

Financial Management

(Paper I)

(As per the Revised Syllabus of BBI, Semester III, University of Mumbai)

**Winner of “Best Commerce Author 2013-14” by Maharashtra Commerce Association
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Preface

We are happy to present this book "*Financial Management*" Paper I to the students of BBI for Semester III. In this edition, an effort has been made to incorporate professional examination questions at relevant places in the book.

The syllabus contains a list of topics covered in each chapter which will avoid controversies regarding the exact scope of the syllabus. The text follows the term-wise chapter topics pattern prescribed in the syllabus. We have preferred to leave 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 students community will find this book of great use.

We are extremely grateful to students of BBI and Mr. K.N. Pandey of Himalaya Publishing House Pvt. Ltd., for their devoted and untiring personal attention accorded by them to this publication. I gratefully acknowledge and express my sincere thanks to the following people without whose inspiration, support and constructive suggestions, this book would not have been possible.

- ❖ *Mr. Jitendra Singh Thakur (Trustee, Thakur College)*
- ❖ *Dr. Chaitaly Chakraborty (Principal, Thakur College)*
- ❖ *Mrs. Darshita Nirav Goda*

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

Authors

Syllabus

Unit	Topics	Lectures Assigned
I	(a) Overview of Financial Management – Scope, Functions and Objectives (b) Financial Forecasting – Sales Forecast – Preparation of Proforma Income Statement and Balance Sheet – Growth and External Funds Requirements (EFR)	15
II	Tools of Financial Analysis – Common Size Statements – Comparative Statements – Ratios: Balance Sheet Ratios, Income Statement Ratios and Combined Ratios	15
III	Cash Budget Capital Budget Flexible Budget	5
IV	Sources of Finance – Long-term Sources (Term Loans, Debentures), Bonds Zero Coupon Bonds, Convertible Bonds) – Equity Shares, Preference Shares – Short-term Sources (Bank Finance, Trade Credit, Other Short-term Sources)	15

Paper Pattern

Question Paper Pattern for Periodical Class Test for Courses at UG Programmes

Written Class Test

20 Marks

Sr. No.	Particulars	Marks
1	Match the Column/Fill in the Blanks/Multiple Choice Questions (½ Mark each)	05 Marks
2	Answer in One or Two Lines (Concept-based Questions) (1 Mark each)	05 Marks
3	Answer in Brief (Attempt any two of the three) (5 Marks each)	10 Marks

Semester End Examination

Duration: 2½ Hrs.

Maximum Marks: 75

All Questions are Compulsory carrying 15 Marks each.

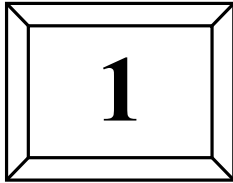
Questions to be Set: 05

Sr. No.	Particulars	Marks
Q.1	Objective Questions	15 Marks
	(a) Sub-questions to be asked 10 and to be answered any 08 (b) Sub-questions to be asked 10 and to be answered any 07 (*Multiple Choice/True or False/Match the Column, Fill in the blanks)	
Q.2	Full Length Practical Question OR	15 Marks
Q.2	Full Length Practical Question	15 Marks
Q.3	Full Length Practical Question OR	15 Marks
Q.3	Full Length Practical Question	15 Marks
Q.4	Full Length Practical Question OR	15 Marks
Q.4	Full Length Practical Question	15 Marks
Q.5	(a) Theory Questions (b) Theory Questions OR	08 Marks 07 Marks
Q.5	Short Notes To be asked 05 To be answered 03	15 Marks

Note: Full length question of 15 marks may be divided into two Sub-questions of 08 and 07 marks.

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Overview of Financial Management

Evolution of Financial Management

Financial management emerged as a distinct field of study at the turn of this century. Its evolution may be divided into three broad phases (though the demarcating lines between these phases are somewhat arbitrary): the traditional phase, the transitional phase, and the modern phase

The *traditional phase* lasted for about four decades. The following were its important features:

The focus of financial management was mainly on certain episodic events like formation, issuance of capital, major expansion, merger, reorganization, and liquidation in the life cycle of the firm.

- The approach was mainly descriptive and institutional. The instruments of financing, the institutions and procedures used in capital markets, and the legal aspects of financial events formed the core of financial management.
- The outsider's point of view was dominant. Financial management was viewed mainly from the point of the investment bankers, lenders, and other outside interests.

A typical work of the traditional phase is *The Financial Policy of Corporations* by Arthur S. Dewing. This book discusses at length the types of securities, procedures used in issuing these securities, bankruptcy, reorganisations, mergers, consolidations and combinations. The treatment of these topics is essentially descriptive, institutional and legalistic.

The *transitional phase* being around the early forties and continued through the early fifties. Though the nature of financial management during this phase was similar to that of the traditional phase, greater emphasis was placed on the day to day problems faced by finance managers in the areas of fund analyses, planning and control. These problems, however, were discussed within limited analytical frameworks. A representative work of this phase is *Essays on Business Finance* by Wilford J. Eiteman et al.

The *modern phase* began in the mid-fifties and has witnessed an accelerated pace of development with the infusion of ideas from economic theory and application of quantitative methods of analysis. The distinctive features of the modern phase are:

- The scope of financial management has broadened. The central concern of financial management is considered to be a rational matching of funds to their uses in the light of appropriate decision criteria.
- The approach of financial management has become more analytical and quantitative.
- The point of view of the managerial decision maker has become dominant.

Since the beginning of the modern phase many significant and seminal developments have occurred in the fields of capital budgeting, capital structure theory, efficient market theory, option pricing theory, arbitrage pricing theory, valuation models, dividend policy, working capital management, financial modeling and behavioural finance. Many more exciting developments are in the offing making finance a fascinating and challenging field.

- Early 1900: instrument, institution, and procedures of capital market and money market
- Around 1920: focus on security and banking sector, and investment in common stock
- Around 1930: focus on liquidity, debt, regulation, bankruptcy, reorganization
- Early 1940 and 1950: internal analysis, planning and controlling cash flow
- End of 1950: capital budgeting, valuation, and dividend policy
- Around 1960: development of portfolio theory
- Around 1970: CAPM model and APT model that can be used to value the financial assets
- Around 1980: focus on uncertainty, asymmetric information, financial signaling
- Around 1990: multinational financial management, behavioral finance, enterprise risk management, good corporate governance.

Meaning of Financial Management

Financial Management means planning, organizing, directing and controlling the financial activities such as procurement and utilization of funds of the enterprise. It means applying general management principles to financial resources of the enterprise.

Importance of Financial Management

In a big organisation, the general manager or the managing director is the overall incharge of the organisation but he gets all the activities done by delegating all or some of his powers to men in the middle or lower management, who are supposed to be specialists in the field so that better results may be obtained.

For example, management and control of production may be delegated to a man who is specialist in the techniques, procedures and methods of production. We may designate him "Production Manager". So is the case with other branches of management, i.e., personnel, finance, sales, etc.

The incharge of the finance department may be called financial manager, finance controller, or director of finance who is responsible for the procurement and proper utilisation of finance in the business and for maintaining coordination between all other branches of management.

Importance of finance cannot be overemphasised. It is, indeed, the key to successful business operations. Without proper administration of finance, no business enterprise can reach its full potentials for growth and success. Money is a universal lubricant which keeps the enterprise dynamic – develops product, keeps men and machines at work, encourages management to make progress and creates values. The importance of financial administration can be discussed under the following heads:

- (i) **Success of Promotion Depends on Financial Administration.** One of the most important reasons of failure of business promotions is a defective financial plan. If the plan adopted fails to provide sufficient capital to meet the requirements of fixed and fluctuating capital and particularly, the latter, or it fails to assume the obligations by the corporations without establishing earning power, the business cannot be carried on successfully. Hence, sound financial plan is very necessary for the success of a business enterprise.
- (ii) **Smooth Running of an Enterprise.** Sound financial planning is necessary for the smooth running of an enterprise. Money is to an enterprise, what oil is to an engine. As, Finance is required at each stage of an enterprise, i.e., promotion, incorporation, development, expansion and administration of day to day working, etc., proper administration of finance is very necessary. Proper financial administration means the study, analysis and evaluation of all financial problems to be faced by the management and to take proper decision with reference to the present circumstances in regard to the procurement and utilisation of funds.

- (iii) **Financial Administration Coordinates Various Functional Activities.** Financial administration provides complete coordination between various functional areas such as marketing, production, etc., to achieve the organisational goals. If financial management is defective, the efficiency of all other departments can, in no way, be maintained. For example, it is very necessary for the finance department to provide finance for the purchase of raw materials and meeting other day to day expenses for the smooth running of the production unit. If financial department fails in its obligations, the production and the sales will suffer and consequently, the income of the concern and the rate of profit on investment will also suffer. Thus, Financial administration occupies a central place in the business organisation which controls and coordinates all other activities in the concern.
- (iv) **Focal Point of Decision Making.** Almost, every decision in the business is taken in the light of its profitability. Financial administration provides scientific analysis of all facts and figures through various financial tools, such as different financial statements, budgets, etc., which help in evaluating the profitability of the plan in the given circumstances, so that a proper decision can be taken to minimise the risk involved in the plan.
- (v) **Determinant of Business Success.** It has been recognised, even in India that the financial managers play a very important role in the success of business organisation by advising the top management for the solution of the various financial problems as experts. They present important facts and figures regarding financial position and the performance of various functions of the company in a given period before the top management in such a way so as to make it easier for the top management to evaluate the progress of the company to amend suitably the principles and policies of the company. The financial managers assist the top management in its decision making process by suggesting the best possible alternative out of the various alternatives of the problem available. Hence, financial management helps the management at different levels in taking financial decisions.
- (vi) **Measure of Performance.** The performance of the firm can be measured by its financial results, i.e., by its size of earnings. Riskiness and profitability are two major factors which jointly determine the value of the concern. Financial decisions which increase risks will decrease the value of the firm and on the other hand, financial decisions which increases the profitability will increase value of the firm. Risk and profitability are two essential ingredients of a business concern.

The importance of financial management can be summarized as follows:

1. It brings economic growth and development through investments, financing, dividend and risk management decision which help companies to undertake better projects.
2. When there is good growth and development of the economy it will ultimately improve the standard of living of all people.
3. Improved standard of living will lead to good health and financial stress will reduce considerably.
4. It enables the individual to take better financial decision which will reduce poverty, reduce debts, increase savings and investments.

Better financial ability will lead to profitability which will create new jobs and in turn lead to more development, expansion and will promote efficiency.

Scope/Elements and Objectives of Financial Management

Scope/Elements

1. Investment decisions includes investment in fixed assets (called as capital budgeting). Investment in current assets are also a part of investment decisions called as working capital decisions.

2. Financial decisions - They relate to the raising of finance from various resources which will depend upon decision on type of source, period of financing, cost of financing and the returns thereby.
 - (a) *Dividend decision*: The finance manager has to take decision with regards to the net profit distribution. Net profits are generally divided into two: Dividend for shareholders – Dividend and the rate of it has to be decided.
 - (b) *Retained profits*: Amount of retained profits has to be finalized which will depend upon expansion and diversification plans of the enterprise.

Scope of Financial Management: Financial management has a wide scope. According to **Dr. S.C. Saxena**, the scope of financial management includes the following five 'A's.

1. **Anticipation:** Financial management estimates the financial needs of the company, that is, it finds out how much finance is required by the company.
2. **Acquisition:** It collects finance for the company from different sources.
3. **Allocation:** It uses this collected finance to purchase fixed and current assets for the company.
4. **Appropriation:** It divides the company's profits among the shareholders, debenture holders, etc. It keeps a part of the profits as reserves.
5. **Assessment:** It also controls all the financial activities of the company. Financial management is the most important functional area of management. All other functional areas such as production management, marketing management, personnel management, etc., depends on financial management. Efficient financial management is required for survival, growth and success of the company or firm.

Objectives of Financial Management

The financial management is generally concerned with procurement, allocation and control of financial resources of a concern. The objectives can be –

1. To ensure regular and adequate supply of funds to the concern.
2. To ensure adequate returns to the shareholders which will depend upon the earning capacity, market price of the share, expectations of the shareholders.
3. To ensure optimum funds utilization. Once the funds are procured, they should be utilized in maximum possible way at least cost.
4. To ensure safety on investment, i.e., funds should be invested in safe ventures so that adequate rate of return can be achieved.
5. To plan a sound capital structure. There should be sound and fair composition of capital so that a balance is maintained between debt and equity capital.

Conflicts in Principles of Profit vs. Value Maximisation

Goals mean financial objective of a firm. Experts in financial management have endorsed the view that the goal of Financial Management of a firm is maximization of economic welfare of its shareholders. Maximization of economic welfare means maximization of wealth of its shareholders. Shareholders' wealth maximization is reflected in the market value of the firms' shares. A firm's contribution to the society is maximized when it maximizes its value. There are two versions of the goals of financial management of the firm:

Profit Maximization: In a competitive economy, profit maximization has been considered as the legitimate objective of a firm because profit maximization is based on the cardinal rule of efficiency. Under perfect competition allocation of resources shall be based on the goal of profit maximization. A firm's performance is evaluated in terms of profitability. Investor's perception of company's performance can be

traced to the goal of profit maximization. But, the goal of profit maximization has been criticized on many accounts:

1. The concept of profit lacks clarity. What does the profit mean?
 - (a) Is it profit after tax or before tax?
 - (b) Is it operating profit or net profit available to shareholders?
 Differences in interpretation on the concept of profit expose the weakness of the goal of profit maximization.
2. Profit maximization ignores time value of money because it does not differentiate between profits of current year with the profit to be earned in later years.
3. The concept of profit maximization fails to consider the fluctuation in the profits earned from year to year. Fluctuations may be attributable to the business risk of the firm but the concept fails to throw light on this aspect.
4. Profit maximization does not make clear the concept of profit as to whether it is accounting profit or economic normal profit or economic supernormal profits.
5. Because of these deficiencies, profit maximization fails to meet the standards stipulated in an operationally feasible criterion for maximizing shareholders wealth.

Value or Wealth Maximization: Wealth Maximization has been accepted by the finance managers, because it overcomes the limitations of profit maximisation. Wealth maximisation means maximizing the net wealth of the company's shareholders. Wealth maximisation is possible only when the company pursues policies that would increase the market value of shares of the company.

Following arguments are in support of the superiority of wealth maximisation over profit maximisation:

1. Wealth maximisation is based on the concept of cash flows. Cash flows are a reality and not based on any subjective interpretation. On the other hand there are many subjective elements in the concept of profit maximisation.
2. It considers time value of money. Time value of money translates cash flows occurring at different periods into a comparable value at zero period. In this process, the quality of cash flows is considered critically in all decisions as it incorporates the risk associated with the cash flow stream. It finally crystallizes into the rate of return that will motivate investors to part with their hard earned savings. It is called required rate of return or hurdle rate which is employed in evaluating all capital projects undertaken by the firm. Maximizing the wealth of shareholders means positive net present value of the decisions implemented. Positive net present value can be defined as the excess of present value of cash inflows of any decision implemented over the present value of cash outflows associated with the process of implementation of the decisions taken. To compute net present value we employ time value factor. Time value factor is known as time preference rate, i.e., the sum of risk free rate and risk premium. Risk free rate is the rate that an investor can earn on any government security for the duration under consideration. Risk premium is the consideration for the risk perceived by the investor in investing in that asset or security.

X Ltd., is a listed company engaged in the business of FMCG (Fast Moving Consumer Goods). Listed means the company's shares are allowed to be traded officially on the portals of the stock exchange. The Board of Directors of X Ltd., took a decision in one of its Board meeting, to enter into the business of power generation. When the company informs the stock exchange at the conclusion of the meeting of the decision taken, the stock market reacts unfavourably with the result that the next days' closing of quotation was 30 % less than that of the previous day.

The question now is, why the market reacted in this manner. Investors in this FMCG Company might have thought that the risk profile of the new business (power) that the company wants to take up is higher compared to the risk profile of the existing FMCG business of X Ltd. When they want a higher return,

market value of company's share declines. Therefore, the risk profile of the company gets translated into a time value factor. The time value factor so translated becomes the required rate of return. Required rate of return is the return that the investors want for making investment in that sector.

Any project which generates positive net present value, creates wealth to the company. When a company creates wealth from a course of action it has initiated the shareholders benefit because such a course of action will increase the market value of the company's shares.

Functions of Financial Management

1. **Estimation of Capital Requirements:** A finance manager has to make estimation with regards to capital requirements of the company. This will depend upon expected costs and profits and future programmes and policies of a concern. Estimations have to be made in an adequate manner which increases earning capacity of an enterprise.
2. **Determination of Capital Composition:** Once the estimation have been made, the capital structure have to be decided. This involves short and long-term debt equity analysis. This will depend upon the proportion of equity capital a company is possessing and additional funds which have to be raised from outside parties.
3. **Choice of Sources of Funds:** For additional funds to be procured, a company has many choices like:
 - (a) Issue of shares and debentures
 - (b) Loans to be taken from banks and financial institutions
 - (c) Public deposits to be drawn like in form of bonds.
 Choice of factor will depend on relative merits and demerits of each source and period of financing.
4. **Investment of Funds:** The finance manager has to decide to allocate funds into profitable ventures so that there is safety on investment and regular returns is possible.
5. **Disposal of Surplus:** The net profits decision have to be made by the finance manager. This can be done in two ways:
 - (a) *Dividend declaration:* It includes identifying the rate of dividends and other benefits like bonus.
 - (b) *Retained profits:* The volume has to be decided which will depend upon expansional, innovational, diversification plans of the company.
6. **Management of Cash:** Finance manager has to make decisions with regards to cash management. Cash is required for many purposes like payment of wages and salaries, payment of electricity and water bills, payment to creditors, meeting current liabilities, maintenance of enough stock, purchase of raw materials, etc.
7. **Financial Controls:** The finance manager has not only to plan, procure and utilize the funds but he also has to exercise control over finances. This can be done through many techniques like ratio analysis, financial forecasting, cost and profit control, etc.

Exercise

Self-assessment Questions

1. Financial Management deals with procurement of funds at the least cost and _____ of funds.
2. Under perfect competition, allocation of resources shall be based on the goal of _____.
3. _____ is based on cash flows.
4. _____ consider time value of money.

5. _____ lead to investment in real assets.
6. _____ relate to the acquisition of funds at the least cost.
7. Formulation of inventory policy is an important element of _____.
8. Obtaining finance is an important function of _____.

[Ans.: 1. Effective utilization, 2. Profit maximisation, 3. Wealth maximization, 4. Wealth maximization, 5. Investment decisions, 6. Financing decisions, 7. Liquidity, 8. Treasurers]

Terminal Questions

1. What are the objectives of financial management?
2. How does a finance manager arrive at an optimal capital structure?
3. Examine the relationship of financial management with other functional areas of a firm.

2

Financial Forecasting

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.

External Funding Required

In the theory of capital structure, external financing is the phrase used to describe funds that the firms obtain from outside the firm. It is in contrast to the internal financing which consists mainly of profits retained by the firm for further investment.

External Funding Required is defined as the amount of extra cash that a company will need for the next year based on the proforma financial statements. There are many kinds of external financing. The two main ones are equity issues, (IPOs or FPOs), but current liabilities are also considered as a source of external financing. External financing is perceived to be more expensive than internal financing, because the firm often has to pay a transaction and flotation cost in order to obtain it.

The term External Financing Needed (EFN) or External Financing Required (EFR) or Additional Funds Needed (AFN) or External Funding Required (EFR) is used to determine the amount of external funding that a company will need based on the change in balance sheet valued from one year to another. As assets increase, equity or liabilities must increase as well. If assets grow from one year to the next, then either the current liabilities or the retained earnings must also grow by the same amount. If not then external funding is required, and the company will either borrow debt, or sell equity to finance such a growth plans.

The stronger the company's internal cash flows, and in turn its cash position, the less the need to draw on an external source of fund. In short, if internal cash flows or the retention ratio increase, external funding requirements would decrease. If internal cash flows suffers, then the external funding requirements will increase. Companies not wanting to increase their external funding requirements will often decrease their dividend payout ratio (in other words increase their retention ratio) in an anticipation of long term increase in profit margin. Of course, such a move as this can raise shareholder eyebrows and overall price of a stock in the stock market.

Formula of External Funding Requirements:

External Funding Requirement is equal to the Incremental Change in Assets minus Incremental Change in Current Liabilities minus Retained Earnings.

Solved Problems

Illustration 1: The following data is available in respect of Gowardhan Company Ltd.

Income Statement Year Ending

(₹ in Lakhs)

Particulars	2016		2017	
		Amount		Amount
Sales		1300		?
Costs		750		?
Taxable Income		550		?
Taxes		202		?
Net Profit After Tax		348		?
Dividends		22		?
Additional to Retained Earnings		326		?

Balance Sheet as on 31st March,

(₹ in Lakhs)

Liabilities and Owners' Equity	2016		2017		Assets		2016		2017	
Current Liabilities:					Current Assets:					
Accounts Payable	185	?			Cash	300	?			
Bills Payable	435	?			Accounts Receivable	200	?			
Total Current Liabilities	620	?			Inventory	250	?			
Long-term Liabilities:					Total Current Assets	750	?			
Long-term Debt	420	?			Fixed Assets:					
Total Long-term Liabilities	420	?			Net Fixed Assets	900	?			
Owners' Equity:										
Equity Share Capital	455	?								
Retained Earnings	155	?								
Total Owners' Equity	610	?								
Total Liabilities and Owners Equity	1650	?				1650	?			

Other Information:

Forecasted Growth Rate in Sales = 34%

Using "Percentage of Sales" method approach determine the External Financing Needed, assuming that the funds are raised by Bills Payable and that the Long-term Debt and Equity Share Capital remains constant.

Solution:

Income Statement Year Ending

(₹ in Lakhs)

Particulars	2016		2017	
	%	Amount		Amount
Sales [2600 + 34% = 3484]	100	1300		1742
Costs	57.69	750		1005
Taxable Income	42.31	550		737

Taxes	15.54	202	270.60
Net Profit After Tax	26.77	348	466.32
Dividends	1.69	22	29.48
Additional to Retained Earnings	25.04	326	436.84

Balance Sheet as on 31st March

(₹ in Lakhs)

Liabilities and Owners' Equity	2016		2017	Assets	2016		2017
	%	Amt.	Amt.		%	Amt.	Amt.
Current Liabilities:				Current Assets:			
Accounts Payable	14.23	185	495.8	Cash	23.08	300	402
Bills Payable	N/A	435	992.52	Accounts Receivable	15.38	200	268
Total Current Liabilities	N/A	620	1488.32	Inventory	19.23	250	335
Long-term Liabilities:				Total Current Assets	N/A	750	1005
Long-term Debt	N/A	420	840	Fixed Assets:			
Total Long-term Liabilities	N/A	420	840	Net Fixed Assets	69.23	900	1206
Owners' Equity:							
Equity Share Capital	N/A	455	910				
Retained Earnings	N/A	155	1183.68				
Total Owners' Equity	N/A	610	2093.68				
Total Liabilities and Owners' Equity	N/A	3,300	4,422		N/A	3,300	?

External financing needed = $992.52 - 870 = ₹ 122.52$ lakhs is raised through bills payable.

Illustration 2: The following data is available in respect of Amitabh & Sons. Comp. Ltd.

Income Statement year ending

(₹ in Lakhs)

Particulars	2016 Amount	2017 Amount
Sales	400	?
Costs	300	?
Taxable Income	100	?
Taxes	10.5	?
Net Profit After Tax	89.5	?
Dividends	35.5	?
Additional to Retained Earnings	55	?

Balance Sheet as on 31st March,

(₹ in Lakhs)

Liabilities and Owners' Equity	2016	2017	Assets	2016	2017
Current Liabilities:			Current Assets:		
Accounts Payable	140	?	Cash	300	?
Bills Payable	125	?	Accounts Receivable	250	?
Total Current Liabilities	265	?	Inventory	250	?
Long-term Liabilities:			Total Current Assets	800	?

Long-term Debt	560	?	Fixed Assets:		
Total Long-term Liabilities	560	?	Net Fixed Assets	300	?
Owners' Equity:					
Equity Share Capital	90	?			
Retained Earnings	185	?			
Total Owners' Equity	275	?			
Total Liabilities and Owners Equity	1100	?		1100	?

Other Information:

Forecasted Growth Rate in Sales = 25%

Using "Percentage of Sales" method approach determine the External Financing Needed, assuming that the funds are raised by Equity Share Capital and that the Long-term Debt and Bills Payable remains constant.

Solution:**Income Statement Year Ending**

(₹ in Lakhs)

Particulars	2016		2017
	%	Amount	Amount
Sales [800 + 25% = 1000]	100	400	500
Costs	75	300	375
Taxable Income	0.25	100	125
Taxes	0.002	10.5	13.12
Net Profit After Tax	0.017	89.5	118.8
Dividends	0.006	34.5	13.12
Additional to Retained Earnings	0.009	55	68.75

Balance Sheet as on 31st March

(₹ in Lakhs)

Liabilities and Owners' Equity	2016		2017	Assets	2016		2017
	%	Amt.	Amt.		%	Amt.	Amt.
Current Liabilities:				Current Assets:			
Accounts Payable	35	140	175	Cash	75	300	375
Bills Payable	N/A	125	156.25	Accounts Receivable	62.5	250	312.5
Total Current Liabilities	N/A	265	331.2	Inventory	62.5	250	312.5
Long-term Liabilities:				Total Current Assets	N/A	800	1000
Long-term Debt	N/A	560	700	Fixed Assets:			
Total Long-term Liabilities	N/A	560	700	Net Fixed Assets	75	300	375
Owners' Equity:							
Equity Share Capital	N/A	90	112.5				
Retained Earnings [370 + 137.5]	N/A	185	231.25				
Total Owners' Equity	N/A	275	337.5				
Total Liabilities and Owners Equity	N/A	1100	2375			1100	2375

External financing needed = 522.5 – 80 = ₹ 342.5 lakhs is raised through additional equity share capital.

Illustration 3: The following data is available in respect of Yashwant Rao Company Ltd.

Income Statement year ending

(₹ in Lakhs)

Particulars	2016 Amount	2017 Amount
Sales	1000	?
Costs	400	?
Taxable Income	100	?
Taxes	29	?
Net Profit After Tax	71	?
Dividends	16.5	?
Additional to Retained Earnings	54.5	?

Balance Sheet as on 31st March,

(₹ in Lakhs)

Liabilities and Owners' Equity	2016	2017	Assets	2016	2017
Current Liabilities:			Current Assets:		
Accounts Payable	160	?	Cash	100	?
Bills Payable	125	?	Accounts Receivable	250	?
Total Current Liabilities	280	?	Inventory	250	?
Long-term Liabilities:			Total Current Assets	600	?
Long-term Debt	355	?	Fixed Assets:		
Total Long-term Liabilities	355	?	Net Fixed Assets	350	?
Owners' Equity:					
Equity Share Capital	160	?			
Retained Earnings	150	?			
Total Owners' Equity	310	?			
Total Liabilities and Owners Equity	950	?		950	?

Other Information:

Forecasted Growth Rate in Sales = 30%

Using "Percentage of Sales" method approach determine the External Financing Needed, assuming that the funds are raised by Long-term and that the Equity Share Capital and Bills Payable remains constant.

Solution:

Income Statement Year Ending

(₹ in Lakhs)

Particulars	2016		2017
	%	Amount	Amount
Sales [2000 + 30% = 2600]	100	1500	1200
Costs	40	400	520
Taxable Income	10	100	130
Taxes	2.9	29	37.7
Net Profit After Tax	7.1	71	92.3
Dividends	16.5	165	214.5

Additional to Retained Earnings	5.45	54.5	708.5
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Balance Sheet as on 31st March

(₹ in Lakhs)

Liabilities and Owners' Equity	2016		2017	Assets	2016		2017
	%	Amt.	Amt.		%	Amt.	Amt.
Current Liabilities:				Current Assets:			
Accounts Payable	16	160	416	Cash	10	100	260
Bills Payable	N/A	125	250	Accounts Receivable	25	250	650
Total Current Liabilities	N/A	280	666	Inventory	25	250	650
Long-term Liabilities:				Total Current Assets	N/A	600	1560
Long-term Debt	N/A	355	333.8	Fixed Assets:			
Total Long-term Liabilities	N/A	355	333.8	Net Fixed Assets	35	350	910
Owners' Equity:							
Equity Share Capital	N/A	160	320				
Retained Earnings [300 + 850.2]	N/A	150	1150.2				
Total Owners' Equity	N/A	310	1470.2				
Total Liabilities and Owners' Equity	N/A	950	2470		N/A	1900	2470

External financing needed = 33.8 – 710 = ₹ 376.20 lakhs, hence ₹ 376.20 lakhs of Term Loan is repaid.

Illustration 4: Complete the following income statement of Yash Ltd. For the year ended 31st March, 2015, 31st March 16 and 31st March 17 respectively:

Income Statement of Yash Ltd.

Particulars	31 st March, 2012 ₹	31 st March, 2013 ₹	31 st March, 2014 ₹	31 st March, 2015 ₹	31 st March, 2016 ₹	31 st March, 2017 ₹
Sales	1000	1200	1400	?	?	?
Less: Cost of Sales	600	720	840	?	?	?
Gross Margin	400	480	560	?	?	?
Less: Operating Expenses:						
(A) Management Expenses	60	64	68	?	?	?
(B) Sales Expenses	100	120	140	?	?	?
(C) Finance Expenses	60	60	60	?	?	?
(Interest on Debentures)						
Total Expenses (A + B + C)	220	244	268	?	?	?
Net profit before Depreciation and Tax	180	236	292	?	?	?
Less: Depreciation	100	80	64	?	?	?
Net Profit before Tax	80	156	228	?	?	?
Less: Tax @50%	40	78	114	?	?	?
Net Profit after Tax	40	78	114	?	?	?

Additional Information:

- (a) Percentage of cost of sales (60% of sales) will remain same for the year ended 31st March 2015, 31st March, 2016 and 31st March, 2017.

- (b) Management Expenses to the extent of Rs. 40 are of fixed nature and remaining are variable.
 (c) Sales expenses are 10% of sales.
 (d) 10% Debentures are to be redeemed in 3 annual equal instalments commencing from 1st April, 2014.
 (e) Additional fixed assets will be purchased on 1st April, 2014 amounting to ₹ 144 and rate of depreciation will also remain same i.e. 20% P.A. on W.D.V.

Solution:**Income Statement of Yash Ltd., for the year ended 31st March**

Particulars	2012 ₹	2013 ₹	2014 ₹	2015 ₹	2016 ₹	2017 ₹
Sales	1000	1200	1400	1600	1800	2000
Less: Cost of Sales	600	720	840	960	1080	1200
Gross Margin	400	480	560	640	720	800
Less: Operating Expenses:						
(A) Management Expenses	60	64	68	72	76	80
(B) Sales Expenses	100	120	140	160	180	200
(C) Finance Expenses (Interest on Debentures)	60	60	60	40	20	0
Total Expenses (A + B + C)	220	244	268	272	176	280
Net profit before Depreciation and Tax	180	236	292	368	444	520
Less: Depreciation	100	80	64	80	64	512
Net Profit before Tax	80	156	228	288	380	4688
Less: Tax @50%	40	78	114	144	190	2344
Net Profit after Tax	40	78	114	144	190	2344

Workings:**(1) Management Expenses**

Particulars	2012	2013	2014	2015	2016	2017
Variable	20	24	28	32	36	40
Fixed	40	40	40	40	40	40
Total	60	64	68	72	76	80

(2) Interest on Debentures

	₹
Year Ending 2007: $60 \times \frac{2}{3}$	= 40
Year Ending 2008: $60 \times \frac{1}{3}$	= 20
Year Ending 2009: 60×0	= 0

(3) Fixed Assets: Depreciation @20% p.a. WDV

Fixed Assets	₹
1-4-2011	5000
Less: Depreciation	1000
1-4-2012	4000
Less: Depreciation	800
1-4-2013	3200
Less: Depreciation	640
1-4-2014	2560

Add: Purchased 1-4-2006	1440
1-4-2015	4000
Less: Depreciation	800
1-4-2016	3200
Less: Depreciation	640
1-4-2017	2560
Less: Depreciation	512

Illustration 5: Complete the following Income statement of ABC Ltd. For the year ended 31st March.

Income Statement Yash Ltd.

Particulars	31 st March, 2004 ₹	31 st March, 2005 ₹	31 st March, 2006 ₹	31 st March, 2007 ₹	31 st March, 2008 ₹	31 st March, 2009 ₹
Sales	50000	60000	70000	?	?	?
Less: Cost of Sales	30000	36000	42000	?	?	?
Gross Margin	20000	24000	28000	?	?	?
Less: Operating Expenses:						
(A) Management Expenses	3000	3200	3400	?	?	?
(B) Sales Expenses	5000	6000	7000	?	?	?
(C) Finance Expenses (Interest on Debentures)	3000	3000	3000	?	?	?
Total Expenses (A + B + C)	11000	12200	13400	?	?	?
Net profit before Depreciation and Tax	9000	11800	14600	?	?	?
Less: Depreciation	5000	4000	3200	?	?	?
Net Profit before Tax	4000	7800	11400	?	?	?
Less: Tax @50%	2000	3900	5700	?	?	?
Net Profit after Tax	2000	3900	5700	?	?	?

Additional Information

- Percentage of Gross Margin will remain same for the year ended 31 March 07, 31st March 08 and 31st March 09.
- Variable Management Expenses are 2% of sales.
- Sales expenses are 10% of sales.
- 10% Debentures are to be redeemed in 3 annual equal instalments commencing from 31 Mar. 07.
- Additions to the fixed assets will be made on 1 April 06 amounting to ₹ 12,20,000 and rate of depreciation will remain same i.e. 20% p.a. On W.D.V.

Solution:

Income Statement of ABC Ltd. for the year ended 31st March

Particulars	2012 ₹	2013 ₹	2014 ₹	2015 ₹	2016 ₹	2017 ₹
Sales	50000	60000	70000	80000	90000	100000
Less: Cost of Sales	30000	36000	42000	48000	54000	60000
Gross Margin	20000	24000	28000	32000	36000	40000
Less: Operating Expenses:						
(A) Management Expenses	3000	3200	3400	3600	3800	4000
(B) Sales Expenses	5000	6000	7000	8000	9000	10000

(C) Finance Expenses (Interest on Debentures)	3000	3000	3000	3000	2000	1000
Total Expenses (A + B + C)	11000	12200	13400	14600	14800	15000
Net profit before Depreciation and Tax	9000	11800	14600	17400	21200	25000
Less: Depreciation	5000	4000	3200	5000	4000	3200
Net Profit before Tax	4000	7800	11400	12400	17200	21800
Less: Tax @50%	2000	3900	5700	6200	8600	10900
Net Profit after Tax	2000	3900	5700	6200	8600	10900

Workings:**(1) Management Expense:**

Particulars	2012	2013	2014	2015	2016	2017
Variable	1000	1200	1400	1600	1800	2000
Fixed	2000	2000	2000	2000	2000	2000
Total	3000	3200	3400	3600	3800	4000

(2) Interest on Debentures

		₹
Year Ending 2008:	$3000 \times \frac{2}{3}$	= 2000
Year Ending 2009:	$3000 \times \frac{1}{3}$	= 1000

(3) Fixed Assets: Depreciation @20% p.a. WDV

Fixed Assets	₹
1-4-2003	25000
Less: Depreciation @ 20% WDV	5000
1-4-2004	20000
Less: Depreciation @ 20% WDV	4000
1-4-2005	16000
Less: Depreciation @ 20% WDV	3200
1-4-2006	12800
Add: Addition on 1-04-06	12200
1-4-2006 WDV	25000
Depreciation for 2006-07	5000
Depreciation for 2007-08	4000
Depreciation for 2008-09	3200

Exercise**I. Theory Questions:**

- (a) What are the Financial Statement?
(b) What is the Importance of Financial Statement?
(c) Parties interested in Financial Statements.
- Discuss the utility of financial statements.
- What are the limitations of financial statements?
- What are Financial Statements? Discuss in brief.
- What are importance of financial statements?
- Describe the various uses of the financial statements.

II. Write short notes:

- (a) Reserved and Surplus
- (b) Net worth.
- (c) Capital employed.

Practical Problems

1. The following data is available in respect of Plentrich Company Ltd.

Income Statement Year Ending

(₹ in lakhs)

Particulars	2016	2017
	Amount	Amount
Sales	450	?
Costs	350	?
Taxable Income	100	?
Taxes	44	?
Net Profit After Tax	56	?
Dividends	7.5	?
Addition to Retained Earnings	48.5	?

Balance Sheet as on 31st March

(₹ in lakhs)

Liabilities & Owners' Equity	2016	2017	Assets	2016	2017
Current Liabilities:			Current Assets:		
Accounts Payable	90	?	Cash	150	?
Bills Payable	60	?	Accounts Receivable	200	?
Total Current Liabilities	150	?	Inventory	300	?
Long-term Liabilities			Total Current Assets	650	
Long-term debt	520	?	Fixed Assets:		?
Total Long-term Liabilities	520	?	Net Fixed Assets	350	?
Owners' Equity					
Equity Share Capital	200	?			?
Retained Earnings	130	?			?
Total Owners' Equity	330	?			?
Total Liabilities & Owners' Equity	1000	?	Total Assets	1000	?

Other Information

Forecasted Growth Rate is Sales = 40%

Using "Percentage of Sales" method approach determine the External Financing Needed, assuming that the funds are raised by long-term debt and that the equity share capital and bills payable remains constant.

[Ans.: External Financial Needed = ₹ 592.2 Lakhs long-term debt]

2. The following data is available in respect of Bonanza Company Ltd.

Income Statement Year Ending

(₹ in lakhs)

Particulars	2016	2017
	Amount	Amount
Sales	750	?
Costs	550	?
Taxable Income	200	?
Taxes	17	?
Net Profit After Tax	183	?
Dividends	60.5	?
Addition to Retained Earnings	122.5	?

Balance Sheet as on 31st March

(₹ in lakhs)

Liabilities & Owners' Equity	2016	2017	Assets	2016	2017
Current Liabilities:			Current Assets:		
Accounts Payable	85	?	Cash	150	?
Bills Payable	85	?	Accounts Receivable	50	?
Total Current Liabilities	170	?	Inventory	150	?
Long-term Liabilities			Total Current Assets	350	
Long-term debt	495	?	Fixed Assets:		?
Total Long-term Liabilities	495	?	Net Fixed Assets	550	?
Owners' Equity					
Equity Share Capital	170	?			?
Retained Earnings	85	?			?
Total Owners' Equity	235	?			?
Total Liabilities & Owners' Equity	990	?	Total Assets	990	?

Other Information

Forecasted Growth Rate is Sales = 28%

Using "Percentage of Sales" method approach determine the External Financing Needed, assuming that the funds are raised by long-term debt and that the equity share capital and bills payable remains constant.

[Ans.: External Financial Needed = ₹ 142.8 Lakhs long-term debt]

3. The following data is available in respect of Aakash Company Ltd.

Income Statement Year Ending

(₹ in lakhs)

Particulars	2016	2017
	Amount	Amount
Sales	1050	?
Costs	950	?
Taxable Income	100	?
Taxes	9.5	?
Net Profit After Tax	90.5	?
Dividends	40.5	?
Addition to Retained Earnings	50	?

Balance Sheet as on 31st March

(₹ in lakhs)

Liabilities & Owners' Equity	2016	2017	Assets	2016	2017
Current Liabilities:			Current Assets:		
Accounts Payable	525	?	Cash	200	?
Bills Payable	185	?	Accounts Receivable	250	?
Total Current Liabilities	710	?	Inventory	150	?
Long-term Liabilities			Total Current Assets	600	
Long-term debt	360	?	Fixed Assets:		?
Total Long-term Liabilities	360	?	Net Fixed Assets	900	?
Owners' Equity					
Equity Share Capital	180	?			?
Retained Earnings	250	?			?
Total Owners' Equity	430	?			?
Total Liabilities & Owners' Equity	1500	?	Total Assets	1500	?

Other Information

Forecasted Growth Rate is Sales = 18%

Using "Percentage of Sales" method approach determine the External Financing Needed, assuming that the funds are raised by equity share capital and that the long-term debt and bills payable remains constant.

[Ans.: External Financial Needed = ₹ 233 Lakhs by additional equity share capital]

4. The following data is available in respect of XYZ Company Ltd.

Income Statement Year Ending

(₹ in lakhs)

Particulars	2016	2017
	Amount	Amount
Sales	200	?
Costs	150	?
Taxable Income	50	?
Taxes	21	?
Net Profit After Tax	29	?
Dividends	21	?
Addition to Retained Earnings	08	?

Balance Sheet as on 31st March

(₹ in lakhs)

Liabilities & Owners' Equity	2016	2017	Assets	2016	2017
Current Liabilities:			Current Assets:		
Accounts Payable	100	?	Cash	250	?
Bills Payable	160	?	Accounts Receivable	350	?
Total Current Liabilities	260	?	Inventory	200	?
Long-term Liabilities			Total Current Assets	800	
Long-term debt	395	?	Fixed Assets:		?

Total Long-term Liabilities	395	?	Net Fixed Assets	200	?
Owners' Equity					
Equity Share Capital	155	?			?
Retained Earnings	180	?			?
Total Owners' Equity	345	?			?
Total Liabilities & Owners' Equity	1000	?	Total Assets	1000	?

Other Information

Forecasted Growth Rate is Sales = 18%

Using "Percentage of Sales" method approach determine the External Financing Needed, assuming that the funds are raised by equity share capital and that the long-term debt and bills payable remains constant.

[Ans.: External Financial Needed = ₹ 233 Lakhs by additional equity share capital]

5. The following data is available in respect of Arvind Company Ltd.

Income Statement Year Ending

(₹ in lakhs)

Particulars	2016	2017
	Amount	Amount
Sales	450	?
Costs	300	?
Taxable Income	150	?
Taxes	12	?
Net Profit After Tax	138	?
Dividends	35.5	?
Addition to Retained Earnings	102.5	?

Balance Sheet as on 31st March

(₹ in lakhs)

Liabilities & Owners' Equity	2016	2017	Assets	2016	2017
Current Liabilities:			Current Assets:		
Accounts Payable	150	?	Cash	250	?
Bills Payable	240	?	Accounts Receivable	150	?
Total Current Liabilities	415	?	Inventory	200	?
Long-term Liabilities			Total Current Assets	600	
Long-term debt	345	?	Fixed Assets:		?
Total Long-term Liabilities	345	?	Net Fixed Assets	400	?
Owners' Equity					
Equity Share Capital	160	?			?
Retained Earnings	80	?			?
Total Owners' Equity	240	?			?
Total Liabilities & Owners' Equity	1000	?	Total Assets	1000	?

Other Information

Forecasted Growth Rate in Sales = 20%

Using “Percentage of Sales” method approach determine the External Financing Needed, assuming that the funds are raised by bills payable and that the equity share capital and long-term debt and remains constant.

[Ans.: External Financial Needed = ₹ 84 Lakhs by bills payables]

6. The balance sheet of Ajit & Company on December 31, 2016 shown below:

Liabilities	₹	Assets	₹
Share Capital	75	Fixed Assets	200
Retained Earnings	90	Inventories	100
Term Loans	40	Receivables	75
Short-term Bank Borrowings	100	Cash	25
Account Payable	70		
Provisions	25		
	400		400

The sales of the firm for the year ending on December 31, 2016 were ₹ 1000. Its profit margin on sales was 6% and its dividend payout ratio was 50%. The tax rate was 60%. Deepak Ltd. expects its sales to increase by 30% in the year 2017. The ratio of assets to sales and spontaneous current liabilities to sales would remain unchanged. Likewise the profit margin ratio, the tax rate, and the dividend payout ratio would remain unchanged. Required:

- Estimate the external funds requirement for the year 2017
- Prepare “projected balance sheet” and “projected profit and loss account”, assuming that the external funds requirement would be raised equally from term loans and short-term bank borrowing.

7. Complete the following income statement of Pawan Ltd. for the year ended 31st March 2015, 31st March, 2016 and 31st March 2017 respectively:

Particulars	31-3-12 ₹	31-3-13 ₹	31-3-14 ₹	31-3-15 ₹	31-3-16 ₹	31-3-17 ₹
Sales	2000	2400	2800	?	?	?
Less: Cost of Goods Sold	1200	1440	1680	?	?	?
Gross Margin	800	960	1220	?	?	?
Less: Operating Expenses:						
(i) Administration expenses	120	128	136	?	?	?
(ii) Selling and Distribution Expenses	200	240	280	?	?	?
(iii) Finance Expenses	120	120	120	?	?	?
(Interest on Debentures)						
Total Expenses (I + II + III)	440	488	536	?	?	?
Net Profit before Depreciation & Tax	360	472	584	?	?	?
Less: Depreciation	200	160	128	?	?	?
Net Profit before tax	160	312	456	?	?	?
Less: Tax @ 40%	64	124.8	638.4	?	?	?
Net Profit After Tax	96	187.2	182.4	?	?	?

Additional Information:

- Percentage of cost of Goods sold (60% of sales) will remain same for the year ended 31st March, 2015, 31st March, 2016 and 31st March 2017.
- Administration expenses to the extent of ₹ 80 are of fixed in nature and remaining are variable.

- (c) Selling and distribution expenses are 10% of sales.
 (d) 10% Debentures are to be redeemed in 3 annual equal instalments commencing from 1st April 2014.
 (e) Additional fixed assets will be purchased on 1-4-2014 amounting to ₹ 288 and rate of depreciation will also remain the same i.e. @ 20% p.a. on W.D.V.

8. Complete the following Income Statement of Sita & Geeta Ltd., for the year ended 31st March.

Particulars	31.3.12 ₹	31.3.13 ₹	31.3.14 ₹	31.3.15 ₹	31.3.16 ₹	31.3.17 ₹
Sales	10000	12000	14000	?	?	?
Less: Cost of Sales	6000	7200	8400	?	?	?
Gross Profit Margin	4000	4800	5600	?	?	?
Less: Operating Expenses:						
(a) Management Expenses	600	640	680	?	?	?
(b) Sales Expenses	1000	1200	1400	?	?	?
(c) Finance Expenses (Interest on Debentures)	600	600	600	?	?	?
Total Expenses (A + B + C)	2200	2440	2680	?	?	?
Net Profit before Depreciation & Tax	1800	2360	2920	?	?	?
Less: Depreciation	1000	800	640	?	?	?
Net Profit before tax	800	1560	2280	?	?	?
Less: Tax @50%	400	780	1140	?	?	?
Net Profit after Tax	400	780	1140	?	?	?

Additional Information

- (a) Percentage of Gross Profit Margin will remain same for year ended 31st March 2015, 31st March 2016, 31st March 2017.
 (b) Variable Management expenses are 2% of sales.
 (c) Sales expenses are 10% of sales.
 (d) 10% Debentures are to be redeemed in 3 annual equal instalments commencing from 31st March, 2015.
 (e) Additions to the fixed assets will be made on 1st April 2014 amounting to ₹ 2440 and rate of depreciation will remain the same i.e. 20% p.a. on W.D.V.
9. Complete the following Balance Sheet of Roots Ltd. for the year ended 31st March 2015 31st March 2016 and 31st March 2017 respectively.

Balance Sheet of Roots Ltd.

(₹ in lakhs)

Particulars	31-3-12 ₹	31-3-13 ₹	31-3-14 ₹	31-3-15 ₹	31-3-16 ₹	31-3-17 ₹
(i) Sources of Funds:						
(1) Owned Funds:						
Equity Share Capital	500	500	500	?	?	?
Add: Profit and Loss A/c	20	22	24	?	?	?
Net Worth	520	522	524	?	?	?
(2) Borrowed Funds:						
8% Term Loans	100	90	80	?	?	?
Total Loan Funds	100	90	80	?	?	?

Total Funds Available	620	612	604	?	?	?
(II) Application of Funds:						
(1) Fixed Assets						
At Cost	500	500	500	?	?	?
Less: Accumulated Depreciation	50	100	150	?	?	?
Net Fixed Assets	450	400	350	?	?	?
(2) Investments	30	30	30	?	?	?
(3) Working Capital:						
Current Assets	280	364	448	?	?	?
Less: Current Liabilities	140	182	224	?	?	?
Working Capital	140	182	224	?	?	?
Total Funds Employed	620	612	604	?	?	?

Additional Information

- The company will not issue any equity shares during the year ended 31st March 15, 16 and 17.
 - The company will not add any fixed assets and the rate of depreciation will remain the same i.e., 10% p.a. on SLM.
 - The balance of Profit and Loss A/c of the company will increase at the same percentage as in the previous year during the year ended 31st March 15, 16 and 17.
 - The Company has to repay term loans of ₹ 10 lakhs each year.
 - The Company will not change its investments.
 - The current ratio of the company is 2 : 1 for all the years under consideration.
10. Complete the following Balance Sheet of Yogiraj Ltd. for the year ended 31st March 2007, 31st March, 2008, and 31st March, 2009 respectively.

Balance Sheet of Yogiraj Ltd.

(₹ in lakhs)

Particulars	31-3-12 ₹	31-3-13 ₹	31-3-14 ₹	31-3-15 ₹	31-3-16 ₹	31-3-17 ₹
(i) Sources of Funds:						
(1) Owned Funds:						
Equity Share Capital	50	50	50	?	?	?
Add: Preference share capital	10	10	30	?	?	?
Profit and Loss A/c	12	20	28	?	?	?
	72	80	108	?	?	?
Less: Preliminary Expenses	3	3	2	?	?	?
Net Worth	68	77	105	?	?	?
(2) Borrowed Funds:						
12% Term Loans	90	90	90	?	?	?
Total Loan Funds	90	90	90	?	?	?
Total Funds Available	158	167	195	?	?	?
(II) Application of Funds:						
(1) Fixed Assets	100	80	64	?	?	?
(2) Investments	30	33	36	?	?	?
(3) Working Capital:						
Current Assets	57	108	190	?	?	?

<i>Less:</i> Current Liabilities	28	54	95	?	?	?
Working Capital	28	54	95	?	?	?
Total Funds Employed	158	167	195	?	?	?

Additional Information

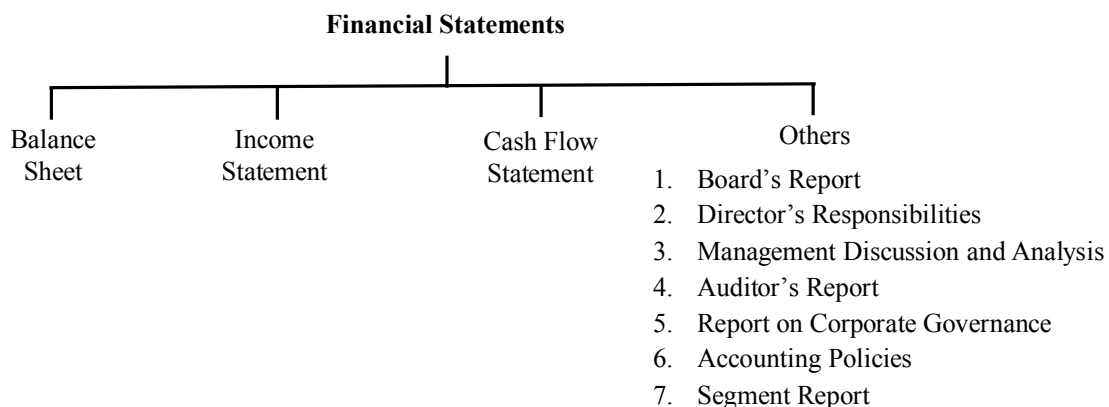
- (a) 12% Redeemable debenture are to be redeemed in 3 annual equal installments commencing from 1st April 2014.
- (b) Preliminary expenses are to be written off every year by ₹ 5 lakhs
- (c) Additional fixed assets will be purchased on 1st April, 2014 amounting to ₹ 36 lakhs and rate of depreciation will also remain the same i.e. 20% p.a. On W.D.V.
- (d) The investments of the company will rise by 10% every year as in its previous.
- (e) The balance of profit and loss A/c has increased by ₹ 8 lakhs every year.
- (f) The company will issue preference share capital of ₹ 20 lakhs each year commencing from 1st April, 2014 for 4 years.
- (g) The current ratio of the company is 2 : 1 for all the years under consideration.
- (h) The company will not issue any additional equity share capital during the year ended 31st March 15, 16, and 17.

3

Tools of Financial Analysis - I

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.



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	4,000	(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. Common 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%

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.

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

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	
<i>Less: Fictitious Assets (Miscellaneous Expenditure not written off)</i>		X	
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	XXX
Patent Rights		X	
Copy Right		X	
Trade Mark		X	
Technical Know-how		X	
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	
<i>Less: Provision for Depreciation</i>		X	X
2. Investments:			
Investment in 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	
<i>Less: (B) Current Liabilities: (Quick Liabilities + Non-quick Liabilities)</i>			
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	
<i>Less: Sales Return and Allowances</i>		X	X
2. Less: Cost of Goods Sold:			
Opening Stock		X	
Add: Purchase (<i>Less</i> 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	

	<i>Add:</i> Reserves and Surplus:			
	General Reserve	2,000		
	Profit and Loss A/c	1,000	3,000	
	<i>Less:</i> Fictitious Assets – Preliminary Expenses		11,000	
2.	Long-term Liabilities:		1,500	9,500
	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		
	<i>Less:</i> 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:		1,00,000	
	Gross block			
	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		
			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		
			4,30,000	
		(A)		
		(B)		
		(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	
	<i>Less:</i> Return and Allowances		20,000	20,00,000
2.	Cost of Goods Sold:			
	Opening Stock	7,00,000		
	<i>Add:</i> Purchases	9,00,000		
	Wages	1,50,000		
	Factory Expenses	3,50,000		
	Depreciation on Plant	30,000	21,30,000	
	<i>Less:</i> 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
	<i>Less:</i> 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		
	(B) Current Liabilities:		2,04,000	
	Creditors	13,000		
	Tax Provision	20,000		
	Proposed Dividend	8,000		
	Quick Liabilities:	41,000		
	Bank Overdraft	19,000		
			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
3	Gross Profit (1 – 2)			26,75,000
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) | (i) Income tax payable |
| (d) Delivery Expenses | (j) Debenture redeemable after seven years |
| (e) Equity Capital | (k) Tsunami relief fund deducted from employee's salary |
| (f) Prepaid insurance | (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

<i>Less: Cost of Goods Sold</i>			
Opening Stock		50,000	
<i>Add: Purchases</i>		2,00,000	
Carriage Inwards		20,000	
Octroi		5,000	
Import Duty		3,000	
<i>Less: Closing Stock</i>		2,78,000	
		40,000	
		2,38,000	
<i>Less: Operating Expenses:</i>			
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
<i>Add: Non-operating Income</i>			
Dividend on Shares Held		25,000	
Profit on Sale of Investment		5,000	30,000
			1,45,000
<i>Less: Non-operating Expenses and Losses:</i>			
Loss on Sale of Asset		30,000	
Loss by Fire		5,000	35,000
Net Profit before Tax			1,10,000
<i>Less: Provision for Tax</i>			30,000
Net Profit after Tax			80,000
<i>Add: Net Profit b/f from P.Y.</i>			60,000
			10,40,000
<i>Less: Transfer to general Reserve</i>		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 Manganon 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		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		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:

- Depreciate machinery by 10% and furniture by 5%.
- Provide final dividend on equity shares at 5% and dividend on preference shares.
- Make provision for Income Tax at ₹25,000.
- Closing stock on 31-03-2014 is ₹1,01,000.
- General expenses include ₹4,000 as selling expenses.
- 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		1,80,000	
	Carriage Inward		13,100	
	Wages		84,800	
	Factory Expenses		9,000	

	Depreciation on Plant and Machinery		36,000	
			3,88,900	
	<i>Less:</i> 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
	<i>Less:</i> Tax			25,000
9	Net Profit after Tax			49,490
	Add: Operating Retained Earnings b/d			14,500
	Profit Available for Appropriation			63,990
	<i>Less:</i> 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	
	<i>Less:</i> 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		
	<i>Less:</i> 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	18,000	1,41,000	
		(B)		
		(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:

- Make a provision for Income Tax of ₹ 2,40,000.
- Provide final dividend ₹ 80,000.
- 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
<i>Less: Administrative Expenses</i>		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
<i>Less: Interest on Overdraft</i>		30,000
Net Profit before Tax		3,20,000
<i>Less: Income Tax</i>		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
<i>Less: Current Liabilities</i>		
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
<i>Less:</i> Cost of Sales		
Opening Stock		3,00,000
<i>Add:</i> Purchases	12,00,000	15,00,000
	12,00,000	18,00,000
<i>Less:</i> Closing Stock	3,00,000	4,00,000
	9,00,000	14,00,000
Gross Profit (a)	11,00,000	16,00,000
<i>Less:</i> Operating Expenses:		
Administration Expenses	2,76,000	3,70,000
Selling Expenses	80,000	1,10,000
	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
<i>Add:</i> 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
	7,00,000	10,00,000
<i>Less: Current Liabilities</i>		
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:

- Stock on 31st March 2009 was valued ₹ 3,00,000.
- Make provision of ₹ 3,00,000 for Income Tax.
- 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
<i>Less:</i> Cost of Good Sold			
Opening Stock		1,20,000	
Purchases		17,00,000	
		18,20,000	
<i>Less:</i> 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
<i>Less:</i> 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
<i>Add:</i> Non-operating Income (Interest)			40,000
			12,60,000
<i>Less:</i> Non-operating Expenses (Loss on Sale of Furniture)			20,000
Net Profit before Tax			12,40,000
<i>Less:</i> Tax Provision			3,00,000
Net Profit after Tax			9,40,000
<i>Add:</i> Opening Balance of Profit & Loss A/c			1,20,000
			10,60,000
<i>Less:</i> 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
	<i>Add:</i> 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			
	13,00,000	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	–	–
	<i>Add:</i> 9% Preference Share Capital	3,00,000	3,00,000	–	–
		7,00,000	7,00,000	–	–
	<i>Add:</i> 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	2,00,000	2,40,000	40,000	20.00
	Factory Plant and Machinery	6,00,000	5,40,000	(60,000)	(10.00)
		8,00,000	7,80,000	(20,000)	(2.50)
2	Working Capital (A – B)				
	(A) Current Assets:				
	Debtors	2,00,000	3,00,000	1,00,000	50.00
	Cash	1,00,000	1,40,000	40,000	40.00
	Quick Assets	3,00,000	4,40,000	1,40,000	46.67
	Stock	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	1,00,000	1,50,000	50,000	50.00
	Creditors	2,00,000	2,75,000	75,000	37.50
	Quick Liabilities:	3,00,000	4,25,000	1,25,000	41.67
		2,00,000	3,15,000	1,15,000	57.50
3	Net Assets Owned (1 + 2)	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
<i>Add:</i> 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
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
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	=	<u>96,000</u>	×	100	=	80,000
		120				
	=	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:	9,00,000	Raw Materials	4,00,000
Raw Materials	1,00,000		
Finished Goods	2,00,000		
To Salaries and Wages	3,92,000		
To Office and Administration Expenses	5,000		
To Audit Fees			
	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
		<u>12,00,000</u>		<u>60.00</u>
	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
		<u>12,00,000</u>		<u>60.00</u>
	Less: Closing Stock of Finished Goods		6,00,000	30.00
3.	Gross Profit (1 - 2)	6,00,000	6,00,000	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)	<u>6,03,000</u>		<u>30.15</u>
	Selling and Distribution Expenses:				
	Selling and Distribution Expenses		1,50,000		7.50
	Bad Assets (Realistic)		8,000		
		(B)	<u>1,58,000</u>		
	Financial Expenses:				
	Interest on Unsecured Loans	(C)	<u>13,500</u>		
		(A + B + C)		<u>7,74,500</u>	<u>38.73</u>
5.	Operating Profits (3 – 4)			<u>6,25,500</u>	<u>31.28</u>
	Non-operating Income:				
	Miscellaneous Receipts			1,20,000	6.00
	Non-operating Expenses:				
	Preliminary Expenses w/off		<u>10,000</u>		<u>0.50</u>
	Net Profit Before Tax (5 + 6 – 7)		<u>7,35,500</u>		<u>36.78</u>
	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		<u>1,85,500</u>		<u>9.275</u>
	Less: Transfer to General Reserve		20,000		
	Interim Dividend		50,000		
	Proposed Dividend		<u>1,10,000</u>		
	Closing Retained Earnings c/d			<u>1,80,000</u>	<u>9.00</u>
				<u>5,500</u>	<u>0.275</u>

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
	<i>Add:</i> 12% Preference Share Capital		1,00,000		7.18
			6,00,000		43.10
	<i>Add:</i> Reserves and Surplus:				
	General Reserve	2,46,000		17.67	
	<i>Less:</i> 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
	<i>Less:</i> 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	
	<i>Less:</i> Depreciation Provision	60,000	4,32,000	4.31	32.18
	Machinery	4,20,000		30.17	
	<i>Less:</i> Depreciation Provision	70,000	3,50,000	5.03	25.14
	Furniture	2,10,000		15.09	
	<i>Less:</i> 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			
	<i>Less:</i> 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
<i>Less:</i> Cost of Goods Sold	?
Gross Profit (25% on Sales)	?
<i>Less:</i> Operating Expenses	?
Operating Net Profit	2,00,000
<i>Add:</i> Non-operating Income	1,00,000
<i>Less:</i> 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
<i>Less:</i> Cost of Goods Sold	12,00,000	75
Gross Profit (25% on Sales)	4,00,000	25
<i>Less:</i> Operating Expenses	2,00,000	12.50
Operating Net Profit	2,00,000	12.50
<i>Add:</i> Non-operating Income	1,00,000	6.25
<i>Less:</i> 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	?
<i>Less:</i> Sales Return	?	10
Net Sales	?	?
<i>Less:</i> Cost of Sales	?	40
Gross Profit	?	?
<i>Less:</i> Operating Expenses		
(a) Administrative Expenses	?	?
(b) Finance Expenses	?	2
(c) Selling and Distribution Expenses	72,000	?
Operating Net Profit	?	?
<i>Add:</i> Non-operating Income	45,000	?
<i>Less:</i> Non-operating Expenses	?	15
Net Profit before Tax	?	30

Solution:**Common Size Income Statement**

Particular	₹	₹
Gross Sales	9,90,000	110
<i>Less:</i> Sales Return	90,000	10
Net Sales	9,00,000	100
<i>Less:</i> Cost of Sales	3,60,000	40
Gross Profit	5,40,000	60
<i>Less:</i> 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
<i>Add:</i> Non-operating Income	45,000	5
<i>Less:</i> 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	1,35,000	1,50,000	1,60,000	100	111.11	118.52
(ii)	3,55,000	4,10,000	4,80,000	100	115.49	135.21
(i + ii)						
(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
<i>Add:</i> 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
<i>Less:</i> Current Liability:						
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
	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
	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

1. Calls-in-arrears
2. Forfeited shares
3. Capital WIP
4. LOOSE TOOLS
5. Loss on sale of machinery
6. Oil wells and mines
7. Bank overdraft
8. Stock

Group B

- (a) Added to share capital
- (b) Fixed asset
- (c) Current asset
- (D) Non-operating expenditure
- (e) Deducted from share capital
- (f) Wasting assets
- (g) Not a quick asset
- (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

1. Vertical analysis
2. Horizontal analysis
3. Increases/decreases
4. % increases/decreases
5. Capital employed = 100
6. Sales = 100
7. Trends analysis
8. Comparative statement

Group B

- (a) Comparative statement
- (b) Method of preparation of comparative
- (c) Method of preparation of comparative
- (d) Basis of common balance sheet
- (e) Common size statement
- (f) Basis of common size income statement
- (g) Earlier year as base year
- (h) Shows comparative performance

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

(F) Group A

1. Land and building
2. Equity share capital
3. Debentures
4. 5% Government securities
5. Loose tools

Group B

- (a) Net worth
- (b) Loan fund
- (c) Investments
- (d) Current asset
- (e) Fixed asset

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

(G) Group A

1. Quick asset
2. Own fund
3. Working capital
4. Applications of fund
5. Trend analysis
6. Horizontal analysis
7. Vertical analysis

Group B

- (a) Share capital + Reserves and Surplus
- (b) Fixed asset + Investment = Net current asset
- (c) Current asset – Stock
- (d) Current asset – Current liability
- (e) Comparative statements
- (f) Common size statements
- (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 is 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 assets are ₹ 3,00,000 and current liabilities are ₹ 1,00,000. There is no investment. Capital employed will be
 (a) ₹ 8,00,000 (b) ₹ 7,00,000
 (c) ₹ 9,00,000 (d) ₹ 6,00,000
10. Natural resources like 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:

- Common size Balance Sheet (in Vertical Form)
- Common Size Income Statements (in Vertical Form)
- Comments in brief
- 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.

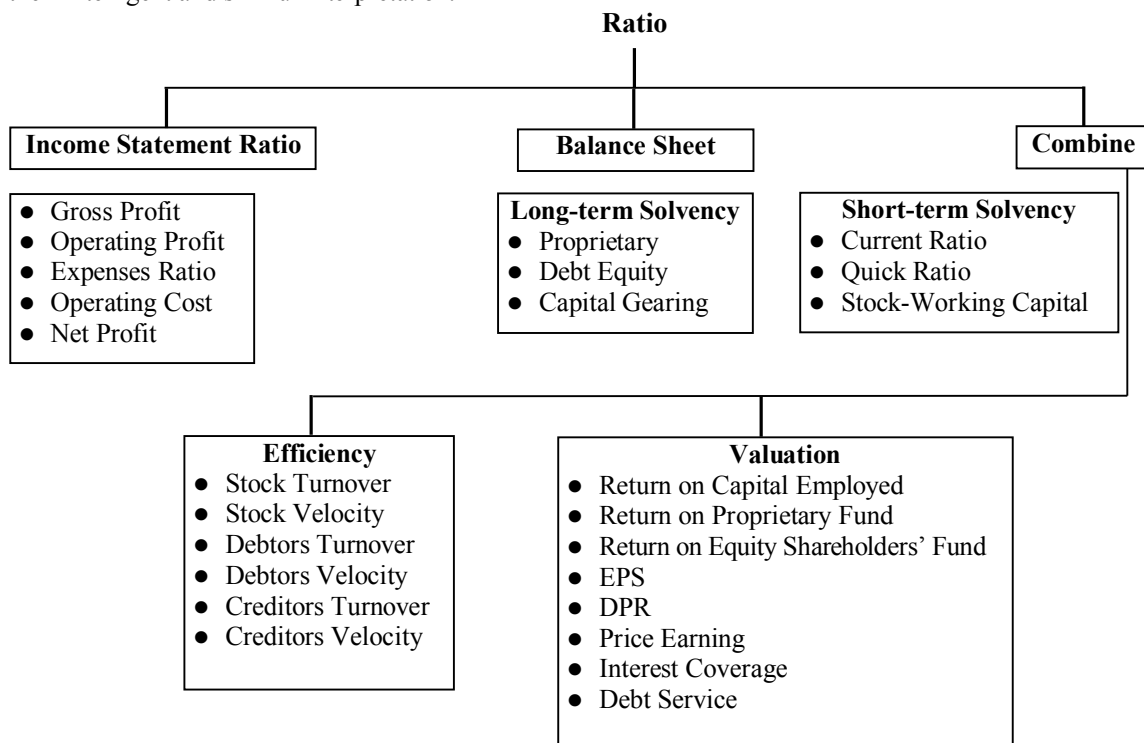
Particulars	₹
Shareholders' Fund	7,15,000
10% Debentures	2,00,000
Current Assets	4,15,000
Current Liabilities	2,00,000
Investments (Long Term)	1,30,000
Fixed Assets	?

4

Tools of Financial Analysis - II

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 ($4 \times 100 = 400\%$).
- 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:

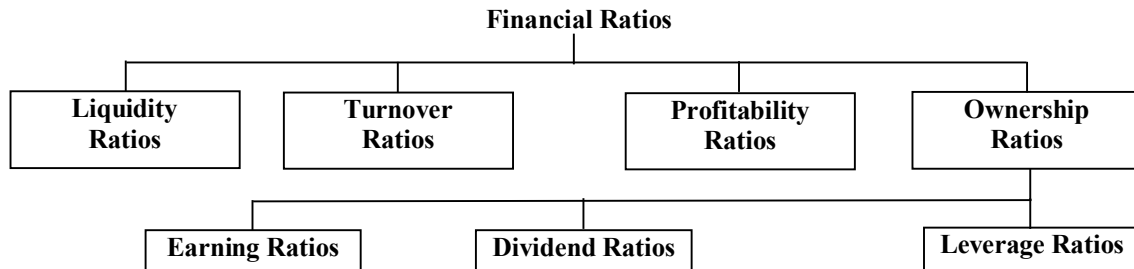
Income Statement for the year ending 31-03-2011

Particulars	₹	₹
Net Sales		
Credit:	7,20,000	
Cash:	4,80,000	12,00,000
<i>Less:</i> Cost of Goods Sold		
Opening Stock	2,00,000	
<i>Add:</i> Purchases	6,00,000	
<i>Less:</i> 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
			<i>Less:</i> 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:

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

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

- 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.

$$\text{Super Quick Ratio} = \frac{\text{Cash and Marketable Securities}}{\text{Current Liabilities}}$$

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.

$$\text{Cash Flow from Operations Ratio} = \frac{\text{Operations from Cash Flow}}{\text{Current Liabilities}}$$

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:

$$\begin{aligned} \text{Net Sales} &= \text{Cash Sales} + \text{Credit Sales} = 2,00,000 + 50,000 = 2,50,000 \\ \text{Gross Profit} &= 25\% \text{ of } 2,50,000 \text{ (Net Sales)} = 62,500 \\ \text{COGS} &= \text{Net Sales} - \text{Gross Profit} = 2,50,000 - 62,500 = 1,87,500 \\ \text{Average Inventory} &= (\text{Opening Stock} + \text{Closing Stock})/2 = (75,000 + 1,00,000)/2 = 87,500 \\ \text{Inventory Turnover Ratio} &= \text{COGS}/\text{Average Inventory} = 1,87,500/87,500 = 2.14 \text{ times} \end{aligned}$$

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:

$$\begin{aligned} \text{Debtors Turnover Ratio} &= \text{Net Credit Sales}/(\text{Debtors} + \text{Bills Receivables}) \\ &= 3,65,000/(50,000 + 2,000) = 7.02 \\ \text{Debtors Velocity} &= \text{No. of Days in a Year}/\text{Debtors Turnover Ratio} \\ \text{Debtors Collection Period} &= 365/7.02 = 52 \text{ days} \end{aligned}$$

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:

$$\begin{aligned} \text{Credit Purchases} &= \text{Total Purchase} - \text{Cash Purchase} - \text{Purchase Return} \\ &= 1,00,000 - 20,000 - 2,000 = ₹ 78,000 \\ \text{Creditors Turnover Ratio} &= \text{Net Credit Purchases}/(\text{Creditors} + \text{Bills Payable}) \\ &= 78,000/(30,000 + 25,000) = 1.42 \\ \text{Creditors Velocity} &= \text{No. of Days in a Year}/\text{Creditors Turnover Ratio} \\ \text{Creditors Collection Period} &= 365/1.42 = 257 \text{ days} \end{aligned}$$

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:

$$\begin{aligned} \text{Debtors Turnover Ratio} &= \text{Net Credit Sales}/(\text{Debtors} + \text{Bills Receivables}) \\ &= 36,50,000/(5,000 + 2,000) = 70.02 \\ \text{Debtors Velocity} &= \text{No. of days in a year}/\text{Debtors turnover ratio (Debtors collection period)} \\ &= 365/70.02 = 5.2 \text{ days} \end{aligned}$$

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:

$$\begin{aligned} \text{Credit Purchases} &= \text{Total Purchase} - \text{Cash Purchase} - \text{Purchase Return} \\ &= 1,00,000 - 20,000 - 2,000 = ₹ 78,000 \\ \text{Creditors Turnover Ratio} &= \frac{\text{Payable Bills Creditors (Purchases + Bills Payable)}}{\text{Period Collection Creditors (No. of Days in a Year)}} \\ &= \frac{78,000}{25,000 + 15,000} = 1.95 \\ \text{Creditors Velocity} &= \text{Period Collection Creditors (No. of Days in a Year)} \\ \text{Creditors Collection Period} &= \frac{365}{1.95} = 187 \text{ days} \end{aligned}$$

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:

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

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

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.

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

$$\text{For KR Ltd., Operating Profit Ratio} = \frac{1,68,000}{12,00,000} \times 100 = 14\%$$

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

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.

$$\text{Operating Ratio} = \frac{\text{Cost of Goods Sold} + \text{Operating Expenses}}{\text{Net Sales}} \times 100$$

$$\text{Cost of Goods Sold} = \text{Opening Stock} + \text{Purchase} - \text{Closing Stock}$$

$$\text{Operating Expenses} = \text{Administrative Expenses} + \text{Financial Expenses} + \text{Selling Expenses}$$

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.

$$\text{Expense Ratio} = \frac{\text{Administrative Expenses or Selling and Distribution Expenses or Financial Expenses}}{\text{Net Sales}} \times 100$$

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.

$$\text{ROCE} = \frac{\text{EBIT}}{\text{Capital employed}} \times 100$$

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.

$$\text{ROEF} = \frac{\text{Net Profit after Tax} - \text{Preference Dividends}}{\text{Shareholders' Equity or Net Worth}} \times 100$$

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:

$$\text{Gross Sales} = \text{Cash Sales} + \text{Credit Sales} = 8,00,000 + 10,00,000 = 18,00,000$$

$$\text{Net Sales} = \text{Gross Sales} - \text{Return Inwards} = 18,00,000 - 20,000 = 17,80,000$$

$$\text{Gross Profit} = \text{Net Sales} - \text{COGS} = 17,80,000 - 15,80,000 = 2,00,000$$

$$1. \text{ Gross Profit Ratio} = \left(\frac{\text{Gross Profit}}{\text{Net Sales}} \right) \times 100 = \left[\frac{2,00,000}{17,80,000} \right] \times 100 = 11.2\%$$

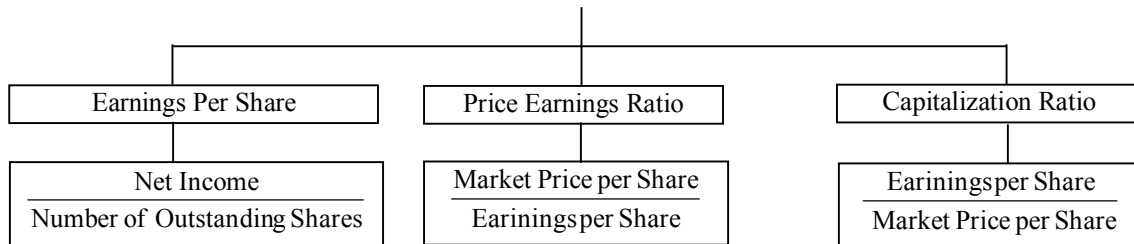
$$2. \text{ Ratio of COGS} = 100 - \text{GP Ratio} = 100 - 11.2 = 88.8\%$$

(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:

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

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

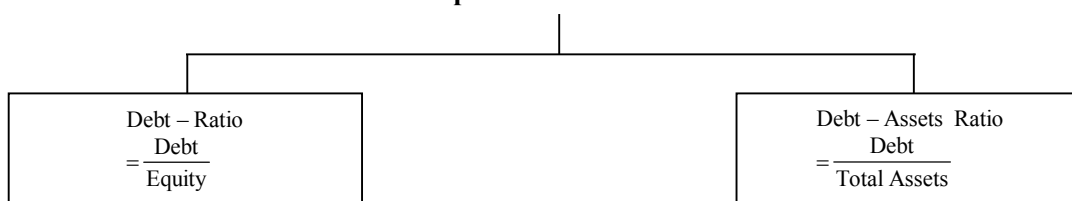
Price-earnings Ratio (P/E Ratio): P/E ratio helps in studying the affect of the earnings of the firm on the market price of the share. It is calculated as:

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

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 Debt-asset ratio Equity-asset/Proprietors' fund ratio	Interest coverage ratios Dividend coverage ratios 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 stand to gain for two reasons: (i) Higher returns, (ii) Limited stake would 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.

$$\text{Proprietary Ratio} = \frac{\text{Fund's Proprietor}}{\text{Assets Total}}$$

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

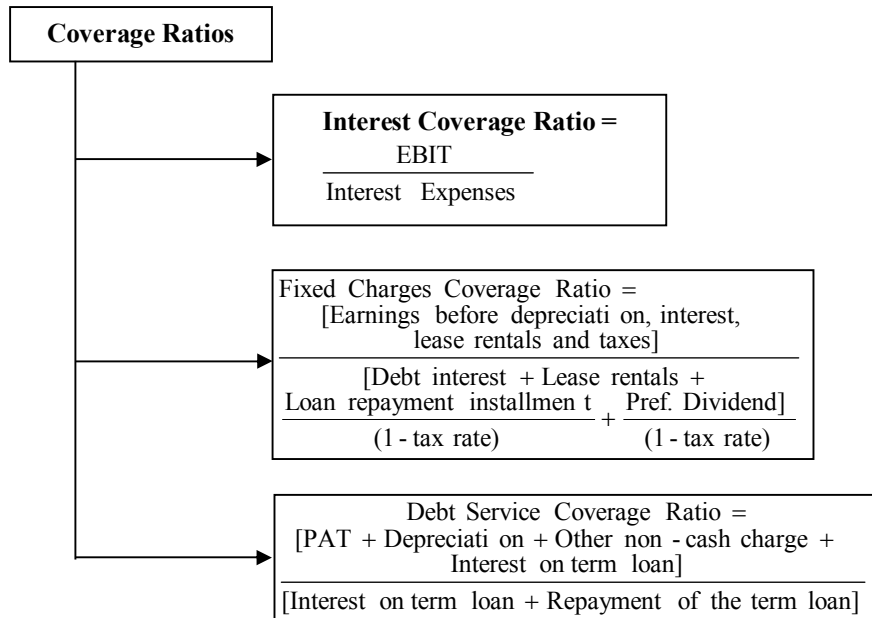
Capital Gearing Ratio: It shows the mix of finance employed in the firm.

$$\text{Capital Gearing Ratio} = \frac{\text{Fixed Income bearing Securities}}{\text{Total Equity}}$$

Important Concepts

$$\text{Equity Capital} = \text{Loan Capital} = \text{Even Gear}$$

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:

$$\text{Fixed Charges Coverage Ratio} =$$

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

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:

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

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.

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

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

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:

- 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
- 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. They 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	$\frac{\text{Quick Assets}}{\text{Quick Liabilities}}$	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/MISCELLANEOUS 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	$\frac{\text{N.P.B.T. + Interest}}{\text{Total Assets (Except Misc. Exp.) (Total Resources)}}$	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	$\frac{\text{Avg. Drs. \& B.R.}}{\text{Net Credit Sales}} \times 365 \text{ D}$	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	$\frac{\text{NPAT} + \text{Dep. and Other Non-cash Expenses} + \text{Int. Interest} + \text{p.a.}}{\text{Interest}}$	> 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	$\frac{\text{Sales / COS}}{\text{Net FA}}$				
25	Capital Turnover Ratio	$\frac{\text{Sales / COS}}{\text{Capital Employed}}$				
26	Working Capital T/O Ratio	$\frac{\text{Sales / COS}}{\text{Working Capital}}$				
27	Assets T/O Ratio	$\frac{\text{Sales Average}}{\text{Assets}}$				
28	Preference Dividend Coverage Ratio	$\frac{\text{NPAT (before)}}{\text{Preference Dividend}} \times \text{Equity Dividend}$				
29	Equity Dividend Coverage Ratio	$\frac{\text{NPAT - Pref. Div.}}{\text{EQ Dividend}}$				
30	Fixed Assets to Shareholders' Fund Ratio	$\frac{\text{Fixed Assets}}{\text{Shareholders Funds}}$				
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	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			
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) $\frac{\text{Cost of Goods Sold}}{\text{Net Sales}} \times 100 = \frac{3,00,000}{5,00,000} \times 100 = 60\%$
- 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 = $\frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{2,00,000}{5,00,000} \times 100 = 40\%$

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

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

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

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

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

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

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

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**

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

2. Net Profit Ratio

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

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

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

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

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

$$\begin{aligned} \text{Operating Cost} &= \text{Cost of Goods Sold} + \text{Operating Expenses} \\ &= 15,00,000 + 2,05,000 = 17,05,000 \end{aligned}$$

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

5. Expenses Ratio

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

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

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

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

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

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

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

Balance Sheet Related Ratios

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

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

$$\text{Quick Assets} = \text{CA} - \text{Stock} - \text{Prepaid Expenses} = 10,00,000 - 6,00,000 - \text{Nil} = 4,00,000$$

$$\text{Quick Liabilities} = \text{CL} - \text{Bank OD} = 7,00,000 - 1,20,000 = 5,80,000$$

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

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

$$\text{TA} = \text{FA} + \text{CA} = 19,00,000 + 10,00,000 = 29,00,000$$

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

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

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities} = 10,00,000 - 7,00,000 = 3,00,000$$

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

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

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

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

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

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

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

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

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

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

$$\text{Total Assets} = \text{Fixed Assets} + \text{Investment} + \text{Current Assets}$$

$$= 19,00,000 + \text{Nil} + 10,00,000 = 29,00,000$$

$$\text{Net Profit before Interest and Tax} = \text{Net Profit After Tax} + \text{Tax} + \text{Interest}$$

$$= 1,44,000 + 1,76,000 + 20,000 = 3,40,000$$

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

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

$$\begin{aligned} \text{Capital Employed} &= \text{Owners' Fund} + \text{Borrowed Fund} \\ &= 20,00,000 + 2,00,000 = 22,00,000 \end{aligned}$$

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

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
<i>Less:</i> Cost of Goods Sold	
Opening Inventory	100
Purchases	205
	305
<i>Less:</i> Closing Inventory	80
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		<i>Less:</i> Provision for Depreciation	25	15
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) $\text{No. of Days} = \frac{\text{Average Accounts Receivable}}{\text{Credit Sales}} \times 365$
 $= \frac{60,000}{3,00,000} \times 365 = 73 \text{ days}$
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) $\text{Stock Working Capital Ratio} = \frac{\text{Closing Stock}}{\text{Working Capital}} \times 100$
 $\text{Working Capital} = \text{C. Assets} - \text{Current Liabilities} = 1,70,000 - 1,00,000 = 70,000$
 $\text{Stock Working Capital Ratio} = \frac{80,000}{70,000} \times 100 = 114.29\%$
5. $\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}}$
 $\text{Quick Assets} = \text{CA} - \text{Stock} - \text{Prepaid Expenses} = 1,70,000 - 80,000 - \text{Nil} = 90,000$
 $\text{Quick Liabilities} = \text{CL} - \text{Bank OD} = 1,00,000 - \text{Nil} = 1,00,000$
 $\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{90,000}{1,00,000} = 0.9 : 1$
6. $\text{Proprietary Ratio} = \frac{\text{Proprietors' Funds}}{\text{Total Assets}} \times 100$

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

$$\begin{aligned}
 1. \text{ Quick Gearing Ratio} &= \frac{\text{Borrowed Funds} + \text{Preference Share Capital}}{\text{Equity Holders' Funds}} \\
 &= \frac{2,15,000 + \text{Nil}}{4,30,000 - \text{Nil}} = 0.50:1
 \end{aligned}$$

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

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

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

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 > ?

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

Sales	10,95,500
(-) GP	<u>3,65,000</u>
COGS	7,30,000

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

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

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

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

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

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

$$6. \text{ Turnover of Debtors}$$

Debtors Turnover Ratio

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

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

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

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) Proprietary Ratio (iv) Return on Total Resources
 (v) Return on Proprietors' Fund (vi) Return on Equity Share Capital.

Solution:

- Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{65,000}{30,000} = 2.17 : 1$
- Quick Ratio = $\frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities} - \text{Bank O/D}} = \frac{35,000}{30,000} = 1.17 : 1$
- Proprietary Ratio = $\frac{\text{Proprietary Funds}}{\text{Total Assets}} \times 100 = \frac{75,000}{1,55,000} \times 100 = 48.39\%$
- 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 Return on Total Assets = $\frac{10,500}{1,55,000} \times 100 = 6.77\%$
- 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 Return on Proprietors' Fund = $\frac{3,750}{75,000} \times 100 = 5\%$
- 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

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) <i>Add:</i> 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	
<i>Add:</i> Stock	2,73,000	
<i>Add:</i> Prepaid Expenses Advance Tax	1,00,000	
Total Current Asset	10,29,000	
(b) <i>Less:</i> 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

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

12% Debentures		3,00,000	
(b) Unsecured Loan			3,00,000
Capital Employed			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	30,000		
Proposed Dividend	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

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

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

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

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

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

$$\text{Total Assets} = \text{Fixed Assets} + \text{Current Assets} = 5,90,000 + \text{Nil} + 7,95,000 = 13,85,000$$

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

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
 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
 = $\frac{24,00,000}{\text{Average Stock}} = 4.8$
 Average Stock = $\frac{24,00,000}{4.8}$
 = 5,00,000
 Average Stock = $\frac{\text{Opening Stock} + \text{Closing Stock}}{2}$
 $5,00,000 = \frac{50,000 + x + x}{2}$
 $10,00,000 = 50,000 + x + x$
 $10,00,000 = 50,000 + 2x$

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. $\frac{\text{General Reserve}}{\text{Net Worth}} = \frac{1}{10}$
 $\text{Net Worth} = 20,000 \times 10 = 2,00,000$
 $\text{Net Worth} = \text{Equity Share Capital} + \text{General Reserve}$
 $\text{Equity Capital} = \text{Net Worth} - \text{General Reserve}$
 $= 2,00,000 - 20,000$
 $= 1,80,000$
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. $\frac{\text{Total Sales}}{\text{General Reserve}} = 32$
 $\text{Total Sales} = 32 \times \text{General Reserve}$
 $= 32 \times 20,000$
 $= 6,40,000$
 $\text{Gross Profit Ratio} = \frac{\text{COGS}}{\text{Closing Stock}}$
 $= \frac{4,80,000}{\text{Closing Stock}}$

$$\begin{aligned}
 &= 8 \\
 \text{Closing Stock} &= \frac{4,80,000}{8} \\
 &= 60,000 \\
 4. \text{ Debtors Turnover} &= \frac{\text{Credit Sales}}{\text{Debtors}} \\
 &= \frac{6,40,000}{80,000} = 8 \\
 5. \frac{\text{Fixed Assets}}{\text{Shareholders' Fund}} &= \frac{6}{10} \\
 \text{Fixed Assets} &= \frac{6}{10} \times \text{Shareholders' Fund} \\
 &= \frac{6}{10} \times 2,00,000 \\
 &= 1,20,000 \\
 6. \text{ Current Assets} &= \text{Stock} + \text{Debtors} + \text{Bank Balance} \\
 \text{Let Current Assets} &= 100 \times \text{Bank Balance} = 30x \text{ and Stock} + \text{Debtors} = 70x \\
 \text{Stock} + \text{Debtors} &= 60,000 + 80,000 \\
 &= 1,40,000 = 70x \\
 x &= 20,000 \\
 30x &= 60,000 = \text{Bank Balance} \\
 7. \frac{\text{Current Assets}}{\text{Current Liabilities}} &= \frac{2}{1} \\
 \text{Current Liabilities} &= \frac{\text{Current Assets}}{2} \\
 &= \frac{2,00,000}{2} \\
 &= 1,00,000
 \end{aligned}$$

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

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

$$\text{Working Capital} = \text{C.A.} - \text{C.L.} = 2.5 \text{ C.L.} - \text{C.L.} = 1.5 \text{ C.L.} = 1,56,000$$

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

$$\text{Quick Liabilities} = \text{C.L.} - \text{Bank Overdraft} = 1,04,000 - 24,000 = ₹ 80,000$$

$$\text{Current Assets} = 2.5 \times \text{C.L.} = 2.5 \times 1,04,000 = ₹ 2,60,000$$

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

$$\text{Closing Stock} = \text{Current Assets} - \text{Quick Assets} = 2,60,000 - 1,20,000 = ₹ 1,40,000$$

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

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

$$\text{Stock Turnover Ratio} = \text{C.O.G.S./Average Stock} = 5$$

$$\text{C.O.G.S} = 5 \times \text{Average Stock} = 5 \times 1,26,000 = ₹ 6,30,000$$

$$\text{Gross Profit Ratio} = 25\%, \text{ C.O.G.S./Sales} \times 100 = 75\%$$

$$\text{Total Sales} = 6,30,000 / 75 \times 100 = ₹ 8,40,000$$

$$\text{Debt Collection Period} = 360 / \text{Credit Sales} \times \text{Debtors} = 45$$

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

$$\text{Current Assets} = \text{Closing Stock} + \text{Debt} + \text{Cash Balance}$$

$$2,60,000 = 1,40,000 + 1,05,000 + \text{Cash Balance} \quad \text{Cash Balance} = ₹ 15,000$$

$$3. \text{ Net Profit Ratio} = 15\% = 8,40,000 \times 15\% \quad \text{Net Profit} = ₹ 1,26,000$$

$$4. \text{ Fixed Assets/Proprietor's Fund} = 0.6 : 1 \quad \text{Proprietor's Fund} = \text{Fixed Assets} \times 0.60$$

$$= 2,34,000 \times 0.60$$

$$= ₹ 3,90,000$$

$$\text{Proprietor's Fund} = \text{Share Capital} + \text{Reserves} + \text{Profit and Loss A/c Balance}$$

$$3,90,000 = 2,00,000 + \text{Reserve} + 1,26,000$$

$$\text{Reserve} = ₹ 64,000$$

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:

- Let Sales = 100x
C.O.G.S. = $\frac{75x}{100}$
G.P. = 25x
- 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
- Debtors Turnover Ratio = $\frac{\text{Total Credit Sales}}{\text{Dr.s}} = 4 \frac{100x}{4} = \text{Debtors}$
Debtors – 25x
- Stock Turnover Ratio = $\frac{\text{C.O.G.S}}{\text{Clo sin g Stock}} = 6 \frac{75x}{6} = \text{Clo sin g Stock}$
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		?
<i>Less: Current Liabilities</i>		
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
<i>Less: Cost of sales:</i>		
Opening Stock	12,000	
Purchases	6,48,000	
<i>Less: Closing Stock</i>	6,60,000	
Gross Profit	1,00,000	5,60,000
<i>Less: Expenses</i>		2,40,000
Net Profit before Tax		40,000
<i>Less: Income Tax Provision</i>		2,00,000
Net Profit after Tax		1,00,000
<i>Add: Opening Balance</i>		10,000
		1,10,000
<i>Less: Appropriation</i>		
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	
<i>Add: Reserves and Surplus</i>		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			
<i>Less: Current Liabilities</i>			
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.

$$\begin{aligned} \text{N.P.} &= 20\% \text{ of ₹ } 5,00,000 \\ &= 1,00,000 \end{aligned}$$

2. Share Capital = 5,00,000 – 2,00,000
= 3,00,000

3. N.P. before Tax = N.P. after Tax + Provision for Tax

$$\begin{aligned} 100 &= 50 + 50 \\ \text{Provision for Tax} &= \text{N.P. after Tax} \\ &= 1,00,000 \end{aligned}$$

$$\begin{aligned} \text{N.P. before Tax} &= 1,00,000 + 1,00,000 \\ &= 2,00,000 \end{aligned}$$

4. G.P. Ratio = 30% of Sales

$$\begin{aligned} \text{Sales} &= 100 \\ \text{G.P.} &= 30 \\ \text{COGS} &= 70 \end{aligned}$$

5. N.P. after Tax Ratio = 12.50%

$$\begin{aligned} \text{N.P. after Tax} &= ₹ 1,00,000 \\ \text{Sales} &= \frac{100}{12.50} \times 1,00,000 \end{aligned}$$

$$\begin{aligned} &= 8,00,000 \\ \text{G.P.} &= 30\% \text{ of Sales} \\ &= 30\% \text{ of } 8,00,000 \\ &= 2,40,000 \end{aligned}$$

$$\begin{aligned} \text{COGS} &= \text{Sales} - \text{GP} \\ &= 8,00,000 - 2,40,000 \\ &= 5,60,000 \end{aligned}$$

6. Creditors Turnover = $\frac{\text{Purchases}}{\text{Creditors}} = 2.5$

$$= \frac{6,48,000}{\text{Creditors}} = 2.5$$

$$\text{Creditors} = \frac{6,48,000}{2.5} = 2,59,200$$

7. Debtors Turnover Ratio = $\frac{\text{Sales}}{\text{Debtors}}$

$$= \frac{8,00,000}{\text{Debtors}} = 2$$

$$\text{Debtors} = \frac{8,00,000}{2}$$

$$\begin{aligned}
 &= 4,00,000 \\
 \text{Stock Turnover} &= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} \\
 &= \frac{5,60,000}{\text{Average Stock}} = 10 \\
 \text{Average Stock} &= \frac{5,60,000}{10} \\
 &= 56,000 \\
 \text{Average Stock} &= \frac{\text{Opening Stock} + \text{Closing Stock}}{2} \\
 56,000 &= \frac{\text{Opening Stock} + 1,00,000}{2} \\
 1,12,000 &= \text{Opening Stock} + 1,00,000 \\
 \text{Opening Stock} &= 1,12,000 - 1,00,000 \\
 &= 12,000 \\
 8. \text{ Purchases} &= \text{Opening Stock} + \text{Purchases} \\
 6,60,000 &= 6,60,000 - 12,000 \\
 &= 6,48,000 \\
 \text{Current Liabilities} &= \text{Creditors} + \text{Provision for Tax} + \text{Provision for Dividend} \\
 &= 2,59,200 + 1,00,000 + 60,000 \\
 &= 4,19,200 \\
 9. \text{ Current Ratio} &= 2 \\
 \text{Current Liabilities} &= 4,19,200 \\
 \text{Current Ratio} &= \frac{\text{Current Assets}}{\text{Current Liabilities}} \\
 &= \frac{\text{Current Assets}}{4,19,200} = 2 \\
 \text{Current Assets} &= 8,38,400 \\
 10. \text{ Other Current Assets} &= \text{Total Current Assets} - \text{Closing Stock} - \text{Debtors} \\
 &= 8,38,400 - 1,00,000 - 4,00,000 \\
 &= 3,38,400 \\
 11. \text{ Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\
 &= 8,38,400 - 4,19,200 \\
 &= 4,19,200 \\
 12. \text{ Total Fund} &= \text{Fixed Assets} + \text{Working Capital} \\
 &= 2,00,000 + 4,19,200 \\
 &= 6,19,200 \\
 13. \text{ Loan Fund} &= \text{Total Fund} - \text{Shareholders' Fund} \\
 &= 6,19,200 - 5,00,000 \\
 &= 1,19,200
 \end{aligned}$$

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 Depreciation	?
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 (1/6th on Cost)		4,40,000
Long-term Loans		9,00,000			22,00,000
Bank Overdraft		50,000	Stock	3	1,50,000
Creditors	4	1,50,000	Debtors		2,00,000
		–	Cash	4	50,000
		26,00,000			26,00,000

Working Note:

- Cost of Goods Sold = Sales – G.P.
 = 15,62,500 – 3,12,500
 = 12,50,000
- Stock Turnover = $\frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = 10 \text{ times}$
 Average Stock = $\frac{12,50,000}{10} = 1,25,000$
- 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
- Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}} = 2$
 Acid Test Ratio = $\frac{\text{Q.A.}}{\text{Q.L.}} = \frac{\text{C.A.} - \text{Stock}}{\text{C.L.} - \text{Bank Overdraft}} = \frac{5}{3}$

$$\frac{C.A. - 1,50,000}{C.L. - 50,000} = \frac{5}{3}$$

$$3(C.A. - 1,50,000) = 5(C.L. - 50,000)$$

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

$$Q.A. = \frac{5}{3} \times 1,50,000$$

$$= 2,50,000$$

$$\text{Cash} = Q.A. - \text{Debtors} = 2,50,000 - 2,00,000 = 50,000$$

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

$$\text{Equity Share Capital} = \frac{15,00,000}{150} \times \frac{100}{1} = 10,00,000$$

$$\begin{aligned} R \& S &= \text{Equity} - \text{Equity Capital} \\ &= 15,00,000 - 10,00,000 \\ &= 5,00,000 \end{aligned}$$

$$\begin{aligned} \text{Total Liabilities} &= \text{Equity} + \text{Loan} + \text{Bank OD} + \text{Creditors} \\ &= 15,00,000 + 9,00,000 + 50,000 + 1,50,000 \\ &= 26,00,000 \end{aligned}$$

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 (Shares of ₹ 10 each)		6,00,000	Land		3,60,000
Reserves and Surplus:			Plant & Machinery:		
Balance on 1-4-2008	1,80,000		Cost	9,00,000	
Add: Transfer during the year	1,20,000	3,00,000	Less: Depreciation	3,60,000	5,40,000
10% Loan		6,00,000	Current Assets:		
Current Liabilities:			Stock	?	
Proposed Dividend	?		Debtors	?	
Provision for Tax	?		Cash and Bank	?	?
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 (60,000 Equity Shares of ₹ 10 each)		6,00,000	Land		3,60,000
Reserves and Surplus:			Plant & Machinery		
Balance on 1-4-2008	1,80,000		Cost	9,00,000	
Add: Transfer during the year	1,20,000	3,00,000	Less: Depreciation	3,60,000	5,40,000
10% Loan		6,00,000	Current Assets:		
Current Liabilities:			Stock (WN 5)	3,60,000	
Proposed Dividend (WN 7)	1,20,000		Debtors (WN 5)	4,80,000	
Provision for Tax (WN 8)	1,20,000		Cash & Bank (WN 2)	3,60,000	
Creditors (WN 6)	3,60,000	6,00,000	Total (WN 1)		12,00,000
		21,00,000			–
					21,00,000

Working Note:

$$\begin{aligned}
 1. \text{ Current Ratio} &= \frac{\text{Current Assets}}{\text{Current Liabilities}} \\
 &= \frac{2}{1} = \frac{\text{Current Assets}}{6,00,000} \\
 \therefore \text{Current Assets} &= 6,00,000 \times 2 = 12,00,000 \\
 2. \text{ Cash/Bank} &= 30\% \text{ Total Current Assets} \\
 &= 30\% 12,00,000 \\
 \text{Cash/Bank} &= 3,60,000 \\
 3. \text{ Gross Profit Ratio on Sales} &= 25\% \text{ on Sales} = 25x \\
 \therefore \text{Cost of Goods Sold} &= \text{Sales} - \text{Gross Profit} \\
 &= 100x - 25x \\
 \therefore \text{Cost of Goods Sold} &= 75x
 \end{aligned}$$

$$\begin{aligned}
4. \text{ Stock Turnover} &= \frac{\text{Cost of Goods Sold}}{\text{Stock}} \\
12 &= \frac{75x}{\text{Stock}} \\
\therefore \text{Stock} &= \frac{75x}{12} \\
5. \text{ Debtors Turnover} &= \frac{\text{Sales}}{\text{Debtors}} \text{ (Let Sales = 100x)} \\
12 &= \frac{100x}{\text{Debtors}} \\
\therefore \text{Debtors} &= \frac{100x}{12} = \text{Stock} = \frac{75x}{12} \\
\therefore \text{Debtors} &= 100x \\
\text{Stock} &= 75x \\
\text{But, Debtors + Stock + Cash} &= \text{Current Assets} \\
\text{Debtors + Stock + 3,60,000} &= 12,00,000 \\
\therefore \text{Debtors + Stock} &= 12,00,000 - 3,60,000 \\
100x + 75x &= 8,40,000 \\
175x &= 8,40,000 \\
x &= \frac{8,40,000}{175} = 4,800 \\
\therefore \text{Debtors} = 100x &= 100 \times 4,800 = ₹ 4,80,000 \\
\text{Stock} = 75x &= 75 \times 4,800 = ₹ 3,60,000 \\
6. \text{ Creditors Turnover} &= \frac{\text{Cost of Goods Sold}}{\text{Creditors}} \\
12 &= \frac{75x}{\text{Creditors}} \\
\therefore \text{Creditors} &= \frac{75x}{12} = \text{Stock (See 4th working)} \\
\therefore \text{Creditors} &= \text{Stock} \\
\therefore \text{Creditors} &= 3,60,000 \\
7. \text{ Proposed Dividend} &= 20\% \text{ (Share Capital)} \\
&= 20\% (6,00,000) = ₹ 1,20,000 \\
8. \text{ Provision for Tax} &= \text{Current Liabilities} - \text{Creditors} - \text{Proposed Dividend} \\
&= 6,00,000 - 3,60,000 - 1,20,000 \\
&= ₹ 1,20,000
\end{aligned}$$

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

$$(a) \text{ Average Stock of Finished Good} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{30,000 + 20,000}{2}$$

$$= \frac{50,000}{2} = 25,000$$

$$\text{Inventory Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}} = \frac{2,68,000}{25,000} = 10.7 \text{ times}$$

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

- $\frac{\text{Fixed assets}}{\text{Capital}} = \frac{5}{4} \therefore \frac{5,00,000}{\text{Capital}} = \frac{5}{4} \therefore \text{Capital} = \frac{5,00,000 \times 4}{5} = 4,00,000$
- $\frac{\text{Fixed assets}}{\text{Current assets}} = \frac{5}{7} \therefore \frac{5,00,000}{\text{Current assets}} = \frac{5}{7} \therefore \text{Current assets} = \frac{5,00,000 \times 7}{5} = 7,00,000$

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 = $\frac{\text{Credit Sales}}{\text{Average Accounts Receivable}}$

$$\begin{aligned} \text{Average Accounts Receivable} &= \frac{\text{Opening Debtors} + \text{Closing Debtors}}{2} = \frac{50,000 + 70,000}{2} \\ &= \frac{1,20,000}{2} = 60,000 \end{aligned}$$

$$\text{No. of times} = \frac{3,60,000}{60,000} = 6 \text{ times}$$

(b) 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 = $2,40,000 \div 6 = 40,000$
 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 = $2,00,000 \times 6 = 12,00,000$
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
<i>Less:</i> Cost of Goods Sold:		
Raw Material Consumed	10,00	
Wages	15,00	
Production Expenses	2,50	27,50
		12,50
<i>Less:</i> 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
<i>Less:</i> 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

$$(i) \text{ Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{12,50,000}{40,00,000} \times 100 = 31.25\%$$

(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

$$= \frac{4,70,000}{40,00,000} \times 100 = 11.75\%$$

$$= \frac{2,70,000}{40,00,000} \times 100 = 6.75\%$$

$$(iii) \text{ Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

Operating Profit = Gross Profit – Operating Expenses = 12,50,000 – 7,50,000 = 5,00,000

$$\text{Operating Profit Ratio} = \frac{5,00,000}{40,00,000} \times 100 = 12.5\%$$

(b)

$$(i) \text{ Return on Capital Employed} = \frac{\text{Net Profit before Interest Tax}}{\text{Capital Employed}} \times 100$$

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:	

Debtures	2,00,000
Add: Term Loan + Cash Credit	50,000
	11,80,000

$$\text{Return on Capital Employed} = \frac{8,70,000}{11,80,000} \times 100 = 73.73\%$$

$$\begin{aligned} \text{(ii) Earnings Per Share} &= \frac{\text{Net Profit after Tax} - \text{Preference Dividend}}{\text{No. of Equity Shares}} \\ &= \frac{2,70,000 - 10,000}{8,000} = ₹ 32.5 \text{ per share} \end{aligned}$$

(iii) Yield (Dividend and Earning)

$$\text{(a) Dividend Yield Ratio} = \frac{\text{Dividend per Share}}{\text{Marketing Price per Share}} \times 100 = \frac{20}{150} = 13.33\%$$

$$\begin{aligned} \text{(iv) Dividend Payout Ratio} &= \frac{\text{Equity Dividend} + \text{Preference Dividend}}{\text{Profit after Tax}} \times 100 \\ &= \frac{1,60,000 + 10,000}{2,70,000} \times 100 = 62.9\% \end{aligned}$$

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.

$$\text{(i) Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 = \frac{1,60,000}{4,80,000} \times 100 = 33.33\%$$

$$(ii) \text{ Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{72,000}{56,000} = 1.28 : 1$$

$$(iii) \text{ Liquidity Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = \frac{48,000}{46,000} = 1.04 : 1$$

$$\begin{aligned} \text{Quick Liabilities} &= \text{Current Liabilities} - \text{Bank OD} \\ &= 56,000 - 10,000 = 46,000 \end{aligned}$$

$$(iv) \text{ Return on Capital Employed} = \frac{\text{Net Profit before Interest and Tax}}{\text{Capital Employed}} \times 100$$

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

$$\therefore \text{Return on Capital Employed} = \frac{59,520}{1,74,000} \times 100 = 34.21\%$$

Capital Employed = Total Assets – Current Liabilities

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

$$\begin{aligned} \text{Note: Cost of Goods Sold} &= \text{Net Sales} - \text{Gross Profit} \\ &= 4,80,000 - 1,60,000 = 3,20,000 \end{aligned}$$

$$\text{Average Stock} = \frac{\text{Operating Stock} + \text{Closing Stock}}{2} = \frac{40,000 + 24,000}{2} = \frac{64,000}{2} = 32,000$$

$$\therefore \text{Stock Turnover Ratio} = \frac{3,20,000}{32,000} = 10 \text{ times}$$

Debtors Turnover Ratio

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

$$\text{No. of Days} = \frac{\text{Average Accounts Receivable}}{\text{Credit Sales}} \times 100$$

Credit Sales = ₹ 3,60,000 (given)

$$\begin{aligned} \text{Average Accounts Receivable} &= \frac{\text{Operating [Debtors + B/R]} + \text{Closing Debtors [Debtors + B/R]}}{2} \\ &= 28,000 \text{ (since only closing debtors given)} \end{aligned}$$

Debtors Ratio

$$(a) \text{ No. of Times} = \frac{3,60,000}{28,000} = 12.86 \text{ times}$$

$$(b) \text{ No. of Days} = \frac{28,000}{3,60,000} \times 360 = 28 \text{ days approx.}$$

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 Dividend	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	
<i>Add:</i> Reserves and Surplus		1,90,000	5,90,000		2,07,500	6,07,500
(B) Loan Funds			—			2,00,000
TOTAL SOURCES			5,90,000			8,07,500
(A) Fixed Assets:						
Gross Block						
<i>Less:</i> 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	
<i>Less:</i> 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		
$= \frac{\text{Cost of Goods Sold} + \text{Operating Expenses}}{\text{Sales}} \times 100$	$= \frac{8,80,000 + 1,90,000}{12,00,000} \times 100$	$= \frac{10,00,000 + 3,45,000}{15,00,000} \times 100$
	= 89.17%	= 89.67%
2. Debtors Turnover Ratio		
$= \frac{\text{Credit Sales}}{\text{Debtor} + \text{Bills Receivable}}$	$= \frac{12,00,000}{2,00,000} \times 100$	$= \frac{15,00,000}{2,95,000} \times 100$
	= 6 times	= 5 times
In the Second Year, Average Debtors may be taken.		
3. Stock Turnover Ratio		
$= \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$		
$= \text{Average Stock} = \frac{\text{Op. Stock} + \text{Cl. Stock}}{2}$	$= \frac{1,80,000 + 2,00,000}{2}$	$= \frac{2,00,000 + 4,00,000}{2}$
	= 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
<i>Less:</i> 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	30,00,000
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. Proprietary 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 = $\frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$ Average Stock = $\frac{\text{Op. Stock} + \text{Cl. Stock}}{2}$	= $\frac{22,00,000}{95,000} = 23.16 \text{ times}$ = $\frac{90,000 + 1,00,000}{2} = 95,000$	= $\frac{29,00,000}{1,10,000} = 26.3 \text{ times}$ = $\frac{1,00,000 + 1,20,000}{2} = 1,10,000$
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
	<u>25,50,000</u>

$$1. \text{ Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{16,00,000}{7,00,000} = 8.28 : 1$$

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

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2} = \frac{5,50,000 + 7,50,000}{2} = \frac{13,00,000}{2} = 6,50,000$$

$$\text{Stock Turnover Ratio} = \frac{28,80,000}{6,50,000} = 4.43 \text{ times}$$

$$3. \text{ Debtors' Ratio} = \frac{\text{Debtors} + \text{Bills Rec.}}{\text{Credit Sales}} \times 360 = \frac{6,00,000}{43,20,000} \times 360 = 49.99 = 50 \text{ days}$$

$$4. \text{ Debt - equity Ratio} = \frac{\text{Loan Funds}}{\text{Shareholders' Fund}} = \frac{6,00,000}{28,50,000} = 0.21 : 1$$

$$5. \text{ Proprietary Ratio} = \frac{\text{Shareholders' Funds}}{\text{Total Assets}} \times 100 = \frac{28,50,000}{41,50,000} \times 100 = 68.67\%$$

$$6. \text{ Net Profit Ratio} = \frac{\text{Net Profit after Tax}}{\text{Sales}} \times 100 = \frac{5,70,000}{48,00,000} \times 100 = 11.87\%$$

$$7. \text{ Rate of Return of Proprietor's Funds} = \frac{\text{Net Profit after Tax}}{\text{Shareholders' Fund}} \times 100 = \frac{5,70,000}{28,50,000} \times 100 = 20\%$$

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. Debt-equity Ratio	40%	21%
5. Proprietary 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 its 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

- Proprietary Ratio
- Capital Gearing Ratio
- Gross Profit Ratio
- Operating Ratio
- Return on Total Resources Ratio
- Return on Proprietors' Equity Ratio
- Expenses Ratio
- Net Profit Ratio.

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

Solution:

$$(i) \text{ Proprietary Ratio} = \frac{\text{Shareholders' Funds}}{\text{Total Assets}} \times 100$$

$$= \frac{\text{Equity Share Capital} + \text{Preference Capital} + \text{R \& S} - \text{ME}}{\text{FA} + \text{CA}} \times 100$$

$$\text{For 'X' Ltd.} = \frac{88,000 + 42,900 - \text{Nil}}{1,21,000 + 1,25,400} \times 100 = \frac{1,30,900}{2,46,400} \times 100 = 53.13\%$$

$$\text{For 'Y' Ltd.} = \frac{88,000 + 35,200 - \text{Nil}}{96,800 + 1,03,400} \times 100 = \frac{1,23,200}{2,00,200} \times 100 = 61.54\%$$

$$(ii) \text{ Capital Gearing Ratio} = \frac{\text{Long - term Borrowing} + \text{Preference Capital}}{\text{Shareholders' Fund}}$$

$$\text{For 'X' Ltd.} = \frac{22,000}{1,30,900} = 0.17 : 1$$

$$\text{For 'Y' Ltd.} = \frac{22,000}{1,23,200} = 0.18 : 1$$

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

$$\text{For 'X' Ltd.} = \frac{92,400}{3,30,900} \times 100 = 28\%$$

$$\text{For 'Y' Ltd.} = \frac{66,000}{2,64,000} \times 100 = 25\%$$

$$(iv) \text{ Operating Ratio} = \frac{\text{COGS} + \text{Other Operating Expenses}}{\text{Sales}} \times 100$$

$$\text{For 'X' Ltd.} = \frac{2,37,600 + 63,800}{3,30,000} \times 100 = \frac{3,01,400}{3,30,000} \times 100 = 91.33\%$$

$$\text{For 'Y' Ltd.} = \frac{1,98,000 + 44,000}{2,64,000} \times 100 = \frac{2,42,000}{2,64,000} \times 100 = 91.67\%$$

$$(v) \text{ Return on Total Resources Ratio} = \frac{\text{Net Profit before Tax and Interest}}{\text{Total Assets}} \times 100$$

$$\text{For 'X' Ltd.} = \frac{28,600 + 1,760}{2,46,400} \times 100 = \frac{30,360}{2,46,400} \times 100 = 12.32\%$$

$$\text{For 'Y' Ltd.} = \frac{22,000 + 1,760}{2,00,200} \times 100 = \frac{23,760}{2,00,200} \times 100 = 11.87\%$$

$$(vi) \text{ Return on Prop. Equity Ratio} = \frac{\text{Net Profit after Tax} - \text{Pref. Share Dividend}}{\text{Equity Share Capital} + \text{Reserves and Surplus}} \times 100$$

$$\text{For 'X' Ltd.} = \frac{16,500 - \text{Nil}}{1,23,200} \times 100 = 12.61\%$$

$$\text{For 'Y' Ltd.} = \frac{12,760 - \text{Nil}}{1,23,200} \times 100 = 10.36\%$$

$$(vii) \text{ Expenses Ratio} = \frac{\text{Operating Expenses}}{\text{Sales}} \times 100$$

$$\text{For 'X' Ltd.} = \frac{63,800}{3,30,000} \times 100 = 19.33\%$$

$$\text{For 'Y' Ltd.} = \frac{44,000}{2,64,000} \times 100 = 16.67\%$$

$$(viii) (a) \text{ Net Profit Ratio} = \frac{\text{Net Profit before Tax}}{\text{Sales}} \times 100$$

$$\text{For 'X' Ltd.} = \frac{28,600}{3,30,000} \times 100 = 8.67\%$$

$$\text{For 'Y' Ltd.} = \frac{22,000}{2,64,000} \times 100 = 8.33\%$$

$$(b) \frac{\text{Net Profit after Tax}}{\text{Sales}} \times 100$$

$$\text{For 'X' Ltd.} = \frac{16,500}{3,30,000} \times 100 = 5\%$$

$$\text{For 'Y' Ltd.} = \frac{13,760}{2,64,000} \times 100 = 4.83\%$$

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:

$$\text{A. Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{2,00,000}{1,25,000} = 1.6 : 1$$

$$\begin{aligned} \text{Working Capital} &= \text{Current Assets} - \text{Current Liabilities} \\ &= 2,00,000 - 1,25,000 = ₹ 75,000 \end{aligned}$$

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 = ₹ 2,25,000

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

$$\text{Stock} = 75,000 - 25,000 = ₹ 50,000$$

It increase the debtors by ₹ 35,000 as Sale is for ₹ 35,000

$$\text{Debtors} = 1,25,000 + 35,000 = ₹ 1,60,000$$

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.

$$\text{Current Assets} = 2,00,000 + 15,000 = ₹ 2,15,000$$

It also increases the Bank Overdraft by ₹ 15,000

$$\text{Current Liabilities} = 1,25,000 + 15,000 = ₹ 1,40,000$$

$$\text{Revised Current Ratio} = \frac{2,15,000}{1,40,000} = 1.54 : 1$$

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 = _____ \times 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

1. Ratio
2. Current ratio
3. Liquid ratio
4. Stock to working capital ratio
5. Proprietary ratio
6. Debt-equity ratio
7. Capital gearing ratio
8. Gross profit ratio
9. Expenses ratio
10. Operating ratio
11. Net profit ratio
12. Net operating profit ratio

Group B

- (a) Short-term position
- (b) Liquidity position
- (c) Investment of stock in working capital
- (d) Long-term financial position
- (e) Dependence on debt and equity
- (f) Gearing of capital structure
- (g) Trading efficiency
- (h) % of expenses to sales
- (i) Operating efficiency
- (j) Profitability position
- (k) Operating profitability
- (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

1. Return on capital employed
2. Return on proprietor's fund
3. Return on equity capital
4. Dividend payout
5. Debt service ratio
6. Debtors turnover

Group B

- (a) Utilisation of proprietors' fund
- (b) Utilisation of equity capital
- (c) Dividend paying ability
- (d) Overall profitability
- (e) Debt service ability
- (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

1. Liquid ratio
2. Debt equity ratio
3. Operating ratio
4. Stock to working capital ratio
5. Net profit ratio
6. Dividend payout
7. Return on equity capital
8. Return on capital employed
9. Return on proprietor's fund

Group B

- (a) $\text{Liquid assets} \div \text{Current liabilities}$
- (b) $\text{Operating cost} \div \text{Sales}$
- (c) $\text{Stock} \div \text{Working capital}$
- (d) $\text{Long-term Debt} \div \text{Equity}$
- (e) $\text{Dividend per share} \div \text{EPS}$
- (f) $\text{NP} \div \text{Capital employed}$
- (g) $\text{NP} \div \text{Proprietors' fund}$
- (h) $\text{NP} \div \text{Equity capital}$
- (i) $\text{NP} \div \text{Sales}$

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) Proprietary 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
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:

- 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.
 - 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:

- 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:

- Sales ₹ 40,00,000 cost of goods sold was 92.5% of sales.
- 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.
- Non-operating income was 2.5 times the amount of non-operating expenses, total non-operating expenses were ₹ 20,000 incurred during the year.
- Income tax provision ₹ 40,000 transferred to general reserve ₹ 40,000.
- Contingent liabilities on 31st March, 2001 was ₹ 1,50,000 not provided for.
- Closing Stock on 31st March, 2001 was more than opening stock by ₹ 10,000.
- 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) Proprietary 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
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 form and compute the following ratios:
(a) Current Ratio, (b) Proprietary 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
	6,62,000	Preliminary Expenses	15,000
			6,62,000

Rearrange the above in a vertical form 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) Proprietary 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) Proprietary 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 (g) Trade mark
 (b) Accounts payable (h) Short-term investment
 (c) Bills payable (90 days) (i) Income tax payable
 (d) Delivery expenses (j) Debenture redeemable after seven years
 (e) Equity capital (k) Tsunami relief fund deducted from employee's salary
 (f) Prepaid insurance (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) Proprietary 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. ₹	Y 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.	Y 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 Proprietary 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) Proprietary 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	15,00,000
Reserve and Surplus	4,00,000	Goodwill		2,80,000
Long-term Loan	1,00,000	Stock		3,00,000
Debentures	6,00,000	Debtors		2,00,000
Creditors	1,20,000	Prepaid Expenses		50,000
Bills Payable	40,000	Marketable Securities		1,50,000
Accrued Expenses	40,000	Cash		50,000
Provision for Tax	1,30,000			
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)

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 Capital	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:

- Current Ratio
- Acid Test Ratio
- Stock Turnover Ratio
- Capital Gearing Ratio
- Proprietary Ratio
- Debt-equity Ratio (Debt/Net Worth)
- Return on Capital Employed

Redrafting the given Balance Sheet in vertical format is not expected.

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



5

Cash, Capital and Flexible Budget

Budgeting Cash

The next step in the budgeting process is to prepare cash budget. Managers must be concerned with the amount of cash that flows in and out of the firm, as well as the amount that happens to be on hand at any particular time. If the firm has less cash than enough to keep the creditors satisfied it may have to face a suit filed by the creditors. On the other hand, if the firm has excess cash on hand, the firm would earn no income on it. So, the cash manager must have neither too little nor too much.

The first step, then, in preparing cash budget is to establish the desired amount to have on hand, i.e., which will be enough to meet any emergencies. The second step requires the manager to identify all the sources from which cash flows into the firm, like revenues from sales, borrowings, etc. He must also estimate the timing of the cash inflow. The third step is to identify the applications or uses of cash, such as payment for purchases, utility bills, salaries, etc. Even here he has to estimate the timing of the flow. Finally, these predictions are brought together in the cash budget, and the results are analyzed. If there will be excess funds on hand, then plans should be made to find profitable temporary investments to occupy them and if shortages are predicted the manager should plan for short-term loans.

Table 4.1 presents a typical cash budget.

Table 4.1: ABC Company Cash Budget for the year ended

	Amount (₹)	Amount (₹)
Beginning cash balance		2,00,000
<i>Add:</i> Receipts:		
Cash Sales (50% of current year's sales)	35,25,000	
Receivables Collections (50% of previous year's sales)	32,50,000	
Investment income	0	67,75,000
Total cash available for use		69,75,000
<i>Less:</i> Expenditures:		
Cash Purchases	12,72,500	
Labor and Factory Overheads	33,00,000	
Administrative and Selling Expenses	14,00,000	
Total cash to be used		59,72,500
Net cash available		10,02,500

Budgeted Financial Statements

After plans have been made for the firm's cash, revenues, costs and asset acquisitions, it is possible to prepare budgeted financial statements. These statements will be identical to ordinary ones except that they will show the expected results of the operations for the forthcoming year and expected financial position as on that particular future date.

Tables 4.2 and 4.3 shows the Budgeted Income Statement of ABC Co. Ltd. and a typical balance sheet respectively. These statements along with cash budget represents the Master Budget which is presented to the board of directors by the budget committee.

**Table 4.2: ABC Company Ltd.
Budgeted Income Statement for the year ended December 31, 2001**

	Amount (₹)	Amount (₹)
Sales (Table 8.1)		70,50,000
Cost of goods sold (Table 8.8)		52,10,000
Gross Margins		18,40,000
Selling Expenses (Table 8.10)	6,00,000	
Administrative Expenses (Table 8.9)	8,00,000	14,00,000
Income before taxes		4,40,000
Income taxes (assuming 40%)		1,76,000
Net income		2,64,000

**Table 4.3: ABC Company Ltd.
Budgeted Balance Sheet as on December 31, 2001**

Capital and Liabilities		Amount (₹)	Assets		Amount (₹)
Equity Capital		60,00,000	Fixed Assets:	25,00,000	
Reserves and Surplus	7,00,000		Less: Depreciation @ 26%		
			Investments	6,50,000	18,50,000
Add: Budgeted Net Income	2,64,000	9,64,000			
Long-term Loans		10,00,000	Current Assets:		
Current liabilities:			Cash		10,02,500
Sundry Creditors		60,000	Sundry debtors		35,25,000
Accrued Expenses:			Closing Inventories		18,22,500
			(1,62,500 + 6,60,000)		
Income-tax payable		1,76,000			
		82,00,000			82,00,000

Revision of Budgets

As stated earlier in the chapter, successful budgets should have adequate flexibility to meet changing business conditions. Since budgets are used for planning, operation, co-ordination and control, they should be revised if changes occur in the environment. Revision of budgets may be necessary due to the following factors some of which might have been considered earlier in the development of budgets:

- Errors committed in preparing the budgets which may subsequently be known.
- Emergence of unforeseen and unanticipated situations which may cause the budget to be revised.
- Changes in internal factors, e.g., production forecast, sales forecast, capacity utilization, etc.
- Changes in external factors, e.g., market trends, nature of the economy, prices of inputs and resources, consumers' tastes and fashions.

Capital Budget

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 ministeel 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 merge 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.

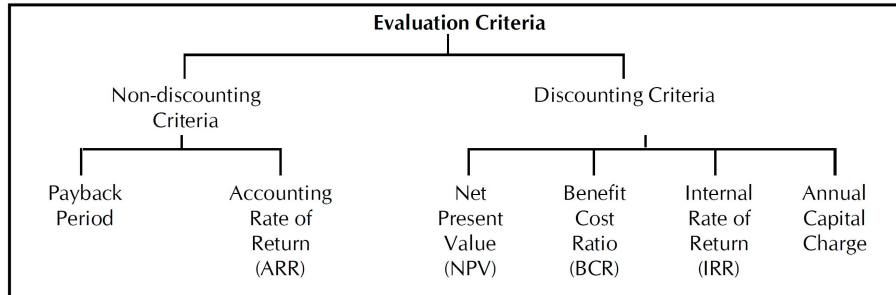
Cash Outflow: It is also known as initial investment. original cost of the project

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

$$4 \times \text{PVIFA} (12, n) = 10 \quad \dots(1)$$

Assuming the cost of funds to be 12 per cent.

Equation (1) can be re-written as

$$\text{PVIFA} (12, n) = 2.5$$

From PVIFA Tables, we find that

$$\text{PVIFA} (12,3) = 2.402$$

$$\text{PVIFA} (12,4) = 3.037$$

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	Project B
	Cash Flows (₹)	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:

$$= 2 + \frac{5,00,000 - 3,00,000}{3,00,000}$$

$$= 2.67 \text{ years}$$

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:

$$3 + \frac{4,00,000 - 3,45,125}{1,36,600} = 3.4 \text{ years } \square$$

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:

$$\text{ARR} = \frac{\text{Average Income}}{\text{Average Investment}} = \frac{\text{Average of Post Tax Operating Profit}}{\text{Average Investment}}$$

$$\text{Average Investment} = \frac{\text{Book Value of the Investment in the Beginning} + \text{Book Scrap Value at the end}}{2}$$

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	<u>28,000</u>	<u>31,000</u>
Average	5,600	6,200
Average investment	21,500	31,500
ARR	$= \frac{5,600}{21,500}$	$= \frac{6,200}{31,500}$
	= 26%	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 arbitrary 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.

$$\text{NPV} = \text{Discounted Cash Inflow} - \text{Discounted Cash Outflow}$$

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. $\text{NPV} > \text{Zero} = \text{accept}$
2. $\text{NPV} < \text{Zero} = \text{reject}$

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

$$\begin{aligned}
 \text{Net present value} &= (-12,500) + (4,554 + 4,065 + 3,631 + 4,516) \\
 &= ₹ (-12,500 + 16,766) \\
 &= ₹ 4,266
 \end{aligned}$$

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				$= 30,000 \times \text{PVIFA} (12\%, 5)$
				$= 30,000 \times 3.605 = 1,08,150$
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.

$$\text{PI} = \frac{\text{Present Value of Cash Inflow}}{\text{Present Value of Cash Outflow}}$$

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 Inflows	PV of Cash Flows
1	0.893	3,50,000	3.1255 lakhs
2	0.797	8,00,000	6.376 lakhs
4	0.636	2,50,000	1.5900 lakhs
		Total	11.0915 lakhs

$$n = \frac{\text{Total of Present Value of Cash Inflows}}{\text{Total of Present Value of Cash Outflow}}$$

$$= \frac{11.0915}{9.424} = 1.177$$

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 (DCFRROR) 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.

$$\text{Formula: IRR} = R_1 + \left(\frac{\text{NPV } R_1}{\text{DCIR}_1 - \text{DCIR}_2} \right) \times R_2 - R_1 \text{ or } R_1 + \frac{\text{PV}_{\text{CI/FR}_1} \text{PV}_{\text{CO/FR}_2} (\text{R}_2 - \text{R}_1)}{\text{PV}_{\text{CI/FR}_1} - \text{PV}_{\text{CO/FR}_2}}$$

Where, R1 = Lower Rate
R2 = 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 $r =$

$$CF_0 = \sum \frac{C_t}{(1+r)^t} \text{ where, } t = 1 \text{ to } n$$

$CF_0 =$ Investment

Sum of the present values of cash inflows at the rate of interest of $r =$

$$CF_0 = \sum \frac{C_t}{(1+r)^t} \text{ where, } t = 1 \text{ to } n$$

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:

$$= \frac{1,00,000}{42,500} = 2.35$$

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 26 %	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 28 %	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.

$$\begin{aligned}
 &= 27 + \frac{1,00,392 - 1,00,000}{1,00,392 - 98,789} \times 1 \\
 &= 27 + \frac{392}{1,603} \times 1 \\
 &= 27 + 0.2445 \\
 &= 27.2445 = 27.24 \%
 \end{aligned}$$

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	(42.00)	14.15	14.15	14.15
I.	Initial flow				
J.	Operating flow = (H + D) + I(1 - t)		26.15	22.15	19.48
K.	Net cash flow = (I + 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)

		0	1	2	3	4	5	6	7	8	9	10
A.	Investment	(204.00)										
B.	Sales		350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00
C.	Cost of sales		163.00	167.05	170.49	173.42	175.91	178.02	179.82	181.34	182.64	183.75
D.	Depreciation		27.00	22.95	19.51	16.58	14.09	11.98	10.18	8.66	7.36	6.25
E.	Profit before interest and taxes		160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00	160.00
F.	Interest on ST bank borrowing		10.80	10.80	10.80	10.80	10.80	10.80	10.80	10.80	10.80	10.80
G.	Profit before taxes		149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20	149.20
H.	Tax		89.52	89.52	89.52	89.52	89.52	89.52	89.52	89.52	89.52	89.52
I.	Profit after tax		59.68	59.68	59.68	59.68	59.68	59.68	59.68	59.68	59.68	59.68
J.	Net salvage value of fixed assets											35.44
K.	Net salvage of current assets											120.00
L.	Retirement of trade credit											(36.00)
M.	Payment of ST bank borrowing											(60.00)
N.	Net Cash Flow = – A + I + D + J + K – L M	(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

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

Incremental Depreciation Schedule (10,000)

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 1 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 negative	(1,40,000)	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

$$(i) \text{ Payback Period} = \frac{\text{Initial Investment}}{\text{Annual Average Cash Flow}}$$

$$= \frac{2,00,000}{32,500}$$

$$= 6.154 \text{ years}$$

$$\begin{aligned} \text{(ii) Payback Profitability} &= \text{Annual Cash Inflow} \times (\text{Estimated Life} - \text{Payback Period}) \\ &= 32,500 - (10 - 6.154) \\ &= ₹ 1,25,000 \end{aligned}$$

$$\text{Payback Profitability} = \frac{(+)\text{ Scrap } 5,000}{₹ 1,30,000}$$

$$\begin{aligned} \text{(iii) Accounting Rate of Return} &= \frac{\text{Annual PAT}}{\text{Average Investment}} \times 100 \\ &= \frac{13,000}{1,02,500} \times 100 \\ &= 12.68 \% \end{aligned}$$

$$\begin{aligned} \text{Average Investment} &= \frac{\text{Original Investment} - \text{Scrap Value}}{2} + \frac{\text{Additional Net Working Capital}}{2} + \text{Scrap Value} \\ &= \frac{2,00,000 - 5,000}{2} + \text{NIL} + 5,000 \\ &= 97,500 + 5,000 \\ &= ₹ 1,02,500 \end{aligned}$$

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

$$= 2 \text{ years and } 8.4 \text{ months}$$

$$= 2 \text{ years} + \frac{70,000}{80,000}$$

$$= 2.875 \text{ years}$$

Or

$$= 2 \text{ years and } 10.5 \text{ months}$$

(ii) NPV

Years	PVF @ 11%	Tata		Bata	
		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 Inflows	2,71,410		2,66,260
		Less: PV of Cash Outflows	2,00,000		2,10,000
		Net Present Values	71,410		56,260

$$(iii) \text{ B/C Ratio} = \frac{\text{Benefits}}{\text{Cost}} = \frac{\text{PV of Cash Inflows}}{\text{PV of Cash Outflows}}$$

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 Inflows (₹)
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	1,00,000	45,000	45,000	1,45,000
5	1,50,000	1,00,000	50,000	22,500	22,500	1,22,500
					Total CFAT	7,25,000

$$\begin{aligned} \text{Fake Payback Period} &= \frac{\text{Cash Outlays}}{\text{Average Annual Cash Inflows}} \\ &= \frac{5,00,000}{(7,25,000)} \\ &= 5 \text{ yrs.} \\ &= 3.448 \end{aligned}$$

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

$$\begin{aligned} \text{IRR} &= D1 + \frac{\text{PV of CFAT D1} - \text{PV of Cash Outlays}}{\text{PV of CFAT D1} - \text{PV of CFAT D2}} \times (D2 - D1) \\ &= 12\% + \frac{5,23,827.50 - 5,00,000}{5,23,827.50 - 4,98,720} \times (14\% - 12\%) \\ &= 12\% + \frac{23,827.50}{25,107.50} \times 2\% \end{aligned}$$

$$\text{IRR} = 13.98\% \text{ (approx.)}$$

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

$$= 2 \text{ years} + \left(\frac{2,00,000 - 1,15,000}{90,000} \right) = 2 \text{ years} + \left(\frac{2,00,000 - 1,78,000}{40,000} \right)$$

= 2.944 years or

= 2 years and 11.33 months or

= 2 years, 11 months and 10 days

= 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 X			Project Y		
	Cash	Depreciation	Profit	Cash	Depreciation	Profit
	Inflows		After Tax	Inflows		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).

$$ARR = \frac{\text{Average Annual Profit After Tax}}{\text{Original Investment}} \times 100$$

(Based on Original Investment)

<p>Project X</p> $= \frac{\frac{1,00,000}{5}}{2,00,000} \times 100$ <p>= 10%</p>		<p>Project Y</p> $= \frac{\frac{45,000}{5}}{2,00,000} \times 100$ <p>= 4.5%</p>
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$$ARR = \frac{\text{Average Annual Profit After Tax}}{\text{Average Investment}} \times 100$$

(Based on Average Investment)

<p>Project X</p> $= \frac{\frac{1,00,000}{5}}{2,00,000} \times 100$ <p>= 20%</p>		<p>Project Y</p> $= \frac{\frac{45,000}{2}}{2,00,000} \times 100$ <p>= 9%</p>
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Accept project X

(c) Net Present Value:

Year	PV Factor @ 10%	Project X		Project Y	
		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
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Accept Project X

$$(d) \text{ Profitability Index} = \frac{\text{PV of Cash Inflows}}{\text{PV of Cash Outflows}}$$

<p>Project X</p> $= \frac{2,29,150}{2,00,000}$ <p>= 1.146</p>		<p>Project Y</p> $= \frac{2,04,760}{2,00,000}$ <p>= 1.024</p>
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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)

$$\begin{aligned} \text{IRR} &= D1 + \frac{\text{PV of CFAT D1} - \text{PV of Cash Outlays}}{\text{PV of CFAT D1} - \text{PV of CFAT D2}} \times (D2 - D1) \\ &= 10\% + \frac{2,29,150 - 2,00,000}{2,29,150 - 1,80,650} \times (20\% - 10\%) \\ &= 10\% + \frac{29,150}{48,500} \times 10\% \\ &= 16.01\% \text{ (approx.)} \end{aligned}$$

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)

$$\begin{aligned} \text{IRR} &= 10\% + \frac{2,04,760 - 2,00,000}{2,04,760 - 1,74,590} \times (20\% - 10\%) \\ &= 10\% + \frac{4,760}{30,170} \times 10\% \end{aligned}$$

= 11.58% (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 be 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:

Year	Project I			Project II		
	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

$$\begin{aligned} \text{Depreciation p.a.} &= \frac{OC - SV}{EL} \\ &= \frac{50,000}{6} \\ &= 8,333 \end{aligned}$$

$$\text{Average NPAT p.a} = \frac{\text{Total Profit}}{\text{No. of Years}}$$

$$\text{Project I} = \frac{18,000}{6}$$

$$\begin{aligned}
 &= ₹ 3,000 \text{ p.a.} \\
 \text{Project II} &= \frac{27,000}{6} \\
 &= ₹ 4,500 \text{ p.a.}
 \end{aligned}$$

1. Payback Period:

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

$$2. \text{ ARR (Original Investment)} = \frac{\text{Average Annual Net Profit After Tax}}{\text{Original Investment}} \times 100$$

$$\begin{aligned}
 \text{Project I} & \\
 &= \frac{3,000}{50,000} \times 100 \\
 &= 6\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Project II} & \\
 &= \frac{4,500}{50,000} \times 100 \\
 &= 9\%
 \end{aligned}$$

$$\text{ARR (Average Investment)} = \frac{\text{Average Annual PAT}}{\text{Average Investment}} \times 100$$

$$\begin{aligned}
 \text{Project I} & \\
 &= \frac{3,000}{\frac{(50,000)}{2}} \times 100 \\
 &= 12\%
 \end{aligned}$$

$$\begin{aligned}
 \text{Project II} & \\
 &= \frac{4,500}{\frac{(50,000)}{2}} \times 100 \\
 &= 18\%
 \end{aligned}$$

3. Payback Profitability = Total Cash Inflow – Cash of Asset

Project I

$$\begin{aligned}
 &= 68,000 - 50,000 \\
 &= ₹ 18,000
 \end{aligned}$$

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

$$\text{Payback Period} = 2 \text{ years} + \left(\frac{30}{90} \times 10 \right)$$

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

$$\text{Payback Period} = 2 \text{ years} + \left(\frac{840}{240} \times 12 \right)$$

= 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 21. (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	(A)	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 $\left(\text{i.e., } \frac{\text{₹ } 20,000}{4 \text{ years}} \right)$, 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 $\left(\text{i.e., } \frac{\text{₹ } 28,000}{5 \text{ years}} \right)$, 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:

$$\begin{aligned} \text{Average Earning} &= \frac{\text{Total Earnings}}{\text{Period}} \\ &= \frac{\text{₹ } 8,500}{4} = 2,125 \end{aligned}$$

$$\text{Average Rate of Return} = \frac{2,125}{20,000} \times 100 = 10.625\%$$

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 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:

$$= \frac{\text{Present Value}}{\text{Capital Cost}}$$

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		A	45,000
Annual Cost Inflows after Tax:	1st Year	A	5,000
	2nd Year	A	10,000
	3rd Year	A	15,000
	4th Year	A	20,000
	5th Year	A	25,000
Estimated Life of Project			5 years

Solution:

- The sum of cash inflows is ₹ 75,000, which when divided by the economic life of 5 years gives annuity of ₹ 15,000.
- 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.
- The factor closest to 3,000 for 5 years is 2.991 for a rate of 20%.
- 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%.
- Using the PV factors for 18% for years 1-5, the present value is computed below:

Year	Cash Flow after Tax A	P.V. Factor at 18%	Total P.V. A
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 1% 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%.

$$\begin{aligned} \text{Internal Rate of Return} &= 15 + \frac{\text{₹ } 45,637 - \text{₹ } 45,000}{\text{₹ } 45,637 - \text{₹ } 44,301} \times 1 \\ &= 15 + \frac{637}{1,336} \times 1 \\ &\text{or } 15.48\% \end{aligned}$$

Alternatively,

$$\begin{aligned} \text{Internal Rate of Return} &= 16 - \frac{\text{₹ } 44,301 - \text{₹ } 45,000}{\text{₹ } 45,637 - \text{₹ } 44,301} \times 1 \\ &= 16 - \frac{699}{1,336} \times 1 \\ &\text{Or } 15.48\% \end{aligned}$$

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:

- The investment life is 10 years.
- An exceptional amount of expenditure on sales promotion of Rs, 15,000 will be spent in year 2 on Proposal II. This has not been taken into account in calculating pre-depreciation profits.
- 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 ₹ 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

Year	Discount Factor at 8%	Proposal I		Proposal II	
		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
			5,11,300		6,89,320
Less: Capital Cost			3,10,000		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	Depre-	P.B.T	Tax 40%	Cash	PV Factors	PV Cash
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	Inflows ₹	ciation ₹	₹	₹	Outflow After Tax ₹	@ 10%	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 x 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 ₹ 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	₹
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 x 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

$$\begin{aligned} \text{3. Profitability Index} &= \frac{49,79,000}{40,00,000} \\ &= 1.244 \end{aligned}$$

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			9,42,300

By Interpolation

$$\begin{aligned} \text{IRR} &= 10\% + \frac{(49,79,000 - 40,00,000)}{9,42,200} \times 5\% \\ &= 10\% + \frac{9,79,000}{9,42,300} \times \frac{5}{100} \\ &= 10\% + 0.05 \\ &= 10.05\% \end{aligned}$$

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 years + $\frac{30,000}{50,000} \times 12 = 2.6$ 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 years + $\frac{20,000}{60,000} = 3.3$ 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

$$\begin{aligned} \text{Machine LM} &= 1,90,000 - 1,00,000 \\ &= ₹ 90,000 \\ \text{Machine PM} &= 1,80,000 - 1,00,000 \\ &= ₹ 80,000 \end{aligned}$$

Note: Machine LM is more profitable.**4. Return on Investment:**

$$\begin{aligned} \text{Formula} &= \frac{\text{Average return p.a.}}{\text{Investment}} \times 100 \\ \text{Machine LM} &= \frac{(1,90,000 \div 5) \times 100}{1,00,000} \\ &= \frac{38,000 \times 100}{1,00,000} \\ &= 38\% \\ \text{Machine PM} &= \frac{(1,80,000 \div 5) \times 100}{1,00,000} \\ &= \frac{36,00,000}{1,00,000} \times 100 \\ &= 36\% \end{aligned}$$

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

$$\begin{aligned} \text{Payback Period} &= 2 \text{ years} + \frac{47,400}{1,31,300} \\ &= 2.36 \text{ years} \end{aligned}$$

$$\begin{aligned} \text{Accounting Rate of Return} &= \frac{\text{Average Earnings}}{\text{Average Investments}} \times 100 \\ &= \frac{62,400}{1,52,500} \times 100 \\ &= 40.92\% \end{aligned}$$

$$\begin{aligned} \text{Average Earnings} &= \frac{\text{Profit after Tax and Depreciation}}{5} \\ &= \frac{46,800 + 61,800 + 84,300 + 79,800 + 39,300}{5} \\ &= 62,400 \end{aligned}$$

$$\begin{aligned} \text{Average Investment} &= \frac{\text{Original} + \text{Investment Scrap}}{2} + \text{Scrap} + \text{working capital} \\ &= \frac{2,50,000 - 15,000}{2} + 15,000 + 20,000 \\ &= 1,17,500 + 15,000 + 20,000 \\ &= 1,52,500 \end{aligned}$$

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

$$\begin{aligned} \text{Net Present Value Index} &= \frac{\text{Total Present Value of Cash Inflows}}{\text{Total Present Value of Cash Outflows}} \\ &= \frac{4,35,015}{2,70,000} \\ &= 1.61 \end{aligned}$$

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:

Year	Alternative	Alternative	Alternative				
------	-------------	-------------	-------------	--	--	--	--

	A Cash Inflow ₹	B Discount Factor	C 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	0.400	1,60,000	—	—	—	—
8	—	0.351	—	₹30,00,000	10,53,000	50,00,000	17,55,000
(Disposal)	—	0.351	—	6,00,000	2,10,600	—	—
9	—	0.308	—	—	—	50,00,000	15,40,000
10	—	0.270	—	—	—	50,00,000	13,50,000
(Disposal)	—	0.270	—	—	—	10,00,000	270,000
Total			52,97,000		8899,100		1,03,69,000
Cash							
Outflow			50,00,000		70,00,000		1,00,00,000
NPV			2,97,000		18,99,100		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

Year	Proposal X			Proposal Y		
	Inflow ₹	Factors @ 10%	Present Value ₹	Inflow ₹	Factor @ 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:

- Average rate of return of both projects.
- 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**

(A 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 Machines

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)

$$\text{Blow moulding machine} = 5 + \frac{13.375}{20.225} = 5.66 \text{ years}$$

$$\text{Injection moulding machine} = 6 + \frac{2.75}{15.8} = 6.17 \text{ years}$$

$$\text{Average Rate of Return} = \frac{\text{Average Earnings}}{\text{Average Investment}} \times 100$$

$$\text{Blow moulding machine} = \frac{9.425}{47.5} \times 100 = 19.84\%$$

$$\text{Injection moulding machine} = \frac{6.825}{40} \times 100 = 17.06\%$$

Net Present Value

(A in Lakhs)

Y	Profit Before			Profit Before		
	Depreciation 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 (Rs 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 ₹	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

$$= \frac{\text{Present Value of Cash Inflows}}{\text{Present Value of Cash Outflows}}$$

$$= \frac{3,08,130}{2,00,000}$$

$$= 1.54$$

6. Internal Rate of Return @ 30%:

Year	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

$$\begin{aligned} \text{Pay back period} &= 1 \text{ year} + \frac{69,000}{1,31,000} \\ &= 1.53 \text{ years} \\ \text{Rate of Return on Original Investment} &= \frac{\text{Average Profit after tax}}{\text{Original Investment}} \times 100 \\ &= \frac{78,000}{2,00,000} \times 100 \\ \text{Average Profit after tax} &= \frac{91,000 + 91,000 + 78,000 + 78,000 + 52,000}{5} \\ &= \frac{3,90,000}{5} \\ &= \text{A } 78,000 \\ \text{Rate of Return an Average Investment} &= \frac{\text{Average Profit after tax}}{\text{Average Investment}} \times 100 \\ &= \frac{78,000}{1,00,000} \times 100 \\ &= 78\% \end{aligned}$$

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 Depreciation Outflow		10,00,000
	Net Present Value		7,04,454

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	1,44,000
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 ₹ 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:

	A
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
Payback Period =	$\frac{\text{Cost of Project}}{\text{Saving p.a.}}$
	$= \frac{20,00,000}{4,00,000}$
	$= 5 \text{ years}$

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
04	80,000	0.68301	54,641
OS	30,000	0.62092	18,628
	40,000 (Salvage value)	0.62092	24,837
			1,86,161
Less: Cash Outflow at the beginning		1,50,000	
Cash Outflow at the end of 1st year (30,000 x 0.90909)			
NPV		27,273	1,77,273
			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	A 60
Direct Labour	A 80
Other Variable Expenses	A 50
Fixed Overheads	A 40
Total	A 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:

- 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	A	60	A	60
Wages	A	80	A	50
Variable Expenses	A	50	A	40
Cash Fixed Overheads (Other than Depreciation)	A	30	A	30
Total	A	220	A	180
Sales 300 pu.				
Cash Profit	A	80	A	120
For 1,000 Units:				
Profit Before Depreciation	A	80,000	A	1,20,000
Depreciation	A	(10,000)	A	(18,000)
PBT	A	70,000	A	1,02,000
Income Tax @ 35%	A	(24,500)	A	(35,700)
PAT	A	45,500	A	66,300
Add: Back Depreciation				
Cash Inflow	A	55,500	A	84,300
Addition Cash Inflow every year		28,800		

Discounted Statement @ 10% p.a. (A)

Year	Additional Cash 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
		6.144	1,76,947

Additional Cash Outflow for new PIM [Year] $(-)$ 1,80,000 x 0.909 = 1,63,620

NPV 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.

Fixed and Flexible Budgeting

Fixed Budgeting

A fixed budget is the budget which is designed to remain unchanged irrespective of the level of activity actually attained. It is based on a single level of activity. A fixed budget performance report compares data from actual operations with the single level of activity reflected in the budget. It is based on the assumption that the company will work at some specified level of activity and that a stated production will be achieved. Fixed budgets do not change when production level changes.

However, in practice, fixed budgeting is rarely used. The main reason is that actual output is often significantly different from the budgeted control. The performance report may be misleading and will not contain very useful information. For example, if actual production is 12,000 units in place of the budgeted 10,000 units the cost incurred cannot be compared with the budget which relates to different levels of activity. Since, in fixed budgeting, units are overlooked, a cost to cost comparison without considering the units may give misleading results.

Flexible Budgeting

A flexible budget is defined as “a budget which by recognizing the difference between fixed, semi-fixed and variable costs, is designed to change in relation to the level of activity attained.”

A flexible budget is a budget that is prepared for a range, i.e., for more than one level of activity. It is a set of alternative budgets to different expected levels of activity. Thus, a flexible budget might be developed that would apply to a “relevant range” of production, say 8,000 to 12,000 units. Under this approach, if actual production slips to 9,000 units from a projected 10,000 units, the manager has a specific tool (i.e., the flexible budget) that can be used to determine budgeted cost at 9,000 units of output. The flexible budget provides a reliable basis for comparisons because it is automatically geared to changes in production activity.

Steps in Flexible Budgeting

The following steps (stages) are involved in developing a flexible budget:

- Deciding the range of activity to which the budget is to be prepared.
- Determining the cost behavior patterns (fixed, variable, semi-variable) for each element of cost to be included in the budget.
- Selecting the activity levels (generally in terms of production) to prepare budgets at those levels.
- Preparing the budget at each activity level selected by associating the activity level with corresponding costs. The corresponding costs to be attached with each activity level are determined in terms of their behavior, i.e., fixed, variable and semi-variable.

Zero-based budgeting: A budget is developed usually on the concept of incrementalism. In case of budgeting in organizations, past events are considered in the light of future probabilities. The influence of past is strong in the budget of an ongoing activity and many entries may ultimately become just last year's

figures plus a fixed percentage over and above that value. Since previous year's figures are considered as base, any inaccuracies in those figures are carried forward year after year.

But in zero-based budgeting, this can be avoided. In case of ZBB, each manager is asked to prepare his own requirement of funds beginning from scratch, ignoring the past and he has to justify the requirements mentioned by him. Hence, the main idea behind ZBB is to challenge the existence of every budgetary unit and every budget period.

Illustration 1

Prepare the Sales Budget from the following data:

Product	January	February
X	1200 units	1800 units
Y	3600 units	5400 units

The sales area A and B account for 60% and 40% sale of product X and 30% and 70% sale of product Y respectively.

The selling price per unit of product X ₹ 24 and the selling price per unit of product Y ₹ 30 in both the sales areas.

Solution:

January Sales Budget

Product	Area	Units	₹	₹
X	A	720	24	17,280
	B	480	24	11,520
Total		1,200		28,800
Y	A	1,080	30	32,400
	B	2,520	30	75,600
Total		3,600		1,08,000

February Sales Budget

Product	Area	Units	₹	₹
X	A	1,080	24	25,920
	B	720	24	17,280
Total		1,800		43,200
Y	A	1,620	30	48,600
	B	3,780	30	1,13,400
Total		5,400		1,62,000

Total Sales Budget

Product	Area	Units	₹	₹
X	A	1,800	24	43,200
	B	1,200	24	28,800
Total		3,000		72,000
Y	A	2,700	30	81,000
	B	6,300	30	1,89,000
Total		9,000		2,70,000

Illustration 2

A manufacturing company is operating at 75% of its full capacity. It is proposed to offer a price reduction of 5% to 10% depending upon volume desired. Given below are the relevant data:

Capacity	75%	85%	100%
Output (units)	75,000	85,000	1,00,000
Selling price unit	₹ 96	5% off	10% off
Material cost per unit	₹ 40	10% less	15% less
Wages cost per unit	₹ 10	₹ 10	₹ 10

Fixed overheads:

Production ₹ 14,00,000

Selling and distribution ₹ 5,00,000

Variable overheads: (at full capacity)

Selling and administration ₹ 4,40,000

Production ₹ 14,00,000

- (a) Prepare a statement showing variable cost, fixed cost, total cost and profit/loss in terms of ₹ and per unit at 75%, 85% and 100% capacity.
 (b) Indicate which of the three levels is most profitable.

Solution:

Capacity	75%		85%		100%	
	75,000		85,000		1,00,000	
	p/u	Amt.	p/u	Amt.	p/u	Amt.
Sales	96	72,00,000	91.20	77,52,000	86.40	86,40,000
Less: Variable Cost						
Material	40	30,00,000	36	30,60,000	34	34,00,000
Wages	10	7,50,000	10	8,50,000	10	10,00,000
Variable production o/h	14	10,50,500	14	11,90,000	14	14,00,000
Variable selling and admn. o/h	4.40	3,30,000	4.40	3,74,000	4.40	4,40,000
Total variable cost	68.4	51,30,000	64.4	54,74,000	62.40	62,40,000
Contribution	27.6	20,70,000	26.8	22,78,000	24	24,00,000
Fixed overheads:						
Production	18.67	14,00,000	16.47	14,00,000		14,00,000
Selling and Administration	6.67	5,00,000	5.88	5,00,000	14	5,00,000
Profit	2.27	1,70,000	4.47	3,78,000	6	5,00,000

Recommendation: Operating at 100%, i.e., at full capacity is most profitable.

Illustration 3

A Factory is currently working at 50% capacity and produces 30,000 units and also sold each at ₹ 225 per unit. Prepare a Flexible Budget and estimate the profit of the company when it works to 75% and 90% capacity. Assume that all units produced are sold at the same selling price per unit as shown above.

Following information is provided to you:

(i) Variable Expenses:

Materials	₹ 60 per unit
Labours	₹ 40 per unit

- Other Expenses ₹ 15 per unit
- (ii) Semi-variable Expenses: (at 50% capacity)**
- Indirect Labour ₹ 1,50,000
 Indirect Materials ₹ 2,10,000
 General Administrative Expenses ₹ 2,70,000
 Repairs and Maintenance ₹ 1,20,000
 Salesmen Salaries ₹ 1,80,000
- (iii) Fixed Expenses:**
- Office and Management Salaries ₹ 5,40,000
 Office and Factory Rent and Taxes ₹ 6,00,000
 Sundry Administrative Expenses ₹ 7,20,000
 Depreciation on Machinery and Furniture ₹ 4,50,000
- (iv)** Semi-variable expenses remain constant upto 60% of capacity, increasing by 10% between 60% and 80% capacity and by 20% between 80% and 100% capacity.
- (v)** Rate per unit of variable expenses remains same.

Solution:**Flexible Budget**

	30,000 units 50%	45,000 units 75%	54,000 units 90%
(i) Variable Expense	₹	₹	₹
Materials	18,00,000	27,00,000	32,40,000
Labours	12,00,000	18,00,000	21,60,000
Other Expenses	4,50,000	6,75,000	8,10,000
(ii) Semi-variable Expenses			
Indirect Labour	1,50,000	1,65,000	1,80,000
Indirect Materials	2,10,000	2,31,000	2,52,000
General Administrative Expenses	2,70,000	2,97,000	3,24,000
Repairs and Maintenance	1,20,000	1,32,000	1,44,000
Salesmen Salaries	1,80,000	1,98,000	2,16,000
(iii) Fixed Expenses			
Office and Management Salaries	5,40,000	5,40,000	5,40,000
Office and Factory Rent and Taxes	6,00,000	6,00,000	6,00,000
Sundry Administrative Expenses	7,20,000	7,20,000	7,20,000
Depreciation on Machinery and Furniture	4,50,000	4,50,000	4,50,000
Total Cost	66,90,000	85,08,000	96,36,000
	₹	₹	₹
	(30,000 × 225)	(45,000 × 225)	54,000 × 225
Sales	67,50,000	1,01,25,000	1,21,50,000
Less: total cost	66,90,000	85,08,000	96,36,000
Profit	60,000	16,17,000	25,14,000

Illustration 4

The following information relates to the productive activities of Delta Ltd. For 3 months ending on 31st March 2008:

Particulars

Variables Expenses: (at 50% capacity)	₹
– Materials	6,00,000
– Labour	6,40,000

– Salesmen’s Commission	95,000
	13,35,000
Semi-variable Expenses: (at 50% capacity)	
– Plant Maintenance	62,500
– Indirect Labour	2,47,500
– Salesmen’s salaries	72,500
– Sundry	65,000
	4,47,500
Fixed Expense:	
– Management Salaries	2,10,000
– Rent and Taxes	1,40,000
– Depreciation of Machinery	1,75,000
– Sundry Office Expenses	2,22,500
	7,47,500

It is further noted that semi-variable expense remain constant between 40% and 70% capacity, increase by 10% of the above figures between 70% and 85% capacity and increased by 15% of the above figures between 85% and 100% capacity.

Fixed expenses remain constant whatever the level of activity may be. Sales at 60% capacity are ₹ 25,50,000, at 80% capacity are ₹ 34,00,000 and at 100% capacity are ₹ 42,50,500.

Assuming that all items produced are sold, you are required to prepare a flexible budget at 60%, 80% and 100% capacity.

Solution:

**In the Books of Delta Ltd.
Flexible Budget for 3 months ending 31-3-2008**

Capacity	60%	80%	100%
A. Fixed Expenses:			
Management Salaries	2,10,000	2,10,000	2,10,000
Rent and Taxes	1,40,000	1,40,000	1,40,000
Depreciation of Machinery	1,75,000	1,75,000	1,75,000
Sundry Office Expenses	2,22,500	2,22,500	2,22,500
Total (A)	7,47,500	7,47,500	7,47,500
B. Semi-variable Expenses:			
Plant Maintenance	62,500	68,750	71,875
Indirect Labour	2,47,500	2,72,250	2,84,625
Salesmen’s salaries	72,500	79,750	83,375
Sundry	65,000	71,500	74,750
Total (B)	4,47,500	4,92,950	5,14,625
C. Variable Expense:			
Materials	7,20,000	9,60,000	12,00,000
Labour	7,68,000	10,24,000	12,80,000
Salesmen’s Commission	1,14,000	1,52,000	1,90,000
Total (C)	16,02,000	21,36,000	26,70,000
D. Total Exp. (A + B + C)	27,97,000	33,75,750	39,32,125
E. Sales	25,50,000	34,00,000	42,50,000
F. Profit/Loss	2,47,000	24,250	3,17,875

Illustration 5

The Jaydeep Co. Ltd., has completed most of the functional budgets and it is now time to prepare the cash budget. An analysis of the various budgets concerned reveals the requirements.

Requirements for Cash Budgets

Month	Sales	Materials	Wages	Production Exp.	Admin Exp.	Selling Exp.	Distribution Exp.	Research and Development Exp.
	₹	₹	₹	₹	₹	₹	₹	₹
Oct. 08	80,000	40,000	10,000	8,400	3,400	5,000	3,000	1,000
Nov. 08	60,000	30,000	9,000	8,000	3,300	4,500	2,500	1,000
Dec. 08	40,000	20,000	8,000	7,500	3,500	4,000	2,000	1,000
Jan. 09	50,000	40,000	9,000	8,000	3,700	4,400	2,400	1,200
Feb. 09	60,000	50,000	10,000	8,500	3,900	4,800	2,600	1,200
March 09	80,000	60,000	11,000	9,000	3,600	5,200	2,900	1,200
April 09	70,000	50,000	9,000	8,000	3,500	5,000	2,600	1,500
May 09	60,000	30,000	8,000	7,500	3,700	4,800	2,500	1,500
June 09	50,000	40,000	9,000	8,000	3,900	4,500	2,400	1,500

Period of Credit allowed by creditors – 2 months

Period of Credit allowed to debtors – 3 months

Lag in Payment of overheads – 1 month

Lag in Payment of wages 1/8 month

The cash balance on 1st January, 2009 is expected to be ₹ 1,00,000.

Further:

- Plant and Machinery to be installed in April, 2009 at a cost of ₹ 50,000 will be paid by monthly installments of ₹ 10,000 as from 1st May, 2009. Extensions to the Research and Development Department at a cost of ₹ 10,000 will be completed on 1st January, 2009 payment to be made on 1st February, 2009.
- A sales commission of 10% on sales is to be paid within the month following actual credit sales.
- Cash sales of ₹ 5,000 per month are expected; no commission is payable on them.
- The company has hire purchase agreement under which ₹ 5,000 a month is being paid for plant purchased before this budget period. The said payment will continue throughout this budget period.
- Preference share dividends of 8% on capital of ₹ 2 million are to be paid on 1st April, 2009.
- Tax of ₹ 1,00,000 is due on 1st April, 2009.
- Dividends from investments, amounting to ₹ 70,000 are expected on 1st May, 2009.
- Three calls of ₹ 0.25 each on 2,00,000 ordinary shares are due on 1st January 09, 1st March 09 and 1st June, 09.

Prepare cash Budget for 6 months from January 2009 to June 2009.

Solution:

Particulars	Jan. '09	Feb. '09	Mar. '09	April '09	May '09	June '09
A. Opening Balance	1,00,000	1,69,125	1,64,550	1,76,675	(1,22,475)	(98,200)
B. Receipts:						

Cash Sales	5,000	5,000	5,000	5,000	5,000	5,000
Receipt from Debtor	80,000	60,000	40,000	50,000	60,000	80,000
Dividend from Investment	—	—	—	—	70,000	—
Calls on Shares	50,000	—	50,000	—	—	50,000
Total Receipts (B)	1,35,000	65,000	95,000	55,000	1,35,000	1,35,000
Total (A + B)	2,35,000	2,34,125	2,59,550	2,31,675	12,525	36,800
C. Payments:						
Materials	30,000	20,000	40,000	50,000	60,000	50,000
Labour	8,875	9,875	10,875	9,250	8,125	8,875
Production Overhead	7,500	8,000	8,500	9,000	8,000	7,500
Adm. Overhead	3,500	3,700	3,900	3,600	3,500	3,700
Selling Overhead	4,000	4,400	4,800	5,200	5,000	4,800
Distribution Overhead	2,000	2,400	2,600	2,900	2,600	2,500
R&D Overhead	1,000	1,200	1,200	1,200	1,500	1,500
Plant & Machinery	—	—	—	—	10,000	10,000
Extension to R&D	—	10,000	—	—	—	—
Hire Purchase Payment	5,000	5,000	5,000	5,000	5,000	5,000
Sales Commission	4,000	5,000	6,000	8,000	7,000	6,000
Preference Dividend (8%)	—	—	—	1,60,000	—	—
Tax	—	—	—	1,00,000	—	—
Total (C)	65,875	69,575	82,875	(3,54,150)	1,10,725	99,875
Cash Available (A + B + C)	1,69,125	1,64,550	1,76,675	1,22,475	(98,200)	63,075
Loans/Overhead (Closing Balance)						

Illustration 6

The following are the estimated sales of a company for eight months ending 30-11-2008:

Months	Estimated Sales (Units)
April 2008	12,000
May 2008	13,000
June 2008	9,000
July 2008	8,000
August 2008	10,000
September 2008	12,000
October 2008	14,000
November 2008	12,000

As a matter of policy, the company maintains the closing balance of finished goods and raw materials as follows:

Stock Items	Closing balance of a month
Finished goods	50% of the estimated sales for the next month
Raw Materials	Estimated consumption for the next month.

Each unit of production requires 5 kg. of raw material costing ₹ 5 per kg.

Prepare Production Budget (in units) and Raw Material Purchase Budget (in units and cost) of the company for the half year ending 30th September, 2008.

Solution:

Production Budget (in units)
For the half year ending 30th Sept. 2008

Month	Sales in Units	Closing Bal. 50% of Estimated Sales for Next Month	Opening Bal.	Production (2 + 3 + 4)
(1)	(2)	(3)	(4)	(5)
April	12,000	6,500	6,000	12,500
May	13,000	4,500	6,500	11,000
June	9,000	4,000	4,500	8,500
July	8,000	5,000	4,000	9,000
August	10,000	6,000	5,000	11,000
Sept.	12,000	7,000	6,000	13,000
	64,000			65,000

Purchase Budget (in Cost and Units)
For the half year ending 30th Sept. 2008

Month	Production in Units	Consumption kg. ₹ 2/- per Unit	Closing Balance	Opening Balance	Purchase in kg.	Rate ₹	Amount
April	12,500	25,000	22,000	25,000	22,000	5	1,10,000
May	11,000	22,000	17,000	22,000	17,000	5	85,000
June	8,500	17,000	18,000	17,000	18,000	5	90,000
July	9,000	18,000	22,000	18,000	22,000	5	1,10,000
August	11,000	22,000	26,000	22,000	26,000	5	1,30,000
Sept.	13,000	26,000	26,000	26,000	26,000	5	1,30,000
	65,000	1,30,000		1,30,000			6,55,000

Illustration 7

One 30th September, 2009, following was the Balance Sheet of MD Pvt. Ltd.

Liabilities	₹	Assets	₹
Equity shares (₹ 10) fully paid	20,000	Equipment (cost)	2,000
Reserves and Surplus	10,000	Less: Depreciation	5,000
Creditors	40,000	Stock	20,000
Proposed Dividend	15,000	Debtors	15,000
		Bank	35,000
	85,000		85,000

The company is developing a system of forward planning and on 1st October, 2009, it submits the following information:

	Credit Sales (₹)	Cash Sales (₹)	Credit Purchases (₹)
September 2009 (actual)	15,000	14,000	40,000
October 2009 (budgeted)	18,000	5,000	23,000
November 2009 (budgeted)	20,000	6,000	27,000
December 2009 (budgeted)	25,000	8,000	26,000

On 1st October, 2009 the equipment will be replaced at a cost of ₹ 30,000, ₹ 14,000 will be allowed in exchange for the old equipment and a net payment of ₹ 16,000 will be made. Depreciation is to be provided at the rate of 10% per annum.

The proposed dividend will be paid in December 2009.

The following expenses will be paid:

Wages ₹ 3,000 per month.

Administration ₹ 15,000 per month.

Rent ₹ 3,600 (for the year to 30th September, 2010) to be paid in October, 2009. You are required to prepare a cash budget for the months of October, November and December, 2009.

Solution:

Cash Budget for the Period Oct. to Dec. 2009

Particular	Oct. (₹)	Nov. (₹)	Dec. (₹)
Inflows:			
Receipt from Debtors	15,000	18,000	20,000
Cash Sale	5,000	6,000	8,000
Total Inflow (A)	20,000	24,000	28,000
Outflows:			
Creditors	40,000	23,000	23,000
Dividend	—	—	15,000
New Equipment (net)	16,000	—	—
Wages	3,000	3,000	3,000
Admin. Exp.	1,500	1,500	1,500
Rent	3,600	—	—
Total Outflow (B)	64,100	27,500	46,500
Surplus/Deficit (A – B)	(44,100)	(3,500)	18,500
(+) Op. Cash/Bank	35,000	(9,100)	(12,600)
Closing Cash/Bank	(9,100)	(12,600)	(31,100)

Illustration 8

From the information set out below, prepare a monthly cash budget for the period January to June, 2010 for A Ltd.

- Prices and costs are assumed to remain unchanged during the period.
- Credit sales affected are 75% of the total sales each month.
- The company's collection of credit sales is made as follows:
60% One month after sale; 30% Second month after sale; 5% Third month after sale.
- The sales forecast is as below:

Month	Sales [₹ (000's)]	Month	Sales [₹ (000's)]
October, 2009	120	March, 2010	80
November, 2009	140	April, 2010	120
December, 2009	160	May, 2010	100
January, 2010	60	June, 2010	80
February, 2010	80	July, 2010	140

- The company maintains a gross profit margin of 20%.
- The probable sales of each month are purchased and settled in the preceding month.
- The salaries and wages to be paid are as follows:

2010	₹	2010	₹
January	12,000	April	20,000
February	16,000	May	16,000
March	20,000	June	14,000

- Interest on 12% convertible debentures of ₹ 1,00,000 is due for payment of 31st March, 2010 and 30th June, 2010.
- The company has to pay ₹ 1,00,000 as a tax on income of year 1998, but is disputed. However, it is decided that 20% of the disputed amount will be paid in April, 2010.

- (j) The company intends to import a machine at a capital cost of ₹ 8,000 which along with the import duty of 50% will be payable in June, 2010.
- (k) The company has a cash balance of ₹ 40,000 on 31st December, 2009. Annual rent of the company amounts to ₹ 9,600 payable monthly.

Solution:**Cash Budget for the Period Jan. 2010 to June 2010**

	Jan.	Feb.	Mar.	April	May	June
Inflows						
Cash Sales	15,000	20,000	20,000	30,000	25,000	20,000
Receipts from Debtor (WN-1)	1,08,000	68,250	55,500	56,250	75,000	7,500
Total (A)	1,23,000	88,250	75,500	86,250	1,00,000	95,000
Outflows						
Purchase (80% of sale)	64,000	64,000	96,000	80,000	64,000	1,12,000
Salaries & Wages	12,000	16,000	20,000	20,000	16,000	14,000
Int. on deb. (10000@ 12% x ³ /12)	—	—	3,000	—	—	3,000
Tax for the year 2010	—	—	—	20,000	—	—
Imports of Machines	—	—	—	—	—	12,000
Rent	800	800	800	800	800	800
Total (B)	76,800	80,800	1,19,800	1,20,800	80,800	1,41,800
Surplus/Deficit (A-B)	46,200	7,450	(-)44,300	(-)34,550	19,200	(-)46,800
(+) Op. Cash Bal.	40,000	86,200	93,650	49,350	14,800	34,000
Cl. Cash Bal.	36,200	93,650	49,350	14,800	34,000	(-)12,800

Working Notes:

Rec. Pyts in resp of sales and purchase.

	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
Credit Sales	10,500	1,20,000	45,000	60,000	60,000	90,000	75,000	60,000
Cash Sales		0	15,000	20,000	20,000	30,000	25,000	20,000
Total Sales			60,000	80,000	80,000	1,20,000	1,00,000	80,000
						0	0	
Receipts								
60% in next Month	54,000	63,500	72,000	27,000	36,000	36,000	54,000	45,000
30% in the 2 nd Month		27,000	31,500	36,000	13,500	18,000	18,000	27,000
5% in the 3 rd Month			4,500	5,250	6,000	2,250	3,000	3,000
			1,08,000	68,250	55,500	56,250	75,000	25,000
			0					
I+II			1,23,000	88,250	75,500	86,250	1,00,000	95,000
			0				0	
Purchase			64,000	64,000	96,000	80,000	64,000	1,12,000
80% of 1 of Next Month								0

Illustration 9

At 90% capacity, ABCD Ltd. Produces 10,800 units and incurred the expenses as under:

Particulars	Cost per Unit ₹
Direct Material	7
Direct Labour	5
Other Variable Expenses	4.50
Administrative Overheads	6 (40% variable)

Selling Overheads	3 (75% variable)
Production Overheads	3 (20% variable)

Selling price per unit ₹ 60.

Prepare Flexible Budget for 70%, 80% and 100 utilisation of the capacity.

Solution:

Level of Output	70%		80%		90%		100%	
No. of Units	8,400		9,600		10,800		12,000	
	P/U	Amt.	P/U	Amt.	P/U	Amt.	P/U	Amt.
Sales	60	5,04,000	60	5,76,000	60	6,48,000	60	7,20,000
Less: Variable Cost								
Direct Materials	7	58,800	7	67,200	7	75,600	7	84,000
Direct Labour	5	42,000	5	48,000	5	54,000	5	60,000
Other Variable	4.50	37,800	4.50	43,200	4.50	48,600	4.50	54,000
Variable Admn o/u	2.40	20,160	2.40	23,040	2.40	25,920	2.40	28,800
Selling o/u	2.25	18,900	2.25	21,600	2.25	24,300	2.25	27,000
Production	0.80	6,720	0.80	7,680	0.80	8,640	0.80	9,600
Total U.C. (A)	21.95	1,84,380	21.95	2,10,720	21.95	2,37,060	21.95	2,63,400
Fixed Cost o/u								
Admin.	4.63	38,880	4.05	38,880	3.60	38,880	3.24	38,880
Selling	0.96	8,100	0.84	8,100	0.75	8,100	0.68	8,100
Prodn.	4.11	34,560	3.60	34,560	3.20	34,560	2.88	34,560
Total F o/u (B)	9.70	81,540	8.49	81,540	7.55	81,540	6.80	81,540
Total Cost (A + B)	31.65	2,65,920	30.44	2,92,260	29.5	3,18,600	28.7	3,44,940
Profit	28.35	2,38,080	29.56	2,83,740	30.5	3,29,400	31.2	3,75,060
					0	0	5	5

Exercise

Self-assessment Questions 1

- _____ make or mar a business.
- _____ decisions involve large outlay of funds now in anticipation of cash inflows in future.
- Social, political, economic and technological forces make capital budgeting decisions _____.
- _____ are very expensive.

Self-assessment Questions 2

- Capital expenditure decisions are _____.
- Forecasting of future operating cash flows suffers from _____ because the future is _____.

Self-assessment Questions 3

- Post-completion audit is _____ in the phases of capital budgeting decisions.
- Identification of investment opportunities is the _____ in the phases of capital budgeting decisions.

Self-assessment Questions 4

- Analyzing the demand and supply conditions of the market for the company's products could be _____ of potential investment proposal.
- Generation of ideas for capital budgets and screening the same can be considered _____ of capital budgetary decisions.

Self-assessment Questions 5

1. _____ decisions could be grouped into two categories.
2. _____ and revenue generation are the two important categories of capital budgeting.

Self-assessment Questions 6

1. _____ examines the project from the social point view.
2. All technical aspects of the implementation of the project are considered in _____.
3. _____ of a project is examined by financial appraisal.
4. Among the elements that are to be examined under commercial appraisal, the most crucial one is the _____.

Self-assessment Questions 7

1. Formulating is the third step in the evaluation of investment proposal.
2. A _____ is not a relevant cost for the project decision.
3. Effect of a project on the working of other parts of a firm is known as _____.
4. The essence of separation principle is the necessity to treat _____ of a project separately from that of _____.
5. Payback period _____ time value of money.
6. IRR gives a rate of return that reflects the _____ the project.

Answer for Self-assessment Questions**Self-assessment Questions 1**

1. Capital budgeting
2. Capital budgeting
3. Highly complex
4. Capital budgeting decisions

Self-assessment Questions 2

1. Irreversible.
2. Uncertainty, highly uncertain.

Self-assessment Questions 3

1. Final step.
2. First step

Self-assessment Questions 4

1. A fertile source
2. The most crucial phase

Self-assessment Questions 5

1. Capital budgeting
2. Cost reduction

Self-assessment Questions 6

1. Economic appraisal
2. Technical appraisal
3. Financial viability
4. Demand for the product or service.

Self-assessment Questions 7

1. Decision criteria
2. Sunk cost

3. Externalities
4. Investment element; Financing element
5. Ignores
6. Profitability of

Self-assessment Questions 8

I. 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)]

Self-assessment Questions 9

II. Match the following.

- | Group A | Group B |
|----------------------|---|
| 1. Capital Budgeting | (i) time required to recover investment |
| 2. Payback | (ii) $\frac{\text{PV of Cash Inflow}}{\text{PV of Cash Outflow}}$ |
| 3. P.I. | (iii) non-cash expense |
| 4. Depreciation | (iv) excess of PV of cash inflow over original investment |
| 5. NPV | (v) average investment |
| | (vi) long-term investment decisions |

[Ans. (1-vi), (2-i), (3-ii), (4-iii), (5-iv)]

Self-assessment Questions 10

III. 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)]

Terminal Questions 1

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.

Terminal Questions 2

1. What do you mean by capital budgeting? What is its importance in business?
2. Explain the different techniques of capital budgeting.
3. Write short note on:
 - (a) Payback Period,
 - (b) Internal Rate of Return,
 - (c) Net Present Value.
4. What are the principal methods employed for ascertaining the profitability of a capital expenditure budget?
5. Explain the need for capital expenditure decisions.
6. What are the criteria for taking capital expenditure decisions.
7. What are the relevant factors for decisions in respect of capital expenditure?

Terminal Questions 3

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 advise 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:

- Year wise income statement under both the alternatives.
 - Payback period working and payback profitability statement if the company goes for first option.
 - 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 will 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 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?

[Ans. NPV A-3,00,000, B-22.34; PBP A-2.33, B-2.35]

11. A choice is to be 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 to be taken at 50%.

	Machine A (₹)	Machine B (₹)
Cost of machine	50,000	80,000
Working life	4year	6year
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 are 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:

- Payback method [X: 3.102; Y: 3.88]
- Average rate of return method
- 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

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	60,000
	Variable Overheads	24,000	20,000

[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.

$$[\text{Ans: (a) 2 years. (b) } \frac{80,000}{2,00,000} \times 100 = 40\%]$$

(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.

$$[\text{Ans. (a) X = 1.25 year; Y = 1.40 year. (b) X = 96.3\%; Y = 103.7\%}]$$

(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	3,000
2	5,000
3	7,000
4	9,000
5	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,

$$\text{Average Investment} = \text{Scrap} + \frac{1}{2} (\text{Cost} - \text{Scrap})$$

$$[\text{Ans: (a) 3 years} + \left(\frac{7,000}{19,000}\right) = 3.368 \text{ years. (b) 25.92\%}]$$

(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

A			
Sales	5,00,000		
(–) Cost of Production	–1,80,000		(all overheads)
	3,20,000		

- (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 $5\frac{1}{2}$ 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	
	A	A		
Sales	1,50,000	1,50,000		
Costs: Material		50,000	50,000	
Labour	12,000	60,000		
Variable Overheads		24,000	20,000	

[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) $\times 100 = 40\%$]

(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	
	A	A		
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 3,000
	2 5,000
	3 7,000
	4 9,000
	5 11,000
	35,000

Estimated Life is 5 years.

Estimated Scrap Value is ₹ 2,000.

Hints: (i) For Payback period, add back depreciation of A 5,000 every year.

(ii) Add Scrap Value for Payback period in 5th year.

(iii) For Average Rate of Return,

Average Investment = Scrap + (Cost – Scrap)

[Ans: (a) 3 years + = 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:

A	
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 A 40,000.

Calculate: (a) Payback Period. (b) Average Rate of Return.

[Ans.

[Hint: Yearly Profit = [Sales – Direct Materials – Labour – Overheads – Depreciation – Tax] + Depreciation

A	
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 Pay-back Period = $\frac{3,00,000}{2,44,000}$	= 1.23 years

$$\begin{aligned} \text{Average Rate of Return} &= \frac{1,14,000}{40,000 + \left(\frac{3,00,000 - 40,000}{2}\right)} \times 100 \\ &= \frac{1,14,000}{1,70,000} \times 100 = 67.05\% \end{aligned}$$

(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.

$$[\text{Ans. (a) } 3 \text{ years} + \left(\frac{8,125}{20,000}\right) = 3.405 \text{ years. (b) } \frac{7,375}{29,562.50} \times 100 = 24.9\%]$$

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 1/5 years; B = 1 1/2 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 (A)	7,000	7,000	7,000	7,000	7,000

Year	6	7	8	9	10
Net Cash Flow (A)	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 (A in lakhs)	1.5	2.0	2.5	1.5	1.0
Machine B (A 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.

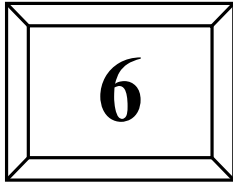
The present value factor at 9% for 5 years is 3.890.

(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]



Sources of Finance

Introduction

There are many (types) sources of finance, which would all provide the business with a quick source of money, which will have to be paid back. But the amount the company needs can limit them to a range of sources of finance and methods of repayment e.g. interest. The sources of finance can be split up into three types; long-term, medium-term and short-term. Long-term finance is mainly for companies who need a large sum of money, which would be difficult to be paid back, this would be used to provide start-up capital to finance the business for its whole lifespan, finance the purchase of assets with a longer life, such as buildings and provide expansion capital for large projects, such as building a new factory or taking over another business. The repayment as it is so much would be paid over a number of years rather than straight away. Medium-term finance is again for high sums of money needed but not as high as long-term, these usually would be used to finance the purchase of assets with a two to five year life, such as vehicles and computers, to replace an overdraft which is difficult to clear and is proving expensive and to finance a change in strategy, such as to switch marketing focus from Britain to the whole of Europe etc. But the repayment would be faster than long-term, such as in a couple of years etc. Short-term finance is when a company needs money quickly for immediate things, which are temporary; the repayments are much quicker than the others. They would be used to bridge temporary finance gaps, to get through periods when cash flow is poor and to cover temporary needs for extra funds due to unexpected problems or opportunities. There are possible sources of finance, which are available to a Limited company.

(a) Needs of Finance and Sources: Long-term, Medium-term, Short-term:

Financial needs of a business may be classified into two on the basis of the extent of permanence:

Fixed Capital: The funds required to purchase fixed or durable assets are known as fixed capital or long-term capital. The fixed or durable assets include land, buildings, machinery, equipment and furniture etc. The nature and size of the business generally determines the amount of fixed capital needed. For e.g., manufacturing activities require large investments in plant, machinery, warehouses and others. While, trading concerns need relatively lesser investment in such assets. These assets continue to generate income and profits over an extended period of time. Also, funds which are once invested in fixed assets cannot be withdrawn and put to some other use.

Working Capital: Money invested in short-term assets or current assets is known as working capital. It includes purchase of raw materials, payment of wages and salaries, rent, fuel, electricity and water, repairs and maintenance of machinery, advertising, etc. Besides, sale of goods on credit leads to the holding of debtors balance and bills receivable, which may also be regarded as current assets. The requirement of finance for all these purposes arises at short intervals. Working capital is also known as Circulating capital or Revolving capital because funds invested in such assets are continuously recovered through realisation of cash, and again reinvested in current assets. The amount of working capital required depends mainly on the nature of the business, the time required for completing the manufacturing process, and the terms on which

materials are purchased and goods sold. For e.g. trading companies require more working capital than manufacturing companies.

On the basis of period of use, the financial needs of the business may be classified into:

Short-term Finance

Short-term finance is required for a shorter period, i.e., less than a year. It involves financing the current assets and meeting day to day expenses.

Need of Short-term Finance

After establishment of a business, funds are required to meet its day to day expenses. For example raw materials must be purchased at regular intervals, workers must be paid wages regularly, water and power charges have to be paid regularly. Thus, there is a continuous necessity of liquid cash to be available for meeting these expenses. For financing such requirements short-term funds are needed. The availability of short-term funds is essential. Inadequacy of short-term funds may even lead to closure of business.

Short-term finance serves following purposes

1. It facilitates the smooth running of business operations by meeting day to day financial requirements.
2. It enables firms to hold stock of raw materials and finished product.
3. With the availability of short-term finance, goods can be sold on credit. Sales are for a certain period and collection of money from debtors takes time. During this time, gap in production continues and money will be needed to finance various operations of the business.
4. Short-term finance becomes more essential when it is necessary to increase the volume of production at a short notice.
5. Short-term funds are also required to allow flow of cash during the operating cycle. Operating cycle refers to the time gap between commencement of production and realisation of sales.

Sources of Short-term Finance

There are a number of sources of short-term finance which are listed below:

1. Trade credit
2. Bank credit
 - Loans and advances
 - Cash credit
 - Overdraft
 - Discounting of bills
3. Customers' advances
4. Instalment credit
5. Loans from cooperatives

1. Trade Credit: Usually in business dealing supplier give a grace period to their customers to pay for the purchases. This can range from 1 week to 90 days depending upon the type of business and industry. Trade credit refers to credit granted to manufactures and traders by the suppliers of raw material, finished goods, components, etc. Usually business enterprises buy supplies on a 30 to 90 days credit. This means that the goods are delivered but payments are not made until the expiry of period of credit. This type of credit does not make the funds available in cash but it facilitates purchases without making immediate payment. This is quite a popular source of finance. By delaying the payment of bills for goods or services received, a business is, in effect, obtaining finance which can be used for more important expenditures.

2. Money Market: It deals with Financing for short-term period of one year or less than one year. The instruments that come under this category are — bank credit, treasury bills, bills of exchange, certificate of deposits, commercial papers etc.

Bank Credit: Commercial banks grant short-term finance to business firms which is known as bank credit. When bank credit is granted, the borrower gets a right to draw the amount of credit at one time or in instalments as and when needed. Bank credit may be granted by way of loans, cash credit, overdraft and discounted bills.

Lending to smaller companies will be at a margin above the bank's base rate and at either a variable or fixed rate of interest. Lending on overdraft is always at a variable rate. A loan at a variable rate of interest is sometimes referred to as a floating rate loan. Longer-term bank loans will sometimes be available, usually for the purchase of property, where the loan takes the form of a mortgage. When a banker is asked by a business customer for a loan or overdraft facility, he will consider several factors, known commonly by the mnemonic PARTS.

- Purpose
- Amount
- Repayment
- Term
- Security

P	The purpose of the loan. A loan request will be refused if the purpose of the loan is not acceptable to the bank.
A	The amount of the loan. The customer must state exactly how much he wants to borrow. The banker must verify, as far as he is able to do so, that the amount required to make the proposed investment has been estimated correctly.
R	How will the loan be repaid? Will the customer be able to obtain sufficient income to make the necessary repayments?
T	What would be the duration of the loan? Traditionally, banks have offered short-term loans and overdrafts, although medium-term loans are now quite common.
S	Does the loan require security? If so, is the proposed security adequate?

(i) Loans: When a certain amount is advanced by a bank repayable after a specified period, it is known as bank loan. Such advance is credited to a separate loan account and the borrower has to pay interest on the whole amount of loan irrespective of the amount of loan actually drawn. Usually loans are granted against security of assets.

(ii) Cash Credit: It is an arrangement whereby banks allow the borrower to withdraw money upto a specified limit. This limit is known as cash credit limit. Initially this limit is granted for one year. This limit can be extended after review for another year. However, if the borrower still desires to continue the limit, it must be renewed after three years. Rate of interest varies depending upon the amount of limit. Banks ask for collateral security for the grant of cash credit. In this arrangement, the borrower can draw, repay and again draw the amount within the sanctioned limit. Interest is charged only on the amount actually withdrawn and not on the amount of entire limit.

(iii) Overdraft: When a bank allows its depositors or account holders to withdraw money in excess of the balance in his account up to a specified limit, it is known as overdraft facility. This limit is granted purely on the basis of credit-worthiness of the borrower.

(iv) Discounting of Bill: Banks also advance money by discounting bills of exchange, promissory notes and hundies. When these documents are presented before the bank for discounting, banks credit the amount to customer's account after deducting discount. The amount of discount is equal to the amount of interest for the period of bill.

(v) Commercial Paper: This is an unsecured promissory note with a fixed maturity of 1 to 364 days in the global money market. It is issued by large corporations to get financing to meet short-term debt obligations. It is only backed by an issuing bank or corporation's promise to pay the face amount on the maturity date specified on the note. Since it is not backed by collateral, only firms with excellent credit ratings from a recognized rating agency will be able to sell their commercial paper at a reasonable price. Asset-backed commercial paper (ABCP) is a form of commercial paper that is collateralized by other financial assets. ABCP is typically a short-term instrument that matures between 1 and 180 days from issuance and is typically issued by a bank or other financial institution.

(vi) Letter of Credit: This is a document that a financial institution or similar party issues to a seller of goods or services which provides that the issuer will pay the seller for goods or services the seller delivers to a third-party buyer. The issuer then seeks reimbursement from the buyer or from the buyer's bank. The document serves essentially as a guarantee to the seller that it will be paid by the issuer of the letter of credit, regardless of whether the buyer ultimately fails to pay.

3. Customers' Advances: Sometimes businessmen insist on their customers to make some advance payment. It is generally asked when the value of order is quite large or things ordered are very costly. Customers' advance represents a part of the payment towards price on the product (s) which will be delivered at a later date. Customers generally agree to make advances when such goods are not easily available in the market or there is an urgent need of goods. A firm can meet its short-term requirements with the help of customers' advances.

4. Instalment Credit: Instalment credit is nowadays a popular source of finance for consumer goods like television, refrigerators as well as for industrial goods. You might be aware of this system. Only a small amount of money is paid at the time of delivery of such articles. The balance is paid in a number of instalments. The supplier charges interest for extending credit. The amount of interest is included while deciding on the amount of instalment. Another comparable system is the hire purchase system under which the purchaser becomes owner of the goods after the payment of last instalment. Sometimes commercial banks also grant instalment credit if they have suitable arrangements with the suppliers.

5. Loans from Cooperative Banks: Cooperative banks are a good source to procure short-term finance. Such banks have been established at local, district and state levels. District Cooperative Banks are the federation of primary credit societies. The State Cooperative Bank finances and controls the District Cooperative Banks in the state. They are also governed by Reserve Bank of India regulations. Some of these banks like the Vaish Cooperative Bank was initially established as a cooperative society and later converted into a bank. These banks grant loans for personal as well as business purposes. Membership is the primary condition for securing loan. The functions of these banks are largely comparable to the functions of commercial banks.

6. Factoring of Debts: It involves the business selling its bills receivable to a debt factoring company at a discounted price. In this way the business get access to instant cash.

Merits and Demerits of Short-term Finance

Short-term loans help business concerns to meet their temporary requirements of money. They do not create a heavy burden of interest on the organisation. But sometimes organisations keep away from such loans because of uncertainty and other reasons. Let us examine the merits and demerits of short-term finance.

Merits of short-term finance

- (a) Economical:** Finance for short-term purposes can be arranged at a short notice and does not involve any cost of raising. The amount of interest payable is also affordable. It is, thus, relatively more economical to raise short-term finance.

- (b) **Flexibility:** Loans to meet short-term financial need can be raised as and when required. These can be paid back if not required. This provides flexibility.
- (c) **No interference in management:** The lenders of short-term finance cannot interfere with the management of the borrowing concern. The management retain their freedom in decision making.
- (d) **May also serve long-term purposes:** Generally business firms keep on renewing short-term credit, e.g., cash credit is granted for one year but it can be extended up to 3 years with annual review.

After three years it can be renewed. Thus, sources of short-term finance may sometimes provide funds for long-term purposes.

Demerits of short-term finance

Short-term finance suffers from a few demerits which are listed below:

- (a) **Fixed burden:** Like all borrowings interest has to be paid on short-term loans irrespective of profit or loss earned by the organisation. That is why business firms use short-term finance only for temporary purposes.
- (b) **Charge on assets:** Generally short-term finance is raised on the basis of security of moveable assets. In such a case the borrowing concern cannot raise further loans against the security of these assets nor can these be sold until the loan is cleared (repaid).
- (c) **Difficulty of raising finance:** When business firms suffer intermittent losses of huge amount or market demand is declining or industry is in recession, it loses its creditworthiness. In such circumstances they find it difficult to borrow from banks or other sources of short-term finance.
- (d) **Uncertainty:** In cases of crisis business firms always face the uncertainty of securing funds from sources of short-term finance. If the amount of finance required is large, it is also more uncertain to get the finance.
- (e) **Legal formalities:** Sometimes certain legal formalities are to be complied with for raising finance from short-term sources. If shares are to be deposited as security, then transfer deed must be prepared.

Medium-term finance: Medium-term Finance are loans for a period of from three to five years. The rate of interest charged on medium-term bank lending to large companies will be a set margin, with the size of the margin depending on the credit standing and riskiness of the borrower. A loan may have a fixed rate of interest or a variable interest rate, so that the rate of interest charged will be adjusted every three, six, nine or twelve months in line with recent movements in the Base Lending Rate. It involves financing certain activities like renovation of buildings, modernisation of machinery, heavy expenditure on advertising, etc. Medium-term and long-term financing are also customarily referred to as term financing. Various credit instruments can fall under these categories. For instance, there are short term loans, medium-term loans and long-term loans. Bonds, lease financing, and other securities are usually designed to be medium-term and long-term financing instruments.

Bank term loan: This is possibly the simplest form of loans available to businesses. The average bank manager dealing with a medium sized firm and responsible to head office for the performance of the branch uses a set of well-defined criteria when making a loan. A bank loan is for a fixed amount at a fixed rate of interest. There is likely to be a demand for regular payments.

The advantages of a bank term loan is that financial planning is made easier as repayments are made in regular instalments and the interest rate are often fixed, but the disadvantages are the smaller the business the higher rates paid due to presenting a higher risk of things going wrong.

Long-term Finance: Long-term sources or funds are required to create production facilities through purchases of fixed assets such as plant, machinery, land, building, furniture, etc. Investments in these assets represent that part of firm's capital which is blocked on a permanent or fixed basis and is called fixed

capital. Long-term Finance is required for a longer period, i.e., five years or more. The fixed assets as well as the permanent part of the working capital is financed by it.

The important sources of long-term finance are:-

The capital markets:

- (i) New share issues, for example, by companies acquiring a stock market listing for the first time
- (ii) Rights issues

Issue of debentures

Loans from financial institutions

Reinvestment of profit

- Loan stock
- Retained earnings
- Bank borrowing
- Government sources
- Business expansion scheme funds
- Venture capital
- Franchising

Ownership Capital: It is the amount of capital invested in a business by its owners. It is on the basis of the amount invested that the owners become entitled to the profits of the business. Under sole proprietorship, the individual owner normally invests capital from his own savings. In partnership, each partner contributes capital as mutually agreed among partners. While companies raise capital by issuing shares. The investors who contribute towards the share capital of a company become its owners by virtue of their shareholdings. The rate of return on owners investment depends on the level of profits earned and are entitled to receive dividend out of these profits. Ownership capital is generally used as permanent capital or long-term capital.

Borrowed Capital: The financial requirements of the business are often met by raising loans. Borrowed money involves a fixed obligation to pay interest and repay the principal amount as and when due. In a sole proprietary business the proprietor can borrow money on his personal security or on the security of his existing assets. A partnership firm can raise loans on the personal security of the individual partners. Companies can also borrow either by issuing debentures or bonds, or raise direct loans. Money may be borrowed for short-term and long-term, i.e., to finance fixed assets as well as current assets.

Issue of Shares: This is the issuing of shares of the business to other investors who want to buy into the company.

The main advantage of issuing shares is that the shareholders have limited liability if the business fails. Personal possessions are not at risk and their liability is limited to the actual capital invested. Also the capital is raised by issuing shares (which are a proportion of what the company is worth) to investors, who are encouraged to buy by the promise of receiving dividends or profits on their shares. Also shares can be sold as preference shares which offer a fixed return as profits change from year to year, according to how well the company has done.

The disadvantages of selling shares are the administrative costs of issuing shares are high. Also it is difficult to estimate the market price of shares, though this problem can be avoided if tender issues them, where investors state how much they are willing to pay for them. Also the price of the shares can go up or down and shareholders may have to sell at a lower price than they bought it. Also the shares of a limited company will have to be sold privately, which costs money and investors would might not want to invest due to the lack of hassle from buying into a Plc.

Reinvested Profits: This is the money that the business makes being re-invested into the business to aid its plans.

The advantage of this is capital can be raised by the company reinvesting or ploughing back the profits made at the end of the year, after expenses and dividends to shareholders have been paid.

The disadvantage of this is profits may be scarce or non-existent, especially in times of recession.

Capital Market: It deals with financial securities having a long maturity period of more than one year. Instruments that come under this category are debentures, equity and preference stock, etc.

Ordinary (equity) shares: Ordinary shares are issued to the owners of a company. They have a nominal or 'face' value, typically of \$1 or 50 cents. The market value of a quoted company's shares bears no relationship to their nominal value, except that when ordinary shares are issued for cash, the issue price must be equal to or be more than the nominal value of the shares.

Deferred ordinary shares are a form of ordinary shares, which are entitled to a dividend only after a certain date or if profits rise above a certain amount. Voting rights might also differ from those attached to other ordinary shares.

Ordinary shareholders put funds into their company:

- (a) by paying for a new issue of shares
- (b) through retained profits.

Simply retaining profits, instead of paying them out in the form of dividends, offers an important, simple low-cost source of finance, although this method may not provide enough funds, for example, if the firm is seeking to grow.

A new issue of shares might be made in a variety of different circumstances:

- (a) The company might want to raise more cash. If it issues ordinary shares for cash, should the shares be issued pro rata to existing shareholders, so that control or ownership of the company is not affected? If, for example, a company with 200,000 ordinary shares in issue decides to issue 50,000 new shares to raise cash, should it offer the new shares to existing shareholders, or should it sell them to new shareholders instead?
 - (i) If a company sells the new shares to existing shareholders in proportion to their existing shareholding in the company, we have a rights issue. In the example above, the 50,000 shares would be issued as a one-in-four rights issue, by offering shareholders one new share for every four shares they currently hold.
 - (ii) If the number of new shares being issued is small compared to the number of shares already in issue, it might be decided instead to sell them to new shareholders, since ownership of the company would only be minimally affected.
- (b) The company might want to issue shares partly to raise cash, but more importantly to float its shares on a stock exchange.
- (c) The company might issue new shares to the shareholders of another company, in order to take it over.

New shares issues: A company seeking to obtain additional equity funds may be:

- (a) an unquoted company wishing to obtain a Stock Exchange quotation
- (b) an unquoted company wishing to issue new shares, but without obtaining a Stock Exchange quotation
- (c) a company which is already listed on the Stock Exchange wishing to issue additional new shares.

The methods by which an unquoted company can obtain a quotation on the stock market

- (a) an offer for sale
- (b) a prospectus issue

- (c) a placing
- (d) an introduction.

Offers for sale: An offer for sale is a means of selling the shares of a company to the public.

- (a) An unquoted company may issue shares, and then sell them on the Stock Exchange, to raise cash for the company. All the shares in the company, not just the new ones, would then become marketable.
- (b) Shareholders in an unquoted company may sell some of their existing shares to the general public. When this occurs, the company is not raising any new funds, but just providing a wider market for its existing shares (all of which would become marketable), and giving existing shareholders the chance to cash in some or all of their investment in their company.

When companies 'go public' for the first time, a 'large' issue will probably take the form of an offer for sale. A smaller issue is more likely to be a placing, since the amount to be raised can be obtained more cheaply if the issuing house or other sponsoring firm approaches selected institutional investors privately.

Rights issues: A rights issue provides a way of raising new share capital by means of an offer to existing shareholders, inviting them to subscribe cash for new shares in proportion to their existing holdings.

For example, a rights issue on a one-for-four basis at A 280 per share would mean that a company is inviting its existing shareholders to subscribe for one new share for every four shares they hold, at a price of ₹ 280 per new share.

A company making a rights issue must set a price which is low enough to secure the acceptance of shareholders, who are being asked to provide extra funds, but not too low, so as to avoid excessive dilution of the earnings per share.

Preference shares: Preference shares have a fixed percentage dividend before any dividend is paid to the ordinary shareholders. As with ordinary shares a preference dividend can only be paid if sufficient distributable profits are available, although with 'cumulative' preference shares the right to an unpaid dividend is carried forward to later years. The arrears of dividend on cumulative preference shares must be paid before any dividend is paid to the ordinary shareholders.

From the company's point of view, preference shares are advantageous in that:

- Dividends do not have to be paid in a year in which profits are poor, while this is not the case with interest payments on long-term debt (loans or debentures).
- Since they do not carry voting rights, preference shares avoid diluting the control of existing shareholders while an issue of equity shares would not.
- Unless they are redeemable, issuing preference shares will lower the company's gearing. Redeemable preference shares are normally treated as debt when gearing is calculated.
- The issue of preference shares does not restrict the company's borrowing power, at least in the sense that preference share capital is not secured against assets in the business.
- The non-payment of dividend does not give the preference shareholders the right to appoint a receiver, a right which is normally given to debenture holders.

However, dividend payments on preference shares are not tax deductible in the way that interest payments on debt are. Furthermore, for preference shares to be attractive to investors, the level of payment needs to be higher than for interest on debt to compensate for the additional risks.

For the investor, preference shares are less attractive than loan stock because:

- they cannot be secured on the company's assets
- the dividend yield traditionally offered on preference dividends has been much too low to provide an attractive investment as compared with the interest yields on loan stock in view of the additional risk involved.

Loan stock: Loan stock is long-term debt capital raised by a company for which interest is paid, usually half yearly and at a fixed rate. Holders of loan stock are therefore long-term creditors of the company.

Loan stock has a nominal value, which is the debt owed by the company, and interest is paid at a stated “coupon yield” on this amount. For example, if a company issues 10% loan stock the coupon yield will be 10% of the nominal value of the stock, so that A 100 of stock will receive A 10 interest each year. The rate quoted is the gross rate, before tax.

Debentures are a form of loan stock, legally defined as the written acknowledgement of a debt incurred by a company, normally containing provisions about the payment of interest and the eventual repayment of capital.

Debenture Loans: A debenture is a long-term loan, which does not have to be repaid until an agreed date. Debenture holders are entitled to a fixed rate of the return year and have priority over all the shareholders.

The advantage of this is that individuals can supply capital to a company in the form of a long-term loan called debentures, which have to be repaid on an agreed date. These payments take priority over payments to all other shareholders.

The disadvantage is that the company has to offer some security for the loan, which can be sold if the company cannot meet the payments. In the case of a fixed debenture this is a specific asset such as a building or land.

Debentures with a Floating Rate of Interest

These are debentures for which the coupon rate of interest can be changed by the issuer, in accordance with changes in market rates of interest. They may be attractive to both lenders and borrowers when interest rates are volatile.

Security: Loan stock and debentures will often be secured. Security may take the form of either a *fixed charge* or a *floating charge*.

(a) Fixed charge: Security would be related to a specific asset or group of assets, typically land and buildings. The company would be unable to dispose of the asset without providing a substitute asset for security, or without the lender’s consent.

(b) Floating charge: With a floating charge on certain assets of the company (for example, stocks and debtors), the lender’s security in the event of a default payment is whatever assets of the appropriate class the company then owns (provided that another lender does not have a prior charge on the assets). The company would be able, however, to dispose of its assets as it chose until a default took place. In the event of a default, the lender would probably appoint a receiver to run the company rather than lay claim to a particular asset.

The redemption of loan stock: Loan stock and debentures are usually redeemable. They are issued for a term of ten years or more, and perhaps 25 to 30 years. At the end of this period, they will “mature” and become redeemable (at par or possibly at a value above par).

Most redeemable stocks have an earliest and latest redemption date. For example, 18% Debenture Stock 2007/09 is redeemable, at any time between the earliest specified date (in 2007) and the latest date (in 2009). The issuing company can choose the date. The decision by a company when to redeem a debt will depend on:

- (a) how much cash is available to the company to repay the debt
- (b) the nominal rate of interest on the debt. If the debentures pay 18% nominal interest and the current rate of interest is lower, say 10%, the company may try to raise a new loan at 10% to redeem the debt which costs 18%. On the other hand, if current interest rates are 20%, the company is unlikely

to redeem the debt until the latest date possible, because the debentures would be a cheap source of funds.

There is no guarantee that a company will be able to raise a new loan to pay-off a maturing debt, and one item to look for in a company's balance sheet is the redemption date of current loans, to establish how much new finance is likely to be needed by the company, and when.

Mortgages are a specific type of secured loan. Companies place the title deeds of freehold or long leasehold property as security with an insurance company or mortgage broker and receive cash on loan, usually repayable over a specified period. Most organisations owning property which is unencumbered by any charge should be able to obtain a mortgage up to two thirds of the value of the property.

As far as companies are concerned, debt capital is a potentially attractive source of finance because interest charges reduce the profits chargeable to corporation tax.

Mortgage Loans: This is a loan where the lender insists on some asset of the business being tied to the repayment of the loan. In the event of bankruptcy or liquidation that lender will then have priority on the money from the sale of that asset for the repayment of the loan. The asset is always land or property.

The advantage of this is capital is often supplied by pension or insurance funds for a loan over 25-30 years for buildings or land, with the asset as security.

The disadvantage of this the loans are usually only given when large sums are required.

Retained earnings: For any company, the amount of earnings retained within the business has a direct impact on the amount of dividends. Profit re-invested as retained earnings is profit that could have been paid as a dividend. The major reasons for using retained earnings to finance new investments, rather than to pay higher dividends and then raise new equity for the new investments, are as follows:

- (a) The management of many companies believes that retained earnings are funds which do not cost anything, although this is not true. However, it is true that the use of retained earnings as a source of funds does not lead to a payment of cash.
- (b) The dividend policy of the company is in practice determined by the directors. From their standpoint, retained earnings are an attractive source of finance because investment projects can be undertaken without involving either the shareholders or any outsiders.
- (c) The use of retained earnings as opposed to new shares or debentures avoids issue costs.
- (d) The use of retained earnings avoids the possibility of a change in control resulting from an issue of new shares.

Another factor that may be of importance is the financial and taxation position of the company's shareholders. If, for example, because of tax considerations, they would rather make a capital profit (which will only be taxed when shares are sold) than receive current income, then finance through retained earnings would be preferred to other methods.

A company must restrict its self-financing through retained profits because shareholders should be paid a reasonable dividend, in line with realistic expectations, even if the directors would rather keep the funds for re-investing. At the same time, a company that is looking for extra funds will not be expected by investors (such as banks) to pay generous dividends, nor over-generous salaries to owner-directors.

Leasing: Leasing, in general, allows a company use of an asset without having to pay the full amount upfront. A leasing agreement is drawn up with the lessee agreeing to pay periodic rental payments in exchange for the use of a capital asset. It is in effect a rental agreement, apart from a clause, which allows the lessee to own, or to buy over the machine at a reduced rate, at the end of the lease agreement. A lease is an agreement between two parties, the "lessor" and the "lessee". The lessor owns a capital asset, but allows the lessee to use it. The lessee makes payments under the terms of the lease to the lessor, for a specified period of time. Leasing is, therefore, a form of rental. Leased assets have usually been plant and machinery,

cars and commercial vehicles, but might also be computers and office equipment. There are two basic forms of lease: “operating leases” and “finance leases”.

Operating leases: Operating leases are rental agreements between the lessor and the lessee whereby:

- (a) the lessor supplies the equipment to the lessee
- (b) the lessor is responsible for servicing and maintaining the leased equipment
- (c) the period of the lease is fairly short, less than the economic life of the asset, so that at the end of the lease agreement, the lessor can either
 - (i) lease the equipment to someone else, and obtain a good rent for it, or
 - (ii) sell the equipment secondhand.

Finance leases: Finance leases are lease agreements between the user of the leased asset (the lessee) and a provider of finance (the lessor) for most, or all, of the asset’s expected useful life.

Suppose that a company decides to obtain a company car and finance the acquisition by means of a finance lease. A car dealer will supply the car. A finance house will agree to act as lessor in a finance leasing arrangement, and so will purchase the car from the dealer and lease it to the company. The company will take possession of the car from the car dealer, and make regular payments (monthly, quarterly, six monthly or annually) to the finance house under the terms of the lease.

Other important characteristics of a finance lease:

- (a) The lessee is responsible for the upkeep, servicing and maintenance of the asset. The lessor is not involved in this at all.
- (b) The lease has a primary period, which covers all or most of the economic life of the asset. At the end of the lease, the lessor would not be able to lease the asset to someone else, as the asset would be worn out. The lessor must, therefore, ensure that the lease payments during the primary period pay for the full cost of the asset as well as providing the lessor with a suitable return on his investment.
- (c) It is usual at the end of the primary lease period to allow the lessee to continue to lease the asset for an indefinite secondary period, in return for a very low nominal rent. Alternatively, the lessee might be allowed to sell the asset on the lessor’s behalf (since the lessor is the owner) and to keep most of the sale proceeds, paying only a small percentage (perhaps 10%) to the lessor.

Why Might Leasing be Popular?

The attractions of leases to the supplier of the equipment, the lessee and the lessor are as follows:

- The supplier of the equipment is paid in full at the beginning. The equipment is sold to the lessor, and apart from obligations under guarantees or warranties, the supplier has no further financial concern about the asset.
- The lessor invests finance by purchasing assets from suppliers and makes a return out of the lease payments from the lessee. Provided that a lessor can find lessees willing to pay the amounts he wants to make his return, the lessor can make good profits. He will also get capital allowances on his purchase of the equipment.
- Leasing might be attractive to the lessee:
 - (i) if the lessee does not have enough cash to pay for the asset, and would have difficulty obtaining a bank loan to buy it, and so has to rent it in one way or another if he is to have the use of it at all; or
 - (ii) if finance leasing is cheaper than a bank loan. The cost of payments under a loan might exceed the cost of a lease.

Operating Leases have Further Advantages:

- The leased equipment does not need to be shown in the lessee's published balance sheet, and so the lessee's balance sheet shows no increase in its gearing ratio.
- The equipment is leased for a shorter period than its expected useful life. In the case of high-technology equipment, if the equipment becomes out of date before the end of its expected life, the lessee does not have to keep on using it, and it is the lessor who must bear the risk of having to sell obsolete equipment secondhand.

The lessee will be able to deduct the lease payments in computing his taxable profits.

Hire purchase: Hire purchase is a form of instalment credit. Hire purchase is similar to leasing, with the exception that ownership of the goods passes to the hire purchase customer on payment of the final credit instalment, whereas a lessee never becomes the owner of the goods.

Hire purchase agreements usually involve a finance house.

- (i) The supplier sells the goods to the finance house.
- (ii) The supplier delivers the goods to the customer who will eventually purchase them.
- (iii) The hire purchase arrangement exists between the finance house and the customer.

The finance house will always insist that the hirer should pay a deposit towards the purchase price. The size of the deposit will depend on the finance company's policy and its assessment of the hirer. This is in contrast to a finance lease, where the lessee might not be required to make any large initial payment.

An industrial or commercial business can use hire purchase as a source of finance. With industrial hire purchase, a business customer obtains hire purchase finance from a finance house in order to purchase the fixed asset. Goods bought by businesses on hire purchase include company vehicles, plant and machinery, office equipment and farming machinery.

Government assistance: The government provides finance to companies in cash grants and other forms of direct assistance, as part of its policy of helping to develop the national economy, especially in high technology industries and in areas of high unemployment. For example, the Indigenous Business Development Corporation of Zimbabwe (IBDC) was set up by the government to assist small indigenous businesses in that country.

Venture capital: Venture capital is money put into an enterprise which may all be lost if the enterprise fails. A businessman starting up a new business will invest venture capital of his own, but he will probably need extra funding from a source other than his own pocket. However, the term 'venture capital' is more specifically associated with putting money, usually in return for an equity stake, into a new business, a management buy-out or a major expansion scheme.

The institution that puts in the money recognises the gamble inherent in the funding. There is a serious risk of losing the entire investment, and it might take a long time before any profits and returns materialise. But there is also the prospect of very high profits and a substantial return on the investment. A venture capitalist will require a high expected rate of return on investments, to compensate for the high risk.

A venture capital organisation will not want to retain its investment in a business indefinitely, and when it considers putting money into a business venture, it will also consider its "exit", that is, how it will be able to pull out of the business eventually (after five to seven years, say) and realise its profits. Examples of venture capital organisations are: Merchant Bank of Central Africa Ltd and Anglo American Corporation Services Ltd.

When a company's directors look for help from a venture capital institution, they must recognise that:

- the institution will want an equity stake in the company
- it will need convincing that the company can be successful
- it may want to have a representative appointed to the company's board, to look after its interests.

The directors of the company must then contact venture capital organisations, to try and find one or more which would be willing to offer finance. A venture capital organisation will only give funds to a company that it believes can succeed, and before it will make any definite offer, it will want from the company management:

- (a) a business plan
- (b) details of how much finance is needed and how it will be used
- (c) the most recent trading figures of the company, a balance sheet, a cash flow forecast and a profit forecast
- (d) details of the management team, with evidence of a wide range of management skills
- (e) details of major shareholders
- (f) details of the company's current banking arrangements and any other sources of finance
- (g) any sales literature or publicity material that the company has issued.

A high percentage of requests for venture capital are rejected on an initial screening, and only a small percentage of all requests survive both this screening and further investigation and result in actual investments.

Venture capital is risk capital, usually in the forms of loan and shares as a package, to provide a significant investment in a medium or large business.

The advantages of this are capital is supplied by venture capital firms who accept a certain degree of risk being inevitable. Also most venture capitalists also provide help in the form of back up management and financial expertise. Also the Government's Enterprise Investment Scheme offers incentives to private investors willing to invest in unquoted companies.

The disadvantages are that most venture capitalists are only interested in loans for more than £ 50,000 and some only consider ventures where more than £ 2,50,000 is involved, as the administration costs are not worthwhile on smaller projects. Also they charge a negotiation 20-40% in the firm's capital, as a return of their investment.

Franchising: Franchising is a method of expanding business on less capital than would otherwise be needed. For suitable businesses, it is an alternative to raising extra capital for growth. Franchisors include Budget Rent-a-Car, Wimpy, Nando's Chicken and Chicken Inn.

Under a franchising arrangement, a franchisee pays a franchisor for the right to operate a local business, under the franchisor's trade name. The franchisor must bear certain costs (possibly for architect's work, establishment costs, legal costs, marketing costs and the cost of other support services) and will charge the franchisee an initial franchise fee to cover set-up costs, relying on the subsequent regular payments by the franchisee for an operating profit. These regular payments will usually be a percentage of the franchisee's turnover.

Although the franchisor will probably pay a large part of the initial investment cost of a franchisee's outlet, the franchisee will be expected to contribute a share of the investment himself. The franchisor may well help the franchisee to obtain loan capital to provide his- share of the investment cost.

The advantages of franchises to the franchisor are as follows:

- The capital outlay needed to expand the business is reduced substantially.
- The image of the business is improved because the franchisees will be motivated to achieve good results and will have the authority to take whatever action they think fit to improve the results.

The advantage of a franchise to a franchisee is that he obtains ownership of a business for an agreed number of years (including stock and premises, although premises might be leased from the franchisor) together with the backing of a large organisation's marketing effort and experience. The franchisee is able to avoid some of the mistakes of many small businesses, because the franchisor has already learned from its own past mistakes and developed a scheme that works.

Corporate Bond: A corporate bond is a bond issued by a corporation to raise money effectively so as to expand its business. The term is usually applied to longer-term debt instruments, generally with a maturity date falling at least a year after their issue date.

Some corporate bonds have an embedded call option that allows the issuer to redeem the debt before its maturity date. Other bonds, known as convertible bonds, allow investors to convert the bond into equity.

Capital Notes: Capital notes are a form of convertible security exercisable into shares. They are equity vehicles. Capital notes are similar to warrants, except that they often do not have an expiration date or an exercise price (hence, the entire consideration the company expects to receive, for its future issue of shares, is paid when the capital note is issued). Many times, capital notes are issued in connection with a debt-for-equity swap restructuring: instead of issuing the shares (that replace debt) in the present, the company gives creditors convertible securities – capital notes – so the dilution will occur later.

Government Securities Market: Government securities market includes all those securities that are issued by the Central government and the state governments and other entities that are wholly owned by the government. They are also referred to as gilt-edged securities as the interest and repayment of principal are completely secured in this case. Depending upon the issuing body, securities can be classified into five categories:

- Central government securities
- State government securities
- Securities guaranteed by the Central Government for All India Financial Institutions like IDBI, IFCI, etc.
- Securities guaranteed by state government for state institutions like State Electricity Boards and Housing Boards.
- Treasury bills issued by the RBI

Stock Certificate: In case of stock issued by government, a stock certificate is given to the owner, which specifies that he is a registered holder in the book of Public Debt Office (PDO).

It indicates the interest rate, interest due dates and face value of the stock.

It is not transferable by endorsement. Transfer can take place only by means of a transfer deed, by which the transferee's name is substituted in the place of the transferor's name in the books of the PDO.

Interest payment by way of interest warrants and principal repayments are issued by the PDO to the domicile of the holder or to the specified local office of the RBI or any branch of the agent bank conducting government securities business in India.

International Equity Instruments

Global Depository Receipts (GDRs): A depository receipt is a negotiable instrument that represents the beneficial interest in shares issued by a company. A GDR is an instrument in the form of a depository receipt or certificate created by the Overseas Depository Bank outside India and issued to non-resident investors against the issue of ordinary shares or foreign currency convertible bonds of the issuing company. Depository in the case of a GDR is located in a foreign country, whereas the custodian is located in the home country of the issuer.

American Depository Receipts (ADRs): It is a dollar denominated negotiable certificate and represents publicly traded equities of non-US companies. Foreign private companies can issue shares of stock on the U.S. equity markets using ADRs. This allows U.S. investors to purchase stock of foreign companies, while allowing foreign companies to benefit from the vast shareholder base and liquidity of U.S. markets.

International Debt Instruments:

Euro bonds: These are the bonds that are issued outside the country of the currency in which they are denominated. Some of their important characteristics are:

- No withholding of taxes of any kind on interest payments.
- These bonds are in bearer form with interest coupon attached.
- They are traded on one or more stock exchanges but are generally traded in the

Over-the-Counter market.

The Eurobonds can be classified into two categories:

Fixed rate bonds/straight debt bonds: They are fixed interest-bearing securities, which are redeemable at face value. These bonds are redeemed by way of a lump sum amount at the end of the maturity period.

Floating Rate Notes (FRNs): They are bond issues with maturity period varying from 5 to 7 years and having varying coupon rates either pegged to another security or re-fixed at periodic intervals.

Foreign Bonds: These are bonds issued by foreign entities for raising medium to long-term financing from domestic money centers in their domestic currencies. The types of foreign bonds are:

Yankee Bonds: They are US dollar denominated bonds issued by foreign borrowers in the US markets.

Samurai Bonds: They are bonds issued by non-Japanese borrowers in the Japanese markets.

Bulldog Bonds: These are sterling denominated foreign bonds that are raised in the UK domestic securities market.

Shibosai Bonds: They are privately placed bonds issued in the Japanese markets.

Forex Market: As per the Foreign Exchange Regulation Act (1973) Sec. 2b, foreign exchange is defined as:

All deposits, credits, balance of payments in foreign currency and any drafts, travelers' cheques, letters of credit and bills of exchange expressed or drawn in Indian currency and payable in foreign currency;

Any instruments payable at the option of the drawee or holder thereof or any party thereto either in Indian currency or in foreign currency or partly in one and partly in the other.

Exchange rate is the rate at which one currency can be converted into another currency. It can be quoted in two ways:

Direct Quotation: In this case, the exchange rate is expressed as the price per unit of foreign exchange in terms of home currency equal to one unit of foreign currency.

Indirect quotation: In this method, the unit of home currency is kept constant and the exchange rate is expressed in terms of units of foreign currency.

Financial Institutions:

Industrial Development Bank of India (IDBI): It is an apex financial institution having the main objective of coordinating the functioning of all financial institutions. Some of its other functions are:

- To plan, promote and develop industries.
- To provide technical and administrative assistance for promotion or expansion of industry.
- To undertake market and investment research surveys.

Industrial Finance Corporation of India (IFCI): It is the first finance institution that was set up in 1948 by the Government of India with the objective of providing medium and long-term loans to large industrial concerns. Its resources are in the form of loans from the RBI, share capital, retained earnings, repayment of loans, bonds issue, loans from the government and credit from international markets.

Industrial Investment Bank of India (IIBI): It was established with the objective of financing the reconstruction and rehabilitation of sick and closed industrial units. Its functions include providing finance for the establishment of new industrial projects as well as for expansion, diversification and modernization of existing industrial enterprises. The other services provided by it are merchant banking, debt syndication and the entire package of services for mergers and acquisitions.

Export and Import Bank of India: It was set up in January 1982 as a statutory corporation wholly owned by the Central Government. It grants direct loans in India and outside for the purpose of exports and imports, refinances loans of banks and other notified financial institutions for the purpose of international trade, rediscounts usance export bills from banks, provides overseas investment finance for Indian companies towards their equity participation in joint ventures abroad and undertakes development of merchant banking activities in relation to export-oriented units.

State Financial Corporations: These were established for the purpose of providing finance to the small and medium sector, and to establish industrial estates. They provide finance in the form of term loans, by underwriting issues of shares and debentures, by subscribing to debentures and standing guarantee for loans raised from other institutions and from the general public.

State Industrial Development Corporations: They have been established to facilitate rapid industrial growth in the respective states. They also identify and sponsor projects in the joint sector with the private entrepreneur participation.

Investment Institutions

Life Insurance Corporation of India: It was established in 1956. Its central office is located in Mumbai. It is the general duty of the corporation to carry on life insurance business and to exercise its powers under the Act to ensure that the life insurance business is developed to the best advantage of the community. As per the LIC Act, it can invest up to 10% of the investible funds in the private sector. LIC provides finance by participating in a consortium with other institutions and does not undertake independent appraisal of projects.

General Insurance Corporation of India (GIC): GIC was established with the purpose of supervising, controlling and carrying on the business of general insurance. It can invest upto 30% of funds in the private sector. Like LIC, GIC also provides finance (depending upon the appraisal made by other financial institutions) by participating in a consortium.

Unit Trust of India: UTI commenced its operations from July 1964 “with a view to encouraging savings and investment and participation in the income, profits and gains accruing to the Corporation from the acquisition, holding, management and disposal of securities.” Unit Trust of India (UTI) is India’s first mutual fund organization. UTI manages funds amounting to Rs. 49,655.57 crore being the market value of investments as on 28th June 2002 (provisional) from 28.96 million investors under its 72 schemes. The faith and confidence of investors stems from UTI’s commitment, as reflected in its long track record of over three decades, to ensure its investors safety, and to provide liquidity and attractive yield on their investments.

Mutual Funds: They help in mobilizing funds from various categories of investors and direct them into productive investments. Apart from UTI, there are many mutual funds that are sponsored by various bank subsidiaries, LIC, GIC, private sector institutions, etc. and operate within the framework of SEBI guidelines

Advantages and Disadvantages of Long-term Finance:

Advantages

- Long-term debt financing is usually less prone to short-term shocks as it is secured by formally established contractual terms. Hence, they are relatively more stable than short-term debt.

- Long-term debt financing is directly linked to the growth of the company's operating capacity (purchase of capital assets such as machinery).
- Long-term debt is normally well structured and defined. Thus fewer resources have to be channeled to monitor and maintain long-term debt financing accounts (compared to short-term debt financing such as supplier credit which, changes over time and need to be monitored on a regular basis).
- Long-term debt financing options such as leases offer a certain degree of flexibility, compared to having to purchase the asset (E.g., machinery).

Disadvantages

- Long-term debt is often costly to service (interest charges are higher).
- Long-term debt financiers usually demand a great amount of information from the company to perform its credit evaluation.
- Start-ups usually find it more difficult to obtain long-term debt financing, or if they do, at unfavorable terms, as they have almost no proven track record, low cash flow, and small asset base.
- Long-term debt financing contracts normally contain a lot of restrictive clauses and covenants, including the scope of business operations that the company is allowed to engage in, capital and management structure limitations, etc.

Illustration 1. On 1st January 2011 Parrot Ltd. purchased from Penguin Ltd. machinery under hire purchase system, ₹ 5,00,000 being paid on delivery and the balance in five Installments of ₹ 7,50,000 each payable half-yearly on 30th June and 31 st December. The vendor charges interest @ 10% per annum. The cash price of the machinery was ₹ 37,50,000.

You are required to show how this transaction should be recorded in the books of Parrot Ltd., by preparing Machinery Account and Penguin Ltd. Account, If depreciation rate is 10% per annum on the written down value of the machinery. The accounts are to be prepared for the first two years only.

Solution:

Dr. **In the books of Parrot Ltd.** **Cr.**

Machinery A/c

Date	Particulars	Amount ₹	Date	Particulars	Amount ₹
2011 01-01-01	To Penguin Ltd. A/c	37,50,000	2011 31-12-11	By P&L A/c (Dep.)	3,75,000
		37,50,000	31-12-11	By Balance c/d	33,75,000
		37,50,000			37,50,000
2012 01-01-12	To Balance b/d	33,75,000	2012 31-12-12	By P&L A/c (dep.)	3,37,500
		33,75,000	31-12-12	By Balance c/d	30,37,500
		33,75,000			33,75,000
2013 01-01-13	To Balance b/d	30,37,500			

Dr. **Penguin Ltd.** **Cr.**

Date	Particulars	Amount ₹	Date	Particulars	Amount ₹
2011 01-01-11	To Bank A/c	5,00,000	2011 01-01-11	By Machinery A/c	37,50,000
30-06-11	To Bank a/c	7,50,000	30-06-11	By Interest on HP A/c	1,82,500
31-12-11	To Bank a/c	7,50,000	31-12-11	By Interest on HP A/c	1,33,125

31-12-11	To Balance c/d	22,45,625			
		40,45,625			40,45,625
2012			2012		
30-06-12	To Bank A/c	7,50,000	01-01-12	By Bal. b/d	20,45,825
31-12-12	To Bank a/c	7,50,000	30-06-12	By Interest on HP A/c	1,02,281
31-12-12	To Balance c/d	7,17,801	31-12-12	By Interest on HP A/c	69,895
		22,17,801			22,17,801
			2013		
			01-01-13	By Balance b/d	7,17,801

Working Notes: Cash Price ₹ 37,50,000

Date	Instalment	Interest (10%)	Principal	Balance
01-01-11	5,00,000*	—	5,00,000	32,50,000
30-06-11	7,50,000	1,82,500	5,87,500	26,62,500
31-12-11	7,50,000	1,33,125	6,16,875	20,45,825
30-08-12	7,50,000	1,02,281	6,47,719	13,97,906
31-12-12	7,50,000	69,895	6,80,105	7,17,801
30-06-13	7,50,000	32,199	(b/f)	7,17,801

* Down Payment

Illustration 2. On 1st April 2011 Vyas Ltd. purchased from Nokia Ltd. under hire purchases system; ₹ 7,50,000 being paid on delivery and the balance in 5 equal installments of ₹ 11,25,000 each payable yearly on 30th September and 31st March. The Nokia Ltd. charges interest @ 10% p.a. The cash price of the machinery was ₹ 56,25,000. The depreciation rate is 10% p.a. on WDV method,

You are required to show Machinery A/c and Nokia Ltd. in the books of Vyas Ltd. for the year ended 31st March 2012 and 2013 only.

Solution:

In the Books of Vyas Ltd.

Dr.		Machinery A/c		Cr.	
Date	Particulars	Amount (₹)	Date	Particulars	Amount (₹)
01-04-11	To Nokia Ltd,	56,25,000	31-03-12	By Depreciation a/c (10% on WDV)	5,62,500
			31-03-12	By Balance c/d	50,62,500
		56,25,000			56,25,000
01-04-12	To Balance bid	50,62,500	31-03-13	By Depreciation a/c (10% on WDV)	5,06,250
			31-03-13	By Balance c/d	45,56,250
		50,62,500			50,62,500
01-04-13	To Balance b/d	45,56,250			

Dr.		Nokia Ltd A/c		Cr.	
Date	Particulars	Amount (₹)	Date	Particulars	Amount (₹)
01-04-11	To Bank a/c	7,50,000	01-04-11	By Machinery a/c	56,25,000
30-09-12	To Bank a/c	11,25,000	30-09-11	By Interest a/c	2,43,750
31-03-12	To Bank a/c	11,25,000	31-03-12	By Interest a/c	1,99,688
31-03-12	To Balance c/d	30,68,438			
		60,68,438			60,68,438
30-09-12	To Bank a/c	11,25,000	01-04-12	By Balance b/d	30,68,438
31-03-13	To Bank a/c	11,25,000	30-09-12	By Interest a/c	1,53,422
31-03-13	To Bal. c/d	10,76,703	31-03-13	By Interest a/c	1,04,843

	33,26,703		33,26,703
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Working Note:

(1) Calculation of Interest

Particulars	(₹)
Cash Price	56,25,000
Less: Down Payment (Cash)	7,50,000
	48,75,000
Balance Instalments paid (11,25,000 × 5)	56,25,000
Interest	7,50,000

Analysis of Payment of Hire Purchase

Year	Cost of Machine at the beginning of the Period	Payment of Installment	Interest @ 10%	Principal Repayment	Cost of Machine at the end of the Period
01-04-11	56,25,000	7,50,000	—	7,50,000	48,75,000
30-09-11	48,75,000	11,25,000	2,43,750	8,81,250	39,93,750
31-03-12	39,93,750	11,25,000	1,99,688	9,25,312	30,68,438
30-09-12	30,68,438	11,25,000	1,53,422	9,71,578	20,96,860
31-03-13	11,25,000	10,48,43	10,20,157	10,76,703	
Total		62,50,000	7,50,000	60,00,000	

Figures rounded off to the nearest rupee.

Illustration 3. M/s. Sehwaq and Co. purchased a machinery worth ₹ 7,92,500 (Cash Price) from M/s Gambhir and Bros. on 1st January 2012. It was agreed by both the parties that the payment of machinery will be done as under:

Down Payment ₹ 1,58,500 on the date of purchase and the balance will be discharged in four half-yearly installment of ₹ 2 lakhs each, commencing from 30th June, 2012.

You are required to prepare Machinery Account and M/s. Gambhir and Bros. Account in the books of M/s. Sehwaq and Co. for calendar years 2012 and 2013 considering that M/s. Sehwaq and Co. closes its books of account on 31st December every year and charges depreciation on machinery @ 10% p.a. on Written Down Value Method.

Solution:**In the Books of M/s. Sehwaq and Co.**

Dr.			Cr.		
Machinery A/c					
Date	Particulars	Amount ₹	Date	Particulars	Amount ₹
01-01-12	To Gambhir & Co.	7,92,500	31-12-12	By Depreciation a/c (10%)	79,250
			31-12-12	By Balance	7,13,250
		7,92,500			7,92,500
01-01-13	To Balance b/d	7,13,250	31-12-13	By Depreciation a/c (10%)	71,325
			31-12-13	By Balance c/d	6,41,925
		7,13,250			7,13,250

Dr.			Cr.		
M/s Gambhir and Bros a/c					
Date	Particulars	Amount ₹	Date	Particulars	Amount ₹
01-01-12	To Bank a/c	1,58,500	01-01-12	By Machinery	7,92,500
30-06-12	To Bank a/c	2,00,000	30-06-12	By Interest	16,600
31-12-12	To Bank a/c	2,00,000	31-12-12	By Interest	33,200
31-12-12	To Balance c/d	2,83,800			

30-06-13	To Bank a/c	8,42,300	01-01-12	By Balance b/d	8,42,300
31-12-13	To Bank a/c	2,00,000	30-06-13	By Interest	2,83,800
		2,00,000	30-12-13	By Interest	49,800
		4,00,000			66,400
					4,00,000

Calculations of Interest

Particulars	Amount ₹
Cash Price	7,92,500
Less: Cash 1st Installment	1,58,500
	6,34,000
Balance paid (2,00,000 × 4)	8,00,000
Interest	1,66,000

30-06-12	16,600	1
31/12/12	33,200	2
30-06-13	49,800	3
31/12-13	66,400	4
	<u>1,66,000</u>	

Illustration 4. Rose Ltd. has purchased machinery from Machinewala Ltd. on hire purchase basis. The details of purchase are: Cash Price ₹ 31,70,000. Down Payment 20% and remaining amount to be discharged in four half yearly Installments of ₹ 8,00,000 each. Prepare a table to show the analysis of payment and calculation of interest.

Solution:

Rose Ltd.
Analysis of Payment of Hire Purchase

Year	Cost of Machine at the beginning of the year	Payment of Installment	Interest @ 10%	Principal Repayment	Cost of Machine at the end of the year
	31,70,000	6,34,000	—	6,34,000	25,36,000
1	25,36,000	8,00,000	2,53,600	5,46,400	19,89,600
2	19,89,600	8,00,000	1,98,960	6,01,040	13,88,560
3	13,88,560	8,00,000	1,38,856	6,61,144	7,27,416
4	7,27,416	8,00,000	72,584	7,27,416	—
Total		38,34,000	6,64,000	31,70,000	—

* Rounding off difference adjusted

Workings:

$$(1) \text{ Down Payment} = \text{Cash Price} \times 20\% \\ = 31,70,000 \times 20\% \\ = ₹ 6,34,000$$

$$(2) \frac{\text{Cost of Asset}}{\text{PVAF of ₹ 1 @ } _ \% \text{ for } _ \text{ years}} \\ \text{PVAF} = \frac{\text{Cost of Asset Less Down Payment}}{\text{Instalment}} \\ = \frac{25,36,000}{8,00,000}$$

$$\text{PVAF @ 10\%} = 3.17$$

(Note: In the Question instead of 4 half yearly installments It should be 4 yearly Installments.)

Illustration 5. Lotus Ltd. issued shares of ₹ 10 each amounting to ₹ 100 lakhs. The company appointed a merchant banker as book-runner who collected Information from various investors to book-building purpose. The quote prices of various investors are:

A quoted price for each share @ ₹ 9.50 for ₹ 10 Lakhs

B quoted price for each share @ ₹ 9.80 for ₹ 50 Lakhs

C quoted price for each share @ ₹ 10.10 for ₹ 10 Lakhs

D quoted price for each share @ ₹ 10.00 for ₹ 20 Lakhs

E quoted price for each share @ ₹ 9.90 for ₹ 10 Lakhs

Based on the above information and data, compute the weighted average Issue price as would be calculated by the merchant banker for book-building purposes.

Solution:

Lotus Ltd.

Investors	No. of Shares × Quoted Price per Share = Total Quoted Amount		
A	1,05,263.15	9.50	10,00,000
B	5,10,204.08	9.80	50,00,000
C	99,009.90	10.10	10,00,000
D	2,00,000.00	10.00	20,00,000
E	1,01,010.10	9.90	10,00,000
Total	10,15,487.23	9.85	1,00,00,000

$$\text{Weighted Average Issue Price} = \frac{\text{Total Quoted Amount}}{\text{Total Number of Shares}}$$

$$= \frac{1,00,00,000}{10,15,487.23}$$

$$\text{Weighted Average Issue Price} = ₹ 9.85 \text{ per Share}$$

Exercise

Self-assessment Questions 1

- Short-term finance is essential for _____ day to day expenditure.
- Overdraft limit is granted on the basis of _____ of customer.
- Banks ask for _____ security while granting cash credit.
- While making payment on discounted bill, banks deduct _____ which is equal to the amount of interest for the period of bill.
- When suppliers extend credit to the buyers it is called _____.
- Under _____ and _____ cash does not flow in.

[Ans. (1) meeting (2) credit worthiness (3) collateral (4) discount (5) trade credit
(6) trade credit, instalment credit.]

Self-assessment Questions 2

- Raising funds for short-term purposes is _____ (costly, economical).
- Short-term finance _____ serve long-term purpose (may, does not)
- Trade credit is for a _____ period of time but bank credit may be extended. (specific, uncertain)

4. Payment after a specific date is _____ in case of bank credit. (compulsory, not compulsory)
5. Discounting of bill _____ cash immediately (provides/does not provide).

[Ans. (1) economical (2) may (3) specific (4) not compulsory (5) provides]

Self-assessment Questions 3

- (i) Limit in case of cash credit is generally less than that in case of bank overdraft.
- (ii) Bank overdraft is granted on the basis of credit-worthiness of customer.
- (iii) The method of charging interest is same in case of bank overdraft and cash credit.
- (iv) Banks do not open separate account while advancing cash credit.
- (v) Besides personal security of borrower, banks insist upon the security of tangible goods while granting loan.

[Ans. (i) F (ii) T (iii) T (iv) F (v) T]

Self-assessment Questions 4

1. Instalment credit facilitates purchase of assets and equipments.
2. Customers' advances do not make cash immediately available.
3. Loans from co-operative banks are easily available to farmers for productive purposes.
4. Repayment is not made in case of customers' advances.
5. Co-operative credit facilitates replacements and renovation.

[Ans. (i) True (ii) False (iii) True (iv) True (v) False]

Terminal Questions 1

1. Why short-term finance is a necessity for business enterprises?
2. List the various sources of short-term finance.
3. Under what circumstances bank credit is preferable to trade credit.
4. Enumerate the various points of difference between cash credit and bank overdraft.
5. What are the differences between bank loan and bank overdraft?
6. Write any five equipments which you think should be taken on instalment credit. Give reasons for your answer.
7. What are the merits of customers' advance.

Sources of Finance. Mini Case Study:

Outdoor Living Ltd., an owner-managed company, has developed a new type of heating using solar power, and has financed the development stages from its own resources. Market research indicates the possibility of a large volume of demand and a significant amount of additional capital will be needed to finance production.

Advise Outdoor Living Ltd. on:

- (a) the advantages and disadvantages of loan or equity capital
- (b) the various types of capital likely to be available and the sources from which they might be obtained
- (c) the method(s) of finance likely to be most satisfactory to both Outdoor Living Ltd. and the provider of funds.

Terminal Questions 2

- (1) On 1st January 2011, Jackson Ltd. purchased from India Ltd. machinery under hire purchase system, ₹ 10,00,000 being paid on delivery and the balance in five installments of ₹ 15,00,000 each payable half-yearly on 30th June and 31st December. The vendor charges interest @ 10% per annum. The cash price of the machinery was ₹ 75,00,000.

You are required to show how this transaction should be recorded In the books of Jackson Ltd., by preparing Machinery Account and India Ltd. Account, if depreciation rate is 10% per annum on the written down value of the machinery. The accounts are to be prepared for the first two years only.

- (2) Kite Ltd. has purchased machinery from Lion Ltd. on hire purchase basis. The details of purchase are: Cash Price ₹ 63,40,000. Down Payment 20% and remaining amount to be discharged in four yearly Installments of ₹ 16,00,000 each. Prepare a table to show the analysis of payment and calculation of interest.
- (3) On 1st January 2011, Marie Ltd. purchased from Nest Ltd. machinery under hire purchase system, ₹ 2,50,000 being paid on delivery and the balance In five installments of ₹ 3,75,000 each payable half-yearly on 30th June and 31st December. The vendor charges Interest @ 10% per annum. The cash price of the machinery was ₹ 18,75,000.

You are required to show how this transaction should be recorded in the books of Marie Ltd., by preparing Machinery Account and Nest Ltd. Account, If depreciation rate is 10% per annum on the written down value of the machinery. The accounts are to be prepared for the first two years only.

- (4) King Ltd. has purchased machinery from Queen Ltd. on hire purchase basis. The details of purchase are: Cash Price ₹ 15,85,000. Down Payment 20% and remaining amount to be discharged In four yearly Installments of ₹ 4,00,000 each. Prepare a table to show the analysis of payment and calculation of interest.
- (5) Calculate NAV of a Sunshine Mutual Fund as on 31/03/2012 from the given information:

No. of Funds Outstanding Units: 6,000
Market Value of all Mutual Fund Holdings: ₹ 8,20,962
Liabilities of Mutual Fund Holdings: ₹ 2,20,962

- (6) Calculate NAV of a UTI Mutual Fund as on 31/03/2012 from the given Information:

No. of Funds Outstanding Units: 29,000
Market Value of all Mutual Fund Holdings: ₹ 2,18,96,422
Liabilities of Mutual Fund Holdings: ₹ 82,00,422

- (7) Echo Ltd. Issued shares of ₹ 20 each amounting to ₹ 200 lakhs. The company appointed a merchant banker as book-runner who collected information from various investors for book-building purpose. The quote prices of various investors are:

A quoted price for each share @ ₹ 19.00 for ₹ 20 Lakhs
B quoted price for each share @ ₹ 19.60 for ₹ 100 Lakhs
C quoted price for each share @ ₹ 20.20 for ₹ 20 Lakhs
D quoted price for each share @ ₹ 20.00 for ₹ 40 Lakhs
E quoted price for each share @ ₹ 19.80 for ₹ 20 Lakhs

Based on the above Information and data, compute the weighted average issue price as would be calculated by the merchant banker for book-building purposes.

- (8) Foxtrot Ltd. Issued shares of ₹ 50 each amounting to ₹ 500 lakhs. The company appointed a merchant banker as book-runner who collected information from various investors to book-building purpose. The quote prices of various investors are:

A quoted price for each share @ ₹ 47.50 for A 50 lakhs
B quoted price for each share @ ₹ 49.00 for A 250 Lakhs
C quoted price for each share @ ₹ 50.50 for A 50 Lakhs
D quoted price for each share @ ₹ 50.00 for A 100 Lakhs
E quoted price for each share @ ₹ 49.50 for A 50 Lakhs

Based on the above information and data, compute the weighted average issue price as would be calculated by the merchant banker for book-building purposes.