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FINANCIAL MANAGEMENT

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Group II Paper 4: Cost Accounting and Financial Management

(One paper – Three hours — 100 Marks)

Level of Knowledge: Working knowledge**Part I: Cost Accounting (50 Marks) Part II: Financial Management (50 Marks)****Objectives:**

- (a) To develop ability to analyse and interpret various tools of financial analysis and planning,
- (b) To gain knowledge of management and financing of working capital,
- (c) To understand concepts relating to financing and investment decisions, and
- (d) To be able to solve simple cases.

Contents:**1. Scope and Objectives of Financial Management**

- (a) Meaning, Importance and Objectives
- (b) Conflicts in profit versus value maximization principle
- (c) Role of Chief Financial Officer.

2. Time Value of Money: Compounding and Discounting techniques— Concepts of Annuity and Perpetuity.**3. Financial Analysis and Planning:**

- (a) Ratio Analysis for performance evaluation and financial health
- (b) Application of Ratio Analysis in decision making
- (c) Analysis of Cash Flow Statement.

4. Financing Decisions

- (a) Cost of Capital — Weighted average cost of capital and Marginal cost of capital.
- (b) Capital Structure decisions — Capital structure patterns, Designing optimum capital structure, Constraints, Various capital structure theories
- (c) Business Risk and Financial Risk-Operating & financial leverage, Trading on Equity.

5. Types of Financing:

- (a) Different sources of finance
- (b) Project financing—Intermediate and long term financing.
- (c) Negotiating term loans with banks and financial institutions and appraisal thereof
- (d) Introduction to lease financing
- (e) Venture capital finance.

6. Investment Decisions:

- (a) Purpose, Objective, Process
- (b) Understanding different types of projects.
- (c) Techniques of Decision making: Non-discounted and Discounted Cash flow Approaches— Payback Period method, Accounting Rate of Return, Net Present Value, Internal Rate of Return, Modified Internal Rate of Return, Discounted Payback Period and Profitability Index.
- (d) Ranking of competing projects, Ranking of projects with unequal lives.

7. Management of Working Capital:

- | | |
|-----------------------------------|--|
| (a) Working capital policies | (b) Funds flow analysis |
| (c) Inventory management | (d) Receivables management |
| (e) Payables management | (f) Management of cash & marketable securities |
| (g) Financing of working capital. | |

Basic of Financial Management

Financial management is broadly concerned with the acquisition and use of funds by a business firm. Its scope may be defined in terms of the following questions:

1. How large should the firm be and how fast should it grow?
2. What should be the composition of the firm's assets?
3. What should be the mix of the firm's financing?
4. How should the firm analyse, plan, and control its financial affairs?

1. 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 some what arbitrary): the traditional phase, the transitional phase, & the modern phase

The traditional phase lasted for about four decades:

1. 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.
2. 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.
3. 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.

2. Decisions, Return, Risk, and Market Value

Risk is present in virtually every decision. When a production manager selects equipment, or a marketing manager an advertising campaign, of a finance manager a portfolio of securities all of them face uncertain cash flows. Assessing risks and incorporating the same in the final decision is an integral part of financial analysis.

The objective in decision making is not to eliminate or avoid risk - often it may be neither feasible nor necessary to do so - but to properly assess it and determine whether it is worth bearing. Once the risk characterizing future cash flows is properly measured, an appropriate risk-adjusted discount rate should be applied to convert future cash flows into their present values.

It is organized into four sections as follows:

- | | |
|--------------------------------------|---|
| 1. Risk and return of a single asset | 2. Risk and return of a portfolio |
| 3. Measurement of market risk | 4. Relationship between risk and return |

3. Business risk and financial risk:

Business risk (sometimes also referred to as operating risk) refers to the variability of earnings before interest and taxes (EBIT) as a result of environment in which a company operates. The environment consist of

- a. Company specific factors,
- b. Industry specific factors and
- c. Economy specific factors, internal and external.

The earnings before interest and taxes of a firm are thus subject to many influences. These influences may be peculiar to the firm, some are common to all the firms in the industry and some are related to the general economic conditions that affect all the firms. In an uncertain

world, EBIT in any period can turn out to be higher or lower than expected. Business risk is only a part of the total risk carried by the business.

Financial risk is related with the financing decisions or decisions on capital mix of a business. Two businesses exposed to the same degree of business risk can differ in respect of financial risk when they adopt different forms of financing. Financial risk is an avoidable and controllable risk because it is associated with a capital structure decision of the firm. For example, if a business were to decide not to use debt capital in its capital structure, it will not have any financial risk. The presence of debt in the capital structure implies debt service obligations for the firm and thereby constitutes this type of risk. The extent of financial risk can be measured by a computing debt-equity ratio, interest coverage ratio and financing leverage ratio.

4. Basic functions of Financial Management:

Financial Management deals with the procurement of funds and their effective utilization in the business. The first basic function of financial management is procurement of funds and the other is their effective utilization.

- (i) **Procurement of funds:** Funds can be procured from different sources; their procurement is a complex problem for business concerns. Funds procured from different sources have different characteristics in terms of risk, cost and control.
 - (1) The fund raised by issuing equity share poses no risk to the company. The funds raised are quite expensive. The issue of new shares may dilute the control of existing shareholders.
 - (2) Debenture is relatively cheaper source of funds, but involves high risk as they are to be repaid in accordance with the terms of agreement. Also interest payment has to be made under any circumstances. Thus there are risk, cost and control considerations, which must be taken into account before raising funds.
 - (3) Funds can also be procured from banks and financial institutions subject to certain restrictions.
 - (4) Instruments like commercial paper; deep discount bonds etc also enable to raise funds.
 - (5) Foreign direct investment (FDI) & Foreign Institutional Investors (FII) are two major routes for raising funds from international sources, besides ADR's & GRD's.
- (ii) **Effective utilisation of funds:** Since all the funds are procured at a certain cost, therefore it is necessary for the finance manager, to take appropriate and timely actions so that the funds do not remain idle. If these funds are not utilised in the manner so that they generate an income higher than the cost of procuring them, there is no point in running the business.

5. Functions of a Chief Financial Officer.

- Estimating requirement of funds
- Decision regarding capital structure
- Investment decisions
- Dividend decision
- Evaluating financial performance
- Financial negotiation
- Keeping touch with stock exchange quotations & behaviour of share prices.

6. Treasury Management

- (i) Cash management: Treasury management in a business organisation is concerned about the efficient collection and repayment of cash to both insiders and to third parties.
- (ii) Currency management: It manages the foreign currency risk, exchange rate risks etc. It may advise on the currency to be used when invoicing overseas sales.
- (iii) Funding management: Responsible for planning and sourcing firm's short, medium and long term cash needs. It participates in capital structure, forecasting of future interest and foreign currency rates decision-making process.
- (iv) Banking: Maintains good relations with bankers and carry out initial negotiations with them for any short- term loan.
- (v) Corporate finance: It advises on aspects of corporate finance including capital structure, mergers and acquisitions.

7. Social cost benefit analysis.

Analysis of public projects has to be done with reference to social costs & benefits. Since they cannot be expected to yield an adequate commercial return on the funds employed, at least during the short run.

Social cost benefit analysis is important for the private corporations also who have a moral responsibility to undertake socially desirable projects.

The need for social cost benefit analysis arises due to the following:

- (i) The market prices used to measure costs & benefits in project analysis, may not represent social values due to market imperfections.
- (ii) Monetary cost benefit analysis fails to consider the external +ve & -ve effects of a project.
- (iii) Taxes & subsidies are transfer payments & hence irrelevant in national economic profitability analysis.
- (iv) The redistribution benefits because of project needs to be captured.
- (v) The merit wants are important appraisal criteria for social cost benefit analysis.

8. Global Depository Receipts (GDR) & American Depository Receipts (ADR)

Global Depository Receipts (GDRs): It is a negotiable certificate denominated in US dollars which represent a Non-US Company's publicly traded local currency equity. GDRs are created when the local currency shares of an Indian company are delivered to the depository's local custodian bank, against which depository bank issues depository receipts in USRs.

The GDRs may be freely traded in the overseas market like any other dollar denominated security either on a foreign stock exchange or in the over the counter market of among qualified institutional buyers. By issue of GDRs Indian companies are able to tap global equity market to raise foreign currency funds by way of equity. It has distinct advantage over debt as there is no repayment of the principal and service costs are lower.

American Depository Receipts (ADRs): These are Depository receipts issued by accompany in the USA and are governed by the provisions of Security and Exchange Commission of USA. As the regulations are severe, Indian Companies tap the American market through private debt placements of GDRs listed in London Luxemburg Stock Exchanges. Apart from legal impediments, ADRs are costlier than GDRs. Legal fees are considerably high for US listing. Registration fee in USA is also substantial. Hence ADRs are less popular than GDR's.

9. Deep Discount Bonds vs. Zero Coupon Bonds

Deep Discount Bonds (DDBs) are in the form of zero interest bonds. These bonds are sold at a discounted value and on maturity face value is paid to the investors. In such bonds, there is no interest payout during lock-in period.

IDBI was first to issue a Deep Discount Bonds (DDBs) in India in January 1992. The bond of a face value of Rs. 1 lakh was sold for Rs. 2,700 with a maturity period of 25 years.

A zero coupon bond (ZCB) does not carry any interest but it is sold by their issuing company at a discount. The difference between discounted value and maturing or face value represent the interest to be earned by the investor on such bonds.

10. Risk – Return considerations in financing of current assets

The financing of current assets involves a trade off between risk & return. A firm can choose from short or long term sources of finance. Short term finance is less expensive than long term financing but at the same time, short term financing involves greater risk than long term financing.

Depending on the mix of short term and long term financing, the approach followed by a Co. may be referred as matching approach, conservative approach & aggregative approach.

11. “Decision tree analysis is helpful in managerial decisions.” Explain

It is generally observed that the present investment decision may have several implications for future investments decisions. Such complex investment decisions involve a sequence of decisions over time. It is also argued that since present choices modify future alternatives, industrial activity cannot be reduced to a single decision and must be viewed as a sequence of decisions extending from the present time into the future. The sequential decisions are taken on the bases of decision tree analyses. While constructing and using decision tree, some important steps to be considered are as follows:

- (i) Investment proposal should be properly defined.
- (ii) Decision alternatives should be clearly clarified.
- (iii) The decision tree should be properly graphed indicating the decision points chances, events and other data.
- (iv) The results should be analyzed and the best alternative should be selected.

12. Export Financing by Banks:

Exports being given a top priority in the country's economic programme, commercial banks render lot of assistance to exporting business houses and industries. Export financing by banks is principally divided into two categories, viz., (i) Pre-shipment finance and (ii) Post-shipment finance.

Advance before shipment of goods or pre-shipment finance takes the form of packing credit made available for buying, manufacturing, processing, packing and shipping goods. The interest rates and margin requirements are concessional. Each advance take is required to be liquidated generally within 180 days.

Post-shipment finance takes the following forms:

1. Purchase/discounting export bills;
2. Advance against export bills for collection; and
3. Advance against duty drawback/cash compensatory support claims.

Normally, facilities granted by banks for export are exempt from many conditions that are attached to other forms of bank finance.

13. Margin Money:

Bankers keep a cushion to safeguard against changes in value of securities while expending loans are given to customer. This cushion represents the Margin Money.

The quantum of margin money depends upon the credit worthiness of the borrowers and the nature of security.

In project cost financing, Margin Money has to come from Promoters' contribution.

In the case of borrowing for working capital Margin Money has to be provided as per norms that are prescribed from time to time by RBI. In the case of new projects Margin Money required for working capital is included in the Project Cost.

14. Bridge Finance:

Bridge finance refers, normally, to loans taken by a business, usually from commercial banks for a short period, pending disbursement of term loans by financial institutions. Normally, it takes time for the financial institution to finalise procedures of a creation of security, tie-up participation with other institutions etc., even though a positive appraisal of the project has been made. However, once the loans are approved in principle, in order not to lose further time in starting their projects, arrange for bridge finance. Such temporary loan is normally repaid out of the proceeds of the principal term loans. Generally the rate of interest on bridge finance is 1% or 2% higher than on normal term loans

15. Promoters contribution in new venture.

- (a) Share capital to be subscribed by the promoters in the form of equity share capital and/or preference share capital.
- (b) Equity shares issued as rights shares to the existing shareholders.
- (c) Convertible debentures issued as "rights" to existing shareholders.
- (d) Unsecured loans.
- (e) Seed capital assistance.
- (f) Venture capital.
- (g) Internal cash accruals.

16. Role of merchant bankers in public issues:

1. Drafting of prospectus and getting approved by the appropriate authorities.
2. Appointing, assisting in appointing Bankers, underwriters, brokers, advertisers printers etc.
3. Obtaining the consent of all agencies involved in public issues.
4. Holding Brokers' conference/ Issuers' conference.
5. Deciding pattern of advertisement.
6. Deciding the branches where application money should be collected.
7. Deciding the dates of opening and closing of the issues.
8. Obtaining daily report of money collected.
9. To get the consent of stock exchange for deciding basis of allotment.
10. To take full responsibility for all administrative matters.

17. Bills discounting as a means of finance:

Bills discounting is a short term source of finance. It can be either supplier bill (purchase) or for sale of goods. These can be discounted with financial institutions, Banks and non banking finance companies. The Reserve Bank of India and the Central Government has been placing emphasis on developing bills discounting culture.

Advantages:

- (i) It is highly useful to small or medium sized Co.
- (ii) The cost of raising funds is low.
- (iii) Timely availability of funds is ensured.
- (iv) Premiums can be decided between the Co. and purchaser without going to SEBI.

Disadvantages:

- (i) It lacks transparency.
- (ii) The scope for misuse is available.

18. Ploughing back of profits:

Retained earnings means retention of profit and reinvesting it in the company as long term funds. Such funds belong to the ordinary shareholders and increase the net worth of the company. A public limited company must plough back a reasonable amount of profit every year keeping in view the legal requirements in this regard and its own expansion plans. Such funds also entail almost no risk. Further, control of present owners is also not diluted by retaining profits.

19. Packing credit.

Any exporter, having at hand a firm export order placed with him by his foreign buyer or an irrevocable letter of credit opened in his favour, can approach a bank for availing of packing credit. An advance so taken by an exporter is required to be liquidated within 180 days from the date of its commencement by negotiation of export bills or receipt of export proceeds in an approved manner. Thus Packing Credit is essentially a short-term advance.

Packing credit may be of the following types:

- (a) Clean packing credit: This is an advance made available to an exporter only on production of a firm export order or a letter of credit without exercising any charge or control over raw material or finished goods. Also, Export Credit Guarantee Corporation (ECGC) cover should be obtained by the bank.
- (b) Packing credit against hypothecation of goods: Export finance is made available on certain terms and conditions where the exporter has pledgeable interest and the goods are hypothecated to the bank as security with stipulated margin. At the time of utilizing the advance, the exporter is required to submit, along with the firm export order or letter of credit, relative stock statements and thereafter continue submitting them every fortnight and whenever there is any movement in stocks.
- (c) Packing credit against pledge of goods: Export finance is made available on certain terms and conditions where the exportable finished goods are pledged to the banks with approved clearing agents who will ship the same from time to time as required by the exporter. The possession of the goods so pledged lies with the bank and are kept under its lock and key.

LEVERAGE

Introduction:

For selecting a target debt-equity mix the firm analyses a number of factors. One such factor is leverage. Capital structure decision involves a choice between risk and expected returns. Use of more and more debt capital raises the Riskiness of the firm's earning stream but it tends to provide a higher expected rate of return to the shareholders. In this chapter, we consider the various aspects of leverage and risks in planning the capital structure of a firm.

Type of Leverage:

The term leverage in general refers to a relationship between two interrelated variables. In financial analysis it represents the influence of one financial variable over some other related financial variable. These financial variables may be costs, output, sales revenue, Earnings before interest and tax (EBIT), Earning per share (EPS) etc.

There are three commonly used measures of leverage in financial analysis. These are:

- i) Operating Leverage
- ii) Financial Leverage
- iii) Combined Leverage

Operating Leverage

Operating leverage results when fluctuations in sales are accompanied by disproportionate fluctuations in operating profit. This is due to existence of fixed costs in the cost structure of a firm. The absence of fixed cost in the total cost structure of a firm will not lead to disproportionate change in profit due to a given change in sales. So, no fixed costs no operating leverage.

Measurement of Operating leverage:

Operating Leverage or Degree of Operating Leverage

$$= \frac{\text{Contribution.}}{\text{Operating Profit or EBIT}}$$

$$= \frac{\% \text{ change in operating profit}}{\% \text{ Change in sales volume}}$$

Financial Leverage:

Financial leverage indicates the effect on earning created by the use of fixed-charge securities in the capitalization plan. In other words, financial leverage results when fluctuation in EBIT is accompanied by disproportionate fluctuation in the firm's earning per shares. This is due to existence of fixed financial charges that arise out of use of fixed interest bearing securities in the capitalization plan. If a firm does accompanied by a similar change in EPS. So, no fixed financial charges no financial leverage.

Measure: Financial Leverage or Degree of Financial Leverage

$$= \frac{\text{EBIT}}{\text{EBIT} - \text{Interest}}$$

$$= \frac{(\% \text{ change in EPS})}{(\% \text{ change in EBIT})}$$

Combined Leverage

Measuring Total Risk i.e. combined leverage

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}} = \frac{\text{Contribution}}{\text{EBT}} = \text{FL} \times \text{OL}$$

A few combinations of DOL, DFL & DCL are stated below :

DOL	DFL	Combined impact or Combined Leverage
Low i.e. low fixed Cost structure	Low i.e. low level of Debt capital	It indicates that the management is taking a very cautious approach towards debt financing. It is difficult to maximise the return of the shareholders in this case. It should be avoidable.
High i.e. high fixed cost structure	High i.e. high level of debt financing	This is a very risky combination & known as high-gear combination due to high leverage. The chance of accident in this case is also very high due to much dependency on loan capital. Hence, this situation should be avoided
High	Low	In this case the high-risk situation is partly diluted as low interest of debt capital will offset the burden of fixed cost or low DFL adjust the high DOL. But aggressive debt policy cannot be adopted in this case & as a result the return to the shareholder is not maximized.
Low	High	This situation is ideal for return maximisation. As fixed cost is low, but high interest has maximise the return to share holders at a minimum risk.

Problems :

- Calculate the Degree of Operating Leverage, Degree of Financial Leverage and the Degree of Combined Leverage for the following firms and interpret the result:-

	B	Q	R
Output (units)	3,00,000	75,000	5,00,000
Fixed costs (Rs.)	3,50,000	7,00,000	75,000
Unit variable cost (Rs.)	1.00	7.50	0.10
Interest Expenses (Rs.)	25,000	40,000	Nil
Unit Selling Price (Rs.)	3.00	25.00	0.50

- Calculate the operating leverage, financial leverage and combined leverage from the following data under Situation I and II and Financial Plan A and B:

Installed Capacity	4,000 Units
Actual Production and Sales	75% of the Capacity
Selling Price	Rs. 30 per Unit.
Variable Cost	Rs 15 per Unit.

Fixed Cost:

Under Situation I	Rs. 15,000
Under Situation II	Rs. 20,000

Financial Plan:

	A (Rs.)	B (Rs.)
Equity	10,000	15,000
Debt (Rate of Interest at 20%)	10,000	5,000

3. From the following prepare Income Statement of Company A, B and C. Briefly comment on each company's performance:

Company	A	B	C
Financial Leverage	3:1	4:1	2:1
Interest	Rs.2, 000	Rs.3,000	Rs. 1,000
Operating Leverage	4:1	5:1	3:1
Variable Cost as a percentage to Sales	66%	75%	50%

4. (i) Find the operating leverage from the following data:

Sales	Rs.50, 000
Variable Costs	60%
Fixed Costs	Rs. 12,000

- (ii) Find the financial leverage from the following data:

Net Wroth	Rs. 25,00,000
Debt/Equity	3/1
Interest Rate	12%
Operating Profit	Rs. 20,00,000

5. The data relating to two Companies are as given below

	Company A	Company B
Equity Capital	Rs.6,00,000	Rs.3,50,000
12% Debentures	Rs.4,00,000	Rs.6,50,000
Out put (units) per annum	60,000	15,000
Selling price/unit	Rs.30	Rs.250
Fixed Costs per annum	Rs.7,00,000	Rs.14,00,000
Variable Cost per unit (Rs.)	10	75

You are required to calculate the operating leverage, Financial leverage & Combined leverage of two companies.
(Nov 02 Q 6B)

6. ABC Ltd. has an average cost of debt at 10% and tax rate is 40%. The Financial leverage ratio for the company is 0.60. Calculate Return on Equity (ROE) if its Return on Investment (ROI) is 20%.

5/07/5

7. The following details of RST Ltd. for the year ended 31st March, 2006 are given below:

Operating leverage	1.4
Combined leverage	2.8
Fixed cost (Excluding interest)	Rs. 2.04 lakhs
Sales	Rs. 30.00 lakhs
12% Debentures of Rs. 100 each	Rs. 21.25 lakhs
Equity Share Capital of Rs. 10 each	Rs. 17.00 lakhs
Income Tax rate	30%

Required:

- Calculate Financial leverage
- Calculate P/V ratio and Earning per Share (EPS)
- If the company belongs to an industry, whose assets turnover is 1.5, does it have a high or low assets leverage?
- At what level of sales the Earning Before Tax (EBT) of the company will be equal to zero?

5/07/7

RATIO ANALYSIS

Ratio analysis is an important tool of management as it reveals the true position of the business. It is generally calculated on the basis comparison of two items taken from its financial statement. Then it is compared with the standard norms as specified for the industry.

Classification of Ratios:

- (i) **Revenue Ratios:** When two variables are taken from revenue statement the ratio so computed is known as Revenue ratio, for example;

$$\text{Net profit} \div \text{Sales} \times 100; \text{Material Consumed} \div \text{Cost of goods sold} \times 100$$

- (ii) **Balance Sheet Ratio:** When two variables are taken from the Balance Sheet the ratio so computed is known a Balance Sheet ratio, for example,

$$\text{Current Ratio} = \text{Current Assets} \div \text{Current Liabilities}; \quad \text{Net Worth} \div \text{Total Liabilities}$$

- (iii) **Mixed Ratio:** When one variable is taken from the Revenue Statement and other is taken from the Balance Sheet the ratios so computed are known as mixed ratios; for example,

$$\text{Net profit} \div \text{Capital Employed} \times 100; \text{Sales} \div \text{Average Total Assets}$$

According to usage: The following seven categories of financial ratios have been advocated by George Foster of Stanford University and these seem to cover exhaustively different aspects of a business organization, these categories have been listed as below:

- | | |
|------------------------------|---------------------------|
| 1. Cash position | 2. Liquidity |
| 3. Working capital/Cash flow | 4. Capital structure |
| 5. Profitability | 6. Debt Services Coverage |
| 7. Turnover | |

Large number of financial ratios are used within each category and some of these may carry same information rather than focusing on any new light. Therefore, it is necessary to avoid duplication of information. The analyst should be selective with regard to the use of financial ratios.

Broadly speaking, the operations and financial position of a firm can be described by studying its short term and long term liquidity position, profitability and its operational activities. Therefore, ratios can be classified into following five broad categories:

- | | |
|--------------------|--|
| a. Liquidity Ratio | b. Capital Structure/ Leverage ratios. |
| c. Activity Ratios | d. Profitability Ratios. |

Liquidity Ratio

- (i) **Current Ratio = Current Assets ÷ Current Liabilities;**

- (ii) **Quick Ratio = Quick Assets ÷ Current Liabilities**

- (iii) **Quick Ratio = Quick Liquid Assets ÷ Quick Liabilities**

Meaning of the terms used:

Current Assets	= Inventories +Sundry Debtors +Cash & Bank Balance + Receivables/ Accruals+ Loans & Advances+ Disposable Investment.
Current Liabilities	= Creditors for goods & Services +Short-term Loans+ Bank Overdraft+ Cash Credit +Outstanding Expenses+ Provision for Taxation+ Proposed Dividend +Unclaimed Dividend.
Quick Assets	= Current Assets –Inventories
Quick Liabilities	= Current Liabilities –Bank Overdraft –Cash Credit

Significance of the Current and Quick Ratios: Current Ratio is a business concern indicates the availability of current assets to meet its current liabilities. Higher the ratio better is the coverage. Traditionally, it is also called 2:1 ratio, i.e. 2 is the standard for current assets for each unit of current liabilities. But this is only a conservative outlook about the coverage of current liabilities. Generally the level of current ratio vary from industry to industry depending on the specific industry characterizes. Also a firm differs from the industry ratio because of its policy.

Quick Assets consist of only cash and near cash assets. Inventories are deducted from current assets on the belief that these are not 'near cash assets'. But in a seller's market inventories are also near cash assets. Moreover, just like lag in collection of debtors, there is a lag in conversion of inventories into Finished Goods and Sundry Debtors. Obviously slow moving inventories are not near cash assets. However, while calculating the quick ratio we have followed the conservatism convention. Quick liabilities are that portion of current liabilities which fall due immediately. Since bank overdraft and cash credit can be used as a source of finance as and when required, it is not included in the calculation of quick liabilities.

Cash Ratio: The cash ratio measures the absolute liquidity of the business. This ratio considers only the absolute liquidity available with the firm. This ratio is calculated as:

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Marketable Securities}}{\text{Current Liabilities}}$$

Interval Measure: This ratio measures the firm's ability to meet its regular cash expenses. This ratio is calculated as: $\frac{\text{Current Assets} - \text{Inventory}}{\text{Average Daily Operating Expenses}}$

The average daily operating expenses is equal to cost of goods sold plus selling, administrative and general expenses less depreciation (and other non-cash expenditures) dividend by number of days in a year. Say 360 days.

Equity means paid up share capital including preference share capital and reserves.

Two popularly used capital structure ratios are:

$$\text{Owner's Equity Ratio} = \frac{\text{Owner's Equity}}{\text{Total Equity}}$$

This ratio indicates proportion of owners' fund to total fund invested in the business. Traditionally it is believed that higher the proportion of owners' fund lower is the degree of risk.

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

This ratio indicates the proportion of debt fund in relation to equity. This ratio is very often referred in capital structure decision as well as in the legislation dealing with the capital structure decisions (i.e. issue of shares and debentures). Lenders are also very keen to know this ratio since it shows relative weights of debt and equity.

There is no norm for maximum debt-equity ratio. Lending institutions generally set their own norms considering the capital intensity and other factors.

Coverage Ratios: The coverage ratios measure the firm's ability to service the fixed liabilities. These ratios establishes the relationship between fixed claims and what is normally available out of which these claims are to be paid. The fixed claims consist of

- (i) Interest on loans
- (ii) Preference dividend
- (iii) Amortization of principal or repayment of the installment of loans or redemption of preference capital on maturity.

The following are important coverage ratios:

- (i) **Debt Service coverage ratio:** Lenders are interested in debt service coverage to judge the firm's ability to pay off current interest and installments.

Earning for debt service = Net profit+ Non-cash operating expenses like depreciation and other amortizations+ non-operating adjustments like loss on sales of +Fixed assets+ interest on Debt fund.

Proprietary Fund = Equity as calculated above+ Capital Reserve +Capital Redemption Reserve

Debt Service coverage = {Earning available for debt service÷ (Interest +installments)}

It indicates that earnings available for debt-service are 1.07 times of the interest and installment.

Interest Coverage ratio: This ratio also known as “times interest earned ratio”. It indicates the firm’s ability to meet interest (and other fixed-charges) obligations. This ratio is computed as:

Interest Coverage Ratio = EBIT ÷Interest

Earning before interest and taxes are used in the numerator of this ratio because the ability to pay interest is not affected by tax burden as interest on debt funds is deductible expense. This ratio indicates the extent to which earnings may fall without causing any embarrassment to the firm regarding the payment of interest charges. A high interest coverage ratio means that an enterprise can easily meet its interest obligations even if earnings before interest and taxes suffer a considerable decline. A lower ratio indicates excessive use of debt or inefficient operations.

(iii) Preference Dividend Coverage ratio = EAT ÷ Preference dividend liability

Earning after tax is considered because unlike debt on which interest is charged on the profit of the firm, the preference dividend is treated as appropriation on profit. This ratio indicates margin of safety available to the preference shareholders. A higher ratio is desirable from preference shareholders point of view.

Capital Gearing Ratio: In addition to debt-equity ratio sometimes capital –gearing ratio is also calculated to show the proportion of fixed interest (dividend) bearing capital to funds belonging to equity shareholders.

Capital Gearing Ratio = $\frac{\text{Preference share capital+ Debentures +Long term loan}}{\text{Equity share capital + Reserve \& surplus –Losses}}$

For judging long term solvency position, in addition to debt-equity ratio and capital gearing ratio, the following ratios are also used.

(i) Fixed Assets ÷Long term Fund

It is expected that fixed assets and core working capital are to be covered by long term fund. In various industries the proportion of fixed assets and current assets are different. So there is no uniform standard of this ratio too. But it should be less than one. If it is more than one, it means short-term fund has been used to finance fixed assets. Very often many companies resort to such practice during expansion. This may be a temporary arrangement but not a long term remedy.

(ii) Proprietary Ratio = Proprietary Fund ÷Total Assets

Proprietary fund includes equity share capital +Preference share capital+ Reserve & surplus –and fictitious asset.

Total assets exclude fictitious assets and losses.

If one follows standard current ratio 2:1 and standard debt-equity ratio 2:1, what should be the standard proprietary ratio? Let Rs. 100 be the total assets of which Rs. 20 be the current assets. Then following standard current ratio Rs. 10 are financed by current liabilities, remaining Rs. 90

are financed by debt & equity. Since following standard debt-equity ratio equity component is 1/3 it is expected that out of Rs. 90, Rs. 30 should come from proprietary fund. If the current assets component increases equity commitment will be reduced and vice-versa.

Proprietary Fund = Equity as calculated above+ Capital Reserve+ Capital Redemption Reserve

Activity Ratios or turnover ratios or performance ratios.

These ratios are employed to evaluate the efficiency with which the firm manages and utilizes its assets. These ratios usually indicates the frequency of sales with respect to its assets. These assets may be capital assets or working capital or average inventory. These ratios are usually calculated with reference to sales/cost of goods sold and are expressed in terms of rate or times. Several activity ratios are as follows:

(i) **Capital Turnover Ratio = Sales ÷ Capital Employed**

This ratio indicates the firms ability of generating sales per Re. Of long term investment. The higher the ratio, the more efficient the utilization of owner's and long-term creditors' funds.

(ii) **Fixed Assets turnover ratio = Sales ÷ Capital Assets**

A higher fixed assets turnover ratio indicates efficient utilization of fixed assets in generating sales. A firm whose plant and machinery are old may show a higher fixed assets turnover ratio than the firm which has purchased them recently.

(iii) **Working Capital Turnover = Sales ÷ Working Capital**

Working capital turnover is further segregated into inventory turnover, Debtors Turnover, Creditors Turnover.

Inventory Turnover Ratio: This ratio also known as stock turnover ratio establishes the relationship between the cost of goods sold.

Inventory Turnover Ratio = Sales ÷ Average Inventory

Average Inventory = {(Opening Stock+ Closing stock) ÷ 2}

Very often inventory turnover is calculated with reference to cost of sales instead of sales. In that case inventory turnover will be calculated as: **Cost of sales ÷ average stock**

Students are advised to follow this formula for calculating inventory turnover ratio. In the case of inventory of raw material the inventory turnover ratio is calculated using the following formula:

Raw Material Consumed ÷ Average Raw Material Stock

Debtors' turnover ratio = Sales ÷ Average Accounts Receivable

As Account receivables pertains only to credit sales, it is often recommended to compute the debtors' turnover with reference to credit sales instead of total sales. Then the debtors turnover would be: **Credit Sales ÷ Average Accounts Receivable.**

Creditors turnover ratio = Annual Net Credit Purchase ÷ Average Accounts Payable

A low creditors turnover ratio reflects liberal credit terms granted by supplies. While a high ratio shows that accounts are settled rapidly. **Credit Purchase ÷ Average Accounts Payable.**

Debtors' turnover ratio indicates the average collection period. However, the average collection period can be directly calculated as follows:

$$\text{Average Accounts Receivable} \div \text{Average Daily Credit Sales}$$

$$\text{Average Daily Credit Sales} = \text{Credit Sales} \div 365$$

Similarly, Average payment period can be calculated using:

$$\text{Average Accounts Payable} \div \text{Average Daily Credit Purchase.}$$

$$\text{Inventory Turnover Ratio} = \text{Cost of Goods sold} \div \text{Average Inventory}$$

Profitability Ratio: The profitability ratios measure the profitability or the operational efficiency of the firm. These ratios reflect the final results of business operations. The results of the firm can be evaluated in terms of its earnings with reference to a given level of assets or sales or owners' interests etc. Therefore, the profitability ratios are broadly classified in three categories:

1. Profitability ratios required for analysis from owners' point of view.
2. Profitability ratios based on Assets/Investments.
3. Profitability ratios based on sales of the firm.

Return on Equity (ROE): Return on Equity measures the profitability of equity funds invested in the firm. This ratio reveals how profitability of the owners' funds have been utilized by the firm. This ratio is computed as: **ROE = Profit After Taxes $\div$ Net Worth**

Earnings per share: The profitability of a firm from the point of view of ordinary shareholders can be measured in terms of number of equity shares. This is known as Earnings per share. It is calculated as follows:

$$\text{Earnings per share (EPS)} = \text{Net Profit Equity Holders} \div \text{No. of Ordinary Shares Outstanding.}$$

Dividend per share: Earnings per share as stated above reflects the profitability of a firm per share; it does not reflect how much profit is paid as dividend and how much is retained by the business. Dividend per share ratio indicates the amount of profit distributed to shareholders per share. It is calculated as:

$$\text{Dividend per share} = \text{Total Profit Distributed to Equity Shareholders} \div \text{No. of Equity Shares}$$

Price Earnings Ratio: The price earnings ratio indicates the expectation of equity investors about the earnings of the firm. It relates earnings to market price and is generally taken as a summary measure of growth potential of an investment, risk characteristics, shareholders' orientation, corporate image and degree of liquidity. It is calculated as:

$$\text{PE Ratio} = \text{Market Price per share} \div \text{Earnings per share}$$

Return on Capital Employed/ Return on investment.

$$\text{Return on Capital Employed} = \{(\text{Return} \div \text{Capital Employed}) \times 100\}$$

Return = Net profit

$\pm$ Non-trading adjustments (but not accrual adjustments for amortization of preliminary expenses goodwill, etc.) + Interest on long term debts + Provision for tax – interest/Dividend from non-trade investments

Capital Employed = Equity Share capital

+ Reserve & Surplus + Preference Share capital + Debenture and other long term loan – Non Trade investments.

Return on Investment (ROI):

$$\begin{aligned}
 \text{ROI} &= \{(\text{Return} \div \text{Capital Employed}) \times 100\} \\
 &= \{(\text{Return} \div \text{Sales}) \times (\text{Sales} \div \text{Capital Employed}) \times 100\} \\
 &= \{(\text{Return} \div \text{Sales}) \times 100\} = \text{Profitability Ratio} \\
 &= (\text{Sales} \div \text{Capital Employed}) = \text{Capital Turnover Ratio}
 \end{aligned}$$

ROI can be improved either by improving operating profit ratio or capital turnover or by both.

Return on Assets (ROA):

The profitability ratio is measured in terms of relationship between net profit and assets employed to earn that profit. This ratio measures the profitability of the firm in terms of assets employed in the firm. The ROA may be measured as follows:

$$\begin{aligned}
 \text{ROA} &= (\text{Net profit after taxes} \div \text{Average total assets}) \\
 &= \text{Net profit after taxes} \div \text{Average tangible assets} \\
 &= \text{Net profit after taxes} \div \text{Average fixed assets}
 \end{aligned}$$

Book value per share =

$$\text{Equity Capital} + \text{Reserve \& surplus (Excluding Revaluation Reserve)} \div \text{No. of Equity Shares}$$

$$\text{EPS} = \text{Net Profit-Preference Dividend} \div \text{No. of Equity Shares.}$$

Gross Margin = Profit before depreciation but after interest before tax.

Capital Employed = Aggregate of the fixed assets, Capital WIP, Investments & current assets excluding accumulated deficit.

Cash generating efficiency: It is the ability of a company to generate cash from its current or continuing operations. Following three ratios are used for the purpose.

i) **Cash flow yield** = Net Cash flow from Operating activities $\div$ Net Income

ii) **Cash flow to sales:** It is the ratio of net cash flows from operating activities to sales, it is computed as follows:

$$\text{Cash flow to sales} = \text{Net cash flow from operating activities} \div \text{Net sales}$$

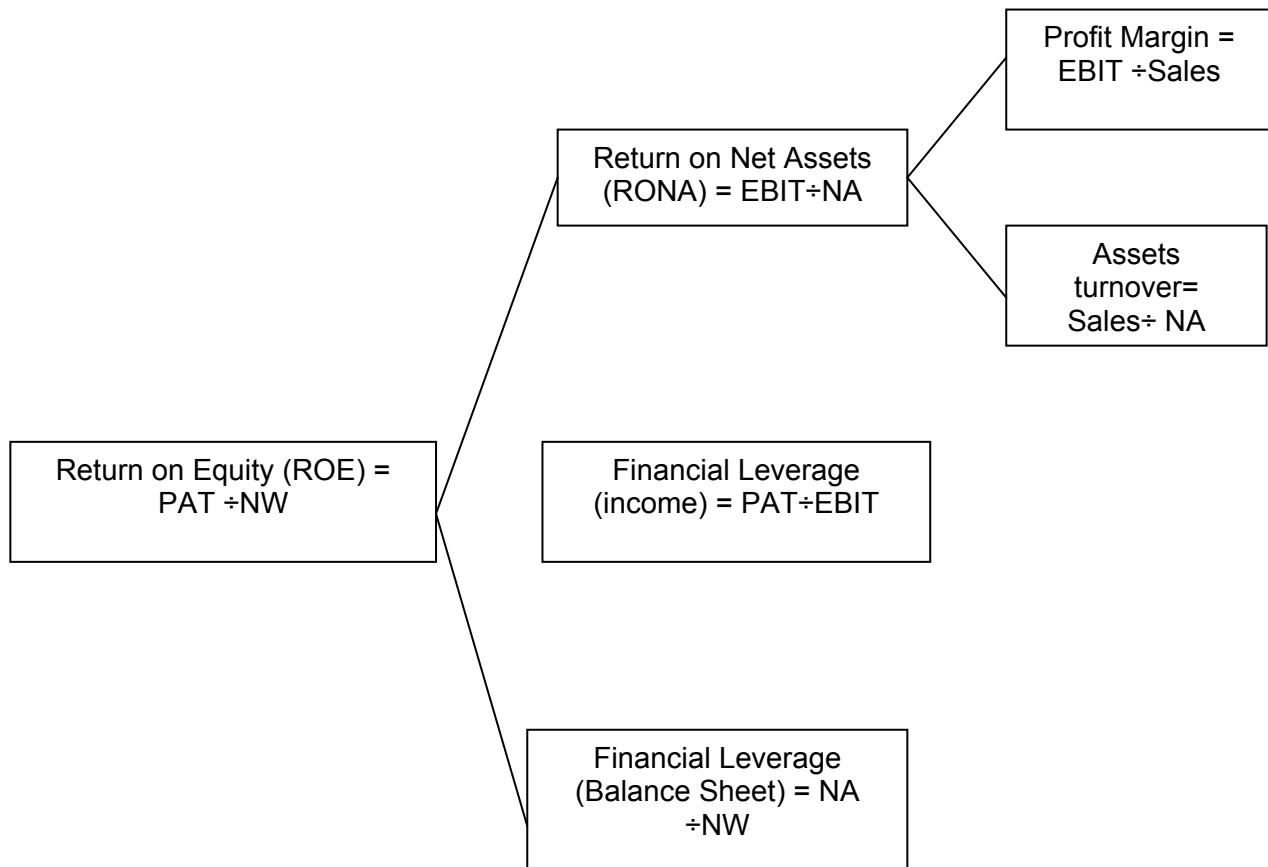
iii) **Cash flows to assets:** It is the ratio of net cash flow from operating activities to average total assets. It is computed as follows:

$$\text{Cash flow to assets} = \text{Net Cash flow from operating activities} \div \text{Average total assets.}$$

Du Pont Chart

There are three components in the calculation of return on equity using the traditional Du Pont Model- the net profit margin, assets turnover, and the equity multiplier. By examining each input individually, the sources of a company's return on equity can be discovered and compared to its competitors.

$$\text{Return on Equity} = (\text{Net profit Margin}) (\text{Asset turnover}) (\text{Equity Multiplier})$$



1. Limitations.

1. The trend of the result, rather than the actual ratios and percentages, is more important. Structural relationships, taken from the financial statements of one year only, are of limited value and the trends of these structural relationships established from statements over a number of years may be more significant than absolute ratios.
2. Financial results of all businesses are affected by general economic conditions, by competition, by local factors and by the policy adopted by management and thus any ratios or percentages must be considered with these factors in mind.
3. It is particularly emphasized that one particular ratio used without reference to other ratios may be very misleading. In other words, the combined effect of the various ratios must be considered in arriving at a correct diagnosis which will be of assistance in interpreting the financial condition and earning performance of the firm. Each ratio plays its part in this interpretation.
4. Predictive analysis, budgeting and standard ratios are often more useful to management than ratios obtained by the analysis of past results. However, in analyzing financial statement, the accountant is often forced to use historical statements because they supply the only material available.
5. Unless the accounts have been prepared on uniform basis, inter-firm comparison through accounting ratios becomes misleading. Similarly, even in the same unit same ratios over a number of periods may not mean same thing, unless the accounts have been prepared on consistent basis over the periods.
6. It should be realised that ratios are only a preliminary step in interpretation and must be supplemented by rigorous investigation before safe conclusions can be drawn from them. They may be useful, however, in drawing attention to aspects of the business which require further analysis and investigation.

2. Which accounting ratio will be useful in indicating the following symptoms :

- 1) Low capacity utilisation.
- 2) Falling demand for the product in the market.
- 3) Inability to pay interest.
- 4) Borrowing for short-term and investing in long-term assets.
- 5) Large inventory accumulation in anticipation of price rise in future.
- 6) Inefficient collection of debtors.
- 7) Inability to pay dues to financial institutions.
- 8) Return of shareholders' funds being much higher than the overall return on investment.
- 9) Liquidity crisis.
- 10) Increase in average credit period to maintain sales in view of falling demand.

Answer

(a) The following ratio(s) will be useful in indicating the symptoms mentioned against each:

- (1) Actual hours/Budgeted hours or Fixed Assets Turnover Ratio - Low capacity utilisation.
- (2) Finished Goods Turnover Ratio - Falling demand for the product in the market.
- (3) Interest Coverage Ratio-Inability to pay interest.[Int. payable/EBIT(excluding the interest)]
- (4) Current Ratio or Fixed Assets to Long Term Loans Ratio - Borrowing for short term and Investing in long-term assets.
- (5) Inventory Turnover Ratio - Large inventory accumulation in anticipation of Price rise in future.
- (6) Debtors Turnover Ratio -Inefficient collection of debtors
- (7) Debt Service Coverage Ratio -Inability to pay dues to financial institutions.
- (8) Debt-Equity Ratio, Return on Investment and Return on -Return of shareholders' funds being much higher than Equity compared the overall return on investment.
- (9) Current Ratio, Quick Assets or Acid Test Ratio - Liquidity crisis,
- (10) Average Collection period or Debtors Turnover Ratio - Increase in average credit period to maintain sales in view of falling demand.

3. Discuss any three ratios computed for investment analysis.

Three ratios computed for investment analysis are as follows:

- (i) Earning per share= Profit after tax ÷ no. of equity share.
- (ii) Dividend yield ratio = Equity dividend per share ÷ Market price per share×100
- (iii) Return on capital employed = Net profit before interest and tax ÷ Capital employed

PROBLEMS

1. Following is the Balance Sheet of M/s Weldone Ltd. as on 30.6.2008

LIABILITIES	Rs.	ASSETS	Rs.
Equity Share Capital	3,00,000	Land	50,000
Preference Share Capital	4,00,000	Building	3,00,000
Reserves	50,000	Plant & Machinery	3,00,000
Profit & Loss A/c	50,000	Furniture	40,000
12% Debentures	2,00,000	Debtors	2,00,000
Trade Creditors	60,000	Stock	1,50,000
Outstanding Expenses	15,000	Cash	40,000
Provision for Taxation	20,000	Prepaid Expenses	10,000
Proposed Dividends	<u>30,000</u>	Preliminary Expenses	<u>35,000</u>
	<u>11,25,000</u>		<u>11,25,000</u>

From the above particulars, you are required to calculate :-

- | | |
|---------------------------|---------------------------|
| (1) Current Ratio | (2) Debts to Equity Ratio |
| (3) Capital Gearing Ratio | (4) Liquid Ratio. |

2. JKL Ltd. has the following Balance Sheets as on March 31, 2008 and March 31, 2007:

	Balance Sheet	
	(Rs. in Lakhs)	
	March 31, 2008	March 31, 2007
<i>Sources of Funds:</i>		
Shareholders Funds	2,377	1,472
Loan Funds	<u>3,570</u>	<u>3,083</u>
	<u>5,947</u>	<u>4,555</u>
<i>Applications of Funds:</i>		
Fixed Assets	3,466	2,900
Cash & Bank	489	470
Debtors	1,495	1,168
Stock	1,567	1,404
Less: Current Liabilities	<u>(3,937)</u>	<u>(3,794)</u>
	<u>5,947</u>	<u>4,555</u>

The income statement of the JKL Ltd. for the year ended is as follows:

	31.03.2008	31.03.2007
Sales	22,165	13,882
Less: Cost of goods sold	<u>20,860</u>	<u>12,544</u>
Gross profit	1,305	1,338
Less: Selling, General & Administration expenses	<u>1,135</u>	<u>752</u>
Earning before interest and tax (EBIT)	170	586
Interest expenses	<u>113</u>	<u>105</u>
Profit before tax	57	481
Tax	<u>23</u>	<u>192</u>
Profit after tax (PAT)	34	289

Required:

1. Calculate for the year 2007-08:

- | | |
|-------------------------------|---------------------------|
| a) Inventory turnover ratio | b) Financial Leverage |
| c) Return on investment (ROI) | d) Return on Equity (ROE) |
| e) Average collection period | Give ur comment |

5/06/72.

3. From the following information, prepare the Balance sheet of XYZ Co. Ltd. showing the details of working :-

Paid-up-capital	Rs.	50,000
Plant and machinery	Rs.	1,25,000
Total sales (annual)	Rs.	5,00,000
Gross profit margin		25%
Annual credit sales		80% of net sales
Current ratio		2
Inventory turnover		4
Fixed Assets turnover		2
Sales returns		20% of sales
Average collection period		73 days
Bank credit to trade credit		2
Cash to inventory		1 : 15
Total debt to current liabilities		3

4. From the following particulars prepare the Balance Sheet of Sri Mohan Ram :-

Current Ratio	2
Working Capital	Rs. 4,00,000
Capital Block to Current Assets	3 : 2
Fixed Assets to Turnover	1 : 3
Sales Cash/Credit	1 : 2
Gross profit Ratio-25% (to Sales)	
Creditors Velocity	2 months
Stock velocity	2 months
Debtors Velocity	3 months
Capital Block :	
Net profit	10% of Turnover
Reserve	2.5 % of Turnover
Debenture to Share Capital	1: 2

5. You are advised by the Management of ABC Ltd., to project Trading, Profit & Loss Account and the Balance Sheet on the basis of the following estimated figures and ratios, for the next financial year ending March 31, 2008 :-

Ratio of Gross Profit	25%
Stock Turnover Ratio	5 times
Average Debt Collection Period	3 months
Creditor's Velocity	3 months
Current Ratio	2
Proprietary Ratio (Fixed Assets to capital employed)	80%
Capital Gearing Ratio (Pref. Shares and Debentures to Cap EMP)	30%
Net Profit to Issued Capital (Equity share capital only)	10%
General Reserve and P & L to Issued Eq. Share Capital	25%
Preference Share Capital to Debenture	2
Cost of goods sold consists of	60% for materials
Gross profit	Rs. 12,50,000

Working notes should be clearly shown.

6. A co. has furnished the following ratios & information relating to the yr. ended 31st March 2008:

Sales	Rs.60,00,000
Current ratio	2
Share capital to reserves	7: 3
Rate of income-tax	30%
Return on net worth	25%
Net profit to sales (PAT/ Sales)	6 ¼%
Inventory turnover (based on cost of goods sold)	12
Cost of goods sold	Rs.18,00,000
Interest on debentures	Rs. 60,000
Sundry debtors	Rs. 2,00,000
Sundry creditors	Rs. 2,00,000

Required:

- Determine the operating expenses for the year ended 31st March 2008.
- Draw the Balance Sheet as at 31st March in the following format by supplying the missing figures:

Balance Sheet as at 31 st March 2008			
Liabilities		Assets	
	Rs.		Rs.
Share Capital	...	Fixed Assets	...
Reserve & Surplus	...	<u>Current Assets</u>	...
15% Debentures	...	- Stock	...
Sundry Creditors	...	- Debtors	...
	_____	- Cash	_____

7. The Balance Sheet of A Ltd. and B Ltd. as on 31st March, 2008 are as follows:

Liabilities	A Ltd.	B Ltd.
Share Capital	40,00,000	40,00,000
Reserves & Surplus	32,30,000	25,00,000
Secured Loans	25,25,000	32,50,000
<u>Current Liabilities & Provisions:</u>		
Sundry Creditors	15,00,000	14,00,000
Outstanding Expenses	2,00,000	3,00,000
Provision for Taxation	3,00,000	3,00,000
Proposed Dividend	6,00,000	-
Unclaimed Dividend	15,000	-
	<u>1,23,70,000</u>	<u>1,17,50,000</u>
Assets		
Fixed Assets - Depreciation	80,00,000	50,00,000
Investments	15,00,000	-
Inventory at Cost	23,00,000	45,00,000
Sundry Debtors	-	17,00,000
Cash and Bank	<u>5,70,000</u>	<u>5,50,000</u>
	<u>1,23,70,000</u>	<u>1,17,50,000</u>

Additional information available:

- 75% of the Inventory in A Ltd. are readily salable at cost plus 20%.
- 50% of Sundry Debtors of B Ltd. are due from C Ltd. which is not in a position to repay the amount. B Ltd. agreed to accept 15% debentures of C Ltd.

- (iii) B Ltd. had also proposed 15% dividend but that was not shown in the Accounts.
- (iv) At the year end, B Ltd. sold investments amounting to Rs. 1,20,000 and repaid Sunday Creditors.

On the basis of the given Balance Sheets and the additional information, you are required to evaluate the liquidity of the companies. All workings should form part of the answer.

8. MICOM Ltd, manufacturer of Mini Computers, commenced business on 1.4.07 with a paid up capital of Rs. 5,00,000. On the same date it also obtained a specific term loan at 20% interest towards 100% of the cost of a special machine from the State Financial Corporation. The loan is to be repaid over five years in equal annual installments excluding interest, the first installment being due on 31.3.08.

For the first year ended 31.3.08 the Company's final accounts were prepared and stored in a Personal Computer. The Company had retained and transferred to reserve a sum of Rs. 2,00,000 after providing for taxes (tax rate 40%) and proposed a dividend of 20%. The Company had invested the entire reserve amount of Rs. 2,00,000 on 31.3.08 in Government Securities. It had also paid the first installment of the loan.

Unfortunately due to a computer virus, the data has been lost. However, the chief accountant is able to provide the following information.

Debt Service Coverage Ratio	2.5 times	
Interest Coverage Ratio		6 times
Creditors Turnover Ratio		1 month
Stock Turnover Ratio (Based on Closing Stock)		5 times
Debtors Turnover Ratio		2 months
Current Ratio		2 months
Gross profit Ratio to Sales		33.1/3%
Selling and Administration Expenses		Rs. 3,00,000

You are required to prepare the Profit and Loss Account and Balance Sheet of MICOM Ltd. for the year ended 31.03.08.

Note: Working should form part of your answer.

9. The following information has been extracted from the Balance sheet of ABC Ltd. as at 30th June, 2007:

Liabilities	Rs.	Assets	Rs.
Equity share capital	20,00,000	Fixed Assets :	
7 & 1/2% pref. share capital	10,00,000	Cost	50,00,000
General reserves	4,00,000	Depr. written off	<u>16,00,000</u>
6% Debentures	6,00,000		34,00,000
Sundry Creditors	10,00,000	Stock of FG	6,00,000
		Sundry debtors	8,00,000
		Cash	<u>2,00,000</u>
	<u>50,00,000</u>		<u>50,00,000</u>

On further enquiry the following additional information relating to 07-08 was also furnished:

- (a) Fixed Assets costing Rs. 10,000 would be acquired and installed on 01.07.07 but the payment therefore would be made on 30.6.08.
- (b) Fixes Assets- turnover ratio on the cost of the fixed assets would be 1.5 ;
- (c) The stock-turnover ratio would be 14.4 calculated on the basis of the average of the opening and closing stocks;
- (d) The break-up of cost-profit was expected as follows:

	Per cent
Material	40
Labour	25
Manufacturing expenses	10
Office & selling expenses	10
Depreciation	5
Profit BT	10
Sales	100

- (e) The profit is also to be charged with interest on debentures & tax assumed @ 35%.
 (f) Debtors are expected to be 1/9 of turnover and creditors 1/5 of materials consumed;
 (g) In June 2008 a dividend of 10% on equity share capital would be paid; and
 (h) 6% of debentures of the value of Rs. 5,00,000 would be issued on 1.7.07.

From the above information you are required to prepare a forecast Balance-Sheet as at 30th June, 2008.

10. Certain items of the annual accounts of ABC Ltd. are missing as shown below :

Trading and Profit & Loss Account for the year ended 31st March, 2008

	Rs.		Rs.
To Opening Stock	3,50,000	By Sales	-
To Purchase	-	By Closing Stock	-
To Other Expenses	87,500		
To Gross Profit	-		
	-----		-----
	-		-
	-----		-----
To Office and other Expenses	3,70,000	By Gross Profit	-
To Interest on Debentures	30,000	By Commission	50,000
To Provision for Taxation	-		
To Net Profit for the year	-		
	-----		-----
	-		-
	-----		-----
To Proposed Dividends	-	By Balance b/d	70,000
To Transfer to General Reserves	-	By Net Profit for	
To Balance transferred to B. S.	-	the year	-
	-----		-----
	-		-
	-----		-----

BALANCE SHEET AS ON 31st MARCH 2008

Liabilities	Rs.	Assets	Rs.
Paid-up Capital	5,00,000	Fixed Assets :	
General Reserve :		Plant & Machinery	7,00,000
Balance at the beginning		Other Fixed Assets	-
of the year	-	Current Assets :	
Proposed Addition	-	Stock-in-trade	-
	-----	Sundry Debtors	-
Profit and Loss Appr. A/c	-	Bank Balance	62,500
10% Debentures	-		
Current Liabilities	-		
	-----		-----

You are required to supply the missing figures with the help of the following information:

- (i) Current ratio 2-1
- (ii) Closing stock is 25% of sales
- (iii) Proposed dividends are 40% of the paid-up capital
- (iv) Gross profit ratio in 60%
- (v) Ratio of current liabilities to debentures is 2:1
- (vi) Transfer to General Reserves is equal to proposed dividends.
- (vii) Profits carried forward are 10% of the proposed dividends
- (viii) Provision for taxation is 5% of profits.
- (ix) Balance to the credit-of General Reserves at the beginning of the year is twice the amount transferred to the account from the current profits. Working should from part of your answer.

11. The Balance Sheet of X Ltd. As on 31st March 2007 is as follows:

Liabilities	Rs. ('000)	Assets	Rs.('000)
Equity Share Capital	6,000	Fixed Assets (at cost)	16,250
8% Preference Share capital	3,250	Less: Depre. Written off	<u>5,200</u>
Reserve & Surplus	1,400	Stock	1,950
10% Debentures	1,950	Sundry Debtors	2,600
Sundry Creditors	<u>3,250</u>	Cash	<u>250</u>
	<u>15,850</u>		<u>15,850</u>

The following additional information is available:

- (i) The stock turnover ratio based on cost of goods sold would be 6 times.
- (ii) The cost of fixed assets to sales ratio would be 1.4.
- (iii) Fixed assets costing Rs. 30,00,000 to be installed on 1st April 2007, payment would be made on March 31, 2008.
- (iv) In March 2008, a dividend of 7% on equity capital would be paid.
- (v) Rs. 5,50,000, 11% Debentures would be issued on 1st April, 2007.
- (vi) Rs. 30,00,000, Equity shares would be issued on 31st March 2008.
- (vii) Creditors would be 25% of materials consumed.
- (viii) Debtors would be 10% of sales.
- (ix) The cost of goods sold would be 90% of sales include material 40% and depreciation 5% of sales.
- (x) The profit is subject to debenture interest and taxation @ 30%.

Required:

- i) Prepare the projected Balance Sheet as on 31st March 2008.
- ii) Prepare projected Cash Flow Statement in accordance with AS-3. 11/07/6

Fund & Cash flow

1. Distinguish between Cash Flow and Fund Flow statement (Nov.'02:Q-8b)

Answer: The points of distinction between cash flow and funds flow statement are as below:

Cash flow statement

It ascertains the changes in balance of cash in hand and bank.
It analyses the reasons for changes in Balance of cash in hand and bank
It shows the inflows and outflows of cash.
It is an important tool for short-term analysis.

Funds flow statement

It ascertains the changes in financial position between two accounting periods
It analyses the reasons for change in financial position between two balance sheets
It reveals the sources and application of funds.
It helps to test whether working capital has been effectively used or not.

The two significant areas of analysis are cash generating efficiency and free cash flow

NOTE: 1 M/S ----- & CO. Ltd. Funds Flow Statement For the year ended..

Sources	Amount (Rs.)	Applications	Amount (Rs.)
1. Trading Profit or funds from operation	x	1. Trading Loss/Funds depleted by open.	x
2. Issue of Share Capital(including premium)	x	2. Redemption of preference shares	x
3. Long--term loan(issue during the year)	x	3. Repayment of loan	x
4. Sale of fixed assets, investments etc.	x	4. Acquisition of F. assets, inv. etc.	x
5. Non--Trading income, e.g. dividend	x	5. Non-trading Exps. (div. paid, tax)	x
6. Decrease in Working Capital	<u>x</u>	6. Increase in Working Capital	<u>x</u>
	--		-

NOTE : 2 Statement showing Increase/Decrease in Working Capital during year 2

Particulars	Year-1 Amount (Rs.)	Year-2 Amount (Rs.)
<u>Current Assets:</u>		
Stock	x	x
Sundry Debtors	x	x
Bills Receivable	x	x
Advances (Dr.)	x	x
Cash & Bank	x	x
Prepaid Expenses	<u>x</u>	<u>x</u>
Total (A)	<u>xx</u>	<u>xx</u>
<u>Current Liabilities:</u>		
Sundry Creditors	x	x
Bills Payable	x	x
Advances (Cr.)	x	x
Outstanding Expenses	x	x
Current Provisions	x	x
(if not treated as appropriations)		
Bank Overdraft	<u>x</u>	<u>x</u>
Total (B)	<u>xx</u>	<u>xx</u>
Working Capital (A--B)	xx	xx
Increase /Decrease in working capital		xx

- Provision for tax, bad debt, and depreciation:** If there is no adjustments, show it in the above statement. In case of adjustments, prepare separate account for it.
- Proposed dividend:** If there is no adjustment, pay last year proposed dividend & provide the current year dividend. In case of adjustments given in the problems, show separate account for it.
- When accumulated depreciation given in the problem, prepare asset accounts at cost.

NOTE: 3 General Statement of Profit to identify the position of Fund From Operation

	Rs.	Rs.
Net Sales		xx
Less:		
1. Direct Expenses	xx	
2. Overhead excluding depreciation	xx	
3. Other trading expenses (Ref. NOTE 5)	<u>xx</u>	
		<u>xx</u>
* Trading Profit or Fund from Operation		xx
Less: Non trading Expenses		
1. Depreciation	xx	
2. Loss on Sale of Fixed Assets & Investment	xx	
3. G/W Written off	xx	
4. Preliminary Expense Written off	xx	
5. Patent	xx	
6. Adv. Suspense	xx	
7. Disc. on issue of share & debenture written off	<u>xx</u>	
		<u>xx</u>
Add: <u>Non trading Income</u>	xx	
1. Dividend Received	xx	
2. Profit on Sale of Fixed Assets & Investment	xx	
3. Tax refund (not income tax)		<u>xx</u>
		<u>xx</u>
PROFIT BEFORE TAX (PBT)		xx
Less: PROVISION FOR TAX		<u>xx</u>
PROFIT AFTER TAX (PAT)		xx
Add: Profit b/ f from previous year		<u>xx</u>
Less:		
1. Transfer to Reserves	xx	
2. Dividend Paid	xx	
3. Amount Provided on Bonus issue or Redemption of Pref. Share	<u>xx</u>	<u>xx</u>
Add : Income Tax refund		<u>xx</u>
Profit C/F (Current year P/L A/c balance as in Balance Sheet)		<u>xx</u>

NOTE : 4

Adjusted Profit and Loss Account

To Depreciation	xx	By Balance b/d(as per p/l a/c)	xx
To Write Offs:		By Profits on Sale of fixed assets, investments etc.	xx
Goodwill			
Preliminary exp.			
Adv. Suspense etc.	xx		
To loss on Sale of fixed assets, inv,	xx	By Dividend (received)	xx
To Premium on Redemption of Debentures	xx	By Trading Profit	xx
To Debenture Discount A/c	xx	balancing figure	
To Reserve for Contingencies(transfer)	xx		
To General Reserve (transfer	xx		
To Provision for tax (if any)	xx		
To Proposed dividend (if any)	xx		
To Interim Dividend	xx		
To Balance C/d (as per P/L a/c)	<u>xx</u>		
	xx		<u>xx</u>

NOTE: 5: CALCULATION OF CASH FROM OPERATION

Statement showing how Cash Trading Profit is to be arrived at is given below:

	Rs. xx	Rs.
Funds from Operations or Trading Profit (<i>on operation</i>)		
Add:		
(a) Decrease in Current Assets (other than Cash and Bank balances)	xx	
(b) Increase in Current Liabilities	<u>xx</u>	<u>xx</u>
Less:		
(a) Increase in Current Assets (other than Cash and Bank balances)	xx	
(b) Decrease in Current Liabilities	<u>xx</u>	<u>xx</u>
Cash Trading Profits (or Cash from Operation)		<u>xx</u>

Note: 6**Direct Method Cash Flow Statement (Paragraph 18a)**

Cash Flows from operating activities		
Cash receipt from customers	x	
Cash paid to suppliers and employees	x	
Cash generated from operations	x	
Interest paid	x	
Income taxes paid	x	
Cash flow before extraordinary item	x	
Proceeds from earthquake disaster settlement	<u> x</u>	
(a) <i>Net cash from operating activities</i>		xx
Cash flows from investing activities.		
Acquisition of subsidiary X, net of cash acquired	x	
Purchase of property, plant and equipment	x	
Proceeds from sale of equipment	x	
Interest received	x	
Dividend received	<u> x</u>	
(b) <i>Net cash used in investing activities</i>		xx
Cash flows from financing activities		
Proceeds from issuance of share capital	x	
Proceeds from long-term borrowings	x	
Payment of finance lease liabilities	x	
Dividends paid *	<u> x</u>	
© <i>Net cash used in financing activities</i>		<u> xx</u>
Net increase in cash and cash equivalents [(a)+(b)+(c)]		xx
(+) Cash and cash equivalents at beginning of period	<u> xx</u>	
Cash and cash equivalents at end of period		<u> xx</u>

* This could also be shown as an operating cash flow.

Note: 7Indirect Method Cash Flow Statement (Paragraph 18b)Cash flows from operating activities

Net profit before taxation, and extraordinary item(PBT)			xx
---	--	--	----

Adjustments for :			
-------------------	--	--	--

Depreciation	x		
Foreign exchange loss		x	
Investment income	x		
Interest expense		x	xx

Operating profit before working capital changes			xx
---	--	--	----

Increase in trade and other receivables		x	
---	--	---	--

Decrease in inventories/Debtors		x	
---------------------------------	--	---	--

Decrease in trade payables		x	xx
----------------------------	--	---	----

Cash generated from operations			xx
--------------------------------	--	--	----

Interest paid		x	
---------------	--	---	--

Income taxes paid		x	xx
-------------------	--	---	----

Cash flow before extraordinary item			xx
-------------------------------------	--	--	----

Proceeds from earthquake disaster settlement			xx
--	--	--	----

<i>Net cash from operating activities</i>			xx
---	--	--	----

Cash flows from investing activities

Acquisition of subsidiary X net of cash acquired			xx
--	--	--	----

Purchase of property, plant and equipment			xx
---	--	--	----

Proceeds from sales of equipment			xx
----------------------------------	--	--	----

Interest received			xx
-------------------	--	--	----

Dividend received			xx
-------------------	--	--	----

<i>Net cash used in investing activities</i>			xx
--	--	--	----

Cash flows from financing activities

Proceeds from issuance of share capital			xx
---	--	--	----

Payment of finance lease liabilities			xx
--------------------------------------	--	--	----

Dividends paid *(it can be shown above)			xx
---	--	--	----

<i>Net cash used in financing activities</i>			xx
--	--	--	----

Net increase in cash and cash equivalents			xx
---	--	--	----

Cash and cash equivalents at beginning of period			xx
--	--	--	----

Cash and cash equivalents at end of period			xx
--	--	--	----

Problems:

1. CKC Ltd. have Balance sheets at 31st March, 2007 and 2008 as follows:

	2007 Rs.	2008 Rs.		2007 Rs.	2008 Rs.
Share capital (Rs. 10 shares)	5,000	10,000	Fixed Assets -		
Share Premium	--	15,000	Cost	20,000	39,800
Revenue reserves	22,000	31,500	Depreciation	7,700	11,000
15% Loan	--	10,000		-----	-----
Creditors	8,000	9,000	Investment	12,300	28,800
Overdraft	2,500	--	Stock	--	10,000
			Debtors	16,000	23,000
			Bank	9,200	10,200
				--	3,500
	<u>37,500</u>	<u>75,500</u>		<u>37,500</u>	<u>75,500</u>

- (a) The profit for 2008 was Rs. 15,000 and an interim dividend of Rs. 5,500 was paid. There will be no final dividend and you can ignore taxation.
- (b) Fixed assets which had cost Rs. 5,000 and which had been depreciated by Rs. 2,000 were sold for Rs. 2,700.
- (c) Loan was taken on 01/10/07. Interest paid.

You are required to prepare a source and application of funds statement for 2008 & Cash Flow Statement (indirect method)

2. The summarised balance sheets at the end of the last two completed financial years of NPC Ltd. are as follows :

Balance Sheets as at March , 31 st				
	2007 Rs.	2008 Rs.		
Issued capital	7,00,000	8,10,000	Land and buildings	3,32,000
General reserve	1,12,000	1,12,000	Machinery and plant	3,45,000
Profit and loss a/c	18,500	18,500	Stock in hand	79,800
Net profit for year	--	91,500	Work-in-progress	1,30,000
Proposed dividend	70,000	--	Debtors	1,67,200
14% Debentures	1,00,000	75,000	Cash at bank	85,000
Creditors	1,38,500	2,05,000		
Bank Overdraft	--	7,800		
	<u>11,39,000</u>	<u>12,09,800</u>		
				<u>11,39,000</u> <u>12,09,800</u>

The cost price of the fixed assets at the balance sheet dates was as follows :

	2007	2008
Land and buildings :	Rs. 3,60,000	Rs. 3,80,000
Machinery and plant :	Rs. 3,83,000	Rs. 5,23,000

A building costs Rs. 80,000, (book value of Rs. 72,000) was sold for Rs. 42,800. There was a Rs. 10,000 issue of equity shares. A dividend of 12.5 % is proposed for the year ended 31.03.2008. Debenture were redeemed on 30/09/06. Tax paid Rs. 34,000.

Compile a source and application of funds statement for the year ended 31st March, 2008.

3. From the following Balance Sheets of Joymatara Ltd., make out Fund Flow Statement:

Balance Sheet as on 2007 & 2008

	Rs.	Rs.		Rs.	Rs.
Equity Share Cap.	40,000	60,000	Goodwill	10,000	8,000
7% Redeemable			Land and Buildings	20,000	15,000
Preference Shares	20,000	10,000	Plant	18,000	38,200
General Reserve	4,000	6,000	Trade Investments	2,000	7,000
Capital Reserve	--	5,000	Stock	17,000	15,600
Profit and Loss A/c	3,600	5,400	Sundry Debtors	12,000	18,000
Proposed Dividend	5,600	7,800	Bills Receivable	3,000	3,600
Sundry Creditors	5,000	9,400	Cash in hand		
			& at bank	3,400	5,600
Bills Payable	2,000	1,200	Preliminary Exp.	2,000	1,400
Liabilities for Exp.	1,600	1,200			
Prov. for Taxation	<u>5600</u>	<u>6400</u>			
	87,400	1,12,400		87,400	1,12,400

Information:

- (1) In 2008 Rs. 3,600 depreciation has been written off plant. No depreciation has been charged on land and building.
- (2) A piece of land has been sold out and the balance has been revalued; the profits on revaluation & sale has been transferred to Capital Reserve. There is no other capital profit.
- (3) A plant has been sold for Rs. 2,400 (W.D.V -- Rs. 3,000)
- (4) Rs. 400 dividend has been received and credited to Profit and Loss A/c.
- (5) An interim dividend of Rs. 2,000 has been paid during 2008.
- (6) Pref. Shares were redempt on 31st September '08 with proportionate dividend.

4. **Summarized Balance Sheets of NKG Ltd.**

	30.11.08	30.11.07		30.11.08	30.11.07
	Rs.	Rs.		Rs.	Rs.
Equity share capital	3,60,000	2,40,000	Fixed assets	2,80,000	1,92,000
Undistributed profits	61,600	47,200	Accu. Depre.	(48,000)	(36,000)
Taxation	20,000	24,000	Stock	1,76,000	1,44,000
Trade creditors	36,000	72,000	Debtors	48,000	64,000
			Prov. for debts	(2,400)	(1,200)
			Cash and Bank	24,000	20,400
	4,77,600	3,83,200		4,77,600	3,83,200

Summarized Income Statement for the year ended 30th Nov. 2008.

	Rs.	Rs.
Sales	3,20,000	
Investment income	4,000	
Profit on sale of machine (1)	<u>800</u>	3,24,800
Operating expenses and taxes (2)		<u>1,82,400</u>
Net profit for year		1,42,400
Undistributed profits brought forward	<u>47,200</u>	1,89,600
Dividends	48,000	
Bonus issue of shares, 1 for every 3 held	<u>80,000</u>	<u>1,28,000</u>
Undistributed profits earned forward		<u>61,600</u>

- 1) The machine which was sold for cash had cost Rs. 2,000 and its net book value at the time of sale was Rs. 800.
- 2) Includes depreciation Rs.13,200; write off of obsolete stocks Rs.1,600; & taxation Rs. 20,000. Prepare a Fund Flow & a Cash Flow Statement.

5. A company finds on 1st January, 2008, that it is short of funds with which to implement its programme of expansion. On 1st January 2008 it had a credit balance of Rs. 1,80,000. From the following information prepare a statement for the Board of Directors to show how the overdraft of Rs. 68,750 as at 31st December, 2007 has arisen.

Figures as per Balance Sheet as at 31st December

	2007 (Rs.)	2008 (Rs.)
Fixed assets	7,50,000	11,20,000
Stock and stores	1,90,000	3,30,000
Debtors	3,80,000	3,35,000
Bank balance	1,80,000 (Dr)	68,750 (O/D)
Trade creditors	2,70,000	3,50,000
Share capital (in shares of Rs. 10 each)	2,50,000	3,00,000
Bills receivable	87,500	95,000

The profit for the year ended 31st December, 2007 before charging depreciation and taxation amounted to Rs. 2,40,000. The 5,000 shares were issued on 1st January, 2008 at a premium of Rs. 5 per share. Dividend was paid during the year as follows :

For 2007 on the capital on 31-12-07 at 10% & for 2007 (interim) 5%. Rs. 1,31,250 was paid in March 2008 by way of income tax.

6. XYZ Ltd. Company's Comparative Balance Sheet for 2007 and the Company's Income Statement for the year follow:

XYZ Ltd.
Comparative Balance Sheet
December 31st, 2007 and 2008 (Rs. in crores)

	2007	2006
Sources of funds:		
Shareholder's funds		
Share Capital	140	140
Retained earnings	<u>110</u>	<u>92</u>
Loan funds Bonus payable	<u>135</u>	<u>40</u>
	<u>385</u>	<u>272</u>
Application of funds		
Fixed Assets		
Plant and Equipment	430	309
Less accumulated depn	<u>(218)</u>	<u>(194)</u>
Investments	60	75
Current Assets		
Inventory	205	160
Accounts receivable	180	270
Pre-paid expenses	17	20
Cash	<u>26</u>	<u>10</u>
	428	460
Less: current liabilities and provisions		
Accounts payable	230	310
Accrued liabilities	70	60
Deferred income-tax pron.	<u>15</u>	<u>8</u>
	<u>315</u>	<u>378</u>
	<u>385</u>	<u>272</u>

Income Statement for the year ended December 31st, 2008 (Rs. in crores)

Sales	1,000
Less cost of goods sold	<u>530</u>
Gross margin	470
Less operating expenses	<u>352</u>
Net operating income	118
Non-operating items: Loss on sale of equipment	<u>(4)</u>
Income before taxes	114
Less income-taxes	<u>48</u>
Net income	66

Additional information:

- (i) Dividends of Rs.48 crores were paid in 2008.
- (ii) The loss on sale of equipment of Rs.4 crore reflects a transaction in which equipment with an original cost of Rs.12 crore and accumulated depreciation of Rs.5 crore were sold for Rs.3 crore in cash.

Using the indirect method, determine the net cash provided by operating activities for 2008 and construct a statement of cash flows. (May '03: Q-7)

Capital of a company consists of:

- 1. Equity share capital + reserves & surpluses**
- 2. Preference share capital**
- 3. Loan capital i.e. Debenture & Bond.**

- Higher amount of profit for Shareholders, &
- Higher Earning Per Share (EPS) = $\frac{\text{Profits available to equity. Share holders}}{\text{number of equity shares}} = \frac{[(\text{PBIT} - I)(1-t) - \text{Pref. Dividend}]}{\text{No. of Equity Share.}}$

Costs of Capitals are of two types

- 1. One Time Cost Or Flotation Cost**
- 2. Annual Costs e.g. Interest, Div.**

Apply the principle of EXPLICIT COST i.e. the rate of return at which the initial cash inflow equates the discounted future cash outflows . This method is opposite to I.R.R.

Cost of Preference Share Capital (C_p)

- a. Cost of irredeemable preference Share .

$$C_p = \text{Preference Dividend} \div \text{Net Proceeds (NP) or Market Value (MP)}$$

- b. Cost of redeemable preference Share

- i. Redemption at the end

$$C_p = \frac{D + (RV - NP) \div n}{(RV + NP) \div 2}$$

- ii. Pref. share Redeemed intermittently -- Apply Explicit Cost principle as before.

Cost of Equity Share Capital (C_e)

- a. **Dividend Price Approach (D/P)**

$$C_e = \text{Dividend} \div \text{Net Proceeds or Market value} \times 100$$

- b. **Dividend Price Approach (D/P) with growth model**

$$C_e = \text{Dividend} \div \text{Net Proceeds or Market value} \times 100 + g$$

Where, g = growth rate or expected growth in dividend from coming year.

- c. **Earning/ Price Approach (E / P):**

$$C_e = \text{Current Earning per Share} \div \text{Current Market Price per share} \times 100$$

- d. **Earning/ Price Approach (E / P) with growth model:**

$$C_e = \text{Current Earning per Share} \div \text{Current Market Price per share} \times 100 + g$$

- e. **Realised yield Approach (Apply MIRR) :-**

It is that rate of return where investor's initial investment = Total discounted cash Inflow in form of dividend and sales realisation at the end of the period.

Estimating growth rate (g)

$$1. \quad D_n = D_o (1+g)^n ;$$

D_n = Div per share in current year;

N = no of years

D_o = Div per share in first year;

G = Growth rate

$$2. \quad \text{GORDON'S MODEL: } g = br.$$

g = growth rate;

b = constant proportion of net profit retained each year;

r = average return of the firm .

$b = (\text{Net profit} - \text{dividends}) \div \text{Net profit}$

$r = \text{Net profits} \div \text{Book value of capital employed}$

THIS METHOD IS ONLY APPLICABLE Net profit TO FIRMS WHICH HAVE ALL EQUITY CAPITAL STRUCTURE (un-levered)

Cost of Retained Earnings (C_r)

$$C_r = C_e (1 - b) (1 - t)$$

Where

b = rate of brokerage;

t = marginal tax rate applicable to share holder.

If rate brokerage is not given, $C_r = C_e$

Overall Cost of Capital or Weighted Average of Capital

Cost of Cap. or cut off rate (C_w or C_o) = Σ Capital mix ratio x cost of each ingredients

Alternatively, C_w or C_o = Total cost ÷ total capital x 100

MIX are taken on 4 different

1. Book value Basis

2. Market value Basis

3. Marginal Basis

4. Expected Cap. Structure basis

Market Value Of The Firm

1. Traditional Approach

Value of the firm = interest ÷ C_d + Dividend ÷ C_e as there is no tax.

2. Net Income Approach :

Value = { (EBIT - I) × (1 - t) } ÷ market Capitalisation rate + value of debt

3. Net Operating Income Approach :

Value of equity = { (EBIT ÷ market Capitalisation rate) - value of debt } × (1 - t)

Value of Firm = Value of Equity + Value of Debt

4. MODIGLIANI MILLER APPROACH: In case of un-lever firm & No Tax

a. Value of the firm = EBIT ÷ C_e

b. $P_0 = (D_1 + P_1) ÷ (1 + C_e)$

Where,

P_0 = Market price per share of time 0

D_1 = Dividend per share at that time.

P_1 = Market price per share at time 1.

C_e = Market capitalisation rate or cost of Equity capital.

5. In case of new financing :

$$M_p1 = I - (NP - nD_1)$$

Where,

m = no. of share to be issued, at time 1.

I = new investment.

P = Price.

NP = Net profit.

D_1 = Dividend per share at time 1.

Rules of CAPM :

$$E(R_p) = R_f + \beta_p [E(R_m) - R_f]$$

Where,

$E(R_p)$ = Expected return of the portfolio

R_f = Risk free rate of Return

β_p = Portfolio Beta i.e. market sensitivity index

= change in expected rate of return ÷ change in market rate of return

$E(R_m)$ = Expected Return on market portfolio

$[E(R_m) - R_f]$ = Market risk premium.

$$\text{Portfolio Beta } (\beta_p) = \frac{(R_{sm})(S.D._s)}{S.D._m}$$

Where,

R_{sm} = Correlation Coefficient with market.

$S.D._s$ = Standard deviation of an asset .

$S.D._m$ = Market Standard deviation.

$E(R_m) = (\text{DIV} + \text{Cap. Gain}) \div \text{Total Investment}$

Capital Gain = Market Value - Value of Original Investment .

Weighted average $\beta = \sum \text{weight} \times \text{individual } \beta$

Theory:**1. 'Profit maximization' and 'Wealth maximization' objective of a firm.**

A firm's financial management may often have the following as their objectives:

- i. The maximum of firm's profit.
- ii. The maximization of firm's wealth / value.

The maximization of profit is often considered as an implied objective of a firm. To achieve the aforesaid objective various type of financing decisions may be taken

The wealth/ value of a firm is defined as the market price of the firms stock. The market price of a firm's stock represents the local judgment of all market participants as to what the value of the particulars firm is It takes into account present and prospective future earnings per share, the

Timing and risk of these earning, the dividend policy of the firm and many other factors that bear upon the market price of the stock.

2. Firm value Vs. Profit maximization

A firm's financial management may often have the following as their objectives:

- (i) The maximization of firm's profit.
- (ii) The maximization of firm's value / wealth.

The maximisation of profit is often considered as an implied objective of a firm. To achieve the aforesaid objective various type of financing decision may be taken. Options resulting into maximisation of profit may be selected by the firm's decision makers. They even some time may adopt policies yielding exorbitant profits in short run which may prove to be unhealthy for the

growth, survival and overall interests of the firm. The profit of the firm in this case is measured in terms of its total accounting profit available to its shareholders.

The value/wealth of a firm is defined as the market price of the firm's stock. The market price of a firm's stock represents the focal judgment of all market participants as to what the value of the particular firm is. It takes into account present and prospective future earnings per share, the timing and risk of these earnings, the dividend policy of the firm and many other factors that bear upon the market price of the stock.

3. Assumptions of Modigliani and Miller.

Assumptions of Modigliani and Miller approach to cost of capital are as follows:

- (i) The capital markets are assumed to be perfect. This means that investors are free to buy and sell securities and are well informed about the risk and return involved in them.
- (ii) The firms can be classified into 'homogeneous risk class'.
- (iii) All investors have the same expectations from a firm's net operating income (EBIT) which is necessary to evaluate the value of a firm.
- (iv) The dividend payment ratio is 100% i.e. there are no retained earnings.

4. Venture Capital Financing:

It refers to financing of new high risky venture promoted by qualified entrepreneurs who lack experience and funds, to give shape to their ideas. In other words, under venture capital financing, venture capitalists make investment to purchase equity or debt securities from inexperienced entrepreneurs who undertake highly risky ventures with a potential of success.

Some common methods of venture capital financing are as follows:

- i. Equity financing: When funds are required for a longer period but the firm fails to provide returns to the investors during the initial stages, the venture capital finance is provided by way of equity share capital.
- ii. Conditional loan: A conditional loan is repayable in the form of a royalty after the venture is able to generate 'sales'. Here royalty ranges between 2 and 15 per cent. No interest is paid on such loans.
- iii. Income note: It combines the features of both conventional and conditional loans. The concern has to pay both viz, interest and royalty on sales but at substantially low rates.
- iv. Participating debenture: Such a security carries charges in three phases – in the start up phase no interest is charged, next stage a low rate of interest is charged up to a particular level of operation, after that, a high rate of interest is required to be paid.

5. Seed capital assistance.

Seed Capital Assistance: The seed capital assistance has been designed by IDBI for professionally or technically qualified entrepreneurs. All the projects eligible for financial assistance from IDBI, directly or indirectly through refinance are eligible under the scheme. The project cost should not exceed Rs. 2 crores and the maximum assistance under the project will be restricted to 50% of the required promoters' contribution of Rs. 15 lakhs whichever is lower.

The seed capital Assistance is interest free but carries a security charge of 1% p.a. for the first five years and an increasing rate thereafter.

Problems on Selection of best capital structure

1. X Ltd., a widely held company is considering a major expansion of its production facilities and the following alternatives are available:

	Alternatives		(Rs. In lakhs)
	A	B	C
Shares Capital	50	20	10
14% Debentures	--	20	15
Loan from a Financial Institution @ 18% p.a. Rate of Interest	--	10	25

Expected rate of return before tax is 25%. The rate of dividend of the company is not less than 20%. The company at present has low debt. Corporate taxation 35%. Which of the alternatives you would choose?

2. EXE Limited is considering three financing plans. The key information is as follows:-
Total investment to be raised Rs. 2,00,000.

Plans of Financing Proportion

	Plans	Equity	Debt	Preference Shares
	A	100%	-	-
	B	50%	50%	-
	C	50%	-	50%
Cost of debt		8%		
Cost of preference shares		8%		
Tax rate		35%		

Equity shares of the face value of Rs. 10 each will be issued at a premium of Rs. 10 per share. Expected PBIT is Rs. 80,000.

Determine for each plan:-

- 1) Earnings per share (EPS); and
- 2) The financial break even point.
- 3) Indicate if any of the plans dominate and compute the PBIT range among the plans for indifference.

3. Aries Limited wishes to raise additional Finance of Rs. 10 lakhs for meeting its investment plans. It has Rs. 2,10,000 in the form of retained earnings available for investment purposes. The following are the further details:

1) Debt/equity mix	30%: 70%
2) Cost of debt	
Up to Rs. 1,80,000	10% (before tax)
Beyond Rs. 1,80,000	16% (before tax)
3) Earnings per share	Rs.4
4) Dividend pay out	50% of earnings
5) Expected growth rate in dividend	10%
6) Current market price per share	Rs. 44
7) Tax rate	35%

You are required:

- a) To determine the pattern for raising the additional finance.
- b) To determine the post-tax average cost of additional debt.
- c) To determine the cost of retained earnings and cost of equity, and
- d) Compute the overall weighted average after tax cost of additional Finance.

4. A B Limited provides you with following figures:-

Profit	Rs. 3,00,000
Less Interest on Debentures @ 12%	<u>60,000</u>
	2,40,000
Income tax @ 50%	<u>1,20,000</u>
	<u>1,20,000</u>
Number of Equity Shares (Rs. 10 each)	40,000
E.P.S (Earning Per Share)	3
Rulings price in market	30
PE ratio (Price/EPS)	10

The company has undistributed reserves of Rs. 6 lakhs. The company needs Rs. 20 lakhs for expansion. This amount will earn at the same rate as funds already employed. You are informed that a debt equity ratio (Debt/Debt +Equity) higher than 35% will push the P/E ratio down to 8 and raise the interest rate on additional amount borrowed to 14%. You are required to ascertain the probable price of the share

- (1) If the additional funds are raised as debt; and;
- (2) If the amt is raised by issuing equity shares.

Computation of cost of capital elements

5. D Ltd. Is foreseeing a growth rate of 12% per annum in the next two years. The growth rate is likely to be 10% for the third and fourth year. After that the growth rate is expected to stabilize at 8% per annum. If the last dividend was Rs. 1.50 per share and the investor's required rate of return is 16% determine the current value of equity share of the company.

The P.V. factors at 16%

Year	1	2	3	4
P.V. factor	0.862	0.743	0.641	0.552 (May'05: Q-6b)

6. The capital structure of Swan & Co. comprising of 12% debentures, 9% preference shares and equity shares of Rs.100 each is in the proportion of 3: 2: 5.

The company is contemplating to introduce further capital to meet the expansion needs by seeking 14% term loan from financial institutions. As a result of this proposal, the proportions of debentures, preference shares and equity would get reduced by 1/10, 1/15 and 1/6 respectively.

In the light of above proposal calculate the impact on weighted average cost of capital assuming 35% tax rate, expected dividend of Rs. 9 per share at the end of the year and growth rate of dividends 5% No change in the dividend, growth rate and market price of share is expected after availing the proposed term loan.

7. The following items have been extracted from the of the Balance Sheet of XYZ Company as at 31st March, 2008:-

Paid up Capital:	Rs.
4,00,000 Equity Shares of Rs. 10 each	40,00,000
Reserves and Surplus	60,00,000
Loans:	
15% Non convertible Debentures	20,00,000
14% Institutional Loans	60,00,000

Other information about the company as relevant is given below:

Year ended 31 st Mar.	Dividend Per Share Rs.	Earning Per Share Rs.	Average Market Price per Share Rs.
2006	4.00	7.50	50.00
2007	3.00	6.00	40.00
2008	4.00	4.50	30.00

You are required to calculate weighted average cost of capital, using book values as weights and Earning/Price (E/P) ratio as the basis of cost of equity. Tax rate is consider as 35 %. Also calculate weighted Average cost of capital on the basis of the market value.

8. M/s. Albert & Co: has the following capital structure as on 31st December, 2008

10% Debentures	Rs.	3,00,000
9% Preference shares	Rs.	2,00,000
Equity-5,000 shares of Rs. 100 each.	Rs.	5,00,000
Total	Rs.	<u>10,00,000</u>

The equity shares of the company are quoted at Rs. 102/- and the company is expected to declare a dividend of Rs. 9 per share for 2007. The company has registered a dividend growth rate of 5% which is expected to be maintained.

- i) Assuming the tax rate applicable to the company at 40% calculate the weighted average cost of capital. State your assumptions, if any.
- ii) Assuming, in the above exercise, that the company can raise additional term loan at 12% for Rs. 5,00,000 to finance an expansion, calculate the revised weighted cost of capital. The company's statement is that it will be in a position to increase the dividend from Rs. 9 per share to Rs. 10 per share, but the business risk associated with new financing may bring down the market price from Rs. 102 to Rs. 96 per share.
9. In considering the most desirable capital structure for a company, the following estimates of the cost of debt and equity capital (after tax) have been made at various levels of debt-equity mix:

Debt as percentage of total capital employed,	Cost of debt. %	Cost of equity %
0	7.0	15.0
10	7.0	15.0
20	7.0	15.5
30	7.5	16.0
40	8.0	17.0
50	8.5	19.0
60	9.5	20.0

You are required to determine the optimal debt-equity mix for the company by calculating composite cost of capital.

10. Given below is the summary of the Balance Sheet of a Company as at 31st December, 2008:

Liabilities	Rs.	Assets	Rs.
Equity Share Capital 20,000 shares of Rs. 10 each	2,00,000	Fixed Assets	4,00,000
Reserves & Surplus	1,30,000	Investments	50,000
8% Debentures Redeemable at par in 2009)	1,70,000	Current Assets	2,00,000
Current Liabilities :			
Short-term loan	1,00,000		
Trade creditors	<u>50,000</u>		
	<u>6,50,000</u>		<u>6,50,000</u>

You are required to calculate Company's weighted average cost of capital using balance sheet valuations. The following additional information are also available:

- i) 8% Debentures were issued at par.
- ii) All interest payments are up-to-date and equity dividend is currently 12%.
- iii) Short-term loan carries interest at 18% p.a.
- iv) The Shares and Debenture of the Co. are all quoted on the Stock Exchange and current market prices are as: Equity Shares: Rs. 14 each; 8% Debentures: Rs. 98 each
- v) The rate of tax for the Company may be taken at 35%.

11. A company has the following capital structure.

	Rs.
Ordinary Shares of Rs. 10 each fully paid	40,00,000
7.5% cumulative preference shares of Rs.100 each fully paid	2,00,000
Reserves and retained profits	45,00,000
11% Long Term Loan	<u>6,00,000</u>
Total	<u>93,00,000</u>

In addition, the company has a bank overdraft for working capital and this average to Rs. 10 lakhs. Interest thereon is 15%. You are required to calculate the company's overall rate of return on capital employed in order to ensure:

- i) Payment of all interests
- ii) Dividend pays out ratio of 60%
- iii) Payment of preference Dividend
- iv) Ordinary shareholder's dividend is 12%. Assume the tax rate to be 35%

12. JKL Ltd. Has the following book- value capital structure as on March 31, 2008.

	Rs.
Equity share capital (2,00,000 shares)	40,00,000
11.5% preference shares	10,00,000
10% debentures	<u>30,00,000</u>
	<u>80,00,000</u>

The equity share of the company sells for Rs.20. It is expected that the company will pay next year a dividend of Rs.2 per equity share, which is expected to grow at 5% p.a. forever. Assume a 35% corporate tax rate.

Required:

- (i) Compute weighted average cost of capital (WACC) of the company based on the existing capital structure.
- (ii) Compute the new WACC, if the company raises an additional Rs.20 lakhs debt by issuing 12% debentures. This would result in increasing the expected equity dividend to Rs.2.40 & leave the growth rate unchanged but the price of equity share will fall to Rs.16 per share.
- (iii) Comment on the use of weights in the computation of weighted average cost of capital.

13. The R & G Company has following capital structure at 31st March 2008 which is considered to be optimum:

	Rs.
13% debenture	3,60,000
11% preference share capital	1,20,000
Equity share capital (2,00,000 shares)	19,20,000

The company's share has a current market price of Rs. 27.75 per share. The expected dividend per share in next year is 50% of the 2008 EPS. The EPS of last 10 years is as follows. The past trends are expected to continue:

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
EPS (Rs.)	1.00	1.120	1.254	1.405	1.574	1.762	1.974	2.211	2.476	2.773

The company can issue 14% new debenture. The company's debenture is currently selling at Rs. 98. The new preference issue can be sold at a net price of Rs. 9.80, paying a dividend of Rs. 1.20 per share. The company's marginal tax rate is 50%.

(i) Calculate the after tax cost.

- (a) of new debts and new preference share capital,
- (b) of ordinary equity, assuming new equity comes from retained earnings.

(ii) Calculate the marginal cost of capital.

(iii) How much can be spent for capital investment before new ordinary share must be sold?

Assuming that retained earnings available for next year's investment are 50% of 2007 earnings.

(iv) What will be marginal cost of capital (cost of fund raised in excess of the amount calculated in part (iii) if the company can sell new ordinary shares to net Rs. 20 per share? The cost of debt and of preference capital is constant. (May '05: Q-7b)

Computation of value of the firm

14. ABC Ltd. has a capital of Rs. 10 lakhs in equity shares of Rs. 100 each. The shares are currently quoted at par. The company proposes declaration of a dividend of Rs. 10 per share at the end of the current financial year. The capitalization rate of the risk class to which the Co belongs is 12%.

What will be the market price of the share at the end of the year if

- 1) A dividend is not declared?
- 2) A dividend is declared?

Assuming that the Co. pays the dividend and has net profits of Rs. 5,00,000 & makes new investments of Rs. 10 lakhs during the period, how many new shares must be issued? Use the M.M. model.

Capital Asset Pricing Model (CAPM)

15. From the following information, calculate the expected rate of return of a portfolio:

Risk free rate of interest	12%
Expected return of market Portfolio	18%
Standard deviation of an asset	2.8%
Market Standard deviation	2.3%
Co-relation Co-efficient of portfolio with market	0.8%

16. The Beta Coefficient of Target Ltd. is 1.4. The company has been maintaining 8% rate of growth in dividends and earnings. The last dividend paid was Rs. 4 per share. Return on Government securities is 10%. Return on market portfolio is 15%. The current market price of one share of

Target Ltd. is Rs. 36.

- i) What will be the equilibrium price per share of Target Ltd.?
- ii) Would you advise purchasing the share?

17. As an investment manager you are given the following information:

Investment in equity shares of	Initial price	Dividends	Market price at the end of the year	Beta risk factor
	Rs	Rs.	Rs.	
A. Cement Ltd.	25	2	50	0.8
Steel Ltd.	35	2	60	0.7
Liquor Ltd.	45	2	135	0.5
B. Government of India Bonds	1,000	140	1,005	0.99

Risk free return may be taken at 14%. You are required to calculate:

- Expected rate of returns of portfolio in each using Capital Asset Pricing Model (CAPM).
- Average return of portfolio.

18. ABC Limited has the following book value capital structure:

Equity share capital (150 million shares, Rs. 10 par)	Rs. 1,500 million
Reserves and surplus	Rs. 2,250 million
10.5% Preference Share Capital (1million shares, Rs. 100 par)	Rs. 100 million
9.5% Debentures (1.5 million debentures, Rs, 1,000 par)	Rs. 1,500 million
8.5% Term Loans from Financial Institutions	Rs. 500 million

The debentures of ABC Limited are redeemable after three years and are quoting at Rs. 981.05 per debenture. The applicable income tax rate for the company is 35%.

The current market price per equity share is Rs. 60. The prevailing default -risk free interest rate on 10– year GOI Treasury Bonds is 5.5%. The average market risk premium is 8%. The beta of the company is 1.1875. The preferred stock of the company is redeemable after 5 years is currently selling at Rs. 98.15 per preference share.

Required:

- Calculate weighted average cost of capital of the company using market value weights.
- Define the marginal cost of capital schedule for the firm if it raises Rs. 750 million for a new project. The firm plans to have a target debt to value ratio of 20%. The beta of new project is 1.4375. The debt capital will be raised through term loans. It will carry interest rate of 9.5% for the first 100 million and 10% for the next Rs. 50 million. 5/04/07

19. You are analyzing the beta ABC computers Ltd. and have dividend the Company into four board business groups, with market values and betas for each group.

Business group (SBU)	Market value of Equity	Un leveraged beta
Main frames	Rs. 100 billion	1.10
Personal Computers	Rs. 100 billion	1.50
Software	Rs. 50 billion	2.00
Printers	Rs. 150 billion	1.00
Debt outstanding	Rs. 50 billion	--

Required :

- Estimate the beta for ABC Computers Ltd. as a Company. Is this beta going to be equal to the beta estimated by regressing past returns on ABC Computers stock against a market index. Why or why not?
- If the treasury bond rate is 7.5%, estimate the cost of equity for ABC computers Ltd. Estimate the cost of equity for each division. Which cost of equity would you use to value the printer division? The average market risk premium is 8.5%.

- 20.** The following summarizes the percentage changes in operating income, percentage changes in revenues, and betas for four pharmaceutical firms.

Firm	Change in Revenue	Change in operating income	Beta
PQR Ltd.	27%	25%	1.00
RST Ltd.	25%	32%	1.15
TUV Ltd.	23%	36%	1.30
WXY Ltd.	21%	40%	1.40

Required :

- (i) Calculate the degree of operating leverage for each of these firms. Comment also.
- (ii) Use the operating leverage to explain why these firms have different beta.

(Nov.'04:Q-8a)

- 21.** A co. needs Rs. 31,25,000 for the construction of new plant. The following 3 plans are feasible:

- (i) The company may issue 3,12,500 equity shares at Rs. 10 per share.
- (ii) The company may issue 1,56,250 ordinary equity shares at Rs. 10 per share and 15,625 debentures of Rs. 100 denomination bearing a 8% rate of interest.
- (iii) The company may issue 1,56,250 equity shares at Rs. 10 per share and 15,625 preference shares at Rs. 100 per share bearing a 8% rate of dividend.
 - I. If the Co.'s earnings before interest & taxes are Rs. 62,500, Rs.1,25,000, Rs. 2,50,000, Rs. 3,75,000 and Rs. 6,25,000, what are the earnings per share under each of three financial plans? Assume a Corporate Income-tax rate of 40%.
 - II. Determine the EBIT-EPS indifference points by formulae between Financing plan I and Plan II and Plan I and Plan III.

(Nov.'05: Q-9a)

CAPITAL BUDGETING

Capital budgeting is a complex process which may be divided into the following phases :

1. Identification of potential investment opportunities
2. Assembling of proposed investments
3. Decision making
4. Preparation of capital budget and appropriations
5. Implementation
6. Performance review

Identification of Potential Investment Opportunities

The capital budgeting process begins with the identification of potential investment opportunities. Typically, the planning body (it may be an individual or a committee organized formally or informally) develops estimates of future sales which serve as the basis for setting production targets. This information, is helpful in identifying required investments in plant and equipment.

For imaginative identification of investment ideas it is helpful to

- (i) Monitor external environment regularly to scout investment opportunities,
- (ii) Formulate a well-defined corporate strategy based on a thorough analysis of strengths, weakness, opportunities, and threats. (SWOT analysis)
- (iii) Share corporate strategy and perspectives with persons who are involved in the process of capital budgeting, and
- (iv) Motivate employees to make suggestions.

Assembling of Investment Proposals

Investment proposals identified by the production department and other departments are usually submitted in a standardized capital investment proposal form. Generally, most of the proposals, before they reach the capital budgeting committee or some body which assembles them, are routed through several persons.

The purpose of routing a proposal through several persons is primarily to ensure that the proposal is viewed from different angles. It also helps in creating a climate for bringing about co-ordination of interrelated activities.

Investment proposals are usually classified into various categories for facilitating decision-making, budgeting, and control. An illustrative classification is given below.

1. Replacement investments
2. Expansion investments
3. New product investments
4. Obligatory and welfare investments

Future value of an annuity:

An annuity is a series of periodic cash flows (payments or receipts) of equal amount. The premium payments of a life insurance policy, for example are an annuity. In general terms the future value of an annuity is given as:

$$\text{Where, } FV_{An} = A \left[\frac{(1+r)^n - 1}{r} \right]$$

FV_{An} = Future value of an annuity which has duration of n years.

A = Constant periodic flow.

r = Interest rate per period.

n = Duration of the annuity

Some Important Definitions

1. Cash outflow of Capital nature

2. Cash inflow = Profit After Tax (PAT) + Depreciation.

<u>Calculation of cash inflow</u>	<u>Rs.</u>
PBDT	x
Less: Depreciation	x
PBT	x
Less: Tax @ -- %	x
PAT	x
Add: Depreciation	x
Cash Inflow	x

3. Cash inflow at the end of the project:

- 1 Working capital recovery
- 2 Sale of machinery at the end of the project :

Different techniques for Project Appraisal

- A. Traditional Approach.
- B. Time Value of Money Approach (TVM) or (DCF). i.e. Discounting approach

A. Traditional Approach :

1. Pay Back Period: it measures the time required to pay the initial investment back.

- (a) When cash inflows are uniform throughout the project life-

$$\text{Pay Back Period} = \frac{\text{Original Investment}}{\text{Cash Inflow p.a.}}$$
 Lower the Pay Back period higher the acceptability.
- (b) When cash Inflows are not uniform through out the project life:
 Apply the method of simple interpolation for pay back period calculation.

$$\frac{\text{REQUIRED TIME} - \text{LOWER LIMIT}}{\text{UPPER LIMIT} - \text{LOWER LIMIT}} = \frac{\text{REQUIRED INVESTMENT} - \text{LOWER LIMIT}}{\text{UPPER LIMIT} - \text{LOWER LIMIT}}$$

2. Average or Accounting rate of return (ARR):

$$\text{ARR} = \frac{\text{Average PAT}}{\text{Investment or average investment}} \times 100.$$

It should be more than cost of finance.

1B. DISCOUNTED CASH FLOW TECHNIQUE :

1. Net Present Value Method :

$$\text{NPV} = \text{Total Disc. Cash Inflow} - \text{Total Disc. Cash outflow}$$

2. Internal Rate of Return (IRR): Is that rate at which the sum total of cash inflows after discounting equals to the discounted cash outflows. The internal rate of return of a project is the discount rate, which makes net present value of the project equal to zero.

3. Profitability Index (PI) = Total Disc cash Inflow ÷ Total Discounted Cash Outflow

NOTE : In a problems where the results are different following different methods, then select that project according to the following priority list :

(i) Profitability index (ii) NPV (iii) IRR

NOTE :-

Again ,

$$P.I. = \frac{\sum DCIF}{\sum DCOF}$$

$$NPV = \sum DCIF - \sum DCOF$$

$$\text{Or, } \sum DCIF = NPV + \sum DCOF$$

$$\text{Or, } NPV = (PI - 1) \times \sum DCOF$$

4. DISCOUNTED PAY BACK

$$= \frac{\text{TOTAL DISCOUNTED CASH OUT-FLOW}}{\text{DISCOUNTED CASH IN-FLOW p.a.}}$$

If discounted cash inflows are not uniform, apply method of simple interpolation.

5. Discounted Pay Back Profitability

$$= \text{DISC. CASH INFLOW AFTER PAY BACK PERIOD} = NPV$$

6. Equivalent PV of Annual Cash outflow = total discounted cash out flow ÷ total of discounting factor. Apply this rule when the assets have different life.

PROBLEMS:

1. A Limited is considering investing in a project requiring a fixed capital outlay of Rs. 2,00,000. Forecasted annual income after depreciation but before tax is as follows:

Year:	1	2	3	4	5
Rs.	1,00,000	1,00,000	80,000	80,000	40,000

Depreciation may be taken as 20% on original cost of the asset and taxation at 40% of net income. Working capital to invest at start is Rs. 80,000, it is expected to recover fully at the end of the project.

You are required to evaluate the project according to each of the following methods :

- (a) Payback method.
 - (b) Rate of return on original investment method.
 - (c) Rate of return on average investment method.
 - (d) Discounted cash flow method taking cost of capital at 10%
 - (e) Net present value index method
 - (f) Internal rate of return method.
2. A person is required to pay four equal annual payment of Rs. 4,000 each in his Deposit account that pays 10% interest per year. Find out the future value of annuity at the end of 4 years.

- 3 The cash flows of two mutually exclusive projects are as under:

	t_0	t_1	t_2	t_3	t_4	t_5	t_6
Project 'P' (Rs.)	(40,000)	13,000	8,000	14,000	12,000	11,000	15,000
Project 'J' (Rs.)	(20,000)	7,000	13,000	12,000	--	--	--

Required:

- Estimate the net present value (NPV) of the Project 'p' and 'J' using 15% as the hurdle rate.
- Estimate the internal rate of return (IRR) of the project 'P' and 'J'.
- Why there is a conflict in the project choice by using NPV and IRR criterion?
- Which criteria you will use in such a situation? Estimate the value at that criterion. Make a project choice.

The present value interest factor values at different rates of discount are as under.

Rate of Discount	t_0	t_1	t_2	t_3	t_4	t_5	t_6
0.15	1.00	0.8696	0.7561	0.6575	0.5718	0.4972	0.4323
0.18	1.00	0.8475	0.7182	0.6086	0.5158	0.4371	0.3704
0.20	1.00	0.8333	0.6944	0.5787	0.4823	0.4019	0.3349
0.24	1.00	0.8065	0.6504	0.5245	0.4230	0.3411	0.2751
0.26	1.00	0.7937	0.6299	0.4999	0.3968	0.3149	0.2499

- 4 International Mining Corporation (IMC) is proposing to acquire mining rights for mineral G-15 on an initial payment of Rs. 1 crore and royalty at the rate of Rs. 1,000 per tonne of mineral G-15 actually raised (payable annually). The mine is expected to be exhausted in 5 years of operation and the annual raising during this period is estimated by IMC's geologist as follows :

Year	1	2	3	4	5
Expected raising (Tones)	150	450	600	700	300

IMC will have to invest in mining plant and equipment Rs. 30 lakhs which investment is expected to fetch a residual value of Rs. 10 lakhs at the end of 5 years. The labour and other raising costs are estimated at Rs. 4,000 per tonne. Mineral G-15 will fetch a sales price of Rs. 20,000 per tonne (delivery at the mine). Tax Rate: 40%. Dep. St. line Basis. Working Capital required 30 lakhs at begin, which will be returned at end to 90% of its original value. Required working capital is Rs. 30 lacs which will be recovered by 90% at the end of the project.

Prepare a DCF analysis of the mining project at a discount rate 10%.

- 5 The current output details of X manufacturers Ltd. are given below:
- Average output per week 50,000 units.
 - Number of employees 200
 - Sales value of output Rs. 2,50,000
 - Contribution towards fixed expenses & profit Rs. 96,000.

There is a proposal before the Board of Directors for further mechanization at a capital cost of Rs. 1,00,800.

The benefits would be to reduce the number of employees to 150 but the output would increase by 60%. To ensure the increase output, the Directors decided to increase the piece work rate of Re. 1 per article by 1% for every 2% increase in average individual output achieved. There would, however, be no change in the selling price.

Calculate the extra weekly contribution and advise the Board regarding the acceptance of the project.

- 6 The cash flows of projects C and D are reproduced below:

Project	Cash Flow				NPV	
	C_0	C_1	C_2	C_3	at 10%	IRR
C	-Rs.10,000	+2,000	+4,000	+12,000	+ Rs.4,139	26.5%
D	-Rs.10,000	+ 10,000	+ 3,000	+ 3,000	+ Rs.3,823	37.5%

- (i) Why there is a conflict of rankings?
(ii) Why should you recommend project C in spite of lower internal rate of return ?

Time Period	1	2	3
$PVIF_{0.10, t}$	0.9090	0.8264	0.7513
$PVIF_{0.14, t}$	0.8772	0.7695	0.6750
$PVIF_{0.15, t}$	0.8696	0.7561	0.6575
$PVIF_{0.30, t}$	0.7692	0.5917	0.4552
$PVIF_{0.40, t}$	0.7143	0.5102	0.3644

(5/03:Q-6a)

- 7 A computer is available at a cash purchase price of Rs. 4,40,000. if taken on hire, the charges would be Rs. 15,400 per month for a minimum period of 36 months, and thereafter the rate would be reduced to Rs. 7,500 per month. The rentals fall due for payment at the end of each month.

A company, planning to acquire the above computer, wants advice whether it would be more economical to purchase the machine or take it on hire. What would be your advice if the cost of the capital is to be taken as 10% p.a. the present values of Re.1 and Re. 1/12 paid monthly at the end of n years both at 1-% are as follows:

After year (n)	present value of Re. 1/12 Paid monthly	present value of Re. 1
1	0.950	0.909
2	0.864	0.826
3	0.785	0.751
4	0.714	0.683
5	0.649	0.621
6	0.591	0.564

8. The capital budgeting committee of the board of directors of Khalifa Ltd. is considering the acquisition of a unit of equipment costing Rs. 76,000. Shipping & installation costs are estimated at an additional Rs. 4,000. The equipment is expected to have a useful life of 5 years with salvage, value of Rs. 5,000 at the end of 5 years. Before considering the effect of depre. the annual cash flow returns after I. tax from the use of this equipment are estimated at Rs. 20,000.

One member of the committee believes that the equipment now in service of this production can be used for another year. A new and improved model is expected in another year that can be acquired at a cost of Rs. 91,000. Shipping and installation costs are also estimated at Rs. 4,000, & the estimated salvage value at the end of the expected 5-year life is Rs. 5,000. Annual cash flow returns after income-tax but before considering the effect of depreciation are estimated at Rs. 23,000. The company has set a minimum rate of return objective of 18%. Depreciation is to be deducted by the sum of the year's digits method. The income tax rate is 40%.

Does it appear that the equipment should be purchased now, or should the company wait for a year for the new model. Use the net present value method and show computations.

9. SCL Limited, a highly profitable company is engaged in the manufacture of power intensive conductors. As part of its diversification plans, the company proposes to put up a Windmill to generate electricity. The details of the scheme are as follows :

- (1) Cost of the Windmill Rs. 300 lakhs
- (2) Cost of Land Rs. 15 lakhs
- (3) Subsidy from State Govt. to be received at the end of first year of installation Rs. 15 lakhs
- (4) Cost of electricity will be Rs. 2.25 per unit in year 1. This will increase by Re. 0.25 per unit every year till year 7. After that it will increase by Re. 0.50 per unit.
- (5) Maintenance cost will be Rs. 4 lakhs in year 1 & the same will increase by Rs. 2 lakhs every year.
- (6) Estimated life 10 years with cost of capital 15%. Tax rate 40%.
- (7) Residual value of Windmill will be nil. However land value will go up to Rs. 60 lakhs, at the end of year 10.
- (8) Depreciation will be 100% of the cost of the Windmill in year 1 and it will be allowed for tax purposes.
- (9) As Windmills are expected to work based on wind velocity, the efficiency is expected to be an average 30%. Gross electricity generated at this level will be 25 lakhs units per annum. 4% of this electricity generated will be committed free to the State Electricity Board as per the agreement.

From the above information you are required to calculate the net present value.

10. Navyug enterprises is considering the introduction of a new product. Generally, the company's products have a life of about five years, after which they are usually dropped from the range of products the company sells.

The new product envisages the purchase of new machinery costing Rs. 4,00,000 including freight and installation charges. The useful life of the equipment is five years, with an estimated salvage value of Rs. 1,57,500 at the end of that time. The machine will be depreciated for tax purposes by reducing balance method at a rate of 15% on the book value.

The new product will be produced in a factory which is already owned by the company. The company built the factory some years ago at Rs. 1,50,000. The book value on the written down value basis is zero.

Today the factory has a resale value of Rs. 3,50,000 which should remain fairly stable over the next five years. The factory is currently being rented to another company under a lease agreement, which has five years to run, and which provides for an annual rental of Rs. 5,000. Under the lease agreement if the lesser wishes to cancel the lease, he can do so by paying the lease compensation equal to one year's rental payment. This amount is not deductible for income tax purposes.

Additions to current assets will require Rs. 22,500 at the commencement of the proposal which, it is assumed, is fully recoverable at the end of year 5. The company will have to spend Rs. 50,000 in year 1 towards market research.

The net cash inflow from operations before depreciation and income tax are:

Year	1	2	3	4	5
Rs.	2,00,000	2,50,000	3,25,000	3,00,000	1,50,000

It may be assumed that all cash flows are received or paid at the end of each year and that income taxes are paid in the year in which the inflow occurred. The company's tax rate may be assumed to be 50% and the company's required return after tax is 10%. Required: Evaluate the proposal

11. A Co. is setting up a project at cost of Rs. 300 lakhs. It has decided whether to locate the plant in a Backward Area (BA). Locating in Backward Area means a cash subsidy of Rs. 15 lakhs from the Central Govt. Besides the taxable profits to the extent of 20% is exempt from tax for 10 years.

The project envisages a borrowing of Rs. 200 lakhs in either case. The cost of borrowing will be 12% in Backward Area. However, the revenue costs are bound to be higher in Backward Area.

The borrowings have to be repaid in 4 equal annual installments beginning from the end of the 4th year. With the help of following information and by using DCF @15% techniques, you are required to calculate the NPV of the project :

Year	PBIT in BA (Rs. In lakhs)	Present Value factor(at 15%)
1	(50.00)	0.87
2	(20.00)	0.76
3	10.00	0.66
4	20.00	0.57
5	45.00	0.50
6	100.00	0.43
7	155.00	0.38
8	245.00	0.33
9	380.00	0.28
10	490.00	0.25

The annual depreciation may be taken at Rs. 30 lakhs. Interest on borrowings may be worked out at the respective rates. Average Rate of Tax may be taken as 35%.

12. XYZ Ltd. Is planning to introduce a new product with a project life of 8 years. The project is to be setup in special Economic Zone (SEZ), Qualifies for one time (at starting) tax free subsidy from the State Government of Rs. 25,00,000 on Capital Investment. Initial equipment cost will be Rs. 1.75 crores. Additional equipment cost Rs. 12,50,000 will be purchased at the end of the third year from the cash inflow of this year. At the end of 8 years, the original equipment will have no resale value, but additional equipment can be sold for Rs. 1,25,000. A working Capital of Rs. 20,00,000 will be needed and it will be released at the end of eight year. The project will be financed with sufficient amount of Equity Capital.

The sales volumes over eight years have been estimated as follows:

Year:	1	2	3	4-5	6-8
Units	72,000	1,08,000	2,60,000	2,70,000	1,80,000

A Sales price of Rs. 120 per unit is expected and variable expenses will amount to 60% of sales revenue. Fixed Cash operating costs will amount Rs. 18,00,000 per year. The loss of any year will be set off from the profits of subsequent two years. The company is subject to 30% tax rate and consider 12% to be an appropriate after tax cost of Capital for this project. The company follows straight line method of depreciation.

Required:

Calculate the net present value of the project and advise the management to take appropriate decision.

11/07/7

13. A theater, with some surplus accommodation, proposes to extend its catering facilities to provide light meals to its patrons. The management is prepared to make the initial funds available to cover the capital costs. It requires that these be repaid over a period of five years at a rate of interest of 14% per annum.

The capital costs are estimated at Rs. 60,000 for equipment that will have a life of 5 years and no residual value. Running costs of staff etc. will be Rs. 20,000 in the first year, increasing by Rs.

2,000 in each subsequent year. The management proposes to charge Rs. 5,000 per annum for electricity and other expenses and wants a nominal Rs. 2,500 per annum to cover any unforeseen contingencies.

Apart from this, the management is not looking for any profit as such from the extension of these facilities because it believes that these will enable more tickets to be sold for the cinema shows at the theaters. It is proposed that costs should be recovered by setting prices for the food at double the direct cost.

It is not expected that the full sales level will be reached until year 3. The proportion of that level reached in year 1 and 2 are 35% and 65% respectively.

You are required to calculate the sales that need to be achieved in each of the five years to meet the management's targets. Ignore inflation and taxation.

Replacement of Assets

14. A job which is presently done entirely by manual methods has a labour cost of Rs. 46,000 a year. It is proposed to install a machine to do the job which involves an investment of Rs. 80,000 and an annual operating cost of Rs. 10,000. Assume the machine can be written off in 5 years on straight-line depreciation basis for tax purposes. Salvage value at the end of its economic life is zero. The tax rate is 35%. Analyse the economic implications of the proposal by the Rate of Return Method. Also calculate NPV at 10%.
15. A manufacturing unit engaged in the production of automobile parts, has a ten-year-old plant which has been depreciated according to the straight line method. The estimated total life of the plant is 20 years. The original cost including installation was Rs. 24 lakhs and the residual after 20 years is estimated to be Rs. 4 lakhs. The output of the factory per minute is 200 units.

It is proposed to install a new plant with a purchase price of Rs. 38 lakhs with a part exchange provision of Rs. 8 lakhs in respect of the existing plant. The new plant has an estimated life of 15 years and a residual value of Rs. 4 lakhs. The output of the new plant is 400 unit per minute and its installation cost is 2 lakhs.

The annual cost of the Two plants are to be taken as follows:—

Running hours p. a. cost	Existing 2,500 Rs.	New 2,500 Rs.
Wages	100,000	140,000
Sundry indirect materials	480,000	600,000
Repairs and maintenance	80,000	100,000
Power and Steam	240,000	280,000
Proportion of general fixed costs	60,000	80,000

Will it be advantageous to buy the new plant or not? Substantiate your answer with the help of comparative unit cost with both the plants. Assume interest for capital as 10%. Make other relevant assumptions.

16. BS ELECTRONICS is considering a proposal to replace one of its machines. In this connection, the following information is available:

The existing machine was bought 3 years ago for Rs. 10 lakhs, It was depreciated at 25% p.a., on reducing balance basis. It has remaining life of 5 years, but its maintenance cost is expected to increase by Rs. 50,000 p.a. from the 6th year of its installation. its present realizable value is Rs. 6 lakhs.

The new machine costs Rs. 15 lakhs and is subject to the same rate of depreciation. On sale after 5 years, it is expected to net Rs. 9 lakhs. With the new machine, operating costs (excluding depreciation) are expected to decrease by Rs. 1 lakh p.a.

In addition, the speed of the new machine would increase productivity on account of which net revenues would increase by Rs. 1.5 lakhs p.a. The tax rate applicable is 40% and the cost of capital 10%.

Is the proposal financially viable? Please advise the firm on the basis of Net Present Value of the proposal.

17. Beta Company Ltd. Is considering replacement of its existing machine by a new machine, which is expected to cost Rs. 2,64,000. The new machine will have a life of five years and will yield annual cash revenues of Rs. 5,68,750 and incur annual cash expenses of Rs. 2,95,750. the estimated salvage value of the new machine is Rs. 18,200. The existing machine has a book value of Rs. 91,000 and can be sold for Rs. 45,500 today.

The existing machine has a remaining useful life of five years. The cash revenues will be Rs. 4,55,000 and associated cash expenses will be Rs. 3,18,500. The existing machine will have a salvage value of Rs. 4,550 at the end of five years.

The Beta Company is in 35% tax-bracket, and written off depreciation at 25% on written-down value method.

The Beta Company has a target debt to net worth ratio of 15%. The Company in the past has raised debt at 11% and it can raise fresh debt at 10.5%.

Beta Company plans to follow dividend discount model to estimate the cost of equity capital. The company plans to pay a dividend of Rs. 2 per share in the next year. The current market price of Company's equity share is Rs. 20 per equity share. The dividend per equity share of the company is expected to grow at 8% p.a.

Required:

- (i) Compute the incremental cash flows of the replacement decision.
- (ii) Compute the weighted average cost of Capital of the company.
- (iii) Find out the net present value of the replacement decision.
- (iv) Estimate the discounted payback period of the replacement decision.
- (v) Should the Company replace the existing machine? Advise.

(Nov.'03: Q-7)

18. MNP Ltd. is thinking of replacing its existing machine by a new machine, which would cost Rs. 60 lakhs. The company's current production is 80,000 units, and is expected to increase to 1,00,000 units, if the new machine is bought. The selling price of the product would remain unchanged at Rs. 200 per unit. The following is the cost of producing one unit of product using both the existing and new machine.

	Existing Machine (80,000 units)	New Machine (1,00,000 units)	Unit cost Difference Rs.
Materials	75.0	63.75	
Wages & salaries	51.25	37.50	(11.25)
Supervision	20.0	25.0	5.0
Repairs & maintenance	11.25	7.50	(3.75)
Power & Fuel	15.50	14.25	(1.25)
Depreciation	0.25	5.0	4.75
Allocated corporate overheads	10.0	12.5	2.5
	<u>183.25</u>	<u>165.50</u>	<u>17.75</u>

The existing machine has an accounting book value of Rs. 1,00,000, and it has been fully depreciated for tax purpose. It is estimated that machine will be useful for 5 years. The supplier of the new machine has offered to accept the old machine for Rs. 2,50,000.

However, the market price of old machine today is Rs. 1,50,000 & it is expected to be Rs. 35,000 after 5 year. The new machine has a life of 5 years & a salvage value of Rs. 2,50,000 at the end of its economic life. Assume corporate income-tax rate at 40%, & depreciation is charged on straight-line basis for income-tax purposes. Further assume that book profit is treated as ordinary income for tax purpose. The opportunity cost of capital of the company is 15%.

Required:

- (i) Estimate net present value of the replacement decision.
- (ii) Estimate the internal rate of return of the replacement decision.
- (iii) Should company go ahead with the replacement decision? Suggest. (Nov.'05:Q-8)

Missing Figure Problem

19. Following are the data on a capital project being evaluated by the management of X Ltd. :

	Project M
Annual cost saving	Rs. 40,000
Useful life	4 years
I. R. R.	15%
Profitability Index (PI)	1.064
NPV	?
Cost of capital	?
Cost of project	?
Payback	?
Salvage value	0

Find the missing values considering the following table of discount factor only:

Discount factor	15%	14%	13%	12%
1 year	0.869	0.877	0.885	0.893
2 years	0.756	0.769	0.783	0.797
3 years	0.658	0.675	0.693	0.712
4 years	0.572	0.592	0.613	0.636
Total	2.855	2.913	2.974	3.038

Lease

20. PQR Limited has decided to go in for a new model of Mercedes car. The cost of the vehicle is Rs. 40 lakhs. The company has two alternatives:

- (i) Taking the car on finance lease; or (ii) Borrowing and purchasing the car
- LMN Limited is willing to provide the car on finance lease of PQR Ltd. for five years at an annual rental of Rs. 8.75 lakhs, payable at the end of the year.

The vehicle is expected to have useful life of 5 years, and it will fetch a net salvage value of Rs. 10 lakhs at the end of year five. The depreciation rate for tax purpose is 40% on written – down value basis. The applicable tax rate for the company is 35%. The applicable before tax borrowing rate for the company is 13.8462%. What is the net advantage of leasing for the PQR Ltd.? The values of present value interest factor at different rates of discount are as under:

Rate of Disc.	t1	t2	t3	t4	t5
0.138462	0.8784	0.7715	0.6777	0.5953	0.5229
0.09	0.9174	0.8417	0.7722	0.7084	0.6499

(Nov.'04: Q-8a)

Capital Rationing

21. Alpha Limited is considering five capital projects for the years 2007 and 2008. The company is financed by equity entirely and its cost of capital is 12%. The expected cash flows of the projects are as below :

Project	Year and Cash flows (Rs. '000)			
	2009	2010	2011	2012
A	(70)	35	35	20
B	(40)	(30)	45	55
C	(50)	(60)	70	80
D	-	(90)	55	65
E	(60)	20	40	50

Note: Figures in brackets represent cash outflows.

All projects are divisible i.e. size of investment can be reduced, if necessary in relation to availability of funds. None of the projects can be delayed or undertaken more than once.

Calculate which project Alpha Limited should undertake if the capital available for investment is limited to Rs. 1,10,000 in 2008 and with no limitation in subsequent years . For your analysis, use the following present value factors :

22. Company UVW has to make a choice between two identical machines, in terms of capacity, 'A' and 'B'. They have been designed differently, but do exactly the same job.

Machine 'A' costs Rs. 7,50,000 and will last for three years. It costs Rs. 2,00,000 per year to run.

Machine 'B' is an economy model costing only Rs. 5,00,000, but will last for only two years. It costs Rs. 3,00,000 per year to run the cash flows of Machine 'A' and 'B' are real cash flows. The costs are forecasted in Rs. of constant purchasing power. Ignore taxes. The opportunity cost of capital is 9%.

Required:

Which machine the company UVW should buy?

The present value (PV) factors at 9% are

Year	t_1	t_2	t_3
PVIF $_{0.09,t}$	0.9174	0.8417	0.7722

11/06/8

23. A company proposes to replace its old and obsolete machine. Two models of machines are available as under:

- Automatic machine involving an initial capital outlay of Rs. 5,00,000. The annual operating cost of this model is Rs. 1,50,000. Salvage value at the end of its life of 5 years is Rs. 20,000.
- Semi-Automatic machine involving an initial capital cost of Rs. 3,00,000. The annual operating cost is Rs. 2,10,000. Salvage value at the end of its life of 6 years is Rs. 10,000.

The company's cost of capital is 14%. Which alternatives is to be preferred? Ignore tax.

Working Capital Management

Working capital = Current assets - Current liabilities

Current assets includes:

1. Stock of raw material
2. Stock of work-in-progress
3. Stock of finished goods
4. Sundry debtors and bills receivables.
5. Prepaid expenses
6. Accrued incomes
7. Cash at bank.

Current liabilities includes:

1. Creditors for materials
2. Creditors for wages and other expenses
3. Bills payable
4. Bank overdraft etc.

So in the study of working capital management the following items or discussions are included.

- 1) Requirement of working capital
- 2) Calculation of operating cycle / working capital cycle.
- 3) Management of stock
- 4) " of debtors
- 5) " of cash
- 6) " of creditors.

Working capital requirement : 4 Steps :

1. Calculate production or sale for a particular period e.g. weekly or monthly as the case may be.
2. Prepare a cost sheet following a particular activity or capacity level. If there is a change in the capacity level, variable cost p. u. does not change but fixed cost p. u. will change.
3. Value of current assets or current liability = Corresponding Cost per item × credit period × production per time period.
4. Prepare a formal statement of working capital.

NOTE: Following the Tandon & Chore Committee recommendation in India the entrepreneur or the organization has to bring 25% of the requirements of current assets out of long term financing (i.e. capital or reserve or debenture). The difference of working capital then will be financed by the bank. This is known as MPBF (Maximum Permissible Bank Financing).

Operating Cycle Analysis: The operating cycle of a firm begins with the acquisition of raw materials and ends with the collection of receivables. There are four aspects of the operating cycle which involve commitment of resources: raw material stage; work-in-process stage; finished goods stage; and accounts receivable stage. There is one aspect of the operating cycle which provides resources: accounts payable stage (this is the period for which credit is provided by the suppliers of raw materials.)

The duration of the operating cycle may be defined as

$$D_{oc} = D_{rm} + D_{wip} + D_{fg} + D_{ar} - D_{ap}$$

- Where
- D_{oc} = duration of the operating cycle
 - D_{rm} = duration of the raw materials and stores stage
 - D_{wip} = duration of the work-in-process stage
 - D_{fg} = duration of the finished goods stage
 - D_{ar} = duration of the accounts receivable stage
 - D_{ap} = duration of the accounts payable stage.

Debtors Management

- 1. Credit Rating of Customers:** When a firm wants to give credit to a new customer or increase credit to existing customers, it ought to steady the risk of customer defaulting and the customer's ability to stand such credit. Such study is referred to as "credit rating".

Credit rating of a customer involves finding answers to two broad questions regarding the customer, viz., (i) can he pay and (ii) Will he pay?

2. Sources of information before granting credit to a party.

- Trade references:
- Bank references:
- Credit bureau reports:
- Past experience:
- Published financial statements:
- Salesmen's interview and reports:

- 3. Credit cards:** Credit cards are primarily seen as a means of convenience in meeting ones expenses. A person who holds a credit card need not pay in cash at the time of every expenditure. Instead he can deposit a lump sum in the bank or the agencies of which he holds the credit card, to meet the expenditures. Some banks offer even flexible payment options under which a card holder may be requires paying as low as 10% of the amount due to the month.

- 4. Concentration Banking:** Concentration Banking is one of the methods for speeding up the process of collecting receivables. The helps in reducing the size of the float (lead time). In this method, a number of strategic collection centres in different regions are established instead of a single collection point. The system reduces the time period between the time a customer mails his remittances and the time when the funds become available for spending with the company. Payments received by the different collection centres are deposited with their respective local banks which in turn transfer all surplus funds to the concentration bank of the head office. The bank with which the company has its major bank account is normally located at the Head office.

- 5. Commercial paper:** It is a sort term unsecured promissory note sold by large business firms to raise cash. These are sold either directly or through dealers. Companies with high credit rating can sell commercial papers directly to investors. In India the introduction of sort-term commercial papers was recommended by a working Group on the money market, appointed by the Reserve Bank of India in 1986.

- 6. Factoring services:** The Business of Factoring involves the purchase of the accounts receivable of an operating business by a third party, who is described as the Factor. It is the Factor who provides credit analysis and the mechanical activities involved in collecting the receivable, to the Client.

- 7. Debt Securitization:**It is a method of recycling of funds. It is especially beneficial to financial intermediaries to support the lending volumes. Assets generating steady cash flows are packaged together and against this assets pool, market securities can be issued, e.g., housing finance, auto loans, and credit card receivables.

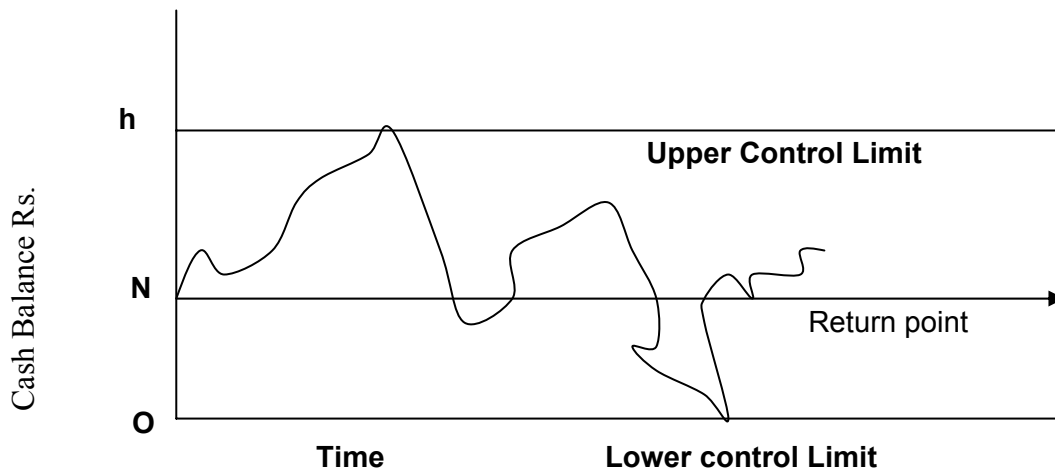
8. Float

The term float is used to refer to the periods that affect cash as it makes through the different stages of the collection process. Four types of float can be identified as:

- (i) **Billing float** : An invoice is the formal document that a seller prepare and sends to the purchaser as the payment request for the goods sold or services provided. The time between the sales & the mailing of the invoice is the billing float.
- (ii) **Mail float** : This is the time when a cheque is being processed by post office, messenger service or other means of delivery.
- (iii) **Cheque processing float** : This is the time required for the seller to sort, record and deposit the cheque after it has been received by the company.
- (iv) **Bank processing float** : This is the time from the deposit of the cheque to the crediting of funds in the seller account.

9. Miller- Orr Cash Management Model

According to this model the net cash flow is completely stochastic. When changes in cash balance occur randomly, the application of control theory serves a useful purpose. The Miller-Orr model is one of such control limits models. This model is designed to determine the time and size of transfers between an investment account and cash account. In this model control limits are set for cash balances. These limits may consists of 'h' as upper limit, 'z' as the return point and zero as the lower limit.

**10. Baumol Model :**

William Baumol proposed a model which applies the economic order quantity (EOQ) concept commonly used in inventory management, to determine the cash conversion size (which in turn influences the average cash holding of the firm). The purpose of such an analysis is to balance the income foregone when the firm holds cash balances (rather than invests in marketable securities) against the transaction costs incurred when marketable securities are converted into cash.

$$C = \sqrt{\frac{2U \times P}{S}}, \text{ where}$$

- C = Optimum cash balance
 U = Annual (monthly) cash disbursements
 P = Fixed cost per transaction.
 S = Opportunity cost of one rupee p.a. (or p.m.)

PROBLEMS: WORKING CAPITAL MANAGEMENT

1. The following information has been extracted from the records of a Company:

Product cost sheet	Rs./unit
Raw materials	45
Direct labour	20
Overheads	<u>40</u>
Total	105
Profit	<u>15</u>
Selling price	<u>120</u>

- Raw materials are in stock on an average of two months.
- The materials are in process on an average for 4 weeks. The degree of completion is 50%. (i.e. Labour+ Overhead)
- Finished goods stock on an average is for one month
- Time lag in payment of wages and overheads is 1½ weeks.
- Time lag in receipt of proceeds from debtors is 2 months.
- Credit allowed by suppliers is one month.
- 20% of the output is sold against cash.
- The company expects to keep a Cash balance of Rs.1,00,000.
- Take 52 weeks per annum

The Company is poised for a manufacture of 1,56,000 units in the years. You are required to prepare a statement showing the Working Capital requirements of the Co. (11/02: Q-9b)

2. An engineering company is considering its working capital investment for the year 2006-07. The estimated fixed assets and current liabilities for the next year are Rs.6.63 crore and Rs.5.967 crore respectively. The sales and earnings before interest and taxes (EBIT) depend on investment in its current assets – particularly inventory and receivables. The company is Examining the following alternative working capital policies:

Working Capital Policy	Investment in current Assets (Rs. Crore)	Estimated Sales (Rs. Crore)	EBIT (Rs. Crore)
Conservative	11.475	31.365	3.1365
Moderate	9.945	29.325	2.9325
Aggressive	6.63	25.50	2.55

You are required to calculate the following for each policy:

- (i) Rate of return on total assets.
- (ii) Net working capital position.
- (iii) Current assets to fixed assets ratio.
- (iv) Discuss the risk-return trade off each working capital policy. (5/03:Q-8c)

3. The following annual figures relate to MNP Limited:

Sales (at three months credit)	Rs. 90,00,000
Materials consumed (suppliers extend one and half month's Credit)	Rs. 22,50,000
Wages paid (one month in arrear)	Rs. 18,00,000
Mfg exp outstanding at the end of the year (cash expenses are paid one month in arrear)	Rs. 2,00,000
Total Administrative expenses for the year (cash expenses Are paid one month in arrear)	Rs. 6,00,000
Sales promotion expenses for the year (paid quarterly in Advance)	Rs. 12,00,000

The company sells its products on gross – profit of 25% assuming depreciation as a part of cost of production. It keeps two month's stock of finished goods and one month's stock of raw materials as inventory. It keeps cash balance of Rs. 2,50,000.

Assuming a 5% safety margin, work out the working capital requirements of the company on cash cost basis. Ignore work – in – progress. (5/04: Q-6a)

4. Your company is operating on 60% capacity, producing 24,000 units per annum, at the following cost-price structure:

	Rs.	per unit
Raw materials	5	"
Wages	3	"
Overheads : variable	2	"
fixed	1	"
Profit	<u>2</u>	"
Price	<u>13</u>	

On 31st December, 2008, the current assets and liabilities were as follows:

	Rs.
Raw materials 4,000 units, at cost	20,000
Work in process 1,000 units, at cost	8,000
Finished goods 3,000 units, at cost	33,000
Sundry Debtors	78,000
Creditors for goods	30,000
Liability for wages	3,000
Liability for expenses	6,000

In view of increased demand for the product, it has been decided that from 1st January, 2008, the unit should operate at 90% capacity. You are required to ascertain the additional working capital as would be necessary in view of additional production. The prices of materials, rates of wages and expenses and the selling price per unit will not be changed. The period of credit allowed to customers, credit allowed by suppliers and also time lag in payment of wages and expenses shall remain the same as before.

DEBTORS MANAGEMENT

5. A company's collection pattern is as follows:-
- 10% of the Sales are the same month
 - 20% of the Sales are the 2nd month
 - 40% of the Sales are the 3rd month
 - 30% of the Sales are the 4th month

The sales of the Co. for three quarters of the year are as follows (in Rs.) :-

Month	Q1	Q2	Q3
1 st	15,000	7,500	22,500
2 nd	15,000	15,000	15,000
3 rd	<u>15,000</u>	<u>22,500</u>	<u>7,500</u>
Total	<u>45,000</u>	<u>45,000</u>	<u>45,000</u>
W/Days	90	90	90

You are req. to calculate the average age of the receivable and comment on the results.

6. Premier Steel Limited has a present annual Sales turnover of Rs. 40,00,000/-. The unit Sale Price is Rs. 20/-. The Variable Costs are Rs. 12/- per unit and fixed costs amount to Rs. 5,00,000 per annum. The present credit period of one month is proposed to be extended to either 2 or 3 months whichever will be more profitable. The following additional information are available:

	on the basis of Credit period of		
	1 month	2 months	3 months
Increase in Sales by	-	10%	30%
% of Bad debts to Sales	1	2	5

Fixed Cost will increase by Rs. 75,000 when Sales will increase by 30%. The Company requires a Pretax return on Investment at 20%. Evaluate the profitability of the proposals and recommend best credit period for the Company.

7. A trade whose current sales are in the region of Rs. 6 lakhs per annum and an average collection period of 30 days wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information:

Credit Policy	Increase in collection period	Increase in sales	Bad Debts
A	10 days	Rs. 30,000	1.5%
B	20 days	Rs. 48,000	2.0%
C	30 days	Rs. 75,000	3.0%
D	45 days	Rs. 90,000	4.0%

The selling price per unit is Rs. 3. Average cost per unit is Rs. 2.25 and variable costs per unit are Rs. 2. The current bad debt loss is 1%. Required return on additional investment is 20%. Assume a 360 days year. Which of the above policies would you recommend for adoption?

8. Star Limited, manufacturers of Colour TV sets, are considering the liberalisation of existing credit terms to three of their large customers A, B and C, The credit period and likely quantity of TV sets that will be lifted by the customers are as follows:-

Credit Period (Days)	(Quantity Lifted (No. of TV Sets))		
	A	B	C
0	1,000	1,000	-
30	1,000	1,500	-
60	1,000	2,000	1,000
90	1,000	2,500	1,500

The selling price per TV set is Rs. 9,000. The expected contribution is 20% of the selling price. The cost of carrying debtors averages 20% per annum.

You are required :-

- Determine the credit period to be allowed to each customer, (Assume 360 days in a year for calculation purposes).
 - What other problems the Co. might face in allowing the credit period as determined in (a) above?
9. XYZ Ltd. has annually credit sales amounting to Rs. 10 lakhs which grants a credit of 60 days. However, at present no discount facility is offered by the firm to its customers. The Co. is considering a plan to offer a discount of "3/12 net 60". The offer of discount is expected to bring the total credit period from 60 days to 45 days & 50% of the customers (in value) are likely to avail the discount facility. The selling price of the product is Rs. 15 while the average cost p. u. comes to Rs. 12.
- Please advise the company whether to resort to discount facility if the rate of return is 20% and a month is equal to 30 days. What is the maximum discount allowed by Management if interest is same. What maximum discount can be allowed by management?

10. A company has prepared the following projections for year:

Sales	21,000	units
Selling price per unit	Rs. 40	
Variable cost per unit	Rs. 25	
Total cost per unit	Rs. 35	
Credit period allowed	one month	

The Co. proposes to increase the credit period allowed to its customers from one month to two months. It is envisaged that the change in the policy as above will increase the sales by 8%. The co. desires a return of 25% on its investment. You are required to examine and advise whether the proposed Credit Policy should be implemented or not.

A problem on factoring

11. The turnover of PQR Ltd. is Rs. 120 lakhs of which 75% is on credit. The variable cost ratio is 80%. The credit terms are 2/10, net 30. on the current level of sales, the bad debts are 1%. The Company spends Rs. 1,20,000 per annum on administering its credit sales. The cost includes salaries of staff who handle credit checking, collection etc. These are avoidable costs. The past experience indicates that 60% of the customers avail of the cash discount, the remaining customers pay on an average 60 days after the date of sale.

The Book debts (receivable) of the company are presently being financed in the ratio of 1:1 by a mix of bank borrowings and owned funds which cost per annum 15% and 14% respectively.

A factoring firm has offered to buy the firms receivables. The main elements of such deal structured by the factor are:

- | | |
|---------------------------------|--|
| i) Factor reserve, 12% | ii) Guaranteed payment, 25 days |
| iii) Interest charges, 15%, and | iv) Commission 4% of the value of receivables. |

Assume 360 days in a year.

What advise would you give to PQR Ltd. to continue with the in-house management of receivables or accept the factoring firm's offer.

5/07/7b

Cash Management

12. Beta Limited has an annual turnover of Rs. 84 crores and the same is spread over evenly each of the 50 weeks of the working year. However, the pattern within each week is that the daily rate of receipts on Mondays and Tuesdays is twice that experienced on the other three days of week. The cost of banking per day is Rs. 2,500. It is suggested that banking should be done daily or twice a week Tuesdays & Fridays as compared to the current practice of banking only on Fridays. Beta Limited always operates on bank overdraft and the current rate of interest is 15% per annum. This interest charge is applied by the bank on a simple daily basis.

Ignoring taxation, advise Beta Limited the best course of banking. For your exercise, use 360 days a year for computational purposes.

13. The annual cash requirement of A Ltd. is Rs. 10 lakhs. The company has marketable securities in lot sizes of Rs. 50,000, Rs. 1,00,000, Rs 2,00,000 ,Rs. 2,50,000 and Rs. 5,00,000. Cost of conversion of marketable securities per lot is Rs. 1,000. The company can earn 5% annual yield on its securities.

You are required to prepare a table indicating which lot size will have to be sold by the company. Also show that the economic lot size can be by Banmol Model.

Present Value of Re.1 payable or receivable at the end of each period

Cost Academy

Financial Management-66

Future Years	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%
1	.9615	.9524	.9434	.9346	.9259	.9174	.9091	.9009	.8929	.8850	.8772	.8696	.8621
2	.9246	.9070	.8900	.8734	.8573	.8417	.8265	.8116	.7972	.7832	.7695	.7561	.7432
3	.8890	.8638	.8396	.8163	.7938	.7722	.7513	.7312	.7118	.6931	.6750	.6575	.6407
4	.8548	.8227	.7921	.7629	.7350	.7084	.6830	.6587	.6355	.6133	.5921	.5718	.5523
5	.8219	.7835	.7473	.7130	.6806	.6499	.6209	.5935	.5674	.5428	.5194	.4972	.4761
6	.7903	.7462	.7050	.6663	.6302	.5963	.5645	.5346	.5066	.4803	.4556	.4323	.4104
7	.7599	.7107	.6651	.6228	.5835	.5470	.5132	.4817	.4524	.4251	.3996	.3759	.3538
8	.7307	.6768	.6274	.5820	.5403	.5019	.4665	.4339	.4039	.3762	.3506	.3269	.3050
9	.7026	.6446	.5919	.5439	.5003	.4604	.4241	.3909	.3606	.3329	.3075	.2843	.2630
10	.6756	.6139	.5584	.5084	.4632	.4224	.3855	.3522	.3220	.2946	.2697	.2472	.2267
11	.6496	.5847	.5268	.4751	.4289	.3875	.3505	.3173	.2875	.2607	.2366	.2149	.1954
12	.6246	.5568	.4970	.4440	.3971	.3555	.3186	.2858	.2567	.2307	.2076	.1869	.1685
13	.6006	.5303	.4688	.4150	.3677	.3262	.2897	.2575	.2292	.2042	.1821	.1625	.1452
14	.5775	.5051	.4423	.3878	.3405	.2993	.2633	.2320	.2046	.1807	.1597	.1413	.1252
15	.5553	.4810	.4173	.3625	.3152	.2745	.2394	.2090	.1827	.1599	.1401	.1229	.1079
16	.5339	.4581	.3937	.3387	.2919	.2519	.2176	.1883	.1631	.1415	.1229	.1069	.0930
17	.5134	.4363	.3714	.3166	.2703	.2311	.1978	.1696	.1456	.1252	.1078	.0929	.0802
18	.4936	.4155	.3503	.2959	.2503	.2120	.1799	.1528	.1300	.1108	.0946	.0808	.0691
19	.4746	.3957	.3305	.2765	.2317	.1945	.1635	.1377	.1161	.0981	.0830	.0703	.0596
20	.4564	.3769	.3118	.2584	.2146	.1784	.1486	.1240	.1037	.0868	.0728	.0611	.0514
21	.4388	.3589	.2942	.2415	.1987	.1637	.1351	.1117	.0926	.0768	.0638	.0531	.0443
22	.4220	.3419	.2775	.2257	.1839	.1502	.1229	.1007	.0827	.0680	.0560	.0462	.0382
23	.4057	.3256	.2618	.2110	.1703	.1378	.1117	.0907	.0738	.0610	.0491	.0402	.0329
24	.3901	.3101	.2470	.1972	.1577	.1264	.1015	.0817	.0659	.0532	.0431	.0349	.0284
25	.3751	.2953	.2330	.1843	.1460	.1160	.0923	.0736	.0588	.0471	.0378	.0304	.0245

Future Years	17%	18%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	.8547	.8475	.8403	.8333	.8265	.8197	.8130	.8065	.8000	.7937	.7874	.7813	.7752	.7692
2	.7305	.7182	.7062	.6914	.6830	.6719	.6610	.6504	.6400	.6299	.6290	.6104	.6009	.5917
3	.6244	.6086	.5934	.5787	.5645	.5502	.5374	.5245	.5120	.4999	.4882	.4768	.4658	.4552
4	.5337	.5158	.4987	.4823	.4665	.4514	.4369	.4230	.4096	.3968	.3844	.3725	.3611	.3501
5	.4561	.4371	.4191	.4019	.3855	.3700	.3522	.3411	.3277	.3149	.3027	.2910	.2799	.2693
6	.3898	.3704	.3521	.3349	.3186	.3033	.2888	.2751	.2621	.2499	.2383	.2274	.2170	.2072
7	.3332	.3139	.2959	.2791	.2633	.2486	.2348	.2218	.2097	.1983	.1877	.1776	.1682	.1594
8	.2848	.2660	.2487	.2326	.2176	.2038	.1909	.1789	.1678	.1574	.1478	.1378	.1304	.1226
9	.2434	.2255	.2090	.1938	.1799	.1670	.1552	.1443	.1342	.1249	.1164	.1084	.1011	.0943
10	.2080	.1911	.1756	.1615	.1486	.1369	.1262	.1164	.1074	.0992	.0916	.0847	.0784	.0725
11	.1778	.1619	.1476	.1346	.1229	.1122	.1026	.0938	.0859	.0787	.0721	.0662	.0608	.0558
12	.1520	.1372	.1240	.1122	.1015	.0920	.0834	.0757	.0687	.0625	.0568	.0517	.0471	.0429
13	.1299	.1163	.1042	.0935	.0839	.0754	.0678	.0610	.0550	.0496	.0447	.0404	.0365	.0330
14	.1110	.0986	.876	.0779	.0693	.0618	.0551	.0492	.0440	.0393	.0352	.0316	.0283	.0254
15	.0949	.0835	.0736	.0649	.0573	.0507	.0448	.0397	.0352	.0312	.0277	.0247	.0219	.0195
16	.0813	.0708	.0618	.0541	.0474	.0415	.0364	.0320	.0282	.0248	.0218	.0193	.0170	.0150
17	.0683	.0600	.0520	.0451	.0391	.0340	.0296	.0258	.0225	.0197	.0172	.0151	.0132	.0116
18	.0393	.0508	.0437	.0376	.0324	.0279	.0241	.0208	.0180	.0156	.0135	.0118	.0102	.0089
19	.0506	.0431	.0357	.0313	.0267	.0229	.0196	.0168	.0144	.0124	.0107	.0092	.0079	.0068
20	.0433	.0365	.0308	.0261	.0221	.0187	.0159	.0135	.0115	.0098	.0084	.0072	.0061	.0053
21	.0370	.0309	.0259	.0217	.0183	.0154	.0129	.0109	.0092	.0078	.0066	.0056	.0048	.0041
22	.0010	.0262	.0218	.0181	.0151	.0126	.0105	.0088	.0074	.0062	.0052	.0044	.0037	.0031
23	.0270	.0222	.0183	.0151	.0125	.0103	.0086	.0071	.0059	.0049	.0041	.0034	.0029	.0024
24	.0231	.0188	.0154	.0126	.0103	.0085	.0070	.0057	.0047	.0039	.0032	.0027	.0022	.0018
25	.0197	.0160	.0129	.0105	.0085	.0069	.0057	.0046	.0038	.0031	.0025	.0021	.0017	.0014

Present Value of Re.1 payable or receivable annually at the end of each period

Year	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4868
4	3.9020	3.8077	3.7171	3.6299	3.5459	3.4651	3.3872	3.3121	3.2397	3.1699
5	4.8535	4.7134	4.5797	4.4518	4.3295	4.2123	4.1002	3.9927	3.8896	3.7908
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553
7	6.7282	6.4720	6.2302	6.0020	5.7863	5.5824	5.3893	5.2064	5.0369	4.8684
8	7.6517	7.3254	7.0196	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349
9	8.5661	8.1622	7.7861	7.4353	7.1978	6.8017	6.5152	6.2469	5.9852	5.7590
10	9.4714	8.9825	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4176	6.1446
11	10.3677	9.7868	9.2526	8.7604	8.3064	7.8868	7.4987	7.1389	6.8052	6.4951
12	11.2552	10.5753	9.9539	9.3850	8.8632	8.3838	7.9427	7.5361	7.1607	6.8137
13	12.1338	11.3483	10.6349	9.9856	9.3935	8.8527	8.3576	7.9038	7.4869	7.1034
14	13.0038	12.1062	11.2960	10.5631	9.8986	9.2950	8.7454	8.2442	7.7861	7.3667
15	13.8651	12.8492	11.9379	11.1183	10.3796	9.7122	9.1079	8.5595	8.0607	7.6061
16	14.7180	13.5777	12.5610	11.6522	10.8377	10.1059	9.4466	8.8514	8.3125	7.8237
17	15.5624	14.2918	13.1660	12.1656	11.2740	10.4772	9.7632	9.1216	8.5436	8.0215
18	16.3984	14.9920	13.7534	12.6592	11.6895	10.8276	10.0591	9.3719	8.7556	8.2014
19	17.2261	15.6784	14.3237	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649
20	18.0457	16.3514	14.8774	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136
21	18.8571	17.0111	15.4149	14.0291	12.8211	11.7640	10.8355	10.0168	9.2922	8.6487
22	19.6605	17.6580	15.9368	14.4511	13.1630	12.0416	11.0612	10.2007	9.4424	8.7715
23	20.4559	18.2922	16.4435	14.8568	13.4885	12.3033	11.2722	10.3710	9.5802	8.8632
24	21.2435	18.9139	16.9355	15.2469	13.7986	12.5503	11.4693	10.5287	9.7066	8.9847
25	22.0233	19.5234	17.4131	15.6220	14.0939	12.7833	11.6536	10.6748	9.8226	9.0770
Year	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	0.9009	0.8929	0.8850	0.8772	0.8696	0.8021	0.8547	0.8475	0.8403	0.8333
2	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5852	1.5656	1.5465	1.5278
3	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.2096	2.1743	2.1399	2.1065
4	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.7432	2.6901	2.6386	2.5367
5	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	3.1993	3.1272	3.0576	2.9906
6	4.2305	4.1114	3.9976	3.8887	3.7845	3.6847	3.5892	3.4976	3.4098	3.3255
7	4.7122	4.5638	4.4226	4.2883	4.1604	4.0385	3.9224	3.8115	3.7057	3.6045
8	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	4.2072	4.0776	3.9544	3.8372
9	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.4506	4.3030	4.1633	4.0310
10	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332	4.6586	4.4941	4.3389	4.1925
11	6.2065	5.9377	5.6359	5.4527	5.2337	5.0286	4.8364	4.6560	4.4855	4.3271
12	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.9884	4.7932	4.6105	4.4392
13	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	5.1185	4.9095	4.7147	4.5327
14	6.7819	6.6282	6.3025	6.0021	5.7245	5.4675	5.2293	5.0081	4.8023	4.6106
15	7.8909	6.8109	6.4624	6.1422	5.8474	5.5755	5.3242	5.0916	4.8759	4.6755
16	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685	5.4053	5.1624	4.9377	4.7296
17	7.5418	7.1196	6.7291	6.3729	6.0472	5.7487	5.4746	5.2223	4.9897	4.7746
18	7.7016	7.2497	6.8399	6.4676	6.1280	5.8178	5.5339	5.2732	5.0333	4.8122
19	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	5.5845	5.3162	5.0700	4.8425
20	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288	5.6278	5.3527	5.1009	4.8696
21	8.0751	7.5620	7.4016	6.6870	6.3125	5.9731	5.6648	5.3837	5.1268	4.8913
22	8.1757	7.6446	7.4695	6.7429	6.3587	6.0113	5.6964	5.4099	5.1486	4.9094
23	8.2664	7.7184	7.2297	6.7921	6.3988	6.0442	5.7234	5.4321	5.1668	4.9245
24	8.3481	7.7843	7.2829	6.8351	6.4338	6.0726	5.7465	5.4509	5.1822	4.9371
25	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971	5.7662	5.4669	5.1951	4.9476

Cost Academy**Financial Management-68**

Year	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	0.8264	0.8197	0.8130	0.8065	0.8000	0.7937	0.7874	0.7813	0.7752	0.7692
2	1.5095	1.4915	1.4740	1.4568	1.4400	1.4235	1.4074	1.3916	1.3761	1.3609
3	2.0739	2.0422	2.0114	1.9813	1.9520	1.9234	1.8956	1.8684	1.8420	1.8161
4	2.5404	2.4936	2.4483	2.4043	2.3616	2.3202	2.2800	2.2410	2.2031	2.1662
5	2.9260	2.8686	2.8035	2.7454	2.6893	2.6351	2.5827	2.5320	2.4830	2.4356
6	3.2446	3.1669	3.0923	3.0206	2.9514	2.8850	2.8210	2.7554	2.7000	2.6427
7	3.5079	3.4155	3.3270	3.2423	3.1611	3.0833	3.0087	2.9370	2.8682	2.8021
8	3.7256	3.6193	3.5179	3.4212	3.3289	3.2407	3.1564	3.0758	2.9986	2.9247
9	3.9054	3.7863	3.6731	3.5655	3.4631	3.3607	3.2728	3.1842	3.0997	3.0190
10	4.0541	3.9232	3.7993	3.6819	3.5705	3.4648	3.3644	3.2689	3.1781	3.0915
11	4.1769	4.0354	3.9018	3.7757	3.6564	3.5435	3.4365	3.3351	3.2388	3.1473
12	4.2785	4.1274	3.9852	3.8514	3.7251	3.6060	3.4933	3.3868	3.2859	3.1903
13	4.3624	4.2028	4.0530	3.9124	3.7801	3.6565	3.6381	3.4272	3.3224	3.2233
14	4.4317	4.2646	4.1082	3.9616	3.8241	3.6949	3.5733	3.4587	3.3507	3.2487
15	4.4890	4.3152	4.1530	4.0013	3.8593	3.7261	3.6010	3.4834	3.3726	3.2682
16	4.5364	4.3567	4.1894	4.0333	3.8874	3.7509	3.6228	3.5026	3.3896	3.2832
17	4.5755	4.3908	4.2190	4.0591	3.9099	3.7705	3.6400	3.5171	3.4028	3.2948
18	4.6079	4.4187	4.2431	4.0799	3.9279	3.7861	3.6536	3.5294	3.4130	3.3037
19	4.6346	4.4415	4.2627	4.0967	3.9424	3.7985	3.6642	3.5386	3.4210	3.3105
20	4.6567	4.4603	4.2786	4.1103	3.9539	3.8083	3.6725	3.5458	3.4271	3.3158
21	4.6750	4.4756	4.2916	4.1212	3.9631	3.8161	3.6792	3.5514	3.4319	3.3198
22	4.6900	4.4882	4.3021	4.1300	3.9705	3.8223	3.6846	3.5558	3.4356	3.3230
23	4.7025	4.4985	4.3106	4.1371	3.9764	3.8273	3.6885	3.5592	3.4384	3.3254
24	4.7128	4.5070	4.3176	4.1428	3.9811	3.8312	3.6918	3.5619	3.4406	3.3272
25	4.7213	4.5139	4.3232	4.1474	3.9849	3.8342	3.6943	3.5640	3.4423	3.3236