ... less ..... (current assets, current liabilities)
4. There are two concept of working capital namely ..... and ..... (gross and net working capital)
5. The operating cycle refers to the time required to convert the ..... into inventory, inventory into receivables and receivables into ..... (cash)
6. .....working capital is the minimum working capital required to run the business smoothly. (Permanent).
7. Operating cycle = ... (R + W + F + D - C)

Match the following :

A	B
1. Gross working capital	a. minimum working capital
2. Net working capital	b. to meet seasonal requirements
3. Permanent working capital	c. excess of current assets over current liabilities
4. Seasonal working capital	d. excess of current liabilities over current assets
5. Positive working capital	e. cash cost of working capital
6. Negative working capital	f. valued at cost or at S.P.
7. Cash working capital	g. valued at cost of production

8.	Debtors	h.	current asset less current liabilities
9.	Stock of goods	i.	total current assets
10.	WIP	j.	stock of materials +50% of wages & overheads
11.	Creditors	k.	cost of materials for the period of credit
12.	Margin of safety	l.	added to net current assets to get working cap.
13.	Outstanding expenses	m.	lag in payment of expenses
14.	Large scale operation	n.	larger working capital
15.	Cash sales	o.	less working capital

Ans: 1 –I, 2 – h, 3- a ,4- b, 5-c ,6 -4 , 7- e, 8 – f, 9- g ,10- j, 11- k, 12- l, 13- m 14- n, 15 – o.

Fill in the Blanks:

1. Working capital is excess of current asset are _____
2. Net working capital – current _____ less _____ liabilities.
3. Gross working capital = total _____ assets.
4. Decreases in current liabilities _____ working capital.
5. Working capital required to meet seasonal requirements is _____ .
6. Positive working capital is excess of current assets over _____.
7. Debtors may be valued at _____ or _____
8. Outstanding expenses bring _____ the requirement of working capital.
9. Margin of safety is _____ to net current assets to get working capital.
10. Permanent working capital is also known as _____ capital.
11. Net working capital = C.A. -_____
12. _____ cycle is one method of estimating working capital.
13. Raw material stock =_____ / 12 x no. of months stock.
14. Finished stock = _____ / 12 x no of months stock.
15. Seasonal working capital required for _____ requirement.
16. An organisation which grants longer period of credit requires _____ working capital.

Ans: 1. Current liabilities, 2. Assets, current, 3. Current, assets 4. Increases, 5. seasonal working capital, 6. Current liabilities, 7. Cost, S.P, 8. Down, 9. added, 10. Core, 11. Current liabilities, 12. Operating, 13.cost of material, 14. cost of product, 15. Seasonal, 16. More.

True or False

1. Working capital is excess of current assets over current liabilities.
2. Trading organisation requires less working capital.
3. Cash cost approach is the appropriate basis of estimation of working capital
4. Gross working capital is equal to net current asset
5. Temporary working capital remains constant
6. Permanent working capital remains constant
7. Longer the period of credit allowed by supplires lesser will be the requirement of working capital
8. Lag in the payment of overheads increasing working capital requirement
9. A service organisation requires more working capital then that of trading organisation
10. Inadequate working capital increases efficiencies of the management
11. Trade credit is a source of working capital
12. A business organisation need not have working capital
13. Working capital financing may be done by banks by hypothecation of stock
14. Average holding period of current asset decides requirements of working capital

Ans.: True -1. True, 2. False, 3. True, 4. False, 5. True, 6. True, 7. True, 8. False, 9. False, 10. False, 11. True, 12. False, 13. True, 14. True,

Practical Questions

1. Bhargava Ltd. furnishes you with the following details with the request to calculate the estimated working capital requirements for the year 2014.
   (a) **Credit:** Two months credit to domestic customers and three months to overseas buyers. Suppliers to give one months credit.
   (b) **Time Lag:** One month in respect of all the expenses except sales promotion expenses which are payable in advance on quarterly basis.
   (c) Projected figures for the year 2014:

	₹
Domestic Sale	1,80,000
Export Sales	36,000
Wages	42,000
Manufacturing Expenses	57,000
Administrative Expenses	60,000
Sales Promotion Expenses	30,000

(April - 2000)

   (d) Inventories to be maintained as follows:
   Raw Materials: One month for domestic and two months for export supplies.
   Finished Goods: One month for domestic and three months for export supplies.
   (e) Gross profit is to be maintained at 25% on sales, while overseas buyers are to be allowed a special 10% discount.
   (f) Special Packing Credit Limits are available on 90% of export stocks of raw materials and debtors.
   (g) An additional cash balance is to be maintained as safety margin which is equivalent to 10% of total working capital.
2. From the following details provided by Goldline Computers Limited, estimate their working capital requirement for the year as at 31st March, 2014.

Balances as at on 1st April, 2013

	₹	₹
Debtors	67,000	
Creditors	56,250	
Cash	15,000	
Stock	30,000	
Sales for the year (with uniform profit of 40% on sales)	2,66,750	
Purchase for the year		1,56,750
Payments to Creditors during the year		1,65,000
Receipts from Debtors during the year		2,62,500
Estimated Overheads on annual basis (one fifth to remain outstanding)		20,000
Estimated amounts to be kept for special millennium dividend in addition to Cash Balance		5,000

(October - 2000)

No amount for contingency is to be kept.

3. Finance Director of "SMART LTD" intends to plan financial requirements for working capital of the company for coming year 2014.
   The share capital of the company is ₹ 10,00,000. The company also has issued 10% Debentures of ₹ 1,50,000.
   The Fixed Assets of the company are valued at ₹ 3,75,000.
   Production in the previous year was 15,000 units. It is expected that during coming year it will be 30,000 units.

The estimated cost-sheet is given below:

Particulars	₹ (per unit)
Raw Material	60
Direct Wages	10
Overheads	20
Profit	10
Selling Price	100

(October - 2001)

You are further informed that:

(a) Raw material will be in stock for half month.
(b) Production cycle will take one month.
(c) Finished goods will remain in godown for one month.
(d) All sales will be on credit basis.
(e) Suppliers' will allow three months credit.
(f) Customers' will enjoy four months credit.
(g) Production and sales will be evenly spread throughout the year.
(h) Time lag in payment of wages and overhead will be half month.

You are required to prepare:

(a) The estimate of Working Capital requirement.
(b) Projected Profit and Loss Account for coming year.
(c) Projected Balance Sheet at the end of coming year, in order to find out cash requirement.

4. Following information is submitted by Sairaj Chemist for the year 2014.

			₹
(a)	Total Domestic Sales 2000 Kgs. @ ₹ 20 per 100 gms.		4,00,000
(b)	Exports Sales 1000 Kgs		1,80,000
(c)	Domestic Cash Sales 500 Kgs		1,00,000
(d)	Raw Material Cost		
	(i) For Export Sales	₹ 60 per Kg	
	(ii) For Other Sales	₹ 50 per Kg	
(e)	Wages of all	₹ 50 per Kg	
(f)	Total Fixed Expenses		20,000
(g)	Other Variable Expenses		80,000

For the year 2015 it is estimated as under:

(a) Domestic sales will increase by 20% but average price shall decrease by 10%.
(b) Export realisation will increase by 10% and quantity sold will increase by 20%.
(c) Raw material prices for both will increase by 20%.
(d) Fixed expenses will increase by 80%.
(e) Variable expenses for domestic sales will be ₹ 20 and ₹ 30 per Kg for export sales.
(f) Wages per unit will remain unchanged.

Calculate working capital requirements for the year 2001 considering:

(a) Credit for export sales 3 months, domestic sales 2 months.
(b) Raw material available on 1 month credit for both.
(c) Inventory of Raw material 1 month for both.
(d) Inventory of finished goods 1.5 months for export, 1 month for domestic.
(e) Process time one month.
(f) Ratio of credit sales and cash sales remains same.
(g) Wages are paid at the end of the month for full month.

(h) Fixed overheads are paid in advance for one month.
(i) Cash required is 10% of gross working capital.
(j) Time lag in payment of variable expenses one month.

5. From the following particulars of Super Market Limited, estimate their working capital requirement for the year ended 31st March, 2015.

Balance as on 1st April, 2014	**₹**
Debtors	70,000
Bills Receivable	5,000
Creditors	55,000
Bills Payable	4,000
Stock	25,000
Bank Balance (Credit)	1,000
Transactions during the year ended 31st March, 2015	₹
Sales for the year (with uniform profit of 25% on sales)	3,00,000
Purchases for the year	2,10,000
Payment to creditors during the year	1,70,000
Receipt from debtors during the year	2,50,000
Bills Receivable received during the year	3,000
Bills Payable accepted during the year	2,000
Amount received against Bills Receivable	2,000
Amount paid against Bills Payable	1,000
Overheads on annual basis (one sixth to remain outstanding)	24,000
Purchased fixed assets by cheque payment	50,000
Contingencies to be kept at 10%	

(April - 2002)

6. Computers India Ltd. produced and sold 6,000 Laptops in 2013 and their cost structure was as under:

	Per Unit
Raw Material	₹ 12,000
Labour	₹ 9,000
Manufacturing Overheads	₹ 8,000
Administration and Selling Overheads	₹ 3,000
Profit	25% of Total Cost

(October - 2002)

In 2014 they plan to Manufacture 7,800 Laptops and sell 7,280 units. In the meantime, it is estimated that:

(a) Raw material cost will go up by 10% p.a.
(b) Labour will reduce by 5% p.a.
(c) Manufacturing overheads will go up by 10% p.a.
(d) Administration and selling overheads per unit will remain unchanged.
(e) Selling price per unit will rise by 10% over last year.

It is further informed that:

(a) Raw Material will remain in stores for 4 weeks before issue to production.
(b) Process period is 3 weeks.
(c) 25% of sales will be on cash basis, 25% of sale will be against Bills of Exchange maturing in 8 weeks, balance will be sold at 4 weeks credit.
(d) 25% of Purchases are on cash basis, 25% of Purchases are from Japan and suppliers are to be given advance payment of 6 weeks. Balance suppliers allow a credit of 6 weeks.
(e) Wages and Manufacturing Overheads remain outstanding for 2 weeks, whereas Administration and Selling overheads are paid 2 weeks in advance.
(f) Cash and Bank Balance shall be maintained at ₹ 75,000.
(g) Company shall get Bank Overdraft equal to 50% of stock of raw material and finished goods.

Work out working capital requirements for the year 2002.

7. A proforma cost sheet of a Shrinath & Co. provides the following particulars:

Element of Cost	Amount per unit (₹)
Raw Material	80
Direct Labour	30
Overheads	60
Total Cost	170
Profit	30
Selling price	200

(April - 2003)

The following further particulars are available:
Raw materials are in stock on average one month. Production period is two week. For estimating work-in-progress consider 100% Material cost and 50% of labour and overheads.
Finished goods are in stock on an average for one month.
Credit allowed by suppliers is one month. Credit allowed to debtors is two months.
Lag in payment of wages is 1.5 weeks. Lag in payment of overheads expenses is one month.
One-fourth of the output is sold against cash. Cash on hand at bank is expected to be ₹ 10,000.
You are required to prepare a statement showing the Working Capital needed to finance a level of activity of 2,000 units of production per week. Debtors to be considered at selling price.
You may assume that production is carried on evenly throughout the year. Wages and Overheads accrue similarly and a time period of 4 weeks is equivalent to a month.
(Month to be converted in weeks). All purchases are on credit basis.

8. D.K. Ltd. provides the following information:
   (a) Projected annual material and labour cost of the company is ₹ 7,20,000 and ₹ 5,40,000 respectively.
   (b) Cost of sales consists of material, labour and overhead cost only.
   (c) Production and sales take place evenly throughout the year.
   (d) As per the credit policy of the company debtors (at selling price) at three months credit will be ₹ 4,50,000. However for working capital statement investment in debtors is to be considered at cost.
   (e) Raw materials are in stock on an average for one month.
   (f) Finished goods are in stock on an average for half a month.
   (g) Credit allowed by suppliers is two months.
   (h) Materials remain in process (valued at cost of raw material plus 50% of labour and overheads) on an average for one month.
   (i) Company sales goods at 25% profit on cost.
   (j) Time lag in payment of wages and overheads is one month.
   (k) Cash balance to be maintained at ₹ 1,10,000.

You are required to prepare a statement showing the working capital requirement.

(October - 2003)

9. From following details, prepare working capital estimate for 2014:

Raw Material	₹ 125 per unit
Fixed Wages	₹ 9,00,000 per annum
Variable Wages	₹ 40 per unit
Fixed Overheads	₹ 6,60,000 per annum
Variable Overheads	₹ 9 per unit
Level of activity of purchases production and sales	60,000 units per annum

Other Information:

(a) Raw Material stock 1.5 months.
(b) Process time 1 month and to include fixed wages and overheads full, variable wages and overheads 40%.
(c) Finished goods stock 1 month.
(d) M.R.P. of the product is arrived at by calculating 20% profit on sales price.
(e) 25% of the sales are to wholesalers giving them 10% discount Credit given to 40% wholesalers two months against acceptance of bill and balance one month credit.
(f) Balance sales to retailers. Half of it on cash basis by giving 2% discount, balance half on one month credit.
(g) Cash required 15% of net working capital.
(h) For material purchases we accept bill for two months for 25% of quantity and for balance we receive credit for 1.5 months.
(i) Fixed wages are paid ½ month in advance.
(j) Fixed overheads are paid 1 month in advance.
(k) Variable wages time lag is one month.
(l) Variable overheads time lag is half month.

(April - 2004)

10. Aryan Ceramics is going to produce and sale 5000 units per month in the year 2014.
The material required per unit is ₹ 550. The direct labour is ₹ 12,00,000 per month. The expenses are ₹ 1,26,00,000 per annum. The sale price is fixed by calculating profit at 20% on sale price.
Calculate requirement of working capital for 2014 by taking into consideration following information:
(a) Stock of raw material will be two months.
(b) Process time is one month.
(c) Stock of finished goods will be 1.5 months.
(d) Credit allowed to 50% customers two months on acceptance of bill and balance 50% customers given one month credit.
(e) 25% of expenses are paid one month in advance and balance 75% is paid after one month.
(f) Time lag in payment of wages is one month.
(g) 20% of material is purchased on cash basis and suppliers of 80% material give 1.5 months credit.
(h) Cash required is 15% of net working capital.

(October - 2004)

11. Chinmag is carrying on trading business in India and gives the following information:
(a) Estimated sales in year ₹ 12,00,000.
(b) His Administrative and Selling expenses are estimated as fixed expenses ₹ 2,000 per month and variable expenses equal to 5% of his turnover.
(c) He expects to fix sale price for each product which will be 25% in excess of his cost of purchase.
(d) He expects to turnover his stock four times in the year.
(e) The sales and purchases will be evenly spread throughout the year. 20% of sales will be on cash and balance on credit and allowed 2 months credit. He also expects one month credit from his suppliers.
(f) Cash balance = Fixed and variable expenses for one month.

Calculate his average working capital and prepare his income statement for the year.

(April - 2005)

12. MR Ltd. sells its goods in domestic as well as in foreign market. Domestic selling price is determined at a gross profit of 30% on sales and export price is 5% below domestic price. These prices are without considering depreciation.

Following are the estimated annual figures:

Sales : Domestic	₹ 12,00,000
: Export	₹ 9,50,000
Material Consumption	₹ 6,60,000
Wages (time lag one month)	₹ 4,80,000
Manufacturing Expenses (one month in arrears) (excluding Depreciation)	₹ ?
Administration Expenses (Half month in arrears)	₹ 1,20,000
Sales Expenses (Payable quarterly in advance)	₹ 60,000

(October - 2005)

Company's policy is to maintain one month stock each of raw materials and finished goods, and cash ₹ 25,000.

Domestic customers are allowed credit of two months and foreign customers get credit for three months from the date of sale. Two months credit facility is available from suppliers of raw materials. Ascertain the funds required as working capital on above estimates.

Out of purchases of raw materials 10% are on cash basis. Debtors are to be estimated at cost price. Ignore work-in-progress.

13. From the following data provided by M/s Alpha Ltd. showing working capital requirements for the year ended 31st March, 2014:
    (a) Estimated activity operations for the year 2,60,000 units (52 weeks).
    (b) Raw materials remains in stock for 2 weeks and production cycle takes 2 weeks.
    (c) Finished Goods remaining in stock for 2 weeks.
    (d) 2 weeks credit is allowed by suppliers.
    (e) 4 weeks credit is allowed to Debtors.
    (f) Time lag in payment of wages and overheads is 2 weeks each.
    (g) Cash and Bank Balance to be maintained ₹ 25,000.
    (h) Selling price per unit is ₹ 15.
    (i) Analysis of cost per unit as follows:
        1. Raw material 331/3% of sales.
        2. Labour and overheads in the ratio of 6:4 per unit.
        3. Profit is at ₹ 5 per unit.

    Assume that operations are evenly spread throughout the year, Wages and Overheads accrue similarly. Manufacturing process requires feeding of material fully at the beginning. Degree of work-in-progress is 50%. Debtors are to be estimated at selling price.

(April - 2006)

14. A company plans to manufacture and sell 400 units of domestic appliances per month at price of ₹ 600 each for the calendar year 2014. The ratio of cost of selling price are as follows:

	% of selling price
Raw material	30
Packing material	20
Direct labour	15
Direct expenses	5

Fixed overhead are estimated at ₹ 4,32,000 per annum.

Stock were maintained as per following:

Raw material	30 days
Packing material	15 days
Work in progress	7 days
Finished goods	200 Units

Following additional information is given:

1. Credit sales represent 80% and customers enjoy 30 working days credit. Balance 20% are cash sales.
2. Creditors allow 21 working days credit for payment.
3. Lag in payment in overhead and expenses is 15 working days.
4. Cash requirements to be 12% of net working capital excluding cash.
5. Working days in a year are taken as 300.

Prepare working capital requirement for the year 2014. **(October - 2006)**

15. Amruta Enterprises (having Installed capacity of 2,00,000 units p.a.) produced 1,00,000 units in the financial year 2012-2013. The cost structure in 2012-2013 was as under:

(a)	Raw Materials	40%
(b)	Wages	15%
(c)	Factory Overheads	10%
(d)	Administrative and Selling Overheads	15%
	Total cost	80%
(e)	Profit	20%
	Selling Price	100%

The selling price, which was ₹ 500 per unit in 2012-2013, is estimated to be fixed as at ₹ 600 per unit for the year 2012-2013; and production and sale expected to increase by 40,000 units. It is, further, anticipated that raw materials cost per unit would increase by 10% due to price rise, whereas wage rate per unit would decrease by 20% due to automation, 56% of all the overheads are fixed and balance are variable. As a Management Accountant you are required to prepare (a) Cost statement for the year 2012-2013 and (b) Statement showing estimated working capital required for the year 2012-2013 after considering the following additional information:

(a) Raw materials stock equivalent to two and half months consumption would be stored.
(b) Production time is one month. Raw materials are introduced at the beginning of the process, whereas wages and factory overheads accrue evenly during the production period.
(c) Two months stock of finished goods (valued at factory cost) would be carried in stock.
(d) 20% of raw materials would be imported from China and advance payment of two months would be made there against. 15% of indigenous raw materials requirement would be procured locally against immediate cash payment. Suppliers of balance of indigenous raw materials, allow a credit of one month.
(e) 50% of customers would enjoy a credit of one month, whereas balance 50% of customers would accept a bill of exchange payable after three months. These bills of exchange are immediately hypothecated with the bank against which overdraft facility would be available equal to 70% of amount of bills of exchange.
(f) Time - lag in payment of wages would be one month and for all overheads, it would be half month.
(g) The company would carry cash balance of ₹ 40,000 in its currency chest. Debtors are to be estimated at selling price.
(h) The activities are spread evenly throughout the year. Degree of completion of work-in-progress is 50%. **(April - 2007)**

16. From the following figures, prepare an estimate of the working capital:

Production	30,000 units
Selling Price per unit	₹ 10
Raw Material	60% of selling price
Direct wages	1/6th of raw material.
Overheads	Twice the Direct wages
Material in hand	2 months requirement

Production time	1 month
Finished goods in stores	3 month
Credit for material	2 month
Credit allowed to customers	3 month
Average cash balance	₹ 40,000

(October - 2007)

Wages and overheads are paid in the beginning of next month. In production all the material are charged in the initial stage and wages and overheads accrue evenly.

17. From following information given by Tata Ltd. estimate working capital requirement for year ending 31-3-2014:

	PER CAR	RATE
STEEL	1000 kg	₹ 70 per kg.
SPARES	20 kg	₹ 60 per kg.
ENGINE	1	₹ 20,000 per engine
LABOUR	50 hrs	₹ 100 per hr.
OVERHEAD		₹ 20,000

(April - 2008)

(a) Steel remains in stock for two months, spares remains in stock for half month and engine remains in stock for one month.
(b) Suppliers of steel allows credit of two months, suppliers of spares allow credit for one month end suppliers of engine allows credit for half month.
(c) Production process takes half month.
(d) Time lag in payment of labour and overhead is one month.
(e) Car (finished goods) remains in stock for one month.
(f) Activity is spread evenly throughout the year.

18. You are required to prepare a statement showing the working capital required to finance the level of activity of 12,000 Units per year from the following information:
(a) Raw materials are in stock on an average for 2 months.
(b) Materials are in process on an average for half a month.
(c) Finished goods are in stock on an average for one month.
(d) Credit allowed by the suppliers is 1½ months of purchase of raw materials and credit allowed to the customers is 2½ months.
(e) Lag in payment of wages and overheads is one month.
(f) Cash and Bank balance is expected to be 10% of Net Working Capital before considering the Cash and Bank balance.
(g) Activities are spread evenly throughout the year:

Cost per Unit:

Raw Material	₹ 10
Wages	₹ 5
Total Cost	₹ 30

Profit is 20% on selling price.

(October - 2008)

19. Tata Manufacturing Co. started for production of NANO cars at Calcutta in March 2014 and purchased land for ₹ 10,00,000 and incurred ₹ 5,00,00,000 on its factory construction. However before production was started due to labour problems Company has shifted its factory to Maharashtra, where it had benefit of low overheads. Overheads are 50% of labour expenses in Maharashtra.

Following is cost structure per Car in Maharashtra for the year 2013-14

Steel	50 kgs. @ ₹ 1,000 per kg.
Spare Parts	10 kgs. @ ₹ 200 per kg.
Engine	1 Engine @ ₹ 20,000 per engine
Labour Charges	100 Hrs @ ₹ 20 per hour.

From the following additional information calculate Working Capital requirement for the company to be started in Maharashtra for the year 2013-14.

(a) Steel remains in stock for 2 months, Spare Parts remain in stock for 1 month and Engine for 6 months.
(b) Suppliers of Steel allow credit for 1 month, suppliers of Spare Parts allow credit for 15 days and suppliers of Engine allow credit for 2 months.
(c) Time lag for payment of Labour and Overhead is 1 month.
(d) Cars will be in Stock for 15 days after production.
(e) Production Cycle is for 1 Month.
(f) Estimated Production during year 2013-14 will be 5,000 NANO cars.

(April - 2009)

20. A Ltd. manufactured and sold 30,000 machines in the year 2013 at 100% capacity.
Following information is available for the same year.

	₹		₹
Materials	7,50,00,000	Labour	3,00,00,000
Sales	15,00,00,000	Gross Profit	20% on Sales

Due to slow down in economy the company has decided to the reduce its production to 50% of its capacity during the year 2014.
It is estimated that: (a) Price of Raw material will be reduced by 10% per unit. (b) Wages will be reduced by 20% per unit. (c) Overheads will be increased by 10% per unit. (d) Selling price per unit to be estimated to maintain profit on sales at 20%.

Additional Informations for the year 2014:

(a) Raw material will remain in stock for one month.
(b) Finished goods will remain in warehouse for 2 months.
(c) Customers (at selling price) will enjoy one month credit.
(d) Suppliers will allow 2 months credit.
(e) Time lag in payment of wages and overheads will be 1 month.
(f) Processing period one month.
(g) Cash and bank balance should be ₹ 30,00,000.

You are required to forecast working capital requirement for the year 2009.

(October - 2009)

21. The Management of Kaka Ltd. has asked you to prepare an estimate showing the working capital requirement for 2014-15, along with estimated cost sheet.
Present position: 2013-14
Operating Capacity – 40%, giving output of 40,000 units for the year:
Cost Structure per unit:

	(₹)
Raw Material	20
Direct Labour	15
Overheads	10
Profit	5

Estimates for the next year 2014-15
Operating Capacity 60%
Cost Structure: Raw Material cost to increase by 10%; Direct Labour cost to increase by 20%;

Overheads to increase by 20%; Selling Price to increase by 20%
The following further information is available:

(a) The purchase, production and sales pattern is assumed to be even throughout the year.
(b) The Raw Materials will remain in stock for 1 month.
(c) The production process will take 1 month wherein labour and overheads will accrue evenly during the process.
(d) The Finished Goods will remain in the stock for 2 months.
(e) The customers will be allowed a credit of 2 months.
(f) The Suppliers will allow a credit of 1 month.
(g) The time-lag in payment of labour will be 1 month.
(h) The time-lag in payment of overheads will be half a month.
(i) The Cash and Bank Balance is expected to be ₹ 25,000.
(j) Calculate debtors on cost basis.
(k) 20% of the purchase will be on cash basis.

(April - 2010)

22. The following information is presented by Data and Sons Ltd. for the year 2014-15.
Estimated Yearly Production = 30,000 units.
Estimated Cost Sheet per unit

	(₹)
Raw Materials	5
Wages	3
Overheads	2
Selling Price	12

Further Information:

(a) The company extends two months credit to the customers.
(b) The company maintains one month's stock of finished goods.
(c) The company maintains two month's stock of finished goods.
(d) The processing period is half a month.
(e) The company is allowed one month's credit by suppliers.
(f) Wages and Overheads are paid one month in arrears.
(g) The cash and bank balance is expected to be ₹ 8,125.
(h) There is regular purchase, production and sales cycle.
(i) During production process wages and overheads accrue evenly.
(g) Debtors are to be calculated on sale price basis.

Prepare an estimate of Working Capital. **(October - 2010)**

23. From the following information provided by M/s. P and Co. Pvt. Ltd., prepare a statement showing working capital requirements for the year 2014-2015:

(a) Estimated sales for the 2014-2015 ₹ 21,60,000.
(b) Estimated cost structure ratios to selling price-Raw Materials 60%, Labour 20% and Overheads 10%.
(c) Selling price ₹ 20 per unit.
(d) Raw Materials remain in stock for 2 months.
(e) Materials remain in process for 1 month.
(f) Finished Goods remain in stock for 1 month.
(g) Customers are allowed 2 months credit.
(h) Suppliers allow 1 month credit.

(i) Time lag in payment of wages is one month.
(j) Time lag in payment of overheads is half a month.
(k) Cash and Bank Balance is expected to be 25% of the Debtors.
(l) Provide a margin of safety at 10%.
(m) Debtors are to be calculated at selling price.
(n) During the manufacturing process labour and overhead and accrue evenly. **(April - 2011)**

24. From the following information given by M/s. Q and Co. Pvt. Ltd., prepare an estimate of working capital for the year ended 31st March, 2014.
(a) Estimated level of Activity – 104,000 units for the year 52 weeks.
(b) Cost of Raw Materials per unit – ₹ 5.
(c) Cost of Labour per unit – 40% if raw materials.
(d) Cost of Overheads per unit – 50% of the labour cost.
(e) Profit per unit is – 200% of overheads.
(f) Stock or Raw Materials – 4 weeks.
(g) Processing Period – 4 weeks.
(h) Stock of Finished Goods – 4 weeks.
(i) Credit to the Debtors – 6 weeks.
(j) Credit by the creditors – 4 weeks.
(k) Time Lag in payment of wages – 4 weeks.
(l) Time Lag in payment of overheads – 2 weeks.
(m) Cash and bank Balance required ₹ 40,000.
(n) Debtors are calculated on Sales basis.
(o) Purchases against Cash – 20%.
(p) All the activities are spread evenly throughout the year.
(q) During processing, labour and overhead accrue evenly. **(October - 2011)**

25. Radhika Manufacturing Limited presents the following information for 2013-14.
Estimated Yearly Production and Sales = 60,000 units
Estimated Cost Elements per unit.

Raw Materials	₹ 5
Wages	₹ 3
Overheads	₹ 2
Selling Price	₹ 12

Further Information:
(a) The company extends two months credit to the debtors.
(b) The company maintains one months stock of Raw materials.
(c) The company maintains one months stock of finished goods.
(d) The processing period is one month.
(e) The company is allowed two months credit by suppliers.
(f) Wages and Overheads are paid one month in arrears.
(g) The cash and bank balance is expected to be equal to ₹ 25,000.
(h) There is regular purchase, production and sales cycle.
(i) During production process wages and overheads accrue evenly.
(j) Debtors are to be calculated on cost basis.
(k) 20% of the customers pay one month in advance.
Prepare statement showing an estimate of working capital.

26. Annual Sales ₹ 18,00,000 with gross profit ratio of 25%. Of the total sales 50% on cash basis and balance on credit basis. Calculate the amount of sundry debtors on cost basis if customers are offered one month's credit. **(April - 2012)**

27. From the following estimates and information relating to Nirmala Products Private Limited, calculate working capital requirement for the year 2013-14:
    (a) Expected level of production and Sale for the year 1,80,000 units.
    (b) Cost per unit - Raw Materials ₹ 9, Direct Labour ₹ 4 and Overheads ₹ 6.
    (c) Selling Price per unit ₹ 22.
    (d) Raw Materials in stock on an average for 30 days.
    (e) Materials are in process on an average for 15 days.
    (f) Finished goods in stock on an average for 30 days.
    (g) Credit allowed by suppliers is 30 days.
    (h) Time lag in payment from customers is 60 days.
    (i) Time lag in payment of labour is 15 days.
    (j) Time lag in payment of overheads is 30 days.
    (k) All the sales are on credit except 10% sales which are on cash basis.
    (l) Cash and Bank balance is expected to be ₹ 67,000.
    (m) The production and sales are evenly spread throughout the year.
    (n) Labour and Overheads accrue evenly during processing period.
    (o) Company works for 360 days during an accounting year.
    (p) Estimate debtors on cost basis.
28. The following are the particulars of Vijay and Company for the year 2013-14. Calculate the working capital estimate for an annual sales of 78,000 units.
    (a) Cost Sheet:

Particulars	₹ (Per unit)
Raw Material	40
Wages	20
Overheads	30
Profit	30

    (b) Production and Sales take place evenly throughout the year.
    (c) Raw Material is on eight weeks credit.
    (d) Raw Material remains in stock for eight weeks.
    (e) Processing period is of two weeks, wherein Raw Material, Wages and Overheads accrue evenly.
    (f) Finished Goods remain in stock for ten weeks.
    (g) Customers are given nine weeks credit.
    (h) Time lag in payment of wages is four weeks.
    (i) Time lag in payment of overheads is two weeks.
    (j) Cash and Bank Balance is maintained at ₹ 1,05,000.
    (k) Calculate Debtors on sales.
29. Arya Ltd. is going to produce and sell 5,000 units per month in the year 2014.
    The material required per unit is 500. The direct labour is ₹ 10,00,000 per month. The expenses are ₹ 24,00,000 per annum. The sales price is fixed by calculating profit at 20% at selling price.
    Calculate requirement of working capital for the year 2014 by taking into consideration the following information:
    (a) Stock of raw material will be two months.
    (b) Process time is one months.
    (c) Stock of finished goods will be two months.
    (d) Credit allowed to 50% customers two months on acceptance on bills and balance 50% customers given one month credit.
    (e) Time lag in payment of wages is one month.
    (f) 20% of material is purchased on cash basis and suppliers of 80% material give 1.5 months credit. **(T.Y. B.Com., Modified)**

30. Ruby manufacturing company gives the following details. Estimated level of activity 26,000 units of production for the year 2013-14.
Estimated Cost per Unit is:

	₹
Raw materials	20
Direct wages	8
Overheads	16
Selling price	50

Further information:
(a) Raw materials in stock average 4 weeks consumption.
(b) Work-in progress 2 weeks.
(c) Finished good in stock 2 weeks.
(d) Credit allowed by supplier 2 weeks.
(e) Credit allowed to debtors 3 weeks.
(f) Lag in payment of wages and overheads 1 week.
(g) Cash at Bank for smooth operation is expected to be ₹ 24,000.
(h) Production is carried on evenly throughout the year.
(i) Provide a margin of safety at 10%.
(j) Debtors are to calculated at selling price.
(k) 25% purchases and 20% sales are against cash.

You are required to prepare a statement showing working capital requirements for the year 2013-14. **(T.Y. B.Com., Modified)**

31. Eshabella Garments Company Ltd. is a famous manufacturer and exporter of garments to the European countries. You are required to prepare working capital requirements for the next year 2014-15, after considering the following information:
(a) Production during the current year was 1,50,000 units. The same level of activity is intended to be maintained during the next year 2014-15.
(b) The expected ratios of cost to selling price are:

Raw materials	40%
Direct wages	20%
Overheads	20%

(c) The raw materials ordinarily remain in store for 3 months before production.
(d) Every unit of production remains in the process for 2 months.
(e) Finished goods remain in warehouse for 3 months.
(f) Credit allowed by the creditors is 4 months from the date of the delivery of raw material.
(g) The estimated balance of cash to be held ₹ 1,50,000.
(h) Time lag in payment of wages and overheads is ½ month.
(i) Selling price would be ₹ 10 per unit for the year 2014-15.
(j) There is regular purchase, production and sale cycle.
(k) You are required to make provision of 10% for contingency.
(l) During the processing labour and overheads accrue evenly.

You are required to prepare a statement showing working capital requirements for the year 2013-14.
(October - 2012)

Chapter

5

Capital Budgeting

INTRODUCTION

Shri Shakti LPG Ltd., a Mumbai based company, put up facilities to import and market liquified petroleum gas, at an estimated cost of ₹ 103.50 crore.

1. Tata Metaliks has set up a new Mini Blast Furnace with associated systems for manufacture of foundry grade pig iron.
2. Lupin Chemicals Ltd., has set up a project to manufacture 'RIFAMPICIN', an anti- TB drug, at an estimated cost of ₹ 8,250 lakh.
3. The above items, which appeared in newspapers are typical illustrations of capital expenditure decisions, also referred to as capital budgeting or investment decisions. Such a decision may be defined as the company's decision to invest its current funds most efficiently in long-term assets in anticipation of an expected flow of benefits over a series of years. Capital expenditure decisions occupy a very important place in corporate finance for the following reasons:
   - Once the decision is taken, it has far-reaching consequences which extend over a considerably long period, and influences the risk complexion of the firm.
   - These decisions involve huge amounts of money.
   - These decisions are irreversible once taken.
   - These decisions are among the most difficult to make when the company is faced with various potentially viable investment opportunities.

While capital expenditure decisions are extremely important, managers find it extremely difficult to analyze the pros and cons and arrive at a decision because:

1. Measuring costs and benefits of an investment proposal whether it be for a mini- steel plant or a library is difficult because all costs and benefits cannot be expressed in tangible terms.
2. The benefits of capital expenditure are expected to occur for a number of years in the future which is highly uncertain.
3. Because the costs and benefits occur at different points of time, investment proposal, for a proper analysis of the viability of the all these have to be brought to a common time frame. Hence, time value of money becomes very relevant here.

The investment decision starts with the identification of investment opportunities and culminates in performance review after the project is implemented and operations are stabilized.

Once the project has been implemented, the trial run is successful, and commercial production is started, a review of the actual performance with the performance projected in the feasibility study is required. This is an integral and vital part of project management because:

1. It throws light on how realistic were the assumptions underlying the project.
2. It is a valuable tool for decision making in future.

MARKET APPRAISAL

The market appraisal is attempted to answer two important questions:

What is the size of the total market for the proposed product or service?

What will be the project's share of the total market?

Answers to both these questions are equally important because a dominant position in a rapidly shrinking market is certainly not a better proposition than a meagre share of a large market. To answer these questions, the market analyst compiles and analyzes the data relating to the following aspects:

- Past and present consumption trends
- Present and prospective supply position
- Level of imports and exports
- Structure of competition
- Price and cross-elasticity of demand
- Consumer requirements, and
- Production constraints.

Technical Appraisal: As the name suggests, this appraisal is done to ensure that all technical aspects related to the successful commissioning of the project have been taken care of. The important issues considered in this appraisal are:

- Availability of the required quality and quantity of raw materials and other inputs;
- Availability of utilities like power, water, etc.;
- Appropriateness of the plant design and layout;
- The proposed technology vis-à-vis the alternative state-of-the-art technologies available;
- Optimality of the scale of operations;
- The technical specifications of the plant and machinery in relation to the proposed technology; and
- Assembly line balancing.

Economic Appraisal: In addition to financial appraisal, most of the projects sponsored by government authorities are subjected to a social cost benefit analysis (otherwise known as economic appraisal) to adjudge whether the project is desirable from the social point of view. Some of the issues considered in this analysis are:

- Impact of the project on the distribution of income in society,
- Impact of the project on the level of savings and investment in the society, and
- Contribution of the project towards socially desirable objectives like self-sufficiency, employment, etc.
- For the successful implementation of a project, each step of the capital budgeting process is equally important. As students of Corporate Finance, we must be aware of all the aspects of Project Management, and be thoroughly proficient to appraise a project in relation to its financial aspects.

Financial Appraisal: The financial appraisal looks at return and risk characterising the project and examines whether the risk adjusted return exceeds the cost of financing the project. For this purpose, the financial analyst compiles data on the cost of project, means of financing, and projected revenues and costs. Based on this data, he works out the net cash flows expected from the project and appraises these cash flows in terms of various criteria of merit like payback, IRR, etc.

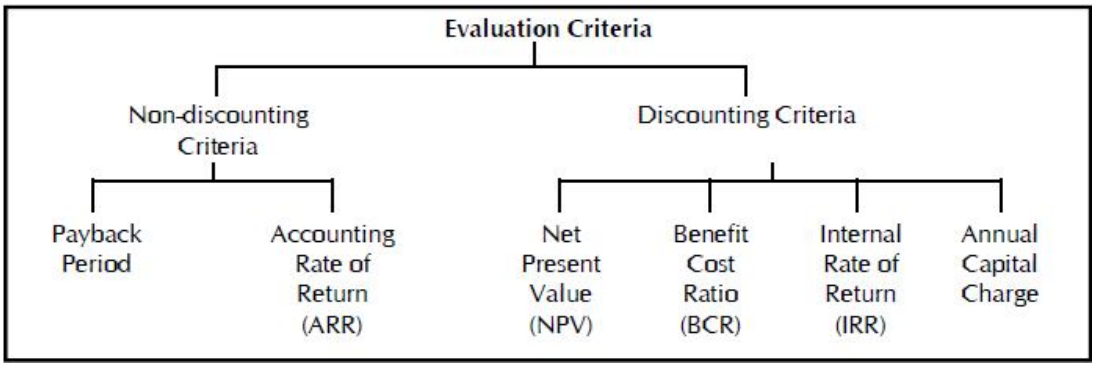
CAPITAL BUDGETING

- Capital Budgeting is a project selection exercise performed by the business enterprise.
- Capital budgeting uses the concept of present value to select the projects.
- Capital budgeting uses tools such as payback period, net present value, internal rate of return, profitability index to select projects.

Cash Outflow: It is also known as initial investment. original cost of the project

Cash Inflow: It is also known as return on the investment or profit on project. However, in capital budgeting cash profit need to be considered for making decision, cash profit exclude all non cash expenses, i.e., depreciation. In short CASH INFLOW = NPAT + DEPRECIATION.

Capital Budgeting Tools



- Payback Period
- Accounting Rate of Return
- Net Present Value
- Profitability Index
- Internal Rate of Return

1. Payback Period: Payback period is the time duration required to recoup the investment committed to a project. Business enterprises following payback period use "stipulated payback period", which acts as a standard for screening the project.

Computation of Payback Period

When the cash inflows are uniform the formula for payback period is cash outflow divided by

- When the cash inflows are uneven, the cumulative cash inflows are to be arrived at and then the payback period has to be calculated through interpolation.
  Payback period formula =
  Year prior to full recovery + Balance of initial outlay to be recovered
  Of initial outlay at the beginning of the year in which full recovery takes place
  Cash inflow of the year in which full recovery takes place
- Here payback period is the time when cumulative cash inflows are equal to the outflows.
  The payback period measures the length of time required to recover the initial outlay in the project. For example, if a project with a life of 5 years involves an initial outlay of ₹ 20 lakh and is expected to generate a constant annual inflow of ₹ 8 lakh, the payback period of the project = 20/8 = 2.5 years. On the other hand, if the project is expected to generate annual inflows of, say ₹ 4 lakh, ₹ 6 lakh, ₹ 10 lakh, ₹ 12 lakh and ₹ 14 lakh over the 5 year period the payback period will be equal to 3 years because the sum of the cash inflows over the first three years is equal to the initial outlay.
  In order to use the payback period as a decision rule for accepting or rejecting the projects, the firm has to decide upon an appropriate cut-off period. Projects with payback periods less than or equal to the cut-off period will be accepted and others will be rejected. The payback period is a widely used investment appraisal criterion for the following reasons:
- It is simple in both concept and application;
- It helps in weeding out risky projects by favoring only those projects which generate substantial inflows in earlier years.

The payback period criterion, however, suffers from the following serious shortcomings:

It fails to consider the time value of money, the importance of which has already been discussed at length.

- The cut-off period is chosen rather arbitrarily and applied uniformly for evaluating projects regardless of their life spans. Consequently the firm may accept too many short-lived projects and too few long-lived ones.
- Since the application of the payback criterion leads to discrimination against projects which generate substantial cash inflows in later years, the criterion cannot be considered as a measure of profitability.

To incorporate the time value of money in the calculation of payback period, some firms compute what is called the "discounted payback period". In other words, these firms discount the cash flows before they compute the payback period. For instance if a project involves an initial outlay of ₹ 10 lakh, and is expected to generate a net annual inflow of ₹ 4 lakh for the next 4 years, the discounted payback will be that value of 'n' for which

$4 \times PVIFA\ (12, n) = 10$ …(1)

Assuming the cost of funds to be 12 per cent.

Equation (1) can be re-written as

PVIFA (12, n) = 2.5

From PVIFA Tables, we find that

PVIFA (12,3) = 2.402

PVIFA (12,4) = 3.037

Therefore, 'n' lies between 3 and 4 years and is approximately equal to 3.15 years. We find the discounted payback period is longer than the undiscounted payback period which will be 2.5 years in this case.

Evaluating the discounted payback period as an appraisal criterion, we find it to be a whisker better than the undiscounted payback period. It considers the time value of money and thereby, does not give an equal weight to all flows before the cut-off date. But it still suffers from the other shortcomings of the payback period. This criterion also depends on the choice of an arbitrary cut-off date and ignores all cash flows after that date. In practice, companies do not give much importance to the payback period as an appraisal criterion.

$$n = 3 + (4 - 3) \times \frac{2.500 - 2.402}{(3.037 - 2.402)} = 3.15$$

Illustration 1. The following details are available in respect of the cash flows of two projects A & B.

Year	Project A Cash Flows (₹)	Project B Cash Flows (₹)
0	(4,00,000)	(5,00,000)
1	2,00,000	1,00,000
2	1,75,000	2,00,000
3	25,000	3,00,000
4	2,00,000	4,00,000
5	1,50,000	2,00,000

Computer payback period for A and B Solutions:

Year	Project A		Project B	
	Cash Flows (₹)	Cumulative Cash Flows	Cash Flows (₹)	Cumulative Cash Flows
1	2,00,000	2,00,000	1,00,000	1,00,000
2	1,75,000	3,75,000	2,00,000	3,00,000
3	25,000	4,00,000	3,00,000	6,00,000

4	2,00,000	6,00,000	4,00,000	10,00,000
5	1,50,000	7,50,000	2,00,000	12,00,000

From the cumulative cash flows column project A recovers the initial cash outlay of ₹ 4,00,000 at the end of the third year. Therefore, payback period of project A is 3 years.

From the cumulative cash flow column the initial cash outlay of ₹ 5,00,000 lies between 2nd year and 3rd year in respect of project B. Therefore, payback period for project B is:

$$= 2 + \frac{5,00,000 - 3,00,000}{3,00,000}$$

= 2.67 years

Merits:

1. Simple in concept and application.
2. Since emphasis is on recovery of initial cash outlay it is the best method for evaluation of projects with very high uncertainty.
3. With respect to accept or reject criterion payback method favors a project which is less than or equal to the standard payback set by the management. In this process early cash flows get due recognition than later cash flows. Therefore, payback period could be used as a tool to deal with the ranking of projects on the basis of risk criterion.
4. For firms with shortage of funds this is preferred because it measures liquidity of the project.

Demerits:

1. It ignores time value of money.
2. It does not consider the cash flows that occur after the payback period.
3. It does not measure the profitability of the project.
4. It does not throw any light on the firm's liquidity position but just tells about the ability of the project to return the cash outlay originally made.
5. Project selected on the basis of payback criterion may be in conflict with the wealth maximization goal of the firm.

Accept or Reject Criterion: (a) If projects are mutually exclusive, select the project which has the least payback period.

(b) In respect of other projects, select the project which have payback period less than or equal to the standard payback stipulated by the management.

Illustration 2. Following details are available of payback period:

Project A = 3 years

Project B = 2.5 years

Standard set up by management = 3 years

If projects are mutually exclusive, accept project B which has the least payback period. If projects are not mutually exclusive, accept both the project because both have payback period less than or equal to original to the standard payback period set by the management.

Discounted Payback Period: The length in years required to recover the initial cash outlay on the present value basis is called the discounted payback period. The opportunity cost of capital is used for calculating present values of cash inflows.

Discounted payback period for a project will be always be higher than simple payback period because the calculation of discounted payback period is based on discounted cash flows.

For example:

Year	Project A Cash Flows	PV Factor at 10%	PV of Cash Flows	Cumulative Positive Cash Flows
0	(4,00,000)	1	(4,00,000)	–
1	2,00,000	0.909	1,81,800	1,81,800

2	1,75,000	0.826	1,44,550	3,26,350
3	25,000	0.751	18,775	3,45,125
4	2,00,000	0.683	1,36,600	4,81,725
5	1,50,000	0.621	93,150	5,74,875

Discounted Payback Period:

$$3 + \frac{4,00,000 - 3,45,125}{1,36,600} = 3.4 \text{ years}$$

2. Accounting Rate of Return: Accounting rate of return is the rate arrived at by expressing the average annual net profit (after tax) as given in the income statement as a percentage of the total investment or average investment. The accounting rate of return is based on accounting profits. Accounting profits are different from the cash flows from a project and hence, in many instances, accounting rate of return might not be used as a project evaluation decision. Accounting rate of return does find a place in business decision making when the returns expected are accounting profits and not merely the cash flows.

The accounting rate of return or the book rate of return is typically defined as follows:

Accounting Rate of Return (ARR) = Average Profit after Tax/Average Book Value of the Investment.

$$\text{ARR} = \text{Accounting Rate of Return} = \frac{\text{Average NPAT}}{\text{Average Investment}} \times 100$$

$$\text{Average Investment} = \left(\frac{\text{Cost} - \text{Scrap Value}}{2}\right) + \text{Additional Working Capital} + \text{Scrap Value}$$

To use it as an appraisal criterion, the ARR of a project is compared with the ARR of the firm as a whole or against some external yard-stick like the average rate of return for the industry as a whole. To illustrate the computation of ARR consider a project with the following data:

(*Amount in* ₹)

Year	0	1	2	3
Investment	(90,000)			
Sales Revenue		1,20,000	1,00,000	80,000
Operating Expenses (excluding depreciation)		60,000	50,000	40,000
Depreciation		30,000	30,000	30,000
Annual Income		30,000	20,000	10,000

$$\text{Average annual income} = \frac{30,000 + 20,000 + 10,000}{3} = 20,000$$

$$\text{Average net book value of investment} = \frac{90,000 + 0}{2} = 45,000$$

$$\text{Accounting rate of return} = \frac{(20,000)}{(45,000)} \times 100 = 44 \text{ per cent}$$

The firm will accept the project if its target average rate of return is lower than 44 per cent

As an investment appraisal criterion, ARR has the following merits:

- Like payback criterion, ARR is simple both in concept and application. It appeals to businessmen who find the concept of rate of return familiar and easy to work with rather than absolute quantities.
- It considers the returns over the entire life of the project and therefore, serves as a measure of profitability (unlike the payback period which is only a measure of capital recovery).

This criterion, however, suffers from several serious defects. First, this criterion ignores the time value of money. Put differently, it gives no allowance for the fact that immediate receipts are more valuable than

the distant flows and results giving too much weight to the more distant flows. Second, the ARR depends on accounting income and not on the cash flows. Since cash flows and accounting income are often different and investment appraisal emphasizes cash flows, a profitability measure based on accounting income cannot be used as a reliable investment appraisal criterion. Finally, the firm using ARR as an appraisal criterion must decide on a yardstick for judging a project and this decision is often arbitrary. Often firms use their current book return as the yardstick for comparison. In such cases if the current book return of a firm tends to be unusually high or low, then the firm can end up rejecting good projects or accepting bad projects.

ARR measures the profitability of investment (project) using information taken from financial statements:

$$\text{ARR} = \frac{\text{Average Income}}{\text{Average Investment}} - \frac{\text{Average of Post Tax Operating Profit}}{\text{Average Investment}}$$

$$\text{Average Investment} = \frac{\text{Book Value of the Investment in the Beginning} + \text{Book Scrap Valur at the end}}{2}$$

Illustration 3. The following particulars refer to two projects:

	X	Y
Cost	40,000	60,000
Estimated life	5 years	5 years
Salvage value	₹ 3,000	₹ 3,000
Estimate income After tax		
	₹	₹
1	3,000	10,000
2	4,000	8,000
3	7,000	2,000
4	6,000	6,000
5	8,000	5,000
Total	28,000	31,000
Average	5,600	6,200
Average investment	21,500	31,500

$$\text{APR} = \frac{5,600}{21,500} \quad \frac{6,200}{31,500}$$

$$= 26\% \qquad 19.7\%$$

Merits of Accounting Rate of Return:

1. It is based on accounting information.
2. Simple to understand.
3. It considers the profits of entire economic life of the project.
4. Since it is based on accounting information the business executives familiar with the accounting information understand this technique.

Demerits:

1. It is based on accounting income and not based on cash flows, as the cash flow approach is considered superior to accounting information-based approach.
2. It does not consider the time value of money.

3. Different investment proposals which require different amounts of investment may have the same accounting rate of return. The ARR fails to differentiate projects on the basis of the amount required for investment.
4. ARR is based on the investment required for the project. There are many approaches for the calculation of denominator of average investment. Existence of more than one basis for arriving at the denominator of average investment may result in adoption of many arbitary bases.

Because of this the reliability of ARR as a technique of appraisal is reduced when two projects with the same ARR but with differing investment amounts are to be evaluated.

Accept or Reject Criterion: Any project which has an ARR more than the minimum rate fixed by the management is accepted. If actual ARR is less than the cut rate (minimum rate specified by the management) then that project is rejected. When projects are to be ranked for deciding on the allocation of capital on account of the need for capital rationing, project with higher ARR are preferred to the ones with lower ARR.

Discounted Cash Flow Method: Discounted cash flow method or time adjusted technique is an improvement over the traditional techniques. In evaluation of the projects the need to give weightage to the timing of return is effectively considered in all DCF methods. DCF methods are cash flow-based and take the cognizance of both the interest factors and cash flow after the payback period.

DCF Technique Involves the following:

1. Estimation of cash flows, both inflows and outflows of a project over the entire life of the project.
2. Discounting the cash flows by an appropriate interest factor (discount factor).
3. Sum of the present value of cash outflows is deducted from the sum of present value of cash inflows to arrive at net present value of cash flows. The most popular techniques of DCF methods are:

DCF methods are of 3 types:

1. The net present value.
2. The internal rate of return.
3. Profitability index.

3. Net Present Value (NPV): NPV method recognizes the time value of money. It correctly admits that cash flows occurring at different time periods differ in value. Therefore, there is the need to find out the present values of all cash flows.

NPV = Discounted Cash Inflow – Discounted Cash Outflow

NPV method is the most widely used technique among the DCF methods.

Steps involved in NPV method:

1. Forecast the cash flows, both inflows and outflows of the projects to be taken up for execution.
2. Decisions on discount factor or interest factor. The appropriate discount rate is the firm's cost of capital or required rate of return expected by the investors.
3. Compute the present value of cash inflows and outflows using the discount factor selected.
4. NPV is calculated by subtracting the PV of cash outflows from the present value of cash inflows.

Accept or Reject Criterion: If NPV is positive, the project should be accepted. If NPV is negative the project should be rejected.

Accept or reject criterion can be summarized as given below:

1. NPV > Zero = accept
2. NPV < Zero = reject

NPV method can be used to select between mutually exclusive projects by examining whether incremental investment generates a positive net present value.

Merits of NPV Method:

1. It takes into account the time value of money.
2. It considers cash flows occurring over the entire life of the project.
3. NPV method is consistent with the goal of maximizing the net wealth of the company.
4. It analyses the merits of relative capital investments.
5. Since cost of capital of the firm is the hurdle rate, the NPV ensures that the project generates profits from the investment made for it.

Demerits:

1. Forecasting of cash flows is difficult as it involves dealing with the effect of elements of uncertainties on operating activities of the firm.
2. To decide on the discounting factor, there is the need to assess the investor's required rate of return. But it is not possible to compute the discount rate precisely.
3. There are practical problems associated with the evaluation of projects with unequal lives or under funds' constraints.

For ranking of projects under NPV approach the project with the highest positive NPV is preferred to that with lower NPV.

We have already discussed the concept of present value and the method of computing the present value in the chapter on time value of money. The net present value is equal to the present value of future cash flows and any immediate cash outflow. In the case of a project, the immediate cash flow will be investment (cash outflow) and the net present value will be, therefore, equal to the present value of future cash inflows minus the initial investment. The following illustration illustrates this point.

Illustration 4. Consider the project cost ₹ 12,500 and expected inflow of ₹ 5,100, ₹ 5,100, ₹ 5,100, and ₹ 7,100 for 1, 2, 3 & 4 year respectively. Compute the net present value of the project, if the cost of funds to the firm is 12 per cent.

Solution: The net cash flows of the project and their present values are as follows:

Year	1	2	3	4
Net cash flow (₹)	5100	5100	5100	7100
PVIF @ k = 12%	0.893	0.797	0.712	0.636
Present value (₹)	4554	4065	3631	4516

Net present value = (–12,500) + (4,554 + 4,065 + 3,631 + 4,516)
= ₹ (–12,500 + 16,766)
= ₹ 4,266

The decision rule based on the NPV criterion is obvious. A project will be accepted if its NPV is positive and rejected if its NPV is negative. Rarely in real life situations, we encounter a project with NPV exactly equal to zero. If it happens, theoretically speaking, the decision maker is supposed to be either indifferent in accepting or rejecting the project. But in practice, NPV in the neighborhood of zero, calls for a close review of the projections made in respect of such parameters that are critical to the viability of the project because even minor adverse variations can mar the viability of such marginally viable projects.

The NPV is a conceptually sound criterion of investment appraisal because it takes into account the time value of money and considers the cash flow stream in its entirety. Since net present value represents the contribution to the wealth of the shareholders, maximizing NPV is congruent with the objective of investment decision making, viz., maximization of shareholders' wealth. The only problem in applying this criterion appears to be the difficulty in comprehending the concept *per se*. Most non-financial executives and businessmen find 'Return on Capital Employed' or 'Average Rate of Return' easy to interpret compared to absolute values like the NPV.

Illustration 5: A project costs ₹ 25,000 and is expected to generate cash inflows as:

Year	Cash Inflows (₹)
1	10,000
2	8,000
3	9,000
4	6,000
5	7,000

The cost of capital is 12%. The present value factors are:

Year	PV Factor at 12%
1	0.893
2	0.797
3	0.712
4	0.636
5	0.567

Compute the NPV of the project.

Solution:

Year	Cash Flows	PV Factor at 12 %	PV of Cash Flows
1	10,000	0.893	8,930
2	8,000	0.797	6,376
3	9,000	0.712	6,408
4	6,000	0.636	3,816
5	7,000	0.567	3,969

Sum of the present value of cash inflows	29,499
Less: Sum of the present value of cash outflows	25,500
NPV	4,499

The project generates a positive NPV of ₹ 4,499. Therefore, project should be accepted.

Illustration 6. A company is evaluating two alternatives for distribution within the plant. Two alternatives are:

1. C system with a high initial cost but low annual operating costs.
2. F system which costs less but have considerably higher operating costs.

The decision to construct the plant has already been made, and the choice here will have no effect on the overall revenues of the project. The cost of capital of the plant is 12% and the projects expected net cash costs are listed below:

Year	Expected Net C Systems	Cash Costs F Systems
0	(3,00,000)	(1,20,000)
1	(66,000)	(96,000)
2	(66,000)	(96,000)
3	(66,000)	(96,000)
4	(66,000)	(96,000)
5	(66,000)	(96,000)

What is the present value of costs of each alternative?

Which method should be chosen?

Solution: Computation of present value

Year	C Systems	F Systems	Incremental
1	(66,000)	(96,000)	30,000
2	(66,000)	(96,000)	30,000

3	(66,000)	(96,000)	30,000
4	(66,000)	(96,000)	30,000
5	(66,000)	(96,000)	30,000

Present value of incremental savings = 30,000 × PVIFA (12%, 5)
= 30,000 × 3.605 = 1,08,150

Incremental cash outlay = $\frac{1,80,000}{(71,850)}$

Since the present value of incremental net cash inflows of C system over F system is negative. C system is not recommended.

Therefore, F system is recommended.

Properties of the NPV:

1. NPVs are additive. If two projects A and B have NPV (A) and NPV (B) then by additive rule the net present value of the combined investment is NPV (A + B).
2. Intermediate cash inflows are reinvested at a rate of return equal to the cost of capital.

Demerits of NPV:

1. NPV expresses the absolute positive or negative present value of net cash flows. Therefore, it fails to capture the scale of investment.
2. In the application of NPV rule in the evaluation of mutually exclusive projects with different lives, bias occurs in favour of the long-term projects.

4. Profitability Index: Profitability index (PI), also known as profit investment ratio (PIR), benefit cost ratio (BCR) and value investment ratio (VIR), is the ratio of pay-off to investment of a proposed project. It is a useful tool for ranking projects because it allows you to quantify the amount of value created per unit of investment. Profitability index is the ratio of the present value of cash inflows to initial cash outlay. The discount factor based on the required rate of return is used to discount the cash inflows.

$$PI = \frac{\text{Present Value of Cash Inflow}}{\text{Pr esent Value of Cash Outflow}}$$

Accept or Reject Criterion

1. Accept the project if PI is greater than 1
2. Reject the project if PI is less than 1

If profitability index is 1 then the management may accept the project because the sum of the present value of cash inflows is equal to the sum of present value of cash outflows. It neither adds nor reduces the existing wealth of the company.

Merits of PI:

1. It takes into account the time value of money
2. It is consistent with the principle of maximization of shareholders wealth.
3. It measures the relative profitability.

Demerits:

1. Estimation of cash flows and discount rate cannot be done accurately with certainty.
2. A conflict may arise between NPV and profitability index, if a choice between mutually exclusive projects has to be made.

For example, given:

- Investment = ₹ 40,000
- Life of the Machine = 5 Years

CFAT Year	CFAT
1	18,000
2	12,000
3	10,000
4	9,000
5	6,000

Calculate net present value at 10% and PI:

Year	CFAT	PV@10%	PV
1	18,000	0.909	16,362
2	12,000	0.827	9,924
3	10,000	0.752	7,520
4	9,000	0.683	6,147
5	6,000	0.621	3,726

Total present value	43,679
(–) Investment	40,000
NPV	3,679

PI = 43,679/40,000
= 1.091
= >1
= Accept the project

Illustration 7.

	X	Y
PV of cash inflows	4,00,000	2,00,000
Initial cash outlay	2,00,000	80,000
NPV	2,00,000	1,20,000
Profitability index	2	2.5

As per NPV method project X should be accepted. As per profitability index project Y should be accepted. This leads to a conflicting situation. The NPV method is to be preferred to profitability index because the NPV represents the net increase in the firm's wealth.

Illustration 8. A firm is considering an investment proposal which requires an initial cash outlay of ₹ 8 lakh now and ₹ 2 lakh at the end of the third year. It is expected to generate cash flows as under:

Year	Cash inflows
1	3,50,000
2	8,00,000
3	2,50,000

Apply the discount rate of 12% and calculate profitability index.

Solution: Present Value of Cash Outflows.

Year	PV Factor at 12 %	Cash Outflows	PV of Cash Flows
1		₹ 8 lakhs	₹ 8 lakhs
2			
3	0.712	2 lakhs	1.424 lakhs
		Total	9.424 lakhs

Present Value of Cash Inflows

Year	PVIF (12%)	Cash Outflows	PV of Cash Flows
1	0.893	3,50,000	3.1255 lakhs
2	0.797	8,00,000	6.376 lakhs
3	0.636	2,50,000	1.5900 lakhs
		Total	11.0915 lakhs

$$n = \frac{\text{Total of Present Value of Cash Inflow}}{\text{Total of Present Value of Cash Outflow}}$$

$$= \frac{11.0915}{9.424} = 1.177$$

For every ₹ 1 invested the project is expected to give a cash inflow of ₹ 1.177, i.e., for every rupee invested a profit of ₹ 0.177 is obtained.

5. Internal Rate of Return: The internal rate of return (IRR) is a rate of return used in capital budgeting to measure and compare the profitability of investments. It is also called the discounted cash flow rate of return (DCFROR) or simply the rate of return (ROR). In the context of savings and loans the IRR is also called the effective interest rate. The term internal refers to the fact that its calculation does not incorporate environmental factors (e.g., the interest rate or inflation).

IRR is also called yield on investment, managerial efficiency of capital, marginal productivity of capital, rate of return and time adjusted rate of return. IRR is the rate of return that a project earns.

Formula: $IRR = R_1 + \left(\frac{NPVR}{DCIR_1 - DCIR_2} \right) \times R_2 - R_1$ or $R1 + \left(\frac{PV_{CI/FR_1} - PV_{CO/FI} \times (R_2 - R_1)}{PV_{CI/FR_1} - PV_{CO/FR_2}} \right)$

Where, R_1 = Lower Rate
R_2 = Higher Rate

Evaluation of IRR

1. IRR takes into account the time value of money.
2. IRR calculates the rate of return of the project, taking into account the cash flows over the entire life of the project.
3. It gives a rate of return that reflects the profitability of the project.
4. It is consistent with the goal of financial management, i.e., maximization of net wealth of shareholders.
5. IRR can be compared with the firm's cost of capital.
6. To calculate the NPV, the discount rate normally used is cost of capital. But to calculate IRR, there is no need to calculate and employ the cost of capital for discounting because the project is evaluated at the rate of return generated by the project. The rate of return is internal to the project.

Demerits:

1. IRR does not satisfy the additive principle.
2. Multiple rates of return or absence of a unique rate of return in certain projects will affect the utility of this technique as a tool of decision making in project evaluation.
3. In project evaluation, the projects with the highest IRR are given preference to the ones with low internal rates.
   Application of this criterion to mutually exclusive projects may lead under certain situations to acceptance of projects of low profitability at the cost of high profitability projects.
4. IRR computation is quite tedious.

Accept or Reject Criterion: If the project's internal rate of return is greater than the firm's cost of capital, accept the proposal. Otherwise reject the proposal.

IRR can be determined by solving the following equation for r =

$$CF_0 = \sum \frac{C_1}{(1+r)^1} \text{ where, } t = 1 \text{ to } n$$

CF_0 = Investment

Sum of the present values of cash inflows at the rate of interest of r =

$$CF_0 = \sum \frac{C_1}{(1+r)^1} \text{ where, } t = 1 \text{ to } n$$

Illustration 9. A project requires an initial outlay of ₹ 1,00,000. It is expected to generate the following cash inflows:

Year	Cash Inflows
1	50,000
2	50,000
3	30,000
4	40,000

What is the IRR of the project?

Step 1: Compute the average of annual cash inflows.

Year	Cash Inflows
1	50,000
2	50,000
3	30,000
4	40,000
Total	1,70,000

$$\text{Average} = \frac{1,70,000}{4} = ₹\ 42,500$$

Step 2: Divide the initial investment by the average of annual cash inflows:

$$= \frac{1,00,000}{42,500} = 235$$

Step 3: From the PVIFA table for 4 years, the annuity factor very near 2.35 is 25%. Therefore the first initial rate is 25%.

Year	Cash Flows	PV Factor at 25 %	PV of Cash Flows
1	50,000	0.800	40,000
2	50,000	0.640	32,000
3	30,000	0.512	15,360
4	40,000	0.410	16,400
		Total	1,03,760

Since the initial investment of ₹ 1,00,000 is less than the computed value at 25% of ₹ 1,03,760, the next trial rate is 26%.

Year	Cash Flows	PV Factor at 25 %	PV of Cash Flows
1	50,000	0.7937	39,685
2	50,000	0.6299	31,495
3	30,000	0.4999	14,997
4	40,000	0.3968	15,872
		Total	1,02,049

The next trial rate is 27%

Year	Cash Flows	PV Factor at 27 %	PV of Cash Flows
1	50,000	0.7874	39,370
2	50,000	0.6200	31,000
3	30,000	0.4882	14,646
4	40,000	0.3844	15,376
		Total	**1,00,392**

The next trial rate is 28%

Year	Cash Flows	PV Factor at 27 %	PV of Cash Flows
1	50,000	0.7813	39,065
2	50,000	0.6104	30,520
3	30,000	0.4768	14,304
4	40,000	0.3725	14,900
		Total	98,789

Since initial investment of ₹ 1,00,000 lies between 98,789 (28%) and 1,00,392 (27%) the IRR by interpolation.

$$= 27 + \frac{1{,}00{,}392 - 1{,}00{,}000}{1{,}00{,}392 - 98{,}789} \times 1$$

$$= 27 + \frac{392}{1{,}603} \times 1$$

$$= 27 + 0.2445$$

$$= 27.2445 = 27.24\ \%$$

Illustration 10. Anand, a chemical engineer with 15 years of experience, and Prakash, a pharmacy graduate with 18 years of experience, are evaluating a pharmaceutical formulation. They have estimated the total outlay on the project to be as follows:

Plant & Machinery	:	₹ 36 lakh
Working Capital	:	₹ 24 lakh
The proposed scheme of financing is	:	
Equity Capital	:	₹ 16 lakh
Term Loan	:	₹ 26 lakh
Trade Credit	:	₹ 8 lakh
Working Capital Advance	:	₹ 10 lakh

The project has an expected life of 10 years. Plant & Machinery will be depreciated at the rate of $33\ \frac{1}{3}$ per cent per annum as per the written down value method. The expected annual sales would be ₹ 80 lakh, and the cost of sales (including depreciation but excluding interest) is expected to be ₹ 50 lakh per year. The tax rate of the company will be 50 per cent. Term-loan will carry 14 per cent interest and will be repayable in 5 equal annual installments, beginning from the end of the first year. Working capital advance will carry an interest rate of 17 per cent and, thanks to the 'rollover' phenomenon, will have an indefinite maturity. Define the cash flows for the first three years from the long-term funds point of view.

Solution: Net Cash Flows Relating to Long-term Funds.

(₹ in lakh)

Year		0	1	2	3
A	Investment	(42.00)			
B	Sales		80.00	80.00	80.00
C	Operating costs (excluding depreciation)		38.00	42.00	44.67
D	Depreciation		12.00	8.00	5.33
E	Interest on working capital advance		1.70	1.70	1.70
F	Profit before tax		28.30	28.30	28.30
G	Tax		14.15	14.15	14.15
H	Profit after tax		14.15	14.15	14.15
I	Initial flow	(42.00)			
J	Operating flow = (H + D) + I(1 – t)		26.15	22.15	19.48
K	Net cash flow = (l + K)	(42.00)	26.15	22.15	19.48

Notes: The investment outlay has to be considered from the point of view of the suppliers of long-term funds. In the given Illustration, we find that ₹ 18 lakh out of the investment of ₹ 24 lakh in current assets is financed by way of trade-credit and working capital advance. The difference of ₹ 6 lakh is called the working-capital margin, i.e., the contribution of the suppliers of long-term funds towards working capital. Therefore, the investment outlay relevant from the long-term funds point of view will be equal to investment in plant and machinery + working capital margin = ₹ 42 lakh.

Since depreciation is a non-cash charge which has to be added to the profit after tax, this charge must be disclosed separately in the cash flow statement and not clubbed with other operating costs. Further, the depreciation charge to be considered here will be the tax-relevant charge. In other words, the depreciation must be computed in accordance with the method and rate(s) prescribed by the Income Tax Act, 1961.

While interest on long-term debt must be excluded for reasons discussed earlier, interest on short-term bank borrowings must be included in the cash flow statement.

In the Illustration discussed above, we have defined the cash flows only over the first three years of the project's life. But in practice cash flows are defined over the entire project life or over a specified time horizon (if the project life is too long). If the cash flows are defined over the entire life of the project, then the estimated salvage value of the investment in plant and machinery and the working capital must be considered for determining the net cash flow in the terminal year. If the cash flows are defined over a specified time horizon, a notional salvage value is taken into account in the final year of the time horizon.

Illustration 11. A capital project involves the following outlays:

	(₹ in lakh)
Plant and machinery	180
Working capital	120

The proposed scheme of financing is as follows:

	(₹ in lakh)
Equity	100
Long-term loans	104
Trade credit	36
Commercial banks	60

The project has a life of 10 years. Plant and machinery are depreciated at the rate of 15 per cent per annum as per the written down value method. The expected annual net sales is ₹ 350 lakh. Cost of sales (including depreciation, but excluding interest) is expected to be ₹ 190 lakh a year. The tax rate of the company is 60 per cent. At the end of 10 years plant and machinery will fetch a value equal to their book value and the investment in working capital will be fully recovered. The long-term loan carries an interest of 14 per cent per annum. It is repayable in eight equal annual installments starting from the end of the third year. Short- term advance from commercial banks will be maintained at ₹ 60 lakh; and will carry interest at 18 per cent per annum. It will be fully liquidated after 10 years. Trade credit will also be maintained uniformly at ₹ 36 lakh and will be fully paid back at the end of the tenth year.

Calculate the cash flow stream from the long-term funds point of view.

Solution: Cash Flows Relating to Long-term Funds.

(***₹ in lakh***)

A.	Investment	0	1	2	3	4	5	6	7	8	9	10
B.	Sales	(204.00)										
C.	Cost of sales		350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00
D.	Depreciation		163.00	167.05	170.49	173.42	175.91	178.02	179.82	181.34	182.64	183.75
E.	Profit before interest and taxes		27.00	22.95	19.51	16.58	14.09	11.98	10.18	8.66	7.36	6.25
F.	Interest on ST bank borrowing		160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00
G.	Profit before taxes		10.80	10.80	10.80	10.80	10.80	10.80	10.80	10.80	10.80	10.80
H.	Tax		149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20

I.	Profit After tax		89.52	89.52	89.52	89.52	89.52	89.52	89.52	89.52	89.52	89.52
J.	Net salvage value of fixed assets		59.68	59.68	59.68	59.68	59.68	59.68	59.68	59.68	59.68	59.68
K.	Net salvage of current assets											35.44
L.	Retirement of trade credit											120.00
M.	Payment of ST bank borrowing											(*36.00)
N.	Net Cash Flow = – A + I – D = J = K – LM	(204.00)	86.68	82.63	79.19	76.26	73.77	71.66	69.86	68.34	67.04	125.37

Notes:

- Net salvage value of fixed assets will be equal to the salvage value of fixed assets less any income tax that may be payable on the excess of the salvage value over the book value. Likewise there will be a tax shield on the loss, if any, incurred at the time of disposing of the fixed assets. According to tax laws, the net salvage value of any individual item of plant and machinery has lost its significance and therefore for our purposes, we will ignore the impact of tax on the salvage value. In other words, we will take only the gross salvage value into consideration.
- The depreciation rate assumed in this problem is not indicative of the current rates in force. (The depreciation rates currently applicable to plant and machinery under the Income Tax Act are 25%, 40%, and 100%).
- In working out the cash flows, deduction available for a new project under Section 80 I of the Income Tax Act has been ignored.
- Our Illustrations have so far been focused on estimating cash flows for a new project.
  The following illustration, illustrates estimation of cash flows for a replacement project.

Illustration 12. Sandals Inc., is considering the purchase of a new leather cutting machine to replace an existing machine that has a book value of ₹ 3,000 and can be sold for ₹ 1,500. The estimated salvage value of the old machine in four years would be zero, and it is depreciated on a straight-line basis. The new machine will reduce costs (before tax) by ₹ 7,000 per year, i.e., ₹ 7,000 cash savings over the old machine. The new machine has a four year life, costs ₹ 14,000 and can be sold for an expected amount of ₹ 2,000 at the end of the fourth year.Assuming straight-line depreciation, and a 40% tax rate, define the cash flows associated with the investment. Assume that the straight-line method of depreciation is used for tax purposes.

Solution: Cash Flows Associated with Replacement Decision

(in ₹)

Year		0	1	2	3	4
1.	Net investment in new machine	(12,500)				
2.	Savings in costs		7,000	7,000	7,000	7,000
3.	Incremental depreciation		2,250	2,250	2,250	2,250
4.	Pre-tax profits		4,750	4,750	4,750	4,750
5.	Taxes		1,900	1,900	1,900	1,900
6.	Post-tax profits		2,850	2,850	2,850	2,850
7.	Initial flow = (1)	(12,500)				
8.	Operating flow = (6) + (3)		5,100	5,100	5,100	5,100
9.	Terminal flow					2,000
10.	Net cash flow = (7) + (8) + (9)	(12,500)	5,100	5,100	5,100	7,100

Notes:

Computation of depreciation:

Existing leather-cutting machine

₹ 3,000/4 = ₹ 750 per annum

New leather-cutting machine

₹ 12,000/4 = ₹ 3,000 per annum

Incremental depreciation = ₹ 2,250 per annum.

Illustration 13. A firm is considering replacement of its existing machine by a new machine. The new machine will cost ₹ 1,60,000 and have a life of five years. The new machine will yield annual cash revenue of ₹ 2,50,000 and incur annual cash expenses of ₹ 1,30,000. The estimated salvage of the new machine at the end of its economic life is ₹ 8,000. The existing machine has a book value of ₹ 40,000 and can be sold for ₹ 20,000. The existing machine, if used for the next five years is expected to generate annual cash revenue of ₹ 2,00,000 and to involve annual cash expenses of ₹ 1,40,000. If sold after five years, the salvage value of the existing machine will be negligible.

The company pays tax at 30%. It writes off depreciation at 25% on the written down value. The company's cost of capital is 20%

Compute the incremental cash flows of replacement decisions.

Solution:

Initial Investment	
Gross investment for the new machine	(1,60,000)
Less: Cash received from the sale of	
Existing machine	20,000
Net cash outlay	(1,40,000)
Annual cash flows from operations	
Incremental cash flows from revenue	50,000
Incremental decrease in expenditure	(10,000)

Incremental Depreciation Schedule

Year	Depreciation (New Machine (₹)	Depreciation (Old Machine)	Incremental Depreciation (₹)
1	45,000	10,000	35,000
2	33,750	7,500	26,250
3	25.312	5,,625	19,687
4	18,984	4,219	14,765
5	14,238	3,164	11,074

Depreciation is calculated as under

Book Value	40,000
Add: Cost of new machine	1,60,000
	2,00,000
Less: Sale proceeds of old machine	20,000
	1,80,000
Depreciation for I year 25%	45,000
	1,35,000
Depreciation for II year 25%	33,750
	1,01,250
Depreciation for III year 25%	25,312
	75,938
Depreciation for IV year 25%	18,984
	56,954
Depreciation for V year 25%	14,238
Book Value after 5 years	42,716

Statement of incremental Cash flows

Particulars	Year					
	0 ₹	1 ₹	2 ₹	3 ₹	4 ₹	5 ₹
1. Investment in new machine	(1,60,000)					
2. After tax salvage value of old machine	20,000					
3. Net cash outlay	(1,40,000)					
4. Increase in revenue		50,000	50,000	50,000	50,000	50,000
5. Decrease in expenses		10,000	10,000	10,000	10,000	10,000
6. Increase in depreciation		35,000	26,250	19,647	14,755	11,074
7. Increase in EBT		25,000	33,750	40,313	45,235	48,926
8. EBT (1 – T)		17,500	23,625	28,219	31,555	34,245
9. Incremental cash flows from operation (8 + 6)		52,500	49,575	47,906	46,430	45,322
10. Salvage value of near machine						8,000
11. Incremental cash flows	(1,40,000) negative	52,500	49,875	47,906	45,430	53,322

Illustration 14. Charlie Company Ltd., wishes to buy a machine costing ₹ 2,00,000.
The life of this machine is 10 yrs. And its scrap value would be ₹ 5,000.
The following details are provided;
Average Annual NPBT ₹ 20,000
Tax Rate 35%
Depreciation (already charged) SLM basis, Calculate:
(i) Payback period
(ii) Payback profitability
(iii) A.R.R. (Accounting Rate of Return Method)

Solution:

Statement of Annual Cash Inflow

	₹
Annual NPBT	20,000
Less: Tax @ 35%	7000
NPAT	
Add: Depreciation already charged	
Cost – Scrap value	
2,00,000 – 5,000	
10 years	13000
Annual cash flow	19,500
	32,500

(i) Payback Period $= \dfrac{\text{Initial Investment}}{\text{Annual Average Cash Flow}}$

$= \dfrac{2,00,000}{32,500}$

= 6.154 years

(ii) Payback Profitability = Annual Cash Inflow × (Estimated Life – Payback Period)
= 32,500 – (10 – 6.154)
= ₹ 1,25,000

$$\text{Payback Profitability} = \frac{(+)\text{Scrap}5{,}000}{₹\ 1{,}30{,}000}$$

(iii) $$\text{Accounting Rate of Return} = \frac{\text{Annual PAT}}{₹\ \text{Average Investment}} \times 100$$

$$= \frac{13{,}000}{₹1{,}02{,}500} \times 100$$

$$= 12.68\ \%$$

$$\text{Average Investment} = \frac{\text{Original Investment} - \text{Scrap Value}}{2} + \frac{\text{Additional Net}}{\text{Working Capital}} + \text{Scrap Value}$$

$$= \frac{2{,}00{,}000 - 5{,}000}{2} + \text{NIL} + 5{,}000$$

$$= 97{,}500 + 5{,}000$$

$$= ₹\ 1{,}02{,}500$$

Illustration 15. The cash flow streams for two alternative investment Tata and Bata are:

Year	Tata (₹)	Bata (₹)
0	(2,00,000)	(2,10,000)
1	50,000	80,000
2	80,000	60,000
3	1,00,000	80,000
4	80,000	60,000
5	60,000	80,000

Calculate the (i) Payback period, (ii) Net present value using 11% discount rate and (iii) Benefit cost ratio using 11% discount rate, for the two alternatives. Which would you choose? Why?

Solution:

(i) Payback Period Method:

(When cash flows uneven)

Year	Tata		Bata	
	CFAT (₹)	Cumulative CFAT (₹)	CFAT (₹)	Cumulative CFAT (₹)
1	50,000	50,000	80,000	80,000
2	80,000	1,30,000	60,000	1,40,000
3	1,00,000	2,30,000	80,000	2,20,000
4	80,000	3,10,000	60,000	2,80,000
5	60,000	3,70,000	80,000	3,60,000

$$= 2 \text{ years} + \frac{70{,}000}{1{,}00{,}000}$$

$$= 2.7 \text{ years}$$

or

$= 2$ years and 8.4 months

$$= 2 \text{ years} + \frac{70{,}000}{80{,}000}$$

$$= 2.875 \text{ years}$$

or

$= 2$ years and 10.5 months

(ii) NPV

		Tata		Bata	
Years	PVF@11%	CFAT (₹)	PVCFAT (₹)	CFAT (₹)	PVCFAT (₹)
1	0.901	50,000	45,050	80,000	72,080
2	0.812	80,000	64,960	60,000	48,720
3	0.731	1,00,000	73,100	80,000	58,480

4	0.659	80,000	52,720	60,000	39,540
5	0.593	60,000	35,580	80,000	47,440
		PV of Cash Outflows	2,71,410		2,66,260
		Less: PV of Cash Outflows	2,00,000		2,10,000
		Net Present Values	71,410		56,260

(iii) B/C Ratio $= \frac{\text{Benefits}}{\text{Cost}} = \frac{\text{PVof Cash Inflows}}{\text{PVof Cash Outflows}}$

Tata	Bata
$= \frac{2,71,410}{2,00,000}$	$= \frac{2,66,260}{2,10,000}$
= 1.35:1	= 1.27:1

Note: Tata should be opted for Investment.

Illustration 16. Speedage Company Ltd., is considering a project which costs ₹ 5,00,000. The estimated salvage value is zero. Tax rate is 55%.The company uses straight line depreciation and the proposed project has cash inflows before depreciation and tax (CFBDT) as follows:

Year end	Cash flows (₹)
1	1,50,000
2	2,50,000
3	2,50,000
4	2,00,000
5	1,50,000

If the cost of capital is 12%, would you recommend the acceptance of the project under Internal Rate of Return Method?

Solution:

Year	CFBBDT (₹)	Dep. (₹)	Net Earnings (₹)	Tax @ 55% (₹)	Net Earnings – Tax = EAT (₹)	CFAT = EAT + Dep. (₹)
1	1,50,000	1,00,000	50,000	27,500	22,500	1,22,500
2	2,50,000	1,00,000	1,50,000	67,500	67,500	1,67,500
3	2,50,000	1,00,000	1,50,000	67,500	67,500	1,67,500
4	2,00,000	1,00,000	1,50,000	45,000	45,000	1,45,000
5	1,50,000	1,00,000	50,000	22,500	22,500	1,22,000
					Total CFAT	7,25,000

Fake Payback Period $= \frac{\text{Cash Outlays}}{\text{Average Annual Cash Inflows}}$

$$= \frac{5,00,000}{\frac{(7,25,000)}{5\text{yrs.}}}$$

$$= 3.448$$

As per Annuity Table the PV Factors closest to 3.448 against 5 years are

At 12% 3.605

At 14% 3.433

Year	CFAT (₹)	PV Factor @ 12%	PV of CFAT at 12% (₹)	PV Factor @ 14%	PV of CFAT at 14% (₹)
1	1,22,500	0.893	1,09,392.50	0.877	1,07,435.50
2	1,67,500	0.797	1,33,497.50	0.769	1,28,807.50
3	1,67,500	0.712	1,19,260.00	0.675	1,13,062.50

4	1,45,000	0.636	92,220.00	0.592	85,840.00
5	1,22,500	0.567	69,457.50	0.519	63,577.50
		Total of CFAT	5,23,827.50		4,96,720.00

$$\text{IRR} = D1 + \frac{\text{PV of CFAT D1} - \text{PV of Cash Outlays}}{\text{PV of CFAT D1} - \text{PVof CFAT D2}} \times (D2 - D1)$$

$$= 12\% + \frac{5,23,827.50 - 5,00,000}{5,23,827.50 - 4,98,720} \times (14\% - 12\%)$$

$$= 12\% + \frac{23,827.50}{25,107.50} \times 2\%$$

IRR = 13.98% (approx.)

Since the IRR is higher than the cost of capital, the project is recommended to be accepted.

Illustration 17. A company is considering the two mutually exclusive projects. The finance director considers that the project with higher NPV should be chosen; whereas the managing Director thinks that one with higher rate of return should be considered. Both the projects have got a useful life of 5 years and the cost of capital is 10%. The initial outlay is ₹ 2 lakhs.

The Future Cash Inflow from Project X and Y are as under:

Year	Project X (₹)	Project Y (₹)	PV Factor @ 10%	PV Factor @ 20%
1	35,000	1,18,000	0.91	0.83
2	80,000	60,000	0.83	0.69
3	90,000	40,000	0.75	0.58
4	75,000	14,000	0.68	0.48
5	20,000	13,000	0.62	0.41

You are required to evaluate the projects and explain the inconsistency, if any, in the ranking of the projects.

Solution:

(a) Payback Period Method:

Year	Project X		Project Y	
	Cash Inflows (₹)	Cumulative Cash Inflows	Cash Inflows (₹)	Cumulative Cash Inflows
1	35,000	35,000	1,18,000	1,18,000
2	80,000	1,15,000	60,000	1,78,000
3	90,000	2,05,000	40,000	2,18,000
4	75,000	2,80,000	14,000	2,32,000
5	20,000	3,00,000	13,000	2,45,000

Payback Period

$$= 2 \text{ years} + \left(\frac{2,00,000 - 1,15,000}{90,000}\right)$$

= 2.944 years or

= 2 years and 11.33 months or

= 2 years, 11 months and 10 days

$$= 2 \text{ years} + \left(\frac{2,00,000 - 1,78,000}{40,000}\right)$$

= 2.55 years or

= 2 years and 6.6 months or

= 2 years, 6 months and 18 days

Accept Project Y

(b) ARR: *Note:* For ARR calculation, we have assumed cash flows are before depreciation.

Year	Project Y			Project Y		
	Cash Inflows (₹)	Depreciation	Profit After Tax (₹)	Cash Inflows (₹)	Depreciation	Profit After Tax (₹)
1	2	3	2 – 3 = 4	5	6	5 – 6 = 7
1	35,000	40,000	(5,000)	1,18,000	40,000	78,000
2	80,000	40,000	40,000	60,000	40,000	20,000
3	90,000	40,000	50,000	40,000	40,000	Nil
4	75,000	40,000	35,000	14,000	40,000	(26,000)
5	20,000	40,000	(20,000)	13,000	40,000	(27,000)
			1,00,000			45,000

Assumption: Depreciation has been changed by Straight Line Method (SLM).

$$\text{ARR} = \frac{\text{Average Annual Profit After Tax}}{\text{Original Investment}} \times 100$$

(Based on Original Investment)

Project X

$$= \frac{\frac{1,00,000}{5}}{2,00,000} \times 100$$

$$= 10\%$$

Project Y

$$= \frac{\frac{45,000}{5}}{2,00,000} \times 100$$

$$= 4.5\%$$

$$\text{ARR} = \frac{\text{Average Annual Profit After Tax}}{\text{Average Investment}} \times 100$$

(Based on Average Investment)

Project X

$$= \frac{\frac{1,00,000}{5}}{\frac{2,00,000}{2}} \times 100$$

$$= 20\%$$

Project Y

$$= \frac{\frac{45,000}{5}}{\frac{2,00,000}{2}} \times 100$$

$$= 9\%$$

Accept project X

(c) Net Present Value:

		Project X		Project Y	
Year	PV Factor @ 10%	Cash Inflows (₹)	PV of Cash Inflows	Cash Inflows (₹)	PV of Cash Inflows
1	0.91	35,000	31,850	1,18,000	1,07,380
2	0.83	80,000	66,400	60,000	49,800
3	0.75	90,000	67,500	40,000	30,000
4	0.68	75,000	51,000	14,000	9,520
5	0.62	20,000	12,400	13,000	8,060
		PV of Cash Inflows	2,29,150		2,04,760
		Less: PV of Cash outflows	2,00,000		2,00,000
		Net Present Value	29,150		4,760

Accept Project X

(d) Profitability Index = $\frac{\text{PV of Cash Inflows}}{\text{PV of Cash Outflows}}$

Project X	Project Y
$= \frac{2,29,150}{2,00,000}$	$= \frac{2,04,760}{2,00,000}$
= 1.146	= 1.024
Accept Project X	

(e) *Internal Rate of Return (IRR):* Since two discounting factors are given in the question, we will find out IRR using the given data.

Project X

Year	Cash Inflows (₹)	PV Factor @ 10%	PV Cash Inflows @10% (₹)	PV Factor @ 20%	PV Cash Inflows @ 20% (₹)
1	35,000	0.91	31,850	0.83	29,050
2	80,000	0.83	66,400	0.69	55,200
3	90,000	0.75	67,500	0.58	55,200
4	75,000	0.68	51,000	0.48	36,000
5	20,000	0.62	12,400	0.41	8,200
		PV of Cash Inflows	2,29,150		1,80,650
		Less: PV of Cash Outflows	2,00,000		2,00,000
		Net Present Value	29,150		(19,350)

$$\text{IRR} = \text{D1} + \frac{\text{PV of CFAT D1} - \text{PV of Cash Outlays}}{\text{PV of CFAT D1} - \text{PV of CFAT D2}} \times (\text{D2} - \text{D1})$$

$$= 10\% + \frac{2,29,150 - 2,00,000}{2,29,150 - 1,80,650} \times (20\% - 10\%)$$

$$= 10\% + \frac{2,29,150}{48,500} \times 10\%$$

= 16.01% (approx.)

Project Y

Year	Cash Inflows (₹)	PV Factor @ 10%	PV Cash Inflows @10% (₹)	PV Factor @ 20%	PV Cash Inflows @ 20% (₹)
1	1,18,000	0.91	1,07,380	0.83	
2	60,000	0.83	49,800	0.69	
3	40,000	0.75	30,000	0.58	
4	14,000	0.68	9,520	0.48	
5	13,000	0.62	8,060	0.41	
		PV of Cash Inflows	2,29,150		1,80,650
		Less: PV of Cash Outflows	2,00,000		2,00,000
		Net Present Value	29,150		(19,350)

$$\text{IRR} = 10\% + \frac{2,04,760 - 2,00,000}{2,04,760 - 1,74,590} \times (20\% - 10\%)$$

$$= 10\% + \frac{4,760}{30,170} \times 10\% = 11.58\% \text{ (approx.)}$$

Accept Project X

Summary

Methods	Project X		Project Y	
	Rank		Rank	
(a) Payback Period	II	2.944 years	I	2.55 years
(b) ARR	I	10%	II	4.5%
(c) NPV	I	₹ 29,150	II	₹ 4,760
(d) PI	I	1.146	II	1,024
(e) IRR	I	16.01%	II	11.58%

Based on the above analysis Project X is recommended to be selected and Project Y to be rejected.

Illustration 18. A choice is to made between two competing projects which require an equal investment of ₹ 50,000 and are expected to generate net cash flows as under:

	Project I	Project II
End of year 1	₹ 25,000	₹ 10,000
End of year 2	₹ 15,000	₹ 12,000
End of year 3	₹ 10,000	₹ 18,000
End of year 4	₹ Nil	₹ 25,000
End of year 5	₹ 12,000	₹ 8,000
End of year 6	₹ 6,000	₹ 4,000
Tax Rate	50%	40%

Calculate:

1. Payback Period.
2. Average Ratio of Return.
3. Payback Profitability.

Solution:

		Project I			Project II	
Year	Cash Inflows (₹)	Depreciation	Net Profit After Tax (₹)	Cash Inflows (₹)	Depreciation	Net Profit After Tax (₹)
1	25,000	8,333	16,667	10,000	8,333	1,667
2	15,000	8,333	6,667	12,000	8,333	3,667
3	10,000	8,333	1,667	18,000	8,333	9,667
4	–	8,333	(8,333)	25,000	8,333	16,667
5	12,000	8,333	3,667	8,000	8,333	(333)
6	6,000	8,335	(2,335)	4,000	8,335	(4,335)
		50,000	18,000		50,000	27,000

$$\text{Depreciation p.a.} = \frac{OC - SV}{EL}$$

$$= \frac{50,000}{6}$$

$$= 8.333$$

$$\text{Average NPAT p.a} = \frac{\text{Total Profit}}{\text{No. of Years}}$$

$$\text{Project I} = \frac{18,000}{6}$$

$$= ₹ 3,000 \text{ p.a.}$$

$$\text{Project II} = \frac{27,000}{6}$$

= ₹ 4,500 p.a.

1. Payback Period:

	Project I		Project I	
Year	**Cash Inflows (₹)**	**Cumulative Cash Inflows (₹)**	**Cash Inflows (₹)**	**Cumulative Cash Inflows (₹)**
1	25,000	25,000	10,000	10,000
2	15,000	40,000	12,000	22,000
3	10,000	50,000	18,000	40,000
4	–	50,000	25,000	65,000
5	12,000	62,000	8,000	73,000
6	6,000	68,000	4,000	77,000

Project I

Payback Period = 3 Years

Project II

Payback Period = 3 + ((50,000 – 40,000/(25,000))

$$= 3 + \frac{10,000}{25,000}$$

= 3.4 Years

$$\text{2. ARR (Original Investment)} = \frac{\text{Average Annual Net Profit After Tax}}{\text{Original Investment}} \times 100$$

Project I	Project II
$= \frac{3,000}{50,000} \times 100$	$= \frac{4,500}{50,000} \times 100$
= 6%	= 9%

$$\text{ARR (Average Investment)} = \frac{\text{Average Annual PAT}}{\text{Average Investment}} \times 100$$

Project I	Project II
$= \frac{\frac{3,000}{(50,000)}}{2} \times 100$	$= \frac{\frac{4,500}{(50,000)}}{2} \times 100$
= 12%	= 18%

3. Payback Profitability = Total Cash Inflow – Cash of Asset

Project I

= 68,000 – 50,000

= ₹ 18,000

Project II

= 77,000 – 50,000 = ₹ 27,000

Illustration 19. M/s. Onward Technology has shortlisted two projects A and B for final consideration. It wants to take up only one project of the two and not both. The investment required for project A is ₹ 190 Lakhs while that for Project B is ₹ 400 Lakhs. The other details related to project A and B are given below:

Project A

Year	Depreciation	Profit Before Tax	Profit After Tax
I	24	78	56
II	20	82	60
III	16	100	74

Project B

Year	Depreciation	Profit Before Tax	Profit After Tax
I	78	104	82
II	64	118	92
III	54	260	186

The cost of capital of company is 14% and the present value of Re.1 at the end of first, second and third year @ 14% rate is 0.8772, 0.7695 and 0.6750 respectively using Net Present Value Method, which project would you recommend.

What will be your answer under Payback Period Method?

Solution:

NVP Method

Project A

Year	PBT	Tax	PAT	Cash Inflows (PAT + Dep.)	PVF @ 14%	PV of Cash Inflows
1	78	22	56	80	0.8772	70.176
2	82	22	60	80	0.7695	61.560
3	100	26	74	90	0.6750	60.750
					PV of Cash Inflows	192.486
					Less: PV of Cash Outflows	190.000
					Net Present Value	2.486

Project B

Year	PBT	Tax	PAT	Cash Inflows (PAT + Dep.)	PVF @ 14%	PV of Cash Inflows
1	104	22	82	160	0.8772	140.352
2	118	2	92	156	0.7695	120.042
3	260	74	186	240	0.6750	162.000
					PV of Cash Inflows	422.394
					Less: PV of Cash Outflows	400.000
					Net Present Value	22.394

Project B is recommended since NPV is greater than Project A.

Payback Period Method:

Project A: Investment ₹ 190 Lacs

Year	PAT	Depreciation	Cash Inflows (PAT + Dep.)	Cumulative Cash Inflows
1	56	24	80	80
2	60	20	80	160
3	74	16	90	250

Payback Period = 2 years + $\left(\frac{30}{90} \times 10\right)$ □ □ □

Payback Period = 2 years and 4 months or 2.33 years or 2 years and 120 days

Project B: Investment ₹ 400 Lacs

Year	PAT	Depreciation	Cash Inflows (PAT + Dep.)	Cumulative Cash Inflows
1	82	78	160	160
2	92	64	156	316
3	186	54	240	556

Payback Period = 2 years + $\left(\frac{840}{240} \times 12\right)$ □

□ □ = 2 years and 4.2 months or 2.35 years or
= 2 years 4 months and 6 days or 2 years and 126 days

Project A will be selected since the payback period is lesser than Project B.

Illustration 20: (NPV Method). The Tamil Nadu Fertilizers Ltd. is considering a proposal for the investment of ₹ 5,00,000 on product development which is expected to generate net cash inflows for 6 years as under:

Year	Net Cash Flows ('000)
1	Nil
2	100
3	160
4	240
5	300
6	600

The following are the present value factors @ 15% p.a.:

Year	Factor
1	0.87
2	0.76
3	0.66
4	0.57
5	0.50
6	0.43

Solution:

Calculation of Net Present Value

Year ₹	Cash Inflows ('000)	PV Factor	Present Values ('000) ₹
1	Nil	0.87	Nil
2	100	0.76	76.0
3	160	0.66	105.60
4	240	0.57	136.80
5	300	0.50	150.00
6	600	0.43	258.00
Total			726.40
Less: Cash Outlay			500.00
Net Present Value			226.40

As the net present value is positive, the proposal is acceptable.

Illustration 2.1 (Multiple Methods — scrap value and additional working capital is given). An enterprise is having the following two proposals of investment:

		Proposal A	Proposal B
Cost of Investment	(₹)	20,000	28,000
Life of the Assets	(Years)	4	5
Scrap Value		Nil	Nil

Net Income after depreciation and tax:

Year	₹	₹
1996	500	Nil
1997	2,000	3,400
1998	3,500	3,400
1999	2,500	3,400
2000	—	3,400

It is estimated that each of the project will require an additional working capital of ₹ 2,000 which will be received back in full after the expiry of each project life.

Depreciation is to be provided under straight line method.

The present value of ₹1 to be received at the end of each year at 10% per annum is given below:

Year	Present Value
1	0.91
2	0.83
3	0.75
4	0.68
5	0.62

You are required to assess the profitability of the projects on the basis of the following methods:

1. Return on Investment.
2. Payback Period.
3. Discounted Payback Period
4. Profitability Index.

Solution:

1. Pay-back Period:

Proposal A:

After adding back depreciation charged ₹ 5,000 each year $\left(\text{i.e.,}\frac{₹\,20{,}000}{4\text{ years}}\right)$, income earned each year amounts to ₹ 55,090; ₹ 7,000; ₹ 8,500 and ₹ 7,500.

Capital Cost ₹ 20,000 will be recovered in 2 years and 10.59 months.

Proposal B:

After adding back depreciation ₹ 5,600 $\left(\text{i.e.,}\frac{₹\,28{,}000}{5\text{ years}}\right)$, income amounts to ₹ 5,600; ₹ 9,000; ₹ 9,000; ₹ 9,000 and ₹ 9,000.□

Capital Cost ₹ 28,000 will be recovered in 3 years and 5.87 months.

As the period of recovery of capital cost in respect of Proposal A is less, Proposal A should be preferred.

2. Return on Investment:

Average Rate of Returns

$$\text{Average Rate} = \frac{\text{Average Annual Earnings (after Depreciation \& Tax)}}{\text{Capital Cost}} \times 100$$

Proposal A:

$$\text{Average Earning} = \frac{\text{Total Earnings}}{\text{Period}}$$

$$= \frac{₹\,8,500}{4} = 2,125$$

$$\text{Average Rate of Return} = \frac{₹\,2,125}{20,000} \times 100 = 10,625\%$$

Proposal B:

$$\text{Average Earnings} = \frac{13,600}{5} = 2,720$$

$$\text{Average Rate of Earnings} = \frac{2,720}{28,000} \times 100 = 9.71\%$$

As the rate of return in respect of Proposal A is more than that of Proposal B. Proposal A should be considered.

3. Discounted Payback Period:

Discounted Cash Flows or Inflows are considered to find out the period required to recover the Capital Cost.

Capital Cost

Proposal A = ₹ 20,000 + ₹ 2,000 Working Capital = ₹ 22,000

Proposal B = ₹ 28,000 + ₹ 2,000 Working Capital = ₹ 30,000

Year	Discount Factor ₹	Proposal A Cash Flow Cash Flow before Depreciation ₹	Discounted Value ₹	Proposal B Cash Flow before Depreciation ₹	Discounted Value ₹
1	0.91	5,500	5,005	5,600	5,096
2	0.83	7,000	5,810	9,000	7,470
3	0.75	8,500	6,375	9,000	6,750
4	0.68	7,500	5,100	9,000	6,120
5	0.62	—	—	9,000	5,580
W.C.	0.62	2,000	1.240	2,000	1,240
			23,530		32,256
			– 22,000		– 28,000
Net Present Value			1,530		4,256

Proposal A:

We can recover ₹ 22,000 within 3 years and 9.10 months as under:

Discounted Cash Flow	1st Year	₹ 5,005
	2nd Year	₹ 5,810
	3rd Year	₹ 6,375
		₹ 17,190

Out of ₹ 22,000; ₹ 17,190 are recovered within 3 years and the balance of ₹ 4,810 is to be recovered in the 4th year. In the 4th year, discounted cash flow including recovery of capital is ₹ 6,340. This is for 12 months. Hence, to recover ₹ 4,810, the period required will be:

$$\frac{4,810}{6,820} \times \frac{12\text{months}}{1} = 9.10 \text{ months}$$

Proposal B:

In the first 4 years, ₹ 25,436 will be recovered and the balance ₹ 4,564 will be recovered within 8 months of the 5th year as under:

$$\frac{4,564}{6,820} \times 12 \; 8.03 \text{ months}$$

4. Profitability Index:

$$= \frac{\text{Pr esent Value}}{\text{Capital Cost}}$$

Proposal A: $= \frac{23,530}{22,000} = 1.06 : 1$

Proposal B: $= \frac{32,256}{30,000} = 1.07 : 1$

Profitability Index is almost equal and it is more than 1. Hence, any proposal can be accepted.

Illustration 22. (When cash flow after tax is given): Determine the Internal Rate of Return from the following set of data using pay-back reciprocal method:

Cost of Project		₹ 45,000
Annual Cost Inflows after Tax:	1st Year	₹ 5,000
	2nd Year	₹ 10,000
	3rd Year	₹ 15,000
	4th Year	₹ 20,000
	5th Year	₹ 25,000
Estimated Life of Project		5 years

Solution:

1. The sum of cash inflows is ₹ 75,000, which when divided by the economic life of 5 years gives annuity of ₹ 15,000.
2. Dividing the initial outflow of ₹ 45,000 by ₹ 15,000; the average pay-back period of 3 years $\left(\frac{45,000}{15,000}\right)$ is determined.
3. The factor closest to 3,000 for 5 years is 2.991 for a rate of 20%.
4. Since the actual cash flows during the later years is more than the average cash flow of ₹ 15,000, a decrease of say 2% is made in the discount rate. This makes an estimated rate of internal rate of return as 18%.
5. Using the PV factors for 18% for years 1-5, the present value is computed below:

Year	Cash Flow after Tax	P.V. Factor at 18%	Total P.V.
1	5,000	0.84746	4,237
2	10,000	0.71818	7,182
3	15,000	0.60863	9,129
4	20,000	0.51579	10,316
5	25,000	0.43711	10,928

			41,792
Less: Cash Outflow			45000
Net Present Value			(–) 3,208

6. Since the Net Present Value is negative, the discount rate is further reduced to 16%. The revised Net Present Value is as under:

Year	Cash Flow after Tax ₹	P.V. Factor at 16%	Total P.V. ₹
1	5,000	0.86207	4,310
2	10,000	0.74316	7,432
3	15,000	0.64066	9,610
4	20,000	0.55229	11,046
5	25,000	0.47611	11,903
			44,301
Less: Cash Outflow			45,000
Net Present Value			(–) 699

7. The Net Present Value is still negative. Therefore, the discount factor is further reduced by I % to 15%. The revised Net Present Value is as under:

Year	Cash Flow after Tax ₹	P.v. Factor at 15%	Total P.V ₹
1	5,000	0.86975	4,348
2	10,000	0.75614	7,561
3	15,000	0.65752	9,863
4	20,000	0.57175	11,435
5	25,000	0.49718	12,430
			45,637
Less: Cash Outflow			45,000
Net Present Value			637

8. Since 15% and 16% are the consecutive discount rates that give positive and negative net present values, we can now use the interpolation method to find the actual Internal Rate of Return which will be between 15% and 16%.

$$\text{Internal Rate of Return} = 15 + \frac{₹45,637 - ₹45,000}{₹45,637 - ₹\ 44,301} \times 1$$

$$= 15 + \frac{637}{1{,}336} \times 1$$

or 15.48%

Alternatively,

$$\text{Internal Rate of Return} = 6 + \frac{₹44,301 - ₹45,000}{₹45,637 - ₹\ 44,301} \times 1$$

$$= 16 - \frac{699}{1{,}336} \times ₹\ 1$$

Or 15.48%

Illustration 23. (When initial capital cost is to be decided): The MN Company Ltd. has decided to increase its productive capacity to meet an anticipated increase in demand for its products. The extent of this increase in capacity has still to be determined and a management meeting has been called for to decide

which of the following two mutually exclusive Proposals I and II should be undertaken. On the basis of the information given below, you are required to:

1. Evaluate the profitability (ignoring taxation and investment allowance of each of the proposals).
2. Advise management in deciding between Proposal I and Proposal II on the assumption of cost of capital at 8%.

		Proposal - I	Proposal - II
Building		50,000	1,00,000
Plant		2,00,000	3,00,000
Installation		10,000	15,000
Working Capital		50,000	65,000
Net Income			
Annual Pre-depreciation Profits	[Note (i)]	70,000	95,000
Other Relevant Income Expenditure			
including Sales Promotion	[Note (ii)]	–	15,000
Plant Scrap Value		10,000	15,000
Buildings Disposable Value	[Note (iii)]	30,000	60,000

Note:

1. The investment life is 10 years.
2. An exceptional amount of expenditure on sales promotion of ₹ 15,000 will be spent in year 2 on Proposal II. This has not been taken into account in calculating pre-depreciation profits.
3. It is not the intention to dispose of the building in ten years' time. However, it is company policy to take a notional figure into account for project evaluation purposes.

The present value of Re. 1 at 8% discounting factor:

Year 1	0.926
2	0.857
3	0.794
4	0.735
5	0.681
6	0.630
7	0.583
8	0.540
9	0.500
10	0.463
11	0.429

Solution:

Initial Capital Cost

	Proposal I ₹	Proposal II ₹
Building	50,000	1,00,000
Plant	2,00,000	3,00,000
Installation	10,000	15,000
Working Capital	50,000	65,000
	3,10,000	4,80,000

Statement of Net Present Value

		Proposal I		Proposal II	
Year	**Discount Factor at 8%** ₹	**Cash Inflow** ₹	**Present Value** ₹	**Cash Inflow** ₹	**Present Value** ₹
1	0.926	70,000	64,820	95,000	87,970
2	0.857	70,000	55,990	80,000	68,560
3	0.794	70,000	55,580	95,000	75,430
4	0.735	70,000	51,540	95,000	69,825
5	0.681	70,000	47,670	95,000	64,695
6	0.630	70,000	44,100	95,000	59,850
7	0.583	70,000	40,810	95,000	55,385
8	0.540	70,000	37,800	95,000	51,300
9	0.500	70,000	35,000	95,000	47,500
10	0.463	70,000	32,410	95,000	43,985
Recovery	0.463	90,000	41.670	1,40,000	64,820
Less: Capital Cost			5,11,300 3,10,000		6,89,320 4,80.000
Net Present Value			2,01,300		2,09,320

Since Net Present Value of Proposal II is more than that of Proposal I, Proposal II is recommended.

Notes:

1. Amount recovered at the end of 10th year:

	Proposal I	**Proposal II**
Scrap Value of Plant	10,000	15,000
Disposal Value of Building	30,000	60,000
Working Capital	50,000	65,000
	90,000	1,40,000

2. Cash Inflow during 2nd year ₹ 80,000 is after deduction of ₹ 15,000 of expenses from ₹ 95,000.

Illustration 24. (When working capital is given): Atul Enterprises wants to introduce a new product well estimated sales life of five years.

The manufacturing equipment will cost ₹ 5,00,000 with scrap value of ₹ 30,000 at the end of five years. The working capital requirement is ₹ 40,000, which will be released after five years.

The annual cash inflow and P.V. factor @ 10% are:

Year	**P.V. Factor**	**Cash Inflow** ₹
1	0.909	2,50,000
2	0.826	3,00,000
3	0.751	3,75,000
4	0.683	3,60,000
5	0.621	2,25,000

The depreciation to be charged under straight line method ₹ 1,00,000.

Tax applicable @ 40%.

Evaluate the proposal under various alternatives.

Solution:

Computation of PV of Cash Outlays

Initial Investment	5,00,000
Additional Working Capital	40,000
Total Cash Outlays	5,40,000

Computation of PV of Cash Inflows

Y	Cash Inflows ₹	Depreciation ₹	P.B.T ₹	Tax 40% ₹	Cash Outflow After Tax ₹	PV Factors @ 10%	PV Cash Inflow ₹
1	2,50,000	1,00,000	1,50,000	60,000	1,90,000	0.909	1,72,710
2	3,00,000	1,00,000	2,00,000	80,000	2,20,000	0.826	1,81,720
3	3,75,000	1,00,000	2,75,000	1,10,000	2,65,000	0.751	,99,015
4	3,60,000	1,00,000	2,60,000	1,04,000	2,56,000	0.683	,74,848
5	2,25,000	1,00,000	1,25,000	50,000	1,75,000	0.621	1,08,675

	₹
Present Value of all CFAT	8,36,968
Add: PV of Salvage Value (30,000 × 0.621)	18,630
Total Cash Inflows	8,55,598
Less: PV of Cash Outflow	5,40,000
	3,15,598

Illustration 25. (When profit after tax is given): Madhu Industries Ltd. has an investment proposal of A 40 lakhs. The expected cash flow (i.e. Profit after Tax, but before depreciation is as under).

Year	Profit ₹	Year	Profit ₹
1	7,00,000	6	9,00,000
2	7,00,000	7	10,00,000
3	8,00,000	8	10,00,000
4	8,00,000	9	8,00,000
5	9,00,000	10	6,00,000

The present value factors are:

Year	@ 10%	@ 15%	Year	@ 10%	@ 15%
1	0.909	0.870	6	0.564	0.432
2	0.826	0.756	7	0.513	0.376
3	0.751	0.658	8	0.467	0.327
4	0.683	0.572	9	0.424	0.284
5	0.621	0.497	10	0.386	0.247

You are required to ascertain:

1. Payback period.
2. N.P.V. @ 10%.
3. Profitability index @ 10%.
4. I.R.R.

Solution:

1. Pay-back Period:

	₹
Cash Outflow:	40,00,000

Cash Inflow:

Year	A
1	7,00,000
2	7,00,000
3	8,00,000
4	8,00,000
5	9,00,000
	39,00,000
6th	
1/9 × 9,00,000	1,00,000
Total Cash Inflow	30,00,000

Payback period = $5\frac{1}{9}$ year.

2. Net Present Value at 10% discounting factor:

Year	Net Cash Flow ₹	P.V. Factor at 10%	Present Value ₹
1	7,00,000	0.909	6,36,300
2	7,00,000	0.826	5,78,200
3	8,00,000	0.751	6,00,800
4	8,00,000	0.683	5,46,400
5	9,00,000	0.621	5,58,900
6	9,00,000	0.564	39,00,000
7	10,00,000	0.5132	5,13,000
8	10,00,000	0.467	4,67,000
9	8,00,000	0.424	3,39,200
10	6,00,000	0.386	2,31,600
Total			49,79,000
Less: Cash Outflow			40,00,000
Net Present Value			9,79,000

3. **Profitability Index** $= \frac{49,79,000}{40,00,000}$

$= 1.244$

4. **Internal Rate of Return: (IRR)**

Year	Net Cash Flow ₹	P.V. Factor at 15%	Present Value ₹
1	7,00,000	0.870	6,09,000
2	7,00,000	0.756	5,29,200
3	8,00,000	0.658	5,26,400
4	8,00,000	0.572	4,57,600
5	9,00,000	0.497	4,47,300
6	9,00,000	0.432	3,88,800
7	10,00,000	0.376	3,76,000
8	10,00,000	0.327	3,27,000

9	8,00,000	0.284	2,27,200
10	6,00,000	0.247	1.48,200
		Total at 15%	40,36,700
		at 10%	49,79,000
		Difference	9,42,200

By Interpolation

$$\text{IRR} = .\ 10\% + \frac{(49,79,000 - 40,00,000)}{9,42,200} \times 5\%$$

$$= 10\% + \frac{9,79,000}{9,42,300} \times \frac{5}{100}$$

$$= 10\% + 0.05$$

$$= 10.05\%$$

Illustration 26: (When multiple techniques are given). Vijay Electronics Ltd. is considering the purchase of a machine. Two machines LM and PM, are available each costing ₹ 1,00,000. In comparing profitability of machines, a discount rate of 10% is to be used.

Earning after taxation are expected as follows:

Year	Machine LM	Machine PM
1	30,000	10,000
2	40,000	30,000
3	50,000	40,000
4	30,000	60,000
5	40,000	40,000

Indicate which machine would be more profitable, investment under'the various methods of ranking investments proposal (Payback period, Post payback profitability, Return on investment, ARR, Discounted Cash flow and Excess present value).

Solution:

1. Pay-back Method:

		₹
Machine LM -	1st year	30,000
	2nd year	40,000
		70,000
	3rd year	30,000
		1,00,000
i.e., $2 \text{ years} + \frac{30,000}{50,000} \times 12 = 2.6 \text{years}$		
Machine PM =	1st year	10,000
	2nd year	30,000
		40,000
	3rd year	40,000
		80,000
	4th year	20,000
		1,00,000
i.e. $3 \text{ years} + \frac{20,000}{60,000} = 3.3 \text{ years}$		

Note: Machine LM is more profitable as its Payback Period is less.

2. Net Present Value Method:

Machine LM & PM

Year	Cash Flow		Discount	Present Value	
	LM ₹	PM ₹	₹	LM ₹	PM ₹
1	30,000	10,000	0.9091	27,273	9,091
2	40,000	30,000	0.8264	33,056	24,792
3	50,000	40,000	0.7573	37,865	30,292
4	30,000	60,000	0.6830	20,490	40,980
5	40,000	40,000	0.6209	24,836	24,836
Total				1,43,520	1,29,991
Less: Cash outflow				1,00,000	1,00,000
Net Present value				43,520	29,991

Note: Machine LM is more profitable as its Net Present Value is more.

3. Post Payback Profitability:

Formula: Total Savings - Investment

Machine LM = 1,90,000 – 1,00,000
= ₹ 90,000

Machine PM = 1,80,000 – 1,00,000
= ₹ 80,000

Note: Machine LM is more profitable.

4. Return on Investment:

Formula $= \frac{\text{Average return p.a.}}{\text{Investment}} \times \text{p.a}$

Machine LM $= \frac{(1{,}90{,}000 \div 5) \times 100}{1{,}00{,}000}$

$= \frac{38{,}000 \times 100}{1{,}00{,}000}$

$= 38\%$

Machine PM $= \frac{(1{,}80{,}000 \div 5) \times 100}{1{,}00{,}000} =$

$= \frac{36{,}00{,}000 \times 100}{1{,}00{,}000}$

$= 36\%$

Note: Machine LM is more profitable as its return on investment is more than that of Machine PM.

Summary:

	Method	Profitability
(a)	Payback	Machine LM
(b)	Net Present Value	Machine LM
(c)	Post payback profitability	Machine LM
(d)	Return on Investment	Machine LM

Illustration 27: (When profit before depreciation and tax is given)

Avanti Products Ltd. wants to introduce a new product will estimated sales life of five years.

The Manufacturing equipment will cost ₹ 2,50,000 with scrap value of ₹ 15,000 at the end of five years. The working capital requirement is ₹ 20,000, which will be realised after five years.

The annual cash inflow and PV factor @ 10% are:

Year	P.V. Factor	₹
1	0.909	1,25,000
2	0.826	1,50,000
3	0.751	1,87,500
4	0.683	1,80,000
5	0.621	1,12,500

The depreciation to be charged under Straight Line Method. Tax applicable @ 40%. Evaluate the proposal under various alternatives.

Solution:

Payback Period

Year	Profit Before Depreciation and Tax ₹	Depreciation ₹	Tax@ 40% ₹	Profit Before Depreciation but after tax ₹	Cumulative Cash Flow ₹
1	1,25,000	47,000	31,200	93,800	93,800
2	1,50,000	47,000	41,200	1,08,800	2,02,600
3	1,87,500	47,000	56,200	1,31,300	3,33,900
4	1,80,000	47,000	53,200	1,26,800	4,60,700
5	1,12,500	47,000	26,200	86,300	5,47,000

$$\text{Payback Period} = 2 \text{ years} + \frac{47,400}{1,31,300}$$

$$= 2.36 \text{ years}$$

$$\text{Accounting Rate of Return} = \frac{\text{Average Earnings}}{\text{Average Investments}} \times 100$$

$$= \frac{62,400}{1,52,500} \times 100$$

$$= 40.92\%$$

$$\text{Average Earnings} = \frac{\text{Profit after Tax and Depreciation}}{5}$$

$$= \frac{46,800 + 61,800 + 84,300 + 79,800 + 39,300}{5}$$

$$= 62,400$$

$$\text{Average Investment} = \frac{\text{Original Investment} - \text{Scrap}}{2} + \text{Scrap} + \text{working capital}$$

$$= \frac{2,50,000 - 15,000}{2} + 15,000 + 20,000$$

$$= 1,17,500 + 15,000 + 20,000$$

$$= 1,52,500$$

Net Present Value

Year	Profit Before Depreciation but after tax ₹	Discount factors @ 10%	Present Value ₹
1	93,800	0.909	85,264
2	1,08,800	0.825	89,760
3	1,31,300	0.751	98,606
4	1,26,800	0.683	86,058
5	86,300	0.621	53,592
			4,13,280
Add: Scrap	15,000	0.621	9,315
Working Capital	20,000	0.621	12,420
Present Value of Cash Inflows			4,35,015
Less: Present Value of Cash Outflows (2,50,000 + 20,000)			2,70,000
Net Present Value			1,65,015

$$\text{Net Present Value Index} = \frac{\text{Total Present Value of Cash Inflows}}{\text{Total Present Value of Cash Outflows}}$$

$$= \frac{4,35,015}{2,70,000}$$

$$= 1.61$$

Illustration 28. (Anticipated sale on disposal of assets is given):

The present value interest factor of ₹ 1 discounted at 14% for the next 10 years is as under:

Year	14%
1	0.877
2	0.769
3	0.675
4	0.592
5	0.519
6	0.456
7	0.400
8	0.351
9	0.308
10	0.270

The expected earnings before interest and tax from the following alternatives over the various years are:

Alternative Year	A ₹	B ₹	C ₹
1	4,00,000	—	—
2	10,00,000	5,00,000	—
3	15,00,000	20,00,000	—
4	16,00,000	30,00,000	10,00,000
5	17,00,000	30,00,000	20,00,000
6	17,00,000	30,00,000	40,00,000

7	10,00,000	30,00,000	50,00,000
8	—	30,00,000	50,00,000
9	—	—	50,00,000
10	—	—	50,00,000
Investment at the start of the year 1	50,00,000	70,00,000	1,00,00,000
Anticipated sale price on disposal of original investment at the end of year 7	4,00,000	—	—
8	—	6,00,000	—
10	—	—	10,00,000

Calculate the present values of anticipated return at 14%.

Which alternative would you recommend? Why?

Solution:

	Alternative A			Alternative B		Alternative C	
Year	**Cash Inflow** ₹	**Discount Factor** ₹	**Present Value @14%** ₹	**Cash Inflow** ₹	**Present Value** ₹	**Cash Inflow** ₹	**Present Value** ₹
1	4,00,000	0.877	3,50,800	—	—	—	—
2	10,00,000	0.769	7,69,000	5,00,000	3,84,500	—	—
3	15,00,000	0.675	10,12,500	20,00,000	13,50,000	—	—
4	16,00,000	0.592	9,47,200	30,00,000	17,76,000	10,00,000	5,92,000
5	17,00,000	0.519	8,82,300	30,00,000	15,57,000	20,00,000	10,38,000
6	17,00,000	0.456	7,75,200	30,00,000	13,68,000	40,00,000	18,24,000
7	10,00,000	0.400	4,00,000	30,00,000	12,00,000	50,00,000	20,00,000
(Disposal)	4,00,000	0.351	1,60,000	—	—	—	—
8	—	0.351	—	`30,00,000	10,53,000	50,00,000	17,55,000
(Disposal)	—	0.308	—	6,00,000	2,10,600	50,00,000	—
9	-	0.270	—	—	—	10,00,000	15,40,000
10	—	0.270	—	—	—		13,50,000
(Disposal)	—		—	—	—		270000
Total			52,97000		8899,100		1,03,69,000
Cash Outflow			50,00,000		70,00,000		1,00,00,000
NPV			2,97,000		18,99100		3,69,000

Alternative B is better, as the NPV is maximum.

Illustration 29. (When risk adjusted discount rate is given)

A textile company is considering two mutually exclusive investment proposals. Their expected cash flow streams are given below:

Year	Proposal 'X'	Proposal 'Y'
0	–5,00,000	–7,00,000
1	1,45,000	1,00,000
2	1,45,000	1,10,000
3	1,45,000	1,30,000
4	1,45,000	1,50,000
5	1,45,000	1,60,000
6	—	1,50,000
7	—	1,20,000

8	—	1,20,000
9	—	1,10,000
10	—	1,00,000

If the company employees risk-adjusted method of evaluating selects the appropriate required rate of return as follows:

Project pay back	Required Rate of Return
Less than 1 year	8%
1 to 5 years	10%
5 to 10 years	12%
Over 10 years	15%

Which proposal should be acceptable to the company? Why?

Solution:

In the books of A Textile Company

Payback period

$$\text{Proposal X} = 3 \text{ years} + \frac{65,000}{1,45,000} = 3.45 \text{ years}$$

$$\text{Proposal Y} = 5 \text{ years} + \frac{50,000}{1,50,000} = 5.33 \text{ years}$$

Net Present Value

	Proposal X			Proposal Y		
Year	**Inflow** ₹	**Factors @ 10%**	**Present Value** ₹	**Inflow** ₹	**Factors @ 12%**	**Present Value** ₹
1	1,45,000	0.909	1,31,805	1,00,000	0.893	89,300
2	1,45,000	0.826	1,19,770	1,10,000	0.797	87,670
3	1,45,000	0.751	1,08,895	1,30,000	0.712	92,560
4	1,45,000	0.683	99,035	1,50,000	0.636	95,400
5	1,45,000	0.621	90,045	1,60,000	0.567	90,720
6	—	—	—	1,50,000	0.507	76,050
7	—	—	—	1,20,000	0.452	54,240
8	—	—	—	1,20,000	0.404	48,480
9	—	—	—	1,10,000	0.361	39,710
10	—	—	—	1,00,000	0.322	32,200
Total			5,49,550			7,06,330
Outflow			5,00,000			7,00,000
NPV			49,550			6,330

NPV of Proposal X is better and hence, Proposal X should be accepted. Further even payback of Proposal X is also better.

Illustration 30. (When profit before depreciation and tax is given)

Karmayoga Industries Ltd. is considering two mutually exclusive project investments, either ₹ 95 lakhs in Blow moulding machine or ₹ 80 lakhs in Injection moulding machine. Both the machines have 'NIL' scrap value at the end of ten years. The expected profits before depreciation and income tax for next 10 years of operation is depicted below. You are also given the discounting factor @ 10% rate for 10 years.

Estimated Profits before Depreciation and Income Tax

Year	Factor at 10%	Blow Moulding Machine ₹	Injection Moulding Machine ₹
1	0.909	16,00,000	13,00,000
2	0.826	18,00,000	14,00,000
3	0.751	20,00,000	15,00,000
4	0.683	22,00,000	16,00,000
5	0.621	24,00,000	17,00,000
6	0.564	26,00,000	18,00,000
7	0.513	27,00,000	20,00,000
8	0.467	28,00,000	22,00,000
9	0.424	29,00,000	24,00,000
10	0.386	30,00,000	26,00,000

The company provides depreciation @ 10% p.a. on straight line basis and pays income tax @ 35%.

You are required to calculate:

(a) Average rate of return of both projects.

(b) Actual pay back period of both projects.

(c) Net present value of each project @ 10% discounting factor.

You are also required to offer your comments as to which proposal should be chosen by the management of Karmayoga Industries Ltd. for investment.

Solution:

In the Books of Karmayoga Industries Ltd.

Blow Moulding Machines

(₹ in Lakhs)

Year	Profit Before Depreciation and Tax ₹	Depreciation ₹	Tax @35% ₹	PAT ₹	Profit Before Depreciation but after Tax ₹	Cumulative ₹
1	16	9.5	2.275	4.225	13.725	13.725
2	18	9.5	2.975	5.525	15.025	28.75
3	20	9.5	3.675	6.825	16.325	45.075
4	22	9.5	4.375	8.125	17.625	62.7
5	24	9.5	5.075	9.425	18.925	81.625
6	26	9.5	5.775	10.725	20.225	101.85
7	27	9.5	6.125	11.375	20.875	122.725
8	28	9.5	6.475	12.025	21.525	144.25
9	29	9.5	6.825	12.675	22.175	166.425
10	30	9.5	7.175	13.325	22.825	189.25
				94.250		

Injection Moulding Machnes

1	13	8	1.75	3.25	11.25	11.25
2	14	8	2.1	3.9	11.9	23.15
3	15	8	2.45	4.55	12.55	35.7
4	16	8	2.8	5.2	13.2	48.9

5	17	8	3.15	5.85	13.85	62.75
6	18	8	3.5	6.5	14.5	77.25
7	20	8	4.2	7.8	15.8	93.05
8	22	8	4.9	9.1	17.1	110.15
9	24	8	5.6	10.4	18.4	128.55
10	26	8	6.3	11.7	19.7	148.25
				68.25		

Payback period (Cumulative Profit Before Depreciation but After Tax)

Below moulding machine = $5 + \frac{13.375}{20.225} = 5{,}66$ years

Injection moulding machine = $6 + \frac{2.75}{15.8} = 6.17$ years

Average Rate of Return = $\frac{\text{Average Earnings}}{\text{Average Investment}} \times 100$

Blow moulding machine = $\frac{9.425}{47.5} \times 100 = 19.84\%$

Injection moulding machine = $\frac{6.825}{40} \times 100 = 17.06\%$

Net Present Value

(₹ in Lakhs)

Y	Depreiation but After Tax	Factors	Discount @10%	Present Value	Depreciation But After Tax	Present Value
1		13.725	0.909	12.476	11.25	10.226
2		15.025	0.826	12.411	11.9	9.829
3		16.325	0.751	12.260	12.55	9.425
4		17.625	0.683	12.038	13.2	9.016
5		18.925	0.621	11.752	13.85	8.601
6		20.225	0.564	11.407	14.5	8.175
7		20.875	0.513	10.709	15.8	8.105
8		21.525	0.467	10.052	17.1	7.986
9		22.175	0.424	9.402	18.4	7.801
10		22.825	0.386	8.810	19.7	7.604
Total Inflow				111.317		86.772
— Outflow				95.000		80.000
NPV				16.317		6.772

	Blow Moulding	Injection Moulding
(a) Average Rate of Return	19.84%	17.06%
(b) Pay back	5.66 years	6.17 years
(c) Net Present Value	16.317 Lakhs	6.772 Lakhs

Blow Moulding Machine is better.

Illustration 31. When income after depreciation but before tax is given)

'D' Ltd. is considering investment in a Project requiring capital outlay of ₹ 2,00,000. Forecast for annual income after depreciation but before tax is as follows:

Year	₹
1	1,00,000
2	1,00,000
3	80,000
4	80,000
5	40,000

Depreciation may be taken at 20% on original cost & tax rate at 50% of net income.

You are required to calculate:

1. Payback period.
2. Rate of Return on Original Investment.
3. Rate of Return on Average Investment.
4. Discounted Cash Flow Method taking cost of capital as 10%.
5. Net Present Value Index Method.
6. Internal rate of Return Method at 30%. Discount factor 0.781, 0.592, 0.455, 0.350 and 0.269.

Solution:

1. Payback period:

Net Cash Inflow Statement

Year	Profit After Depreciation ₹	Tax @ 50% ₹	Profit before Depreciation but after tax ₹
1	1,00,000	50,000	90,000
2	1,00,000	50,000	90,000
3	80,000	40,000	80,000
4	80,000	40,000	80,000
5	40,000	20,000	60,000

Payback period (₹ 1,80,000 is recovered in first 2 years)

$$= 2 \text{ years} + \frac{20,000}{80,000} = 2.25 \text{ years}$$

2. Rate of Return on Original Investment:

Year	Profit after Depreciation and Tax
1	50,000
2	50,000
3	40,000
4	40,000
5	20,000

$$\text{Average Return} = \frac{2,00,000}{5} = ₹\ 40,000$$

$$\text{Rate of Return} = \frac{40,000}{2,00,000} \times 100 = 20\%$$

3. Rate of Return on Average Investment

$$= \frac{40,000}{1,00,000} \times 100 = 40\%$$

4. Discounted Cash Flow (Cost of Capital 10%)

Discounted Cash Flow

Year	Profit Before Depreciation but tax A ₹	Discount Factors @ 10% ₹	Present Value ₹
1	90,000	0.909	81,810
2	90,000	0.826	74,340
3	80,000	0.751	60,080
4	80,000	0.683	54,640
5	60,000	0.621	37.260
Present Value of Cash Inflows			3,08,130
Less: Cash Outflow			2.00.000
Net Present Value			1,08,130

5. Net Present Value Index Method

$$= \frac{\text{Pr esent Value of Cash Inflows}}{\text{Pr esent Value of cash Outflows}}$$

$$= \frac{3,08,130}{2,00,000}$$

$$= 1.54$$

6. Internal Rate of Return @ 30%:

	Cash Inflow ₹	Discount factors	Present Value ₹
1	90,000	0.781	70,290
2	90,000	0.592	53,280
3	80,000	0.455	36,400
4	80,000	0.350	28,000
5	60,000	0.269	16,140
Present Value of Cash Inflows			2,04,110
Less: Cash Outflow			2,00,000
Net Present Value			4,110

Illustration 32. (When income after depreciation is given)

Your Company is considering investing in a project for which the investment data are as follows:
Capital Outlay: ₹ 2,00,000. Depreciation Charges: 20% p.a.
Forecasted annual income after charging depreciation and after all other charges:

First Year	1,40,000
Second Year	1,40,000
Third Year	1,20,000
Fourth Year	1,20,000
Fifth Year	80,000
	6,00,000

In connection with the foregoing, you are asked to employ methods of measuring the return on the capital employed with a view to ascertain the value to the company of the proposed investment.

On the basis of the figures given above, set out calculations illustrating and comparing the following methods of evaluating the return on capital employed.

1. Payback period.
2. Rate of return on original investment.
3. Rate of return on average investment.
4. Discounted cash flow at 9% discount factor.

Taxation may be assumed at 35%.

The present value of ₹ 1 at 9% is as follows:

Year 1	0.917
Year 2	0.842
Year 3	0.772
Year 4	0.708
Year 5	0.650

Solution:

Calculation of Cash Inflow

Year	1	2	3	4	5
Profit after Depreciation	1,40,000	1,40,000	1,20,000	1,20,000	80,000
Less: Tax @ 35%	49,000	49,000	42,000	42,000	28,000
Profit after Tax	91,000	91,000	78,000	78,000	52,000
Add: Depreciation	40,000	40,000	40,000	40,000	40,000
Profit before Depreciation but after tax	1,31,000	1,31,000	1,18,000	1,18,000	92,000

$$\text{Pay back period} = 1 \text{ year} + \frac{69,000}{1,31,000}$$

$$= 1.53 \text{ years}$$

$$\text{Rate of Return on Original Investment} = \frac{\text{Average Profit after tax}}{\text{Original Investment}} \times 100$$

$$\text{Average Profit after tax} = \frac{91,000 + 91,000 + 78,000 + 78,000 + 52,000}{5}$$

$$= \frac{3,90,000}{5}$$

$$= ₹\ 78,000$$

$$\text{Rate of Return an Average Investment} = \frac{\text{Average Profit after tax}}{\text{Average Investment}} \times 100$$

$$= \frac{78,000}{1,00,000} \times 100$$

$$= 78\%$$

4. Discounted Cash Flow:

Year	Profit before Depreciation but after tax ₹	Discount Factors @9%	Present Value ₹
1	1,31,000	0.917	1,20,127
2	1,31,000	0.842	1,10,302

3	1,18,000	0.772	91,096
4	1,18,000	0.708	83,544
5	92,000	0.650	59,800
P.V. of Cash Inflow			4,64,869
Less: Investment			2,00,000
Net Present Value			2,64,869

Illustration 33: Profit before depreciation and tax is given)

'D' Ltd. is considering the possibility of purchasing a Multipurpose Machine Costing ₹ 10 lakhs. The machine has an expected life of 5 years. The machine will generate ₹ 6 lakhs per year, before depreciation and Tax. The management wishes to dispose of the machine at the end of 5 years for ₹ 1 lakh. The depreciation allowable for the machine is 25% on W.D.V. And the company's tax rate is 40%. The company has approached first leasing company Ltd. for a 5 year lease for financing the machine which quoted a rate of ₹ 30 per thousand per month. The company wants you to evaluate the proposals. The cost of capital of the company is 10 per cent and for lease option it wants you to consider discount rate of 15 per cent. The present value factors are as follows:

Year	0	1	2	3	4	5
PV @ 10%	1.000	0.9091	0.8264	0.7513	0.6830	0.6201
PV @ 15%	1.000	0.8696	0.7561	0.6575	0.5718	0.4972

Solution:

D Ltd.

Year	Particulars	Amount
1.	Cost	10,00,000
	Less: Depreciation	2,50,000
2.	WDV	7,50,000
	Less: Depreciation	1,87,000
3.	WDV	5,62,000
	Less: Depreciation	1,40,625
4.	WDV	4,21,875
	Less: Depreciation	1,05,469
5.	WDV	3,16,406
	Less: Depreciation	79,102
	WDV	2,37,304
	Less: Sale Proceeds	1,00,000
	Loss on Sale	1,37,304

Tax saved due to loss on Sale = 40% of 1,37,304 = 54,922.

Year	Profit Before Depreciation and Tax ₹	Depreciation ₹	Profit before Tax ₹	Tax ₹	Profit after Tax ₹
1	6,00,000	2,50,000	3,50,000	1,40,000	2,10,000
2	6,00,000	1,87,500	4,12,500	1,65,000	2,47,500
3	6,00,000	1,40,625	4,59,475	1,83,750	2,75,625
4	6,00,000	1,05,469	4,94,531	1,97,812	2,96,719
5	6,00,000	79,102	5,20,898	2,08,359	3,12,539

Year	Profit after Tax ₹	Depreciation ₹	Scrap Value ₹	Tax saved due to loss on Sale ₹	Cash Inflow ₹
1	2,10,000	2,50,000	—	—	4,60,000
2	2,47,500	1,87,500	—	—	4,35,000
3	2,75,625	1,40,625	—	—	4,16,250
4	2,96,719	1,05,469	—	—	4,02,188
5	3,12,539	79,102	1,00,000	54,922	5,46,563

Year	Cash Inflow	PVIF	PV of Cash Inflow
1	4,60,000	0.9091	4,18,186
2	4,35,000	0.8264	3,59,484
3	4,16,250	0.7513	3,12,729
4	4,02,188	0.6830	2,74,694
5	5,46,563	0.6209	3,39,361
			17,04,454
Less: PV of Cash			10,00,000
Depreciation Outflow			–
Net Present Value			

Lease

Year	Profit before Depreciation and Tax ₹	Lease Rent ₹	Profit Before Tax ₹	Tax ₹	Profit after Tax ₹
1	6,00,000	3,60,000	2,40,000	96,000	1,44,000
2	6,00,000	3,60,000	2,40,000	96,000	1,44,000
3	6,00,000	3,60,000	2,40,000	96,000	1,4"4,000
4	6,00,000	3,60,000	2,40,000	96,000	1,44,000
5	6,00,000	3,60,000	2,40,000	96,000	1,44,000

Year	Cash Inflow	PVIF	PV of Cash Inflow
1	1,44,000	0.8696	1,25,222
2	1,44,000	0.7561	1,08,878
3	1,44,000	0.6575	94,680
4	1,44,000	0.5718	82,339
5	1,44,000	0.4972	71,579
			4,82,716

Conclusion:

Since Net Present Value of buying the Machine is more, the company should buy the machine.

Illustration 34. (When profit before tax is given)

A project of ₹ 20,00,000 yielded annually a profit of ₹ 3,00,000 after depreciation at 12½% and is subject to income tax at 50%. Calculate pay back period.

Cash inflows of a certain project along with cash outflows are given below:

Year	Outflows	Inflows
0	1,50,000	—
1	30,000	20,000
2	—	30,000
3	—	60,000
4	—	80,000
5	—	30,000

Salvage value A 40,000 at the end of 5 years.

The cost of capital is 10%.

The PV of Re. 1 I@ 10% p.a. is given below:

Year	1	2	3	4	5
PV Factor	0.90909	0.82645	0.75131	0.68301	0.62092

Calculate net present value on the basis of discounted cash flows at 10% discounting factor. Offer your comments whether the project should be accepted or not.

Solution:

	₹
Profit before tax	3,00,000
Less: Income Tax @ 50%	1,50,000
Profit after Tax (PAT)	1,50,000
Add: Depreciation @ 12½% on 20 lakhs	2,50,000
Annual Cash Flow or Saving p.a.	4,00,000

$$\text{Payback Period} = \frac{\text{Cost of Project}}{\text{Saving p.a}}$$

$$= \frac{20,00,000}{4,00,000}$$

= 5 years

Statement of Net Present Value (NPV) at 10%

Year	Inflow ₹	Discount Factor at 10%	Present Value ₹
01	20,000	0.90909	18,182
02	30,000	0.82645	24,794
03	60,000	0.75131	45,079
OS	80,000	0.68301	54,641
	30,000	0.62092	18,628
	40,000	0.62092	24,837
	(Salvage value)		1,86,161
Less: Cash Outflow at the beginning		1,50,000	
Cash Outflow at the end of 1st year (30,000 × 0.90909)		27,273	1.77,273
NPV			8,888

Comment:

The project is worth to be accepted as the NPV is positive.

Illustration 35. (When unit cost break up is given)

The cost break-up of a product of a company is as follows:

	Unit Cost
Direct Material	₹ 60
Direct Labour	₹ 80
Other Variable Expenses	₹ 50
Fixed Overheads	₹ 40
Total	₹ 230

The above product is currently being produced on a machine that has a book value of ₹ 1,00,000. It was purchased for ₹ 1,50,000 five years ago. The machine originally had a projected life of 15 years, and was to be depreciated straight line to the zero salvage value. The machine has a capacity of producing 1,000 units. The machine at present is working at its full capacity. The units produced are sold at ₹ 300 per unit. The original manufacturer has offered to accept the old machine as a trade-in for a new version. The new machine would cost ₹ 1,80,000 after allowing ₹ 60,000 for the old machine. The seller also agrees to allow one year credit for making the payment of the balance amount.

The costing department of the company has furnished the following projected costs associated with the new machine:

	Unit Cost
Direct Material	A 60
Direct Labour	A 50
Other Variable Expenses	A 40
Fixed Overheads	A 48
Total	A 198

The fixed overhead costs are allocations from other departments plus the depreciation of the machine. The maintenance expenses of both the machines are the same. The old machine is in good working condition, and can be used for its remaining life of 10 years. The new machine has an expected life of 10 years with no salvage value. The new machine is to be depreciated straight line to the zero salvage value. The company's tax rate is 35%. The cost of capital is 10%.

The present value factors are as follows:

Year	0	1	2	3	4	5
Present Value at 10%	1.000	0.900	0.826	0.751	0.683	0.621

Year		6	7	8	9	10
Present Value at 10%		0.564	0.513	0.467	0.424	0.386

The management of the company seeks your advice whether the new machine should be acquired. The management expects that the future production and sales of the product will remain at 1,000 units per year. Assume that depreciation under straight line method shall be allowed as per Income tax. Ignore Block of Fixed Assets concept as per income tax.

Solution:

Working Notes and Assumptions:

1. For old PIM, the depreciation is 10,000 p.a. I.e.₹ 10 pu.
   For new PIM, the depreciation is 18,000 p.a. for 10 years i.e. ₹ 10 pu.

Cost Structure (per unit)	Old	New
Material	₹ 60	₹ 60
Wages	₹ 80	₹ 50
Variable Expenses	₹ 50	₹ 40

Cash Fixed Overheads (Other than Depreciation)	₹	30	₹	30
Total	₹	220	₹	180
Sales 300 pu.				
Cash Profit	₹	80	₹	120
For 1,000 Units:				
Profit Before Depreciation	₹	80,000	₹	1,20,000
Depreciation	₹	(10,000)	₹	(18,000)
PBT	₹	70,000	₹	1,02,000
Income Tax @ 35%	₹	(24,500)	₹	(35,700)
PAT	₹	45,500	₹	66,300
Add: Back Depreciation				
Cash Inflow	₹	55,500	₹	84,300
Addition Cash Inflow every year	₹	28,800		

Discounted Statement @ 10% p.a. (₹)

Year	Additional C ash Inflow ₹	PV	Discounted Cash Inflow ₹
1	28,800	0.909	26,179
2	28,800	0.826	23,789
3	28,800	0.751	21,629
4	28,800	0.683	19,670
5	28,800	0.621	17,885
6	28,800	0.564	16,243
7	28,800	0.513	14,774
8	28,800	0.467	13,450
9	28,800	0.424	12,211
10	28,800	0.386	11.117
	28,800	6.144	1,76,947

Additional Cash Outflow for new PIM [Year] (–) 1,80,000 x 0.909 = 1,63,620
NPY of the project + 13,327

Capital Budgeting Practices in India

(i) DCF technique is more popular in India.
(ii) IRR is used by about 85% companies. It is preferred over NPV method.
(iii) Large firms use NPV technique.
(iv) Public Sector Companies use Profitability Index technique.
(v) Top management takes most of the decisions regarding capital budgeting. (vi) Organisations follow systematic approach to capital budgeting decisions.

Exercise

Theory Questions

1. Examine the importance of capital budgeting.
2. Briefly examine the significance of identification of investment opportunities in capital budgeting process.
3. Critically examine the payback period as a technique of approval of projects.
4. Summarise the features of DCF techniques.
5. What do you mean by capital budgeting? What is its importance in business?

6. Explain the different techniques of capital budgeting.
7. Write short note on:
   (a) Payback Period,
   (b) Internal Rate of Return,
   (c) Net Present Value.
8. What are the principal methods employed for ascertaining the profitability of a capital expenditure budget?
9. Explain the need for capital expenditure decisions.
10. What are the criteria for taking capital expenditure decisions.
11. What are the relevant factors for decisions in respect of capital expenditure?

Short Notes

1. Capital budgeting
2. Capital budgeting
3. Highly complex
4. Capital budgeting decisions
5. Irreversible.
6. Uncertainty, highly uncertain.
7. Final step.
8. First step
8. A fertile source
9. The most crucial phase
10. Capital budgeting
11. Cost reduction
12. Economic appraisal
13. Technical appraisal
14. Financial viability
15. Demand for the product or service.
16. Decision criteria
17. Sunk cost
18. Externalities
19. Investment element; Financing element
20. Ignores
21. Profitability of

Fill in the Blanks

1. _____ make or mar a business.
2. _____ decisions involve large outlay of funds now in anticipation of cash inflows in future.
3. Social, political, economic and technological forces make capital budgeting decisions _____ .
4. _____ are very expensive.
5. Capital expenditure decisions are _____ .
6. Forecasting of future operating cash flows suffers from _____ because the future is _____ .
7. Post-completion audit is _____ in the phases of capital budgeting decisions.
8. Identification of investment opportunities is the _____ in the phases of capital budgeting decisions.
9. Analyzing the demand and supply conditions of the market for the company's products could be of potential investment proposal.

10. Generation of ideas for capital budgets and screening the same can be considered of capital budgetary decisions.
11. _____ decisions could be grouped into two categories.
12. _____ and revenue generation are the two important categries of capital budgeting.
13. _____ examines the project from the social point view.
14. All technical aspects of the implementation of the project are considered in _____.
15. _____ of a project is examined by financial appraisal.
16. Among the elements that are to be examined under commercial appraisal, the most crucial one is the _____ .
17. Formulating is the third step in the evaluation of investment proposal.
18. A _____ is not a relevant cost for the project decision.
19. Effect of a project on the working of other parts of a firm is know as _____ .
20. The essence of separation principle is the necessity to treat _____ of a project separately from that of_____ .
21. Payback period _____ time value of money.
22. IRR gives a rate of return that reflects the _____ the project.

State with reasons Whether the Following Statements are True or False

1. Capital budgeting decisions can be easily reversed.
2. In independent, a company can select all feasible projects.
3. In mutually exclusive projects, only one project can be selected.
4. Opportunity cost is considered in capital budgeting.
5. Payback technique is based on time value of money.
6. In NPV technique, only cash inflows are discounted and cash outflows are not considered.
7. NPV technique is the best technique of evaluation of long term proposals.
8. NPV and IRR give identical decisions.
9. Traditional techniques use time value of money.

Ans. True: (2, 3, 4, 7).
False: (1, 5, 6, 8, 9)

Match the Following

(A)

Group A	**Group B**
1. Capital Budgeting	(a) time required to recover investment
2. Payback	(b) $\frac{\text{PV of Cash Inflow}}{\text{PV of Cash Outflow}}$
3. P.I.	(c) non-cash expense
4. Depreciation	(d) excess of PV of cash inflow over original investment
5. NPV	(e) average investment
	(f) long-term investment decisions

Ans.: 1. (c), 2. (a), 3. (b), 4. (c), 5. (d)

Select the Correct Answer

1. Long-term decisions are called as
   (i) capital budgeting decisions.
   (ii) working capital decisions.
   (iii) future decisions.

2. Capital budgeting decisions involve huge amount of risk due to
   (i) time factor.
   (ii) money factor.
   (iii) human factor.
3. Payback period is
   (i) the time required to recover the original investment.
   (ii) the time required to depreciate asset.
   (iii) the time required to pay to creditor.
4. For capital budgeting decisions
   (i) depreciation is to be considered.
   (ii) depreciation is to be ignored.
   (iii) depreciation is to be calculated at 20%.
5. ARR method
   (i) takes into account time value of money.
   (ii) does not take into account time value of money.
   (iii) most modern method of capital expenditure decisions.

6. N.P.V. Method is
   (i) most traditional.
   (ii) most modern.
   (iii) most complicated.
7. P.I. is the proportion between
   (i) PV of cash inflow and PV of cash outflow.
   (ii) PV of cash inflow and total cash inflow.
   (iii) cash inflow and cash outflow.
8. In accept-reject decisions
   (i) NPV and IRR methods produce identical results.
   (ii) NPV and IRR methods produce different results.
   (iii) NPV and IRR methods are of no use at all.
9. In determination of cash outflow
   (i) increase in working capital is added.
   (ii) increase in working capital is deducted.
   (iii) increase in working capital is ignored.

Ans. (1- i), (2-i), (3- i), (4-i), (5-ii), (6-ii), (7-i), (8- i), (9- i)

Practical Problems

1. Mr. Vishwanathan is planning to buy a machine which would generate cash flow as follows:

Year	0	1	2	3	4
Cash flow	(25,000)	6,000	8,000	15,000	8,000

If discount rate is 10%, is it worth to invest in machine? [**Ans.** Yes, NPV 3791]

2. Mr. Mehra has invested ₹ 50,000 on Xerox machine on 1st jan 2002. He estimates net cash income from Xerox machine in next 5 years as under

Year	**Estimated Inflows**
2002	12,000
2003	15,000
2004	18,000
2005	25,000
2006	30,000

At the end of 5th year machine will be sold at scrap value of ₹ 5,000 advice him whether his project is viable, considering interest rate of 10% p.a.

[**Ans.** Yes, NPV ₹ 22,529]

3. XYZ & Co. Is considering investing in a project requiring a capital outlay of ₹ 2,00,000 Forecast for annual income after tax is as follows:

Year	**1**	**2**	**3**	**4**	**5**
Profit after tax (₹)	1,00,000	1,00,000	80,000	80,000	40,000
Depreciation is 20% on straight line basis					

Evaluate the project on the basis of net present value taking 14% discounting factor and advise whether XYZ & co. Should invest in the project or not? The present value of Re. 1 at 14% discounting rate are 0.8772, 0.7695, 0.6750, 0.5921 and 0.5194. [Ans. Yes, NPV ` 2,24,142]

4. Miss Sonali is considering an investment opportunity which will give her cash inflow of ₹ 1,000, ₹ 1,200, ₹ 1,100 & ₹ 400 respectively at the end of each of the next 5 year. The initial investment is ₹ 4, 000. If the time, preference rate is 10%, state whether the investment is profitable or not. (Present value factor at 10% are 0.9091, 0.8264,0.7513, 0.6830 and 0.6209)

[**Ans.** Yes, NPV ₹ 49.92]

5. An investment of ₹ 40,000 made on 1/04/08 provides inflows as follows:

Date	**Alternative I**	**Alternative II**
01/04/08	20,000	10,000
01/04/09	10,000	20,000
01/04/10	10,000	10,000
01/04/11	10,000	10,000

Which alternative would you prefer if the investor's expected return is 10%. Give reasons for your preference. [**Ans.** Alternative I is preferred]

6. The share of Ridhi Ltd. (₹ 10) was quoting at ₹ 102 on 1.04.2002 and the price rose to ₹ 132 on 1.04.2005. Dividends were received at 10% on 30th June each year. Cost of Funds was 10%, is it worthwhile investment, considering the time value of money
(Present value of factor @ 10% were 0.909, 0.826, 0.751)

[**Ans.** No, NPV ₹ -0.382]

7. Mr. Vishwanathan is planning to buy a machine which would generate cash flow as follows:

Year	0	1	2	3	4
Cash Flow	(25000)	6000	8000	15000	8000

If discount rate is 10%, is it worth to invest in machine?

Year	1	2	3	4
Discount Factor	0.909	0.826	0.751	0.683

[**Ans.** Yes, NPV ₹ 3,791]

8. The existing manufacturing company has a surplus of ₹ 25 lacs. It has two options, namely:
Option 1: Go for new manufacturing equipments costing ₹ 254 lacs, having working life of 6 years and scrap value at the end of the working life will be ₹ 1 lacs.
The additional profits generated before depreciation and income tax in the very first year will be ₹ 6.50 lacs, which will grow by @ 10% over earlier year every year for next two years, and fall by 5% over earlier year in every subsequent year thereafter. The company will follow Straight Line Method for charging depreciation and rate of income tax is to be assumed @ 30%

OR

Option 2: Alternatively, the company can invest ₹ 25 lacs in a joint venture wherein tax free returns @ 6% are guaranteed in first three years and thereafter returns will be @ 10% tax free.
You are required to present before the company:

(a) Year wise income statement under both the alternatives.
(b) Payback period working and payback profitability statement if the company goes for first option.
(c) The risks involved if the company goes for the second option.

9. M/s Maha Sweet would like to set up a food-processing unit. The technology for the processing is always on improvement and hence, the proposed unit would become obsolete within four years of operation and would be scrapped. The company estimates to achieve sales of ₹ 50 lakhs in the first year of operation. This wills double every year. Net profit margin is 50%. Initial Outlay is ₹ 5 crores. Company will also pump in initial working capital of ₹ 1 crores. Scrap value of the unit is ₹ 1 crores. Depreciation on SLM basis.
Present Value table of ₹ 1 is as follows:

Year	1	2	3	4
17%	0.855	0.731	0.624	0.534
18%	0.847	0.718	0.609	0.516

Calculate: (a) Payback Period, (b) Payback Profitability, (c) NPV at 17% discounting rate, (d) NPV at 18% discounting rate, and (e) IRR.

10. M/s. Onward Technology has short listed two projectsA and B for final consideration. It wants to take up only one project of the two and not both. The investment required for project A is ₹ 190 Lakhs while that for Project B is ₹ 400 Lakhs. The other details related to project A and B are given below:

Project A

Year	Depreciation	Profit Before Tax	Profit After Tax
I	24	78	56
II	20	82	60
III	16	100	74

Project B

Year	Depreciation	Profit Before Tax	Profit After Tax
I	78	104	82
II	64	118	92
III	54	260	186

The cost of capital of company is 14% and the present value of Re. 1 at the end of first, second and third year @ 14% rate is 0.8772, 0.7695 and 0.6750 respectively using Net Present Value Method, which project would you recommend. What will be your answer under Payback Period Method?

[**Ans.** NPV A-3,00,000, B-22.34; PBP A-2.33, B-2.35]

11. A choice is to made between two competing projects which require an equal investment of ₹ 50,000 and are expected to generate net cash flows as under:

	Project I	Project II
End of year 1	₹ 25,000	₹ 10,000
End of year 2	₹ 15,000	₹ 12,000
End of year 3	₹ 10,000	₹ 18,000
End of year 4	₹ Nil	₹ 25,000
End of year 5	₹ 12,000	₹ 8,000
End of year 6	₹ 6,000	₹ 4,000
Tax Rate	50%	40%

Calculate: Payback Period, Average Ratio of Return, Payback Profitability.

[**Ans.**

	I	II
PBP	3 years	3 years
ARR	6%	9%
PI	18,000	27,000]

12. Charlie Company Ltd. wishes to buy a machine costing ₹ 2,00,000. The life of this machine is 10 years and its scrap value would be ₹ 5,000.

Average annual NPBT	₹ 20,000
Tax rate	35%
Depreciation (already charged)	SLM basis

Calculate:

(i) Payback period. [**Ans.** 6.154]

(ii) A.R.R. (Accounting Rate of Return Method) [**Ans.** 12.68]

13. One of the two machines A & B is to be purchased. From the following information, find out which of the two will be more profitable? The average rate of tax a be taken at 50%.

	Machine A (₹)	**Machine B (₹)**
Cost of machine	50,000	80,000
Working life	4year	6 year
Earnings before depreciation and tax	₹	₹
Year 1	10,000	8,000
Year 2	15,000	14,000
Year 3	20,000	25,000
Year 4	15,000	30,000
Year 5	—	18,000
Year 6	—	13,000

[**Ans.** Machine B should be purchased)

14. The following data ate supplied relating to two investment proposals, only one of these be selected:

	Proposal A (₹)	**Proposal B (₹)**
Initial capital expenditure	50,000	50,000
Profit (Loss):		
Year 1	25,000	10,000
2	20,000	10,000
3	15,000	14,000
4	10,000	26,000
Estimated resale value at the end of year 4	10,000	10,000

Note: (i) Profit is calculated after deducting straight line depreciation

(ii) The cost of capital is 10%

Calculate for each proposal the payback period and the net present value. Which proposal should be accepted? Why?

[**Ans.** NPV: A - 27,305; B - 33,336]

The following information may be useful to you:

Year	**Discount Factor of 10%**
0	1.000
1	0.909
2	0.826
3	0.751
4	0.683
5	0.621

15. No project is acceptable unless the yield in 10%. Cash inflows of a certain project along with cash outflows are given below:

Year	Outflows (₹)	Inflows (₹)
0	1,50,000	—
1	30,000	20,000
2	—	30,000
3	—	60,000
4	—	80,000
5	—	30,000
6	—	40,000 (Being salvage value at end of 5 years)

Calculate net present value. [**Ans.** NPV = 94,680]

16. Mohan and Co. is considering the purchase of a machine. The machine X & Y costing ₹ 50,000 are available. Earnings after taxation are expected to be as under:

Year	Machine X (₹)	Machine Y (₹)	Discount Factor @ 10%
1st	15,000	5,000	0.9091
2nd	20,000	15,000	0.8264
3rd	25,000	20,000	0.7513
4th	15,000	30,000	0.6830
5th	10,000	20,000	0.6209

Evaluate the two alternatives according to:

(i) Payback method [X: 3.102; Y: 3.88]

(ii) Average rate of return method

(iii) Net present value method-a discount rate of 10% to be used

[**Ans.** Machine X-PB = 2.094 yrs, Arr. = 68%, NPV = 15,401, Machine Y-PB = 2.69 Yrs, Arr. = 72%, NPV = 14,876]

17. After conducting a survey that costs ₹ 2,00,000; Zeal Ltd., decided to undertake a project for putting a new product in the market. The company's cut off rate is 12%. it was estimated that the project would have a life of 5 years. The project would cost ₹ 40 lakhs in plant and machinery in addition to working capital of ₹ 10 lakhs. The scrap value of plant and machinery at the end of 5 years is estimated at ₹ 5,00,000. After providing depreciation on straight line basis profits after tax were estimated as follows:

Year	₹
1	3,00,000
2	8,00,000
3	13,00,000
4	5,00,000
5	4,00,000

18. Gati Company Ltd., is considering the following three proposals requiring a net cash outlay of ₹ 1,20,000; ₹ 1,70,000 and ₹ 2,40,000 respectively. The after cash inflow are tabulated below:

Rank these projects in the order of their profitability according to the profitability index method. Assume that the firm's cost of capital is 15%.

Year	Project X* (₹)	Project Y* (₹)	Project Z* (₹)	PV of ₹ 1 @ 15% Discounting Factor
1	10,000	50,000	90,000	0.870
2	30,000	65,000	1,20,000	0.756
3	45,000	85,000	70,000	0.658

4	65,000	50,000	50,000	0.572
5	45,000	35,000	20,000	0.497

[**Ans.** X: 1.004; Y: 1.144; Z: 1.053]

19. A company is considering the replacement of its existing machine which is obsolete. The company is faced with two alternatives:

(a) To buy machine A which is similar to existing machine; OR

(b) To go in for machine B which is more expensive and has much greater capacity. The cash flows, at the present level of operations, under the two alternatives are;

Cash flow (in lakhs of rupees) at the end of the year

	0	**1**	**2**	**3**	**4**	**5**
Machine A	– 25	–	5	20	14	14
Machine B	– 40	10	14	16	17	15

The company's cost of capital is 10%. The finance manager tries to evaluate the machine by calculating the following:

		A	B
(a)	Net present value	12.35	13.58
(b)	Profitability value	1.494	1.3395
(c)	Pay back period	3 years	3 years

He is unable to make up his mind and seeks your help.

Year	**0**	**1**	**2**	**3**	**4**	**5**
P.V.	1.00	0.91	0.83	0.75	0.68	0.62

(The present values of Re.1 at 10% discount rate)

20. A company is considering two mutually exclusive projects. Both require an initial cash outlay of ₹ 10,000 each for machinery and have a life of 5 years. The company's required rate of return is 10% and pays tax at 50%. The projects will be depreciated on a straight line basis. The net cash flow (before taxes) expected to be generated by the projects are as follows:

Year	1 (₹)	2 (₹)	3 (₹)	4 (₹)	5 (₹)
Cash flow					
Project 1	4,000	4,000	4,000	4,000	4,000
Project 2	6,000	3,000	2,000	5,000	5,000

Year 1	0.909
Year 2	0.826
Year 3	0.751
Year 4	0.683
Year 5	0.621

The present value factors at 10% are:

		I	II
(a)	The payback of each project	2.665	3.020
(b)	The average rate of return of each project	30.32	60.64
(c)	The net present value and profitability index for each project	5,160	5,152

21. Your company can make either of the following two investments at the beginning of 2004. The particulars available in this respect are:

	Project I	**Project II**
Estimated cost (to be incurred initially) (₹)	24,000	28,000
Estimated life (years)	4	5
Scrap value at the end of estimated life	Nil	Nil

Estimated net cash flows (₹)		
End of 2004	5,500	5,6000
End of 2005	7,000	9,000
End of 2006	8,500	9,000
End of 2007	7,500	9,000
End of 2008	–	9,000

It is estimated that each of the alternative projects will require an additional working capital of ₹ 2,000 which will be received back in full after the expiry of each project life. In estimating net cash flow, depreciation has been provided under straight line method.

Cost of finance to your company may be taken at 10% p.a. the present value of Re. 1, to be received at the end of each year, at 10% is given below:

Year	**1**	**2**	**3**	**4**	**5**
P.V.	0.91	0.83	0.75	0.68	0.62

[**Ans.** NPV: I-21.030; II-24.240]

22. A company whose cost of capital is 12% considering two projects 'A' and 'B' the following data are available:

	Project A	**Project B**
Investment	1,40,000	1,40,000
Cash Flows		
Year 1	20,000	1,00,000
Year 2	40,000	80,000
Year 3	60,000	40,000
Year 4	1,00,000	20,000
Year 5	1,10,000	20,000
	3,30,000	2,60,000

Select the most suitable project by using the following method:

(a)	Payback period	3.8 years	1.78 years
(b)	Net present value	72,500	65,000
(c)	Profitability index	1.52	1.46

The present value of ₹ 1 at 12% are:

Year 1	0.9
Year 2	0.8
Year 3	0.7
Year 4	0.6
Year 5	0.55

23. A company is considering the two mutually exclusive projects. The finance director considers that the project with higher NPV should be chosen; whereas the managing director thinks that one with higher rate of return should be considered. Both the projects have got an useful life of 5 years and the cost of capital is 10%. The initial outlay outlay is ₹ 2 lakhs.

The future cash inflow from project X and Y are as under:

Year	**Project X* (₹)**	**Project Y* (₹)**	**PV Factor @ 10%**	**PV Factor @ 20%**
1	35,000	1,18,000	0.91	0.83
2	80,000	60,000	0.83	0.69
3	90,000	40,000	0.75	0.58
4	75,000	14,000	0.68	0.48
5	20,000	13,000	0.62	0.41

You are required to evaluate the projects and explain the inconsistency, if any, in the ranking of the projects.

[**Ans.** NPV: X - 29,150; Y - 25,410]

24. Caravan Corporation is venturing in a new project. Initial investment for the project is ₹ 20 lakhs. The rate of depreciation 25% on WDV basis. The rate of discount is 10%. Tax rate is 40%. Calculate

(i) ARR

(ii) NPV [2,34,885]

Year	**2005**	**2006**	**2007**	**2008**	**2009**
Earning Before Tax (₹ in lakhs)	2	5	7	9	2

[**Ans.** ARR. = 30%, NPV = 3,33,511]

25. A choice is to be made between two competing projects which require an equal investment of ₹ 50,000 and are expecting to generate net cash flows as under:

	Project I	**Project II**
End of year 1	₹ 25,000	₹ 10,000
End of year 2	₹ 15,000	₹ 12,000
End of year 3	₹ 10,000	₹ 18,000
End of year 4	Nil	₹ 25,000
End of year 5	₹ 12,000	₹ 8,000
End of year 6	₹ 6,000	₹ 4,000
Tax Rate	50%	40%

Calculate:

1. Payback Period — 3 years — 3.4 years
2. Average Rate of Return. — 3% — 9%

26. Compute:

(a) Payback Period,

(b) Payback Profitability,

(c) Average Rate of Return from the following information:

Cost of Project : A 50,000

Life : 5 years

Tax rate : 55%

Depreciation to be charged by SLM.

Year	1	2	3	4	5
Earnings before Depreciation and Tax	10,000	11,000	14,000	15,000	25,000

[**Ans.** (a) 4.328 years. (b) 61,250 – 50,000 = 11,250. (c) 9%]

(When sales and elements of cost given)

27. A company wants to go in either for an automatic machine costing ₹ 2,24,000 (Life 5½ years) or an ordinary machine costing ₹ 60,000 (Life 8 years).

Compute the comparative profitability of the proposals under Pay-Back method from the following information:

	Automatic ₹	**Ordinary** ₹
Sales	1,50,000	1,50,000
Costs: Material	50,000	50,000
Labour	12,000	50,000
Variable Overheads	24,000	50,000

[**Ans.** Payback Period: Automatic 3.5 years. Ordinary 3 years. Payback Profitability: Automatic ₹ 1,28,000. Ordinary ₹ 1,00,000]

Conclusion: From Payback period point of view; Ordinary is preferred. From Pay- Back profitability point of view, Automatic is preferred.]

(Income before depreciation but after tax is given)

28. A Company is considering a new project for which the following information is given:
Capital Outlay: ₹ 2,00,000. Depreciation: 20% p.a.

Year	Annual income before depreciation but after tax
1	
2	1,00,000
3	80,000
4	80,000
5	40,000

Calculate:
(a) Payback Period.
(b) Rate of Return on original investment.

[**Ans:** (a) 2 years. (b) $\frac{80,000}{2,00,000} \times 100 = 40\%$]

(Profit after tax is given)

29. A Company proposes to buy anyone of the two machines whose information is as follows

	Machine X ₹	Machine Y ₹
Cost	90,000	90,000
Life	3 years	3 years
Profit after Tax		
Year 1	40,000	20,000
2	50,000	70,000
3	40,000	50,000

The Company follows SLM of depreciation. Suggest which machine should be bought on the basis of:
(i) Payback Period.
(ii) Average Rate of Return.

[**Ans.** (a) X = 1.25 year; Y = 1.40 year. (b) X = 96.3%; Y = 103.7%]

(**Hint:** For Payback Method, add back depreciation to the Profits given.)

(When scrap value is given)

30. Determine the:
(a) Payback period.
(b) Average Rate of Return
from the following information of a proposed project.

	A
Cost	52,000
Annual Profits after Tax and Depreciation:	
Year 1	
2	3,000
3	5,000
4	7,000
5	9,000
	11,000
	35,000

Estimated Life is 5 years.
Estimated Scrap Value is ₹ 2,000.

Hints: (i) For Payback period, add back depreciation of ₹ 5,000 every year.
(ii) Add Scrap Value for Payback period in 5th year.
(iii) For Average Rate of Return,

$$\text{Average Investment} = \text{Scrap} + \frac{1}{2}(\text{Cost} - \text{Scrap})$$

[**Ans:** (a) 3 years + $\left(\frac{7,000}{19,000}\right)$ = 3.368 years. (b) 25.92%]

(Sales and elements of cost given)

31. A Company wants to buy a machine whose details are given below:

	₹
Cost	3,00,000
Expected Sales (Yearly)	5,00,000
Cost of Production (Yearly):	
Direct Materials	40,000
Direct Labour	50,000
Overheads	90,000

Tax Rate is 40%. Life (Years) is 2 years. Scrap Value is ₹ 40,000.
Calculate: (a) Payback Period. (b) Average Rate of Return.
[**Ans.**
[**Hint:** Yearly Profit = [Sales – Direct Materials – Labour – Overheads – Depreciation – Tax] + Depreciation

	₹	
Sales	5,00,000	
(–) Cost of Production –	1,80,000	(all overheads)
	3,20,000	
(–) depreciation $\left(\frac{3,00,000-40,000}{2}\right)$	– 1,30,000	
Net Profit before Tax	1,90,000	
(–) Tax @ 40%	– 76,000	
Net Profit after Tax	1,14,000	
Add: Depreciation	1,30,000	
Annual Inflow	2,44,000	

$$\therefore \text{Pay-back Period} = \frac{3,00,000}{2,44,000} = 1.23 \text{ years}$$

$$\text{Average Rate of Return} = \frac{1,14,000}{40,000 + \left(\frac{3,00,000-40,000}{2}\right)} \times 100$$

$$= \frac{1,14,000}{1,70,000} \times 100 = 67.05\%$$

(Income after depreciation and tax is given)

32. Calculate (a) Payback Period; (b) Average Rate of Return from the following information.

	₹
Project Cost	56,125
Annual Income after Depreciation and Income Tax:	

1st year	3,375
2nd year	5,375
3rd year	7,375
4th year	9,375
5th year	11,375
Estimated Life	5 years
Estimated Scrap Value	3,000

Depreciation has been charged by SLM.

[**Ans.** (a) 3 years + $\left(\frac{8,125}{20,000}\right)$ =3.405 years. (b) $\frac{7,375}{29,562.50} \times 100 = 24.9\%$]

Hints:

(i) Add back depreciation to the given annual inflows for Payback method.

(ii) Add the Scrap value of machine to the adjusted inflows in the 5th year i.e. the adjusted inflow of 5th year = 22,000 + 3,000 = 25,000

(iii) For Average Rate of Return = Average Investment = Scrap + (cost ~ scrap).
(Earning before tax is given)

33. One of the two machines A and B is to be purchased. From the following information, find out which of the two will be more profitable?
Rate of tax may be taken at 50%.

	Machine A ₹	**Machine B** ₹
Cost of Machine	50,000	80,000
Life 4 years	6 years	
Earnings before Tax		
1	10,000	8,000
2	15,000	14,000
3	20,000	25,000
4	15,000	30,000
5	—	18,000
6	—	13,000

[**Ans:** Average Rate of Return: A = 1.875%; B = 2.33%. Machine B is profitable.
Payback: A = 3 years and 9 months; B = 5 years and 2 months. Machine A is profitable]

(Cash flow is readily given)

34. A company whose cost of capital is 12% is considering two projects A and B. The following data are available:

	Project A ₹	**Project B** ₹
Investments	1,40,000	1,40,000
Cash Flows:		
Year 1	20,000	1,00,000
2	40,000	80,000
3	60,000	40,000
4	1,00,000	20,000
5	1,10,000	20,000

Select the most profitable project by using the following methods:
(a) Payback Period. (b) Net Present Value. (c) Profitability Index.
Present Value of ₹1 at 12% are:

Year	1	2	3	4	5
Present Value	0.9	0.8	0.7	0.6	0.55

[**Ans.**

(a) A = 3 $\frac{1}{5}$ years; B = 1½ years. Project B is profitable.

(b) A = ₹ 72,500; B = ₹ 65,000. Project A is profitable.

(c) A = 1.52; B = 1.46. Project A is profitable.]

(Multiple Methods given)

35. A company has an investment opportunity costing ₹ 40,000 with the following expected net cash flow after tax but before depreciation:

Year	1	2	3	4	5
Net Cash Flow (₹)	7,000	7,000	7,000	7,000	7,000

Year	6	7	8	9	10
Net Cash Flow (₹)	8,000	10,000	15,000	10,000	4,000

Using 10% as the cost of capital, determine the following:

(a) Payback period.

(b) Net Present Value at 10% discount factor.

(c) Profitability Index at 10% discount factor.

(d) Internal Rate of Return with 10% and 15% discount factor.

[**Ans.** (a) 5 years and 7.5 months. (b) ₹ 8,961.
(c) At 10% = 1.224; At 15% = 0.9855. (d) 14.696%]

(Saving and additional cost is given)

36. E Ltd. is considering to purchase a new machine. Two alternative models are under consideration. Following information is available:

	Model A ₹	**Model B** ₹
Cost of Machine	3,00,000	5,00,000
Life 10 years	12 years	
Estimated Savings in scrap per year	20,000	30,000
Additional cost of supervision per year	24,000	32,000
Additional cost of maintenance per year	14,000	22,000
Additional cost of indirect material per year	12,000	16,000
Estimated Savings in wages per year	1,80,000	2,40,000

Rate of Tax is 50%.

Find out the Profitable Model by Payback Period

(Reduction in Operating Cost is Given)

37. A machine purchased six year back for ₹ 1,50,000 has been depreciated to a book value of ₹ 90,000. It originally had a projected life of fifteen years and zero salvage value. A new machine will cost ₹ 2,50,000 and result in a reduced operating cost of ₹ 30,000 per year for the next nine years. The older machine could be sold for ₹ 50,000. The machine also will be depreciated on a straight line method on nine-year life with salvage value of ₹ 25,000. The company's tax rate is 50% and cost of capital is 10%.

Determine whether the old machine should be replaced.

Given:

Present Value of Re. 1 at 10% on 9th year = 0.424

and Present Value of an annuity of Re. 1 at 10% for 8 years 5.335.

[**Ans.** Net Present Value: ₹ - 39,822. Continue with existing machine.]

(Net Cash Flow after Tax is Given)

38. A company is considering which of two mutually exclusive projects it should undertake. The Finance Director thinks that the project with the higher Net Present Value should be chosen whereas the Managing Director thinks that the one with the higher Internal Rate of Return should be undertaken especially as both projects have the same initial outlay and length of life.
The company anticipates a cost of capital of 10% and the net after-tax cash flows of the projects are as follows:

Year	0	1	2	3	4	5
(Cash Flows Figs. '000)						
Project X	(200)	35	80	90	75	20
Project Y	(200)	218	10	10	4	3

Required:

(a) Calculate the Net Present Value and Internal Rate of Return of each project.

(b) State, with reasons, which project you would recommend.

The discount factors are as follows:

Year	0	1	2	3	4	5
Discount Factors						
(10%)	1	0.91	0.83	0.75	0.68	0.62
(20%)	1	0.83	0.69	0.58	0.48	0.41

[**Ans.** (a) Net Present Value at 10%: X + 29.15; Y + 18.76;
Net Present Value at 20%: X - 19.35; Y - 3.21;
Internal Rate of Return: X 16.01%; Y 18.54%

(b) Both the projects are acceptable because they generate the positive NPV at the company's cost of Capital at 10%. However, the Company will have to select Project X because it has a higher Net Present Value. If the company follows Internal Rate of Return method, then Project Y should be selected because of higher Net Present Value. If the company follows Internal Rate of Return method, then Project Y should be selected because of higher Internal Rate of Return (IRR). But when Net Present Value and Internal Rate of Return give contradictory results, a project with higher Net Present Value is generally preferred because of higher return in absolute terms. Hence, Project X should be selected.]

(When Elements of Cost, Sales, Working Capital is Given)

39. A product is currently being manufactured on a machine that has a book value of ₹ 30,000. The machine was originally purchased for ₹ 60,000 ten years ago. The per unit costs of the product are: Direct Labour ₹ 8.00; Direct Materials ₹ 10.00; Variable Overheads ₹ 5.00; Fixed Overheads ₹ 5.00; and total is ₹ 28.00. In the past year 6,000 units were produced and sold for ₹ 50.00 per unit. It is expected that the old machine can be used indefinitely in the future.
An equipment manufacturer has offered to accept the old machine at ₹ 20,000, a trade in for a new version. The purchase price of the new machine is ₹ 1,00,000. The projected per unit costs associated with the new machine are direct labour ₹ 4.00; direct materials ₹ 7.00; variable overheads ₹ 4.00; fixed overheads ₹ 7.00 and total is ₹ 22.00.
The management also expects that, if the new machine is purchased, the new working capital requirement of the company would be less by ₹ 10,000. The fixed overheads costs are allocations from other departments plus the depreciation of the equipment. The new machine has an expected life of ten years with no salvage value; the straight line method of depreciation is employed by the company. It is also expected that the future demand of the product would remain at 6,000 units per year. Should the new equipment be acquired? Corporate tax is @ 50%.

Note:

(i) Present value of annuity of Re. 1.00 at 10% rate of discount for 9 years is 5.759.
(ii) Present value of Re. 1.00 at 10% rate of discount, received at the end of 10th year is 0.386.

[**Ans.** (a) Net Cash Outflow: ₹ 65,000; Variable Cost per Unit: ₹ 8; Net Cash Inflow p.a.: ₹ 27,500 and Net Present Value: ₹ 1,03,988.
(b) Since the Net Present Value of the replacement proposal is positive, the replacement of the machine is a viable proposal.]

(When cash flow, salvage value are given)

40. M/s. Gama & Co. wants to replace its old machine with a new automatic machines. Two models Zee and Chee are available at the same cost of ₹ 5 lakhs each. Salvage value of the old machine is ₹ 1 lakh. The utilities of the existing machine can be used if the company purchases Zee. Additional cost of utilities to be purchased in that case are ₹ 1 lakh. If the company purchases Chee then all the existing utilities will have to be replaced with new utilities costing ₹ 2 lakhs. The salvage value of the old utilities will be ₹ 0.20 lakh. The earnings after taxation are expected to be:

Year	(Cash-Inflows of) (A)		PV Factor @ 15%
	Zee	Clue	
1	1,00,000	2,00,000	0.87
2	1,50,000	2,10,000	0.76
3	1,80,000	1,80,000	0.66
4	2,00,000	1,70,000	0.57
5	1,70,000	40,000	0.50
Salvage Value at the end of year 5	50,000	60,000	

The targeted return on capital is 15%.
You are required to:
(a) Compute, for the two machines separately, Net Present Value, Discounted Pay-back Period and Desirability Factor, and
(b) Advise which of the machines is to be selected.

[**Ans.** (a) Net Cash Outflow: Zee: ₹ 5 lakhs; Chee:₹ 5.80 lakhs
Net Present Value: Zee: ₹ 0.44 lakhs; Chee: ₹ 0.20 lakhs
Discounted Pay-back: Zee: 4.6 years; Chee: 4.6 years
Profitability Index Zee: 1.088; Chee: 1.034
(b) The discounted payback period of both the machines and based on this it is difficult to select the machine. But, based on the profitability index method, the desirability factor of Machine Zee is higher. Hence, Machine Zee is recommended.]

(When cash flow after tax is given)

41. A company is contemplating to purchase a machine. Two machines A and B are available, each costing ₹ 5 lakhs. In comparing the profitability of the machines, a discounting rate of 10% is to be used and machine is to be written off in five years by straight line method of depreciation with nil residual value. Cash inflows after tax are expected as follows:

Year	1	2	3	4	5
Machine A (₹ in lakhs)	1.5	2.0	2.5	1.5	1.0
Machine B (₹ in lakhs)	0.5	1.5	2.0	3.0	2.0

Indicate which machine would be profitable using the following methods of ranking investment proposals:
(a) Payback Method.
(b) Net Present Value Method.

(c) Profitability Index Method.
(d) Average Rate of Return Method.

The discounting factors at 10% are:

Year	1	2	3	4	5
Discounting Factor	0.909	0.826	0.751	0.683	0.621

[Ans. (a) A: 2 years and 7.2 months. B: 3 years and 4 months.
(b) A: 1.53 lakhs; B: 1.48 lakhs.
(c) A: 1.306; B: 1.296.
(d) A: 14%; B: 16%]

(When elements of cost, production, sales price alone given)

42. The management of Well Phin Ltd., Pune is planning to replace its existing machine by purchasing either machine 'A' or 'B'. The relevant information is given below:

	Present Machine ₹	**Machine A** ₹	**Machine B** ₹
Book Value	60,000	–	–
Resale Price	55,000	–	–
Purchase Price	–	90,000	1,00,000
Variable Cost (per unit):			
Cost of Materials	5.00	5.00	5.00
Labour Cost & Other Expenses	1.50	1.50	1.25
Fixed Cost (including Depreciation)	46,000	54,000	66,000
Units produced per hour	8 units	8 units	12 units

Selling Price per units is ₹ 10. Life of each machine (including the old machine) is 5 years. Annual working hours are estimated to be 2,000. The entire production can be sold without extra cost, except in case of Machine B, extra cost of ₹ 4,000 is to be incurred per annum. Tax rate is 50%. Cost of procuring finance is assumed to be 9%.

You are required to evaluate the project by using net present value method. The present value factor at 9% for 5 years is 3.890.

(When profitability index is given)

43. S. Ltd. has ₹ 10,00,000 allocated for capital budgeting purposes. The following proposals and associated profitability indexes have been determined:

Project	**Amount** ₹	**Profitability Index**
1	3,00,000	1.22
2	1,50,000	0.95
3	3,50,000	1.20
4	4,50,000	1.18
5	2,00,000	1.20
6	4,00,000	1.05

Which of the above investments should be undertaken? Assume that projects are indivisible and there is no alternative use of the money allocated for capital budgeting. [**Ans:** Project 3, 4. and 5]

QP CODE: 04291

UNIVERSITY QUESTION PAPERS

QUESTION PAPER I

N.B.

1. All questions are compulsory and carry 15 marks each
2. Question No. 2 to 5 have internal option.
3. Working notes should be **Form Part** of your answer.
4. Proper presentation and neatness is **essential.**
5. Use of simple calculate is **allowed.**
6. **Figures** to the **right** indicates **full** marks.

1. (a) Rewrite the full sentences with most appropriate alternative **(Any Eight):** **8**

I. Sale of long-term Investment at a loss _____ the cash balance.

- decreases
- Increase
- makes no change in
- none of above

II. Balance Sheet provides a statement of _____ at a point of time.

- Assets position
- Liabilities position
- Financial position
- Performance position

III. Amortisation of goodwill will _____ the net cash from operative activities in cash flow statement

- not change
- increase
- Reduce
- non of above

IV. Estimation of working capital deals with expected net investment in _____.

- Current assets
- Fixed assets
- Current liabilities
- Intengiable assets

V. In vertical Revenue statement interim dividend paid is classified as _____.

- Finance expenses
- Selling expenses
- Appropriation of profit
- Non-operation expenses

VI. _____ is calculated to find out the efficiency of collection department.

- Acid test ratio
- Dividend payout ration
- Creditors turnover ration
- Debtors turnover ratio

VII. If profit before Tax Ratio is 25% and the company is subject to income tax rate of 30%, then the profit after tax ratio will be _____.

- 7.5%
- 32.5%
- 24.5%
- 17.5%

VIII. In comparative income statement, net profit in 2014 showed declined of 20% as compared to 2013. If the net profit in 2014 is ₹ 15,00,000, then net profit in 2013 was _____.

- ₹ 11,25,000
- ₹ 18,75,000
- ₹ 18,00,000
- ₹ 12,00,000

IX. If expected sales are only against cash, then working capital required will be _____

- More
- Less
- Maximum
- None of the above

X. If common size income statement, the direct wages component amounting to ₹ 18,00,000 was 20% of turnover then the selling expense amounting to ₹ 22,50,000 would be _____of turnover.

- 22%
- 25%
- 3%
- 40%

1. (b) Match the column with most appropriate choice and rewrite (Any Seven) **7**

Column 'A'	**Column 'B'**
(i) Loss due to Earthquake	• Capital Gearing Ratio is High
(ii) Return on Net Worth	• Non-quick Liability
(iii) Trading on Equity	• Top Management
(iv) Acid Test Ratio	• Non-operational Loss
(v) Strategic Information	• Dividend Payout Ratio is Low
(vi) Bank Overdraft	• Combined Ratio
(vii) Restrictive Dividend Policy	• Liquid Ratio
(viii) Tax paid on Capital Gain	• Current Assets minus Current Liabilities
(ix) Net Current Assets	• Investing Activity
Cash Received from Debtors	• Financing Activity
	• Operating Activity
	• Non-cash Item

2. Following is the Trial Balance of Goodluck Ltd. as on 31st March, 2014. **15**

Trial Balance

Particulars	₹	Particulars	₹
Preliminary Expenses		Equity Share Capital (₹ 100)	7,00,000
(Not yet written off)	20,000	Gloss Sales	20,40,000
Administrative Expenses	4,00,000	General Reserve	3,20,000
Land & Building	8,00,000	Profit & Loss A/c (cr)	2,00,000
Plant & Machinery	6,00,000	12.5% Debentures	4,00,000
Selling Expenses	1,00,000	Depreciation Provision	
Furniture	3,00,000	On Land & Building	2,00,000
Cost of production	9,60,000	On Plant & Machinery	1,00,000
Return inward	40,000	On Furniture	80,000
Finished Goods	2,40,000	Trade Payables	4,00,000
Government Bonds	2,80,000		
Advance Tax	2,00,000		
Trade Receivables	5,00,000		
Total	**44,40,000**	**Total**	**44,40,000**

Other information

1. Closing stock of Finished Goods as on 31st March, 2014 was ₹ 1,60,000
2. Provide dividend on Equity Shares at 10%
3. Make provision for Income Tax of ₹ 2,00,000

From the above information you one required to prepare Income Statement for the year ended 31st March, 2014 and Balance Sheet as on that date in vertical from suitable for analysis.

OR

2. (a) Following are the Balance Sheets of Sanjay Ltd. as on 31st March, 2013 and 2014 **8**

Balance Sheet as on 31st March

Liabilities	2013 ₹	2014 ₹	Assets	2013 ₹	2014 ₹
Equity Share Capital	200	200	Fixed Assets	300	400
12% Pref. Share Capital	100	150	Investment	30	20
General Reserve	10	15	Current Assets	75	80
10% Debentures	50	75	Preliminery Exp.	05	-
Current Liabilities	50	60			
Total	**410**	**500**	**Total**	**410**	**500**

Prepare a Comparative Balance Sheet From the above in vertical form

2. (b) Complete the following Common Size Income Statement of Alpana Ltd by ascertaining the missing figures/percentages: **7**

Common Size Income Statement as on 31st March, 2014

Particulars	₹	₹	Common Size	
			%	%
Net Sales		20,000		10%
***Less*: Cost of Goods Sold:**				
Opening Stock	?		20.00	
Purchases	?		60.00	
Wages	2,50,000		?	
Factory Overheads	?		12.50	
	?		105.00	
Less: Closing Stock	6,00,000	?	30.00	75%
Gross Profit		5,00,000		25%
Less: Operating Expenses:				
(a) Administrative Expenses	?			
(b) Selling Expenses	50,000			
(c) Finance Expense	?	2,10,000		10.50
Operating Profit		?		?
Add: Non-Operating Income		50,000		2.50
Less: Non-Operating Expenses		?		1.00
Net Profit Before Tax		3,20,000		?

3. Complete the following Income Statement Trend Analysis for Three Analysis for three Year of Honesty Enterprise Limited

Income Statement Trend Analysis for three years ended 31st March

Particulars	Amounts			Trend Percentages		
	2011	2012	2013	2011	2012	2013
Sales	?	5,50,000	6,50,000	100	?	130
Cost of Goods Sold	?	2,50,000	?	100	125	?
Gross Margin	?	?	?	100	?	120
Office Expenses	60,000	?	?	100	115	125
Selling Expenses	?	50,000	?	100	125	150
Finance Charges	?	31,000	?	100	?	?

Total Operating **Expenses**	**?**	**?**	**?**	**100**	**?**	**?**
Profit Before Tax	?	?	1,80,000	100	100	120
Income Tax	60,000	?	?	100	?	120
Profit After tax	?	75,000	?	100	?	120

OR

3. Following is the Trading and Profit and Loss Account for the year ended 31st march 2014 and Balance Sheet as on that date of Sudrshan Ltd. **15**

Trading and Profit and Loss Account
for the year ended 31st march 2014

Particulars	₹	Particulars	₹
To Opening Stock	2,500,000	By Sales (Credit)	37,00,000
To Purchases	26,00,000	By Closing Stock	5,00,000
To Gross Profit c/d	13,50,000		
Total	**42,00,000**	**Total**	**42,00,000**
To Administrative Expenses	2,70,000	By Gross Profit b/d	13,50,000
To Interest	72,000	By Profit on Sale	
To Rent	60,000	Of Assets	50,000
To Selling Expenses	1,00,000		
To Depreciation	1,20,000		
To Provision for Income Tax	2,78,000		
To Proposed Dividend	1,00,000		
To Net Profit of	4,00,000		
Total	**14,00,000**	**Total**	**14,00,000**

Balance Sheet
as on 31st march 2014

Liabilities	₹	Assets	₹
Equity share capital (₹ 10 each)	5,00,000	Pixed Assets	12,40,000
11% Preference share capital	3,00,000	Short-term Investment	1,00,000
General Reserve	4,00,000	Trade Receivables	
12% Debentures	6,00,000	(last year ₹ 9,00,000)	9,50,000
Trade Payables	3,00,000	Inventories	5,00,000
Proposed Dividend	1,00,000	Cash and Bank Balance	1,50,000
Bank overdraft	2,00,000	Discount of issue of	
Provision of Depreciation	4,00,000	Debentures	60,000
Provision for Income Tax	2,00,000		
Total	**30,00,000**	**Total**	**30,00,000**

From the above information calculate following ratios and comment on current ratio.

1. Current Ratio
2. Inventory Turnover Ratio
3. Return on proprietors Fund
4. Operation Ratio
5. Debtors Turnover Ratio
6. Capital Gearing Ratio
7. Dividend Payout Ratio

Assume 360 days in year

Note: Drafting of vertical Financial statements is not expected

4. Asmita Ltd. Furnishes you the following summarised financial position as on 31st March, 2015 **15**

Particulars	2014	2013
Equity and Liabilities		
Equity Share Capital	3,00,000	2,80,000
10% Preference Share Capital	2,00,000	1,70,000
General Reserve	1,20,000	95,000
Profit and Loss Account	1,48,000	1,39,000
12% Debentures	3,50,000	3,00,000
Creditors	1,43,000	1,20,000
Expense Payable	84,000	77,000
Provision for taxation	92,000	67,000
Proposed Dividend	80,000	73,000
Total	**15,17,000**	**13,21,000**
Assets		
Land & Building	5,40,000	3,20,000
Plant & Machinery	2,55,000	1,80,000
Furniture	1,08,000	36,000
Motor Vehicles	85,000	1,00,000
	2,20,000	2,83,000
	2,45,000	3,44,000
Cash and cash equivalents	64,000	58,000
Total	**15,17,000**	**13,21,000**

Additional Information

1. Issue of shares, debentures and additional to the assets were made on 1st April 2013.
2. During the year were ₹ 69,000 and ₹ 80,000 respectively.
3. Prepare cash flow statement as per S-3 for the year ended 31st March 2014 using indirect method.

OR

4. Ajeet Ltd produced and sold 60,000 Cellular phone in the year 2013-14 and their cost structure was us under. **15**

Particulars	₹ (Per Unit)
Raw Material	120
Labour	90
Manufacturing Overhead	80
Administration and Selling Overhead	30
Profit	20% Selling price

In the year 2014-15 they plan to produce and sale 72,000 Cellular Phones and they estimate that :

(i) Raw material cost per unit will reduce to ₹100 and all overheads will increase by 10%

(ii) Selling price will remain unchanged.

It is further informed that:

(a) Raw material will be in stock on an average equal to one month consumption.

(b) Processing time required is 1/4 month

(c) Finished goods in stock 1/2 month requirement

(d) Credit allowed by supplier one month.

(e) Credit allowed to customers 1/2 month.

(f) The time lag in payment of wages and both the overhead - one month

(g) Cash balance required for smooth operation is expected to be ₹ 75,000.

(h) Production and sales are carried on evenly throughout the year.

(i) Provide margin of safety of 10%

(j) Debtors are to be calculated at selling price

(k) 40% of purchases and 60% of sales are against cash.

You are required to prepare a statement showing working capital requirement of the year 2014-15.

5. (a) Describe the factor that affect the requirement of working capital. **8**

(b) Define Assets? Explain the various types of Assets. **7**

OR

5. Write the short note on (Any Three) **15**

(a) Strategic Information

(b) Own Fund

(c) Cash flow from financing activities

(d) Common size income statement

(e) Cash and cash equivalent.

QP Code: 11150

QUESTION PAPER II

N.B.

1. All questions are **compulsory** and carry 15 marks each.
2. Question Nos. **2** to **5** have internal option
3. Working notes should **Form Part** of your answer
4. Proper presentation and neatness is **essential**.
5. Use o simple calculator is **allowed**
6. **Figures** to the **right** indicate **full** marks.

1. (a) Rewrite the full sentences with most appropriate alternative (Any Eight): **8**

I. _____ is not a factor that affects the composition of the Working Capital.

- Process Technology used
- Nature of Business
- Nature of raw material
- Tax structure of the company

II. Issue of Right shares will _____ the net cash from Financing activities

- Not change
- Increase
- Reduce
- Non of the above

III. Fixed interest/dividend bearing funds so not include _____

- Debentures
- Bank Loan
- Equity Share Capital
- Public Deposits

IV. Loss due to fire is _____

- Operating loss
- Non-operating income
- Non-operating expenses
- None of the above

V. If cash credit facility is available from Bank for working capital then working capital required is _____

- Less
- More
- Maximum
- None of the above

VI. Debt collection period is 3.5 months, Average Trade Receivables are ₹ 14,00,000 then credit sales are_____

- ₹ 46,00,000
- ₹ 49,00,000
- ₹ 40,00,000
- ₹ 48,00,000

VII. _____ is calculated to find out the movement of inventory

- Debtors Turnover Ratio
- Creditors Turnover Ratio
- Stock Turnover Ratio
- All of the above

VIII. In common size income statement, raw material components amounting to 4,50,000. Was 15% of the turnover. Then the administrative expenses which are 10% of turnover would be _____

- ₹ 6,75,000
- ₹ 3,00,000
- ₹ 30,00,000
- ₹ 3,50,000

IX. _____ is not an item coming under the head 'Reserves & Surplus'

- Capital Reserve
- Security Premium
- P & L Account (Dr)
- P & L A/c (Cr)

X. Generally Quick Liabilities mean All Current Liabilities excluding_____

- Outstanding Expenses
- Outstanding Wages
- Bank Overdraft
- Bank Time Deposits

1. (b) Match the column with most appropriate choice and rewrite (Any Seven) **7**

Column 'A'	Column 'B'
1. Financial Statements	• Non-quick Assets
2. Stock to Working Capital Ratio	• Direction of Data
3. Prepaid Expenses	• Borrowed Fund
4. Trend Analysis	• Financial Position
5. Long-term Liabilities	• Balance Sheet Ratio
6. Liberal Dividend Policy	• Investing Activity
7. Buy-back of Shares	• Dividend Payout Ratio is high
8. Gross Working Capital	• Adjusted in Net Profit as non-operating item
9. Loss on sale of Fixed Assets	• Financing Activity
10. Interim Dividend on Investment	• Total Current Assets

2. The following balances are extracted from the financial statements of Maganlal Products Ltd. **15**

Balances as on 31st March 2014

Particulars	₹	Particulars	₹
Bank Loan	2,00,000	Preliminery Expenses	
7% Preference Share		(Not yet written off)	25,000
Capital (100)	5,00,000	Stock (closing)	4,00,000
Investments	2,50,000	12% Debentures	5,00,000
Trade Receivables	4,00,000	Bills Payble	1,00,000
Trade Payables	3,00,000	Land & Building	10,00,000
Goodwill	2,50,000	Equity Share Capital (10 each)	10,00,000
Bills Receivables	2,75,000	Bank Overdraft	1,50,000
Plant & Machinery	6,00,000	Cash & Bank Balance	75,000
Profit & Loss A/c (Cr)	4,00,000	Furniture	4,00,000
Unclaimed Dividend	20,000	General Reserve	4,25,000
Prepaid Expenses	50,000	Advance Tax	2,00,000
Provision for Taxation	2,30,000	Proposed Dividend	1,00,000

You are required to Prepare Balance Sheet in vertical from suitable for analysis.

OR

2. (a) Following are the Trading & Profit & Loss Accounts of Parmita Ltd. for the year ended 31st March, 2013 and 2014. **8**

Trading & Profit and Loss Account for the years ended 31st March

Particulars	2013 (₹)	2014 (₹)	Particulars	2013 (₹)	2014 (₹)
To Opening Stock	3,50,000	2,00,000	By Sales	11,00,000	12,00,000
To Purchases	7,00,000	9,00,000			
To Wages	50,000	1,00,000	By Closing Stock	2,00,000	3,00,000
To Gross Profit c/d	2,00,000	3,00,000			
Total	**13,00,000**	**15,00,000**	**Total**	**13,00,000**	**15,00,000**

To Office Expenses	1,00,000	1,25,000	By Gross Profit b/d	2,00,000	3,00,000
To Selling Expenses	50,000	1,00,000			
To Finance Expenses	20,000	30,000			
To Net Profit c/f	30,000	45,000			
	2,00,000	**3,00,000**		**2,00,000**	**3,00,000**

Prepare a Comparative Income Statement from the above in Vertical form.

2. (b) Following is the Balance Sheet of Pratikraj Ltd. as on 31st March, 2004. **7**

Balance Sheet as on 31st March, 2014

Liabilities	₹	Assets	₹
Equity Share Capital	3,00,000	Fixed Assets	4,00,000
8% Pref. Share Capital	2,00,000	Investments	1,50,000
General Reserve	20,000	Stock	25,000
Profit and Loss Account	50,000	Debtors	75,000
10% Debentures	1,00,000	Bills Receivable	30,000
Creditors	20,000	Cash	15,000
Bills Payable	7,000	Preliminery Expenses	5,000
Outstanding Expenses	3,000		
	7,00,000		**7,00,000**

Prepare a Common-size Balance Sheet from the above in vertical form.

3. Following balance are extracted from the books of Rama Ltd. **15**

Balance as on 31st March

Particulars	2012 (₹)	2013 (₹)	2014 (₹)
Net Sales	30,000	40,000	50,000
Opening Stock	3,000	5,000	7,000
Purchases	17,000	19,000	20,000
Wages	1,500	3,000	2,000
Carriage Inward	2,000	4,000	4,000
Closing Stock	5,000	7,000	6,000
Office Expenses	1000	1,200	1,500
Selling Expenses	700	900	1,000
Finance Expenses	600	1,000	2,000
Non-operating Income	800	900	1,000
Non-operating Expenses	500	300	500
Tax	40%	40%	40%

You are required to prepare vertical Trend Analysis Income Statement from the above

OR

3. From the following Balance Sheet of Shrushti Ltd. as on 31st March, 2014 and the Profit and Loss Account for the year ended 31st March, 2014, Calculate: **15**

   1. Proprietory Ratio
   2. Operating Ratio
   3. Return on Capital Employed
   4. Stock Turnover Ratio
   5. Debt Service Ratio
   6. Stock Working Capital Ratio
   7. Debtors Turnover ratio an comment on Proprietor Ratio

Assume 360 days in a year.

Balance Sheet as on 31st March, 2014

Liabilities	₹	Assets	₹
Equity Share Capital (₹ 10)	20,00,000	Fixed Assets (at cost)	83,00,000
12% Preference Share Capital	20,00,000	Investments	10,00,000
Reserve and Surplus	15,00,000	Trade Receivables	
15% Debentures	50,00,000	(1.4.2013 ₹ 40,00,000)	60,00,000
Trade Payables		Inventories	15,00,000
(1.04.2013 ₹ 20,00,000)	30,00,000	Cash and Bank Balance	2,00,000
Bank Overdraft	10,00,000	Insurance Claim	2,00,000
Proposed Dividend	5,00,000	Preliminary Expenses	2,00,000
Depreciation Provision	14,00,000		
Provision for Taxation	10,00,000		
	1,74,00,000		**1,74,00,000**

Profit and Loss Account
For the year ended 31st March, 2014

Particulars	₹	Particulars	₹
To Opening Stock	10,00,000	By Sales	
To Purchases	70,00,000	Cash 80,00,000	
To Factory Expenses	15,00,000	Credit 1,00,00,000	1,80,00,000
To Labour Charges	20,00,000	By Goods Lost by Fire	3,00,000
To Administrative Expenses	32,50,000	By Closing Stock	15,00,000
To Selling Expenses	15,00,000	By Profit on Sale of Assets	2,00,000
To Internet	7,50,000		
To Loss by Fire	1,00,000		
To Proposed Dividend	5,00,000		
To Provision for Taxation	10,00,000		
To Net Profit c/f	14,00,000		
	2,00,00,000		**2,00,00,000**

Note: Conversion into vertical statements not expected

4. Following is the summarized financial position of Arpita Ltd. as on 31st march **15**

Particulars	2013 ₹	2014 ₹
Equity and Liabilities		
Equity Share Capital	2,00,000	2,50,000
10% Preference Share Capital	2,00,000	1,50,000
General Reserve	80,000	1,00,000
Profit and Loss Account	1,00,000	1,50,000
12% Debentures	2,00,000	3,00,000
Sundry Creditors	1,00,000	1,20,000
Bills Payable	60,000	50,000
Provision for taxation	70,000	90,000
Proposed Dividend	50,000	55,000
Total	**10,60,000**	**12,65,000**
Assets		
Building	3,00,000	3,20,000
Machinery	1,50,000	1,80,000
Furniture	40,000	36,000
10% Trade Investments	1,00,000	1,00,000
Stock	1,50,000	2,00,000

Debtors	2,30,000	3,44,000
Cash and cash equivalents	90,000	85,000
Total	**10,60,000**	**12,65,000**

Additional Information:

1. Fresh debentures were issued on 1st April 2013.
2. Depreciation charged on Building ₹ 30,000 and on Machinery ₹ 25,000
3. Furniture costing ₹ 4,000, fully depreciated, was scrapped during the year
4. Preference shares were converted into equity shares in 1st April, 2013.

Prepare Cash Flow Statement as per AS-3 for the year ended 31st March, 2014 using indirect method.

OR

4. Abhishek Ltd. Furnishes the following information and requests you prepare a statement showing the requirement of working capital for the year 2014-15 **15**

Cost Sheet for the year 2013-14 (level of activity of purchase, production and sales 12,000 unit per annuam)

Particulars	₹
Raw Material per unit	250
Fixed Wages per annum	1,83,600
Variable Wages per unit	80
Fixed Overheads per annum	1,62,000
Variable Overheads per unit	18

During the year 2014-15 company expects decline of 10% in their level of activity

Other Information:

(a) Raw materials and finished goods remain in stock, equal to 2 month requirement.

(b) Processing takes one month and it includes fixed wages and overheads full and variable wages and overhead 40%.

(c) Selling Price of the product is arrived at by calculating 25% profit on cost.

(d) 60% of the total sales are not credit of two months and balance sales are against cash.

(e) Cash balance should be maintained at 10% of net working capital.

(f) 80% of suppliers of raw material provide credit of 2 months and balance purchases are for cash.

(g) Fixed wages and overheads are paid one month in advance.

(h) Time lag in payment of variable wages and overheads is one month

(i) Production and sales take place evenly throughout the year.

(j) Sundry Debtors are valued at selling Price.

5. (a) Explain the brief-Horizontal and Vertical Analysis of financial statements. **8**

(b) Explain the Working Capital Cycle of a manufacturing concern. **7**

OR

5. Write a short note on (any three) **15**

(a) Tactical Information

(b) Fictitious Assets

(c) Margin of Safety

(d) Comparative Balance Sheet

(e) Acid Test Ratio.