PGDFM
SEMESTER II

FINANCIAL MANAGEMENT

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AN OVERVIEW OF FINANCIAL SYSTEM

Unit Structure :

1.1 INTRODUCTION

The term "finance" in our simple understanding it is perceived as equivalent to 'Money'. We read about Money and banking in Economics, about Monetary Theory and Practice and about "Public Finance". But finance exactly is not money; it is the source of providing funds for a particular activity. Thus public finance does not mean the money with the Government, but it refers to sources of raising revenue for the activities and functions of *a* Government. Here some of the definitions of the word 'finance' both as a source and as an activity.

1.2 DEFINITION & MEANING OF FINANCE

Finance is defined in numerous ways by different groups of people. Though it is difficult to give a perfect definition of Finance following selected statements will help to deduce its broad meaning.

1. In General sense, "Finance is the management of money and other valuables, which can be easily converted into cash."
2. According to Experts, "Finance is a simple task of providing the necessary funds (money) required by the business of entities like companies, firms, individuals and others on the terms that are most favourable to achieve their economic objectives."

3. According to Entrepreneurs, "Finance is concerned with cash. It is so, since, every business transaction involves cash directly or indirectly."
4. According to Academicians, "Finance is the procurement (to get, obtain) of funds and effective (properly planned) utilization of funds. It also deals with profits that adequately compensate for the cost and risks borne by the business."

All definitions listed above refer to finance as a source of funding an activity. In this respect providing or securing finance by itself is a distinct activity or function, which results in Financial Management, Financial Services and Financial Institutions. Finance therefore represents the resources by way funds needed for a particular activity. Thus 'finance' is only referred in relation to a proposed activity. Finance goes with commerce, business, banking etc. Finance is also referred to as "Funds" or "Capital", when referring to the financial needs of a corporate body.

1.3 INDIAN FINANCIAL SYSTEM

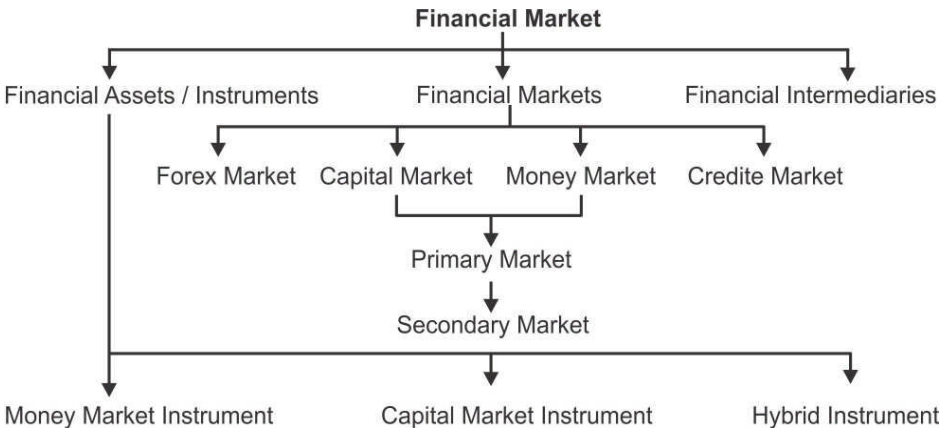
The economic development of a nation is reflected by the progress of the various 1 economic units, broadly classified into corporate sector, government and household sector. While performing their activities these units will be placed in a surplus / deficit / balanced budgetary situations. There are areas or people with surplus funds and there are those with *a* deficit. A financial system or financial sector functions as an intermediary and facilitates the flow of funds from the areas of surplus to the areas of deficit. A Financial System is a composition of various institutions, markets, regulations and laws, practices, money manager, analysts, transactions and claims and liabilities.

Financial System :

The word "system", in the term "financial system", implies a set of complex and closely connected or interlined institutions, agents, practices, markets, transactions, claims, and liabilities in the economy. The financial system is concerned about money, credit and finance, the three terms are intimately related yet are somewhat different from each other. Indian financial system consists of financial market financial instruments and financial intermediation.

1.4 FINANCIAL MARKETS

A Financial Market can be defined as the market in which financial assets are created or transferred. As against a real transaction that involves exchange of money for real goods or services, a financial transaction involves creation or transfer of a financial asset Financial Assets or Financial Instruments represents a claim to the payment of a sum of money sometime in the future and /or periodic payment in the form of interest or dividend.



Money Market :

The money market is a wholesale debt market for low-risk, highly-liquid, short-term instrument. Funds are available in this market for periods ranging from a single day up to a year. This market is dominated mostly by government, banks and financial institutions Money market is that market where short-term credit is supplied and demanded. The major components of money market are organized money market and unorganized money market. The unorganized money market consists of money-lenders and indigenous bankers. The organized money market consists of all banks under the control of Reserve Bank of India, which carry out business of short-term credit (up to one year). Individuals, industrial firms, trading firms, service agencies and other similar business enterprises borrow short-term credit in this market. Indian money market *is* not homogeneous because of the existence of unorganized money market, where there are differences between interest rates, margins and securities.

Capital Market :

The capital market is designed to finance the long-term investments. The transactions taking place in this market will be for periods over a year. This is the other part of financial market where long term credit is bought and sold, in other words, where capital is bought and sold. In this capital market large industrial

houses, corporations, central and I state governments, non-banking financial institutions as also commercial and developmental banks participate. Capital market makes available long-term loans for major projects in industry, infrastructure, agriculture etc. It is because of the capital market that investment finance is made available to innovators who instigate and sustain the process of growth and development. Stock market or share market is a major subcomponent of capital market.

Forex Market :

The Forex market deals with the multicurrency requirements, which are met by the I exchange of currencies. Depending on the exchange rate that is applicable, the transfer of funds takes place in this market. This is one of the most developed and integrated market across the globe.

Credit Market :

Credit market is a place where banks, Financial Institutions and NBFCs provide short, medium and long-term loans to corporate and individuals.

1.5 STRUCTURE OF FINANCIAL MARKET

The functional classification is based on the term of credit, whether the credit supplied is short-term or long-term. Accordingly, markets are called money markets or capital markets. The institutional classification tells us whether the financial institutions are organized on commercial or cooperative principles and whether they belong to the organized or unorganized sector. The sectoral classification identifies credit arrangements for various sectors of the economy: agriculture, manufacturing industry, trade and others.

Financial markets are broadly sub-divided under two heads money markets and capital markets. The former are markets in short-term funds; the latter in long-term funds. The term money market is interpreted more broadly to include within its folds also the notional money market of monetary theory.

Structurally, the short-term credit market is divisible under two sectors: organized and unorganized. The organized market comprises the RBI and banks. It is called organized because its parts are systematically coordinated by the RBI. Non-bank financial institutions such as the LIC, the GIC and subsidiaries, the UTI also operate in this market, but only indirectly through banks and not directly. Quasi-government bodies and large companies may also make their short-term surplus funds available to the market through banks.

Besides commercial banks that dominate the organized money market, there are cooperative banks. They are a part of co-operative credit institutes that have a three-tier : structure. At the top there are state co-operative banks (co-operation being a state subject). At the district level there axe central co-operative banks. At local level there are primary credit societies and urban co-operative banks.

STRUCTURE OF FINANCIAL MARKET
(ORGANIZED & UNORGANISED MARKET)

The whole co-operative credit system is linked with the RBI and is dependent on it for funds. the RBI deals directly with only state co-operative banks. For reasons of size, methods of operation and dealings with the RBI and commercial banks, only state and central co-operative banks need *be* counted into the organized money market; the rest (cooperative credit societies at local level) are only loosely linked with it. The unorganized market is largely made up of indigenous bankers and moneylenders, professional and non-professional. It is unorganized because the activities of its parts are not systematically coordinated *by* the RBI or any other authority.

Private moneylenders operate throughout the length and breadth of the country, but without any link among themselves. Indigenous bankers are better organized on local basis, as in Bombay and Ahmedabad. But this kind of organization is also only a loose association. For the success of monetary and credit policy, the character of the money market is important. The unorganized sector of the market is practically insulated from monetary and credit controls. It is neither subject to reserve requirements, nor capital or investment requirements. Its dependence on the RBI or banks for funds is very limited.

Therefore, it is not affected directly by the policy of monetary restraint of the economy. The RBI has no control over the quality and composition of credit in the market either. This works as an important limitation to the working of monetary policy in India. But since 1947 the situation is rapidly changing with the fast expansion of banking in the country and the relative shrinkage of the unorganized sector of the money market. There are three main components of the organized sector of the money markets. They are :

i) Inter-bank call money market
ii) Bill market, and
iii) Bank loan market

The unorganized sector also has its comparable markets. But its call money market is very small and restricted only to the Gujarati shroffs (one component of indigenous bankers). The other two markets are quite important. The indigenous bills are called hundies, and the hundi market is quite active. The indigenous bankers and moneylenders are still the major source of short-term loans for the small borrower.

The main function of the money market is to provide short-term funds to deficit spenders, whether the government or others. It does this mainly by mobilizing short-term surpluses of both financial and non-financial units, including state governments, local governments, and quasi-government bodies. Banks performs by 'selling' deposits of various kinds, participation Certificates and bills discounted. Then, there are treasury bills sold 'on tap' by the RBI. The RBI itself serves as the lender of last resort to the market. Funds have also to be moved between regions and from one place to another according to demand. An efficient and well- developed system does it fast and at low cost. Also, it does not allow regional or sectoral scarcities of funds to emerge. The surpluses in some centers or sectors get immediately transferred to others in short supply. Thereby an even supply of funds and liquidity is maintained throughout the economy. For this, banks and other constituents of money market must have an inter-connected network of branches and offices, rapid communication and remittance-of-funds system, and well-trained staff.

The real economy may also have a seasonal pattern, giving rise to seasonal ups and downs in the demand for funds. In the Indian economy this kind of seasonality mainly arises from the seasonal character of agriculture and some agro based industries (such as sugar) and their large weight in the overall economy. Thus, traditionally, the Indian money market has been facing two

seasons' busy season from October .to April and slack season from May to September.

During the busy season the main (Kharif) crops are harvested and marketed and sugarcane is crushed. So, the demand for bank credit to traders and sugar manufacturers goes up. During the slack season this demand for funds goes down. The RBI has been following a pro seasonal monetary policy so that any special stringency of funds does not arise during the busy season which may hurt legitimate economic activity. Some time with increased double cropping of cultivated land, hefty increases in the output of wheat (a major rabi crop) and autumn *rice,* growth of perennial industries, and *A* higher proportion of bank credit going lo manufacturing industries, the previous seasonal ups and downs in the demand for funds have largely lost their importance. This trend is likely to gain in strength over time.

The capital market deals in medium-term and long-term funds. Like money market, the capital market also is divisible into two sectors organized and unorganized. The organized sector comprises the stock market, the RBI, banks, development banks (such as the Industrial Development Bank of India), LIC, GIC and subsidiaries, and the UTI.

The unorganized sector is mainly made up of indigenous bankers and money-lenders chit funds, nidhis and similar other financial institutions; investment companies, finance companies and hire purchase companies; and company deposits. The role of the unorganized sector in the capital market is of very limited importance.

1.6 MONEY MARKET INSTRUMENTS

Efficiency of financial system largely depends upon the quality and variety of financial services provided by financial intermediaries. The term financial services can be defined as “activities benefits and satisfaction connected with sale of money that offers to users and customers, financial related value.”

The money market can be denned as a market for short-term money and financial assets that are near substitutes for money. The term short-term means generally a period upto one year and near substitutes to money is used to denote any financial asset which can be quickly converted into money with minimum transaction cost.

Some of the important money market instruments are:

1. Call /Notice-Money Market :

Call / Notice money is the money borrowed or lent on demand for a very short period. When money is borrowed or lent for a day, it is known as Call (Overnight) Money. Intervening holidays and/or Sunday are excluded for this purpose. Thus money, borrowed on a day and repaid on the next working day, (irrespective of number of intervening holidays) is "Call Money". When money is borrowed or lent to day and up to 14 days, it is "Notice Money". No collateral security is required to cover these transactions.

2. Inter-Bank Term Money :

Inter-bank market for deposits of maturity beyond 14 days is referred to as the term money market. The entry restrictions are the same as those for Call/Notice Money except that, as per existing regulations, the specified entities are not allowed to lend beyond 14 days.

3. Treasury .Bills.

Treasury Bills are short term (up to one year) borrowing instruments of the union government. It is an IOU of the Government. It is a promise by the Government to pay a stated sum after expiry of the stated period from the date of issue (14/91/182/364 days i.e. less than one year). They are issued at a discount to the face value, and on maturity the face value is paid to the holder. The rate of discount and the corresponding issue price are determined at each auction.

4. Certificate of Deposits :

Certificates of Deposit (CDs) is a negotiable money market instrument and issued in dematerialized form or as a Usance Promissory Note, for funds deposited at a bank or other eligible financial institution for a specified time period. Guidelines for issue of CDs are presently governed by various directives issued by the Reserve Bank of India, as amended from time to time. CDs can be issued by (i) scheduled commercial banks excluding Regional Rural Banks (RRBs) and Local Area Banks (LABs); and (ii) select all-India Financial Institutions that have been permitted by RBI to raise short-term resources within the umbrella limit fixed by RBI. Banks have the freedom to issue CDs depending on their requirements. An FI may issue CDs within the overall umbrella limit fixed by RBI, i.e., issue of CD together with other instruments viz., term money, term deposits, commercial papers and intercorporate deposits should not exceed 100 per cent of its net owned funds, as per the latest audited balance sheet.

5. Commercial Paper (CP)

Commercial Paper is a note in evidence of the debt obligation of the issuer On issuing commercial paper the debt obligation is transformed into an instrument Commercial Paper is thus an unsecured promissory note privately placed with investors at a discount rate to face value determined by market forces. Commercial Paper is freely negotiable by endorsement and delivery. A company shall be eligible to issue commercial paper provided -

a) the tangible net worth of the company, as per the latest audited balance sheet, is not less than ₹4 Crore;
b) the working capital (fund-based) limit of the company from the banking system is not less than ₹4 Crore and
c) the borrowable account of the company is classified as a Standard Asset by the financing bank/s. The minimum maturity period of Commercial Paper is 7 days. The minimum credit rating shall be P-2 of CRISIL or such equivalent rating by other agencies.

Capital Market Instruments :

The capital market generally consists of the following long term period i.e., more than one year period, financial instruments; In the equity segment Equity shares, preference shares, convertible preference shares, non-convertible preference shares etc and in the debt segment debentures, zero coupon bonds, deep discount bonds etc.

Hybrid Instruments :

Hybrid instruments have both the features of equity and debenture. This kind of instruments is called as hybrid instruments. Examples are convertible debentures, warrants etc.

In India money market is regulated by Reserve bank of India and Securities Exchange I Board of India (SEBI) regulates capital market. Capital market consists of primary market I and secondary market. All Initial Public Offerings comes under the primary market and I all secondary market transactions deals in secondary market. Secondary market refers to a market where securities are traded after being initially offered to the public in the primary I market and/or listed on the Stock Exchange. Secondary market comprises of equity markets and the debt markets. In the secondary market transactions BSE and NSE plays a] great role in exchange of capital market instruments.

1.7 SELF STUDY

I. Fill in the blanks

1) The term "finance" in our simple understanding it is perceived as equivalent to _____.
2) Public finance does not mean the money with the _____
3) _____ is the management of money.
4) Finance is the procurement of _____.
5) A _____ system facilitates the flow of funds.
6) Financial Assets represents a claim to the payment of a sum of _____.
7) The money market is a wholesale _____ market for low-risk.
8) The capital market is designed to finance the long term _____
9) Stock market or share market is a major sub-component of _____ market.
10) the Forex market deals with the _____.
11) Financial markets deals with the _____.
12) Short-term credit market is divisible into _____ and _____.
13) Call money market is very small and restricted only to the Gujarati _____.
14) Efficiency of financial system largely depends upon the _____ of financial services provided by financial intermediaries.
15) Call money is the money _____ on demand for a very short period.
16) _____ market for deposits of maturity _____ is referred to as the term money market.
17) Treasury Bills are short term up to _____.
18) Certificates of Deposit is a _____ money market instrument.
19) _____ is a note in evidence of the debt obligation of the issuer.
20) _____ have both the features of equity and debenture.

[Ans.: (1) 'Money'; (2) Government; (3) "Finance; (4) funds; (5) financial; (6) money; (7) debt; (8) investments; (9) capital; (10) multicurrency; (11) -money, capital; (12) organized, unorganized; (13) Shroffs; (14) quality and variety; (15) borrowed or lent; (16) Inter-bank, beyond 14 days; (17) one year; (18) negotiable; (19) Commercial Paper; (20) Hybrid instruments]

II. State True or False

1. The term "finance" in our simple understanding it is not equivalent to 'Money'
2. Public finance mean the money with the Government
3. Finance is the management of money
4. A financial system does not facilitates the flow of funds
5. The money market is a wholesale debt market for low-risk.
6. Forex market deals with the multicurrency
7. Treasury Bill' are short term up to two year
8. Hybrid instruments have only the features of debenture
9. Certificates or Deposit is a negotiable money market instrument.
10. Call money is the money borrowed for a long period of time.

[Ans.: True : *3,* 5, 6., 9, False : 1, 2, 4, 7, 8,10.]

III. Answer the following

a) State the definition of Finance & give a detailed meaning of finance?

b) Explain the Indian Financial System with appropriate flow chart?

c) Explain the financial market with detailed classifications.

d) Give a detailed account of financial market?

e) Bring out the classification of Organised & unorganised financial market structure?

f) State & explain the components of Indian financial system?

g) Write short notes on:
   i) Hybrid instrument
   ii) Commercial paper
   iii) Certificate of Deposit
   iv) Capital Market
   v) Money Market
   vi) Indian Financial System
   vii) Structure of Financial Market,
   viii) Treasury Bill
   ix) Call Notice Money Market
   x) Unorganised Money Market

2

FINANCIAL INTERMEDIARIES

Unit Structure :

2.1 INTRODUCTION

The term financial intermediary may refer to an institution, firm or individual who performs intermediation between two or more parties in a financial context. The first party is a provider of a product or service and the second party is a consumer or customer. Financial intermediaries are banking and non-banking institutions which transfer funds from economic agents with surplus funds (surplus units) to economic agents (deficit units) that would like to utilize those funds. FIs are basically two types: Bank Financial Intermediaries, Bank Financial Intermediaries (Central banks and Commercial banks) arid Non-Bank Financial Intermediaries, NBFIs (insurance companies, mutual trust fund.-, investment companies, pensions funds, discount houses and bureaux de change).

2.2 TYPES QF FINANCIAL INTERMEDIARIES ARE

- Banks;
- Credit Unions;
- Financial adviser or broker;
- Insurance Companies;
- *Life* Insurance Companies;
- Mutual Funds; or Societies
- Pension Funds.

The borrower who borrows money from the Financial Intermediaries/ Institutions pays higher amount of interest than, that received by the actual lender and the difference between the Interest paid and Interest earned is the Financial Intermediaries / Institutions profit.

Financial Intermediaries are broadly classified into two major categories:

1. Fee-based or Advisory Financial Intermediaries
2. Asset Based Financial Intermediaries.

- Fee Based / Advisory Financial Intermediaries : These Financial Intermediaries Institutions offer advisory financial services and charge a fee accordingly for the services rendered.

Their services include :

Issue Management	Underwriting
Portfolio Management	Corporate Counseling
Stock Broking	Syndicated Credit
Arranging Foreign Collaboration Services	Mergers and Acquisitions
Debenture Trusteeship	Capita) Restructuring

- Asset-Based Financial Intermediaries: These Financial Intermediaries/Institutions finance the specific requirements of their clientele. The required infra-structure, in the form of required asset or finance is provided for rent or interest respectively. Such companies earn their incomes from the interest spread, namely the difference between interest paid and interest earned.

The financial institutions may be regulated by various regulatory authorities, or may be required to disclose the qualifications of the person to potential clients. In addition, regulatory authorities may impose specific standards of conduct requirements on financial intermediaries when providing services to investors.

Having designed the instrument, the issuer should then ensure that these financial assets reach the ultimate investor in order to gamer the requisite amount. When the borrower of funds approaches the financial market to raise funds, mere issue of securities will not suffice. Adequate information of the issue, issuer and the security should be passed on to take place. There should be a proper channel within the financial system to ensure such transfer. To serve this purpose, financial intermediaries came into existence. Financial intermediation in the organized sector is conducted by a wide range of institutions functioning under the overall surveillance of the Reserve Bank of India. In the initial stages, the role of the intermediary was mostly related to ensure transfer of funds from the lender to the borrower.

This service was offered by banks, FIs, brokers, and dealers. However, as the financial system widened along with

the developments taking place in the financial markets, the scope of its operations also widened. Some of the important intermediaries operating in the financial markets include; investment bankers, underwriters, stock exchanges, registrars, depositories, custodians, portfolio managers, mutual funds, financial advertisers financial consultants, primary dealers, satellite dealers, self regulator,' organizations, etc. Though the markets are different, there may be a few intermediaries offering their services in more than one market e.g. underwriter. However, the services offered by them vary from one market to another.

Intermediary	Market	Role
Stock Exchange	Capital Market	Secondary Market to securities
Investment Banker	Capital Market, Credit Market	Corporate advisory services, Issue of securities
Underwriters	Capital Market, Money Market	Subscribe to unsubscribed portion of securities
Registrars, Depositories, Custodians	Capital Market	Issue securities to the investors on behalf of the company and handle share transfer activity
Primary Dealers Satellite Dealers	Money Market	Market making in government securities
Forex Dealers	Forex Dealers	Ensure exchange ink Currencies

It is the combined working of these institutions, which enables the financial system to function efficiently. In any economy, there are organized systems of borrowers and lenders which are brought together by financial institutions and therefore, they are known as financial intermediaries.

In India, these financial institutions are :

1. Reserve Bank of India :

This is the apex of the financial system, established in 1934 and nationalized in 1949. It functions as banker to the government, supplier and controller of money and credit, maker of monetary policy and collector of financial information and data as also other data. It controls the working of rest of the financial systems directly or indirectly through money supply, credit supply by using instruments of bank rate, open market operations, margins, rationing, directives etc.

2. Commercial Bank :

Commercial banks are a very important component of financial institutions. They constitute the main supply of short-term and medium term credit for domestic as well as foreign trade. Commercial banks include nationalized banks, private commercial banks, co-operative banks as also foreign banks, which through a network of branches make short term and medium term finance available to cottage, small and large industry, trade and business as also agriculture and infrastructural projects by mobilization of savings.

3. Financial Corporations :

After independence, financial system of India went on expanding. In 1948, Industrial Finance Corporation of India was established. In 1956, Industrial Credit and Investment Corporation of India established, in 1964 Industrial Development Bank of India was established, and Industrial Reconstruction Bank of India was established in 1971, whereas state government established State Finance Corporations. At a late stage, Small Industries Development Bank of India was established. ICICI and IDBI got converted in to banks recently.

4. Insurance Companies :

Before independence, Private sector insurance companies was formed, but then Life Insurance Corporation of India in the public sector were established along with four subsidiaries of General Insurance Corporation. After 1998, again private sector insurance companies like Bajaj-Allianz, New York Max Life Insurance, ICICI Prudential etc. came into being.

5. Mutual Funds :

For people small means, it is not possible to invest in corporate equity because of their small savings. Mutual Funds are established by different major banks to mobilize small savings and channelize the same in industrial investment through efficient management and to minimize risk for small investors. Unit Trust of India pioneered in this sector.

6. NABARD :

National Bank for Agricultural and Rural Development was established in 1982 for short term as well as long term finance for agriculture through co-operative credit system.

7. Post Office :

Post Offices in India run a banking unit to collect small savings of the people and make them available for public sector investment. State Bank of India runs a scheme for Public Provident Funds and we have National Housing Bank also, which provides finance for construction sector.

2.3 FINANCIAL PRODUCTS

Financial products are classified into three main categories depending upon their inherent function from the investor's perspective. As a result of investing in one of the available types of financial products, an investor either becomes an owner, a creditor, or gains the right to purchase or sell a product. Some of the more popular financial products include shares, bonds, investment funds, warrants and options.

Shares which are usually thought of as stock represent ownership in a company. They are typically offered on public trading markets in exchange for a certain monetary value. Investors pay the specified price for an amount of shares in hopes that the value will increase over time. The company selling the shares receives the funds it needs to keep its operations afloat. Shares can also earn dividend income, which represents a portion of the issuing company's profits that are returned to its shareholders.

Bonds are financial products that represent a debt that the issuing company owes to its investors. Unlike shares, the investor does not have an ownership claim. This type of investment typically has a lower yield or return than shares do, but it also carries less risk. Investors exchange cash which is paid back by the company at a certain future date, along with interest.

If an investor wishes to liquidate his bonds prior to the date that they are scheduled to mature, may sell them back. The value of the bond will most likely not have reached its face value, which represents the amount that is scheduled to *be* paid back at maturity. The investor will receive the market value of the bond, which may be less or more than he originally paid for it. Private companies an ' the government both sell bonds to the general public.

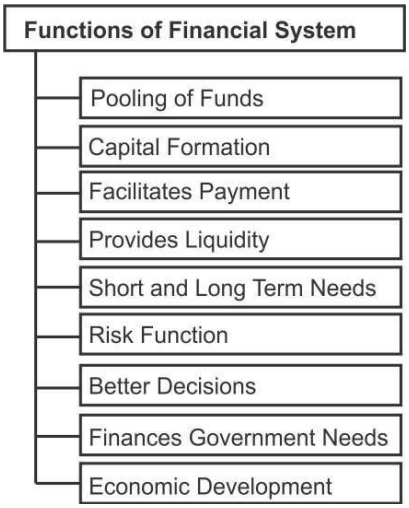
Investment funds are financial products that may consist of money market, equity or bond funds. They do not usually invest in one particular company or source. These funds use pooled sources of cash to purchase a variety of stocks, bonds or very low-risk investments in order to diversify and reduce risk. Depending upon an investor's financial goals, investment funds might range from high risk international shares to stable bonds with a low rate of return similar to a savings account.

Warrants and options both consist of the option to buy and the option to sell a financial product. The investor does not acquire ownership or creditor status. Options are the privilege to buy or sell

stock at a certain price, whereas warrants are the privilege to buy or sell bonds. The premise behind these types of investments is referred to as hedging, which is the hope that the market value of the stock or bond will change in the way the investor predicts.

2.4 FUNCTIONS OF FINANCIAL SYSTEM

Functions of Financial System are given in the diagram below.



Functions and Role of financial system, market is given below,

1. Pooling of Funds

In a financial system, the Savings of people are transferred from households to business organizations. With these production increases and better goods are manufactured, which increases the standard of living of people.

2. Capital Formation

Business requires finance. These are made available through banks, households and different financial institutions. They mobilize savings which leads to Capital Formation.

3. Facilitates Payment

The financial system offers convenient modes of payment for goods and services. New methods of payments like credit cards, debit cards, cheques, etc. facilitates quick and easy transactions.

4. Provides Liquidity

In financial system, liquidity means the ability to convert into cash. The financial market provides the investors the opportunity to liquidate their investments, which are in instruments like shares, debentures, bonds, etc. Price is determined on the daily basis according to the operations of the market force of demand and supply.

5. Short and Long Term Needs

The financial market takes into account the various needs of different individuals and organizations. This facilitates optimum use of finances for productive purposes.

6. Risk Function

The financial markets provide protection against life, health and income risks. Risk Management is an essential component of a growing economy.

7. Better Decisions

Financial Markets provide information about the market and various financial assets. This helps the investors to compare different investment options and choose the best one. It helps in decision making in choosing portfolio allocations of their wealth.

8. Finances Government Needs

Government needs huge amount of money for the development of defense infrastructure. It also requires finance for social welfare activities, public health, education, etc. This is supplied to them by financial markets.

9. Economic Development

India is a mixed economy. The Government intervenes in the financial system to influence macro-economic variables like interest rate or inflation. Thus, credits can be made available to corporate at a cheaper rate. This leads to economic development of the nation.

2.5 SELF STUDY

I. Fill in the Blanks

1) The term financial intermediary may refer to _____ between two or more parties in a context
2) The _____ who borrows money from the Financial Intermediaries / Institutions pays higher amount of interest than that received by the _____.
3) Financial Intermediaries / Institutions offer _____ and charges a fee accordingly for the services rendered.
4) The issuer should then ensure that these financial assets reach the ultimate _____ in order to _____ the requisite amount
5) RBI is the apex of the financial system, established in _____ and nationalized in _____.

6) Commercial banks include nationalized banks, private commercial banks, _____ banks as also _____ banks.

7) Industrial Finance Corporation of India was established in ____.

8) Industrial Credit and Investment Corporation of India were established in _____.

9) Industrial Development Bank of India was established in _____.

10) Industrial Reconstruction Bank of India was established in _____

11) Mutual Funds are established by different major banks to mobilize small _____ and channelize the same in _____.

12) _____ was established in 1982 for _____ through _____ credit system.

13. Investors pay the specified _____ for an amount of shares.

14) _____ companies and the _____ both sell bonds to the general public.

15) _____ both consist of the option to buy and the option to sell a financial product.

16) In a financial system, the Savings of people are transferred from _____ to _____ organizations.

17) The financial system offers convenient modes of payment for _____ and _____.

18) The financial market provides the investors the opportunity to _____ their _____.

19) _____ Management is an essential component of a _____ economy.

20) Financial Markets provide information about the _____ and various financial _____.

[Ans.: (1) intermediation, financial; (2) borrower, actual lender; (3) advisory financial services; (4) investor, garner; (5) 1934,1949; (6) cooperative, foreign; (7) 1948; (8) 1956; (9) 1964; (10) 1971; (11) savings , industrial investment; (12) National Bank for Agricultural and Rural Development, agriculture, co-operative; (13) price; (14) Private, government; (15) Warrants and options; (16) households, business; (17) goods, services; (18) liquidate, investments; (19) Risk, growing; (20) market, assets.]

II. State the following are True or False

1. The term financial intermediary does not refer to intermediation between two or more parties in a financial context.
2. The borrower who borrows money from the Financial Intermediaries/Institutions pays less amount of interest than that received by the actual lender.
3. Financial Intermediaries / Institutions offer advisory financial services and charge a fee accordingly for the services rendered.
4. The issuer should then ensure that these financial assets does not reach the investor in order to garner the requisite amount.
5. RBI is the apex of the financial system, established in 1932 and nationalized in 1936.
6. Commercial banks include nationalized banks, private commercial banks, Cooperative banks as also foreign banks.
7. Industrial Finance Corporation of India was established in 1949.
8. Industrial Credit and Investment Corporation of India were established in 1955.
9. Industrial Development Bank of India was established in 1964.
10. Industrial Reconstruction Bank of India was established in 1971.
11. Mutual Funds are established by different major banks to mobilize small savings and channelize the same in industrial investment.
12. National Bank for Agricultural and Rural Development was established in 1982 for commercial purpose through co-operative credit system.
13. Investors pay the specified price for an amount of shares.
14. Private companies and the government both sell bonds to the general public.
15. Warrants and options both consist of the option to buy and the option to sell a financial product.
16. In a financial system, the Savings of people are transferred from business organizations to business.
17. The financial system offers convenient modes of payment for goods and services.

18. The financial market provides the borrower the opportunity to liquidate their investments.
19. Risk Management is an essential component of a growing economy.
20. Financial Markets provide information about the commodity market and various immovable assets.

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

III. Match the following

Intermediary	Market	Role
Stock Exchange	Capital Market	Subscribe to unsubscribed portion of securities
Investment Banker	Money Market	Secondary Market to securities
Underwriters	Capital Market, Money Market	Corporate advisory services, Issue of securities
Registrars, Depositories, Custodians	Credit Market	Issues securities to the investors on behalf of the company and handle share transfer activity
Primary Dealers Satellite Dealers	Capital Market	Ensure exchange ink Currencies
Forex Dealers	Forex Dealers	Market making in government securities

IV. Answer the following:

a) Explain the term financial intermediaries?
b) What is asset based financial intermediaries?
c) What are the different types of financial products?
d) What are the different types of financial intermediaries?
e) What are the functions of financial systems?
f) Explain the functions of financial systems?
g) What is warrant & option?

h) What is fee based financial intermediaries?

i) Write Short notes on:
   1. Role of financial system
   2. Functions of financial system
   3. Investment
   4. Bonds
   5. Shares
   6. Asset Based financial intermediaries
   7. Advisory financial intermediaries
   8. Warrant & Options

3

REGULATORY FRAMEWORK OF INDIAN FINANCIAL SYSTEM

Unit Structure :

3.1 INTRODUCTION

SEBI is regulator to control Indian capital market. Since its establishment in 1992, it is doing hard work for protecting the interests of Indian investors. SEBI gets education from past cheating with native investors of India. Now, SEBI is stricter with those who commit frauds in capital market. The role of security exchange board of India (SEBI) in regulating Indian capital market is very important because government of India can only open or take decision to open new stock exchange in India after getting advice from SEBI.

3.2 SECURITIES AND EXCHANGE BOARD OF INDIA (SEBI)

The Government has set up the Securities & Exchange Board of India (SEBI) in April 1988. For more than three years, it had no statutory powers. Its interim functions during the period were :

1) To collect information and advice the Government on matters relating to Stock and Capital Markets.
2) Licensing and regulation of merchant banks, mutual funds etc.

3) To prepare the legal drafts for regulatory and development role of SEBI, and
4) To perform any other functions as may be entrusted to it by the Government.

The need for setting up independent Government agency to regulate and develop the Stock and Capital Market in India as in many developed countries was recognized since the Sixth Five Year Plan was launched (1985) when some major industrial policy changes like opening up of the economy to outside world and greater role to the Private Sector were initiated. The rampant malpractices noticed in the Stock and Capital Market stood in the way of infusing confidence of investors, which is necessary for mobilization of larger quantity of funds from the public, and helps the growth of the industry.

The malpractices were noticed in the case of companies, merchant bankers and brokers who are all operating in the Capital Market. The need to curb these malpractices and to promote healthy Capital Market in India was felt. The security industry in India has to develop on the right lines for which a competent Government agency as in U.K. (SIB) or in U.S.A. (SEC) is needed.

Malpractices have been reported in both the primary market and secondary market. Malpractices in the primary market are as follows :

- Too many self style Investment Advisors and Consultants.
- Grey Market or unofficial premiums on the new issues.
- Manipulation of market prices before new issues is floated.
- Delay in allotment letters or refund orders or in dispatch of share certificates.
- Delay in listing and commencement of trading in shares.

Malpractices in the Secondary Market are as follows :

- Lack of transparency in the trading operations and prices charged to clients.
- Poor services due to delay in passing contract notes or not passing contract notes, at all.
- Delay in making payments to clients or in giving delivery of shares.
- Persistence of odd lots and refusal of companies to stop this practice of allotting shares in odd lots.
- Insider trading by agents of companies or brokers rigging and manipulating prices.
- Takeover bids to de-stabilize the management.

3.3 OBJECTIVES

The objectives of SEBI are as follows :

- Investor protection, so that there is a steady flow of savings into the Capital Market.
- Ensuring the fair practices by the issuers of securities, namely, companies so that they can raise resources at least cost.
- Promotion of efficient services by brokers, merchant bankers and other intermediaries so that they become competitive and professional.

Pending the legislative sanction to SEBI it carried out the functions of supervisory and advisory body of the Government. It has initiated the basis for control and regulation of the market, arranged for the licensing of merchant banks, mutual funds etc. and performed the advisory functions to the Govt. The legislation giving powers to SEBI was passed on 4th April 1992 in the form of the securities & Exchange Board of India Act to protect the interests of investors in securities and to promote the development of and to regulate the securities market and for matters connected therewith or incidental thereto.

3.4 SEBI GUIDELINES FOR CAPITAL MARKET

Repealing of Competition Commission of India (CCI) Act :

SEBI guidelines were issued after the repeal of the CCI Act whereby the CCI guidelines became out of date. New guidelines by SEBI were issued starting from the month of June 1992. Some CCI guidelines were still retained, as in the case of those for premium fixation.

Guidelines for new issues made by new companies :

They have to be issued at par. Free pricing is permitted only if the new company is promoted by the existing company with not less than 50% of equity.

Guidelines for new issues made by private limited companies :

New issues made by Private Limited Companies and Closely held companies could be made by free pricing, for listing purposes if such companies have had three years of track record of consistent profitability out of last 5 years. Not less than 20% of equity is to be offered to the public in such cases.

Guidelines for new issues made by existing listed companies :

Public issues by existing listed companies can be made through free pricing, if there are further issues and if they are disclosed in the prospectus. The Net Asset Value and the market

price have to be considered for the last 3 years. The companies with foreign holding wishing to enhance the limit up to 51% will have to get the prices approved in the general body meeting by a special resolution under Sec. 81 (A) of the Companies Act, and subject to RBI approval.

Listing of shares on the Over the Counter (OTC) :

If the new issues are made through OTC, normal guidelines will apply if the sponsor is not taking any share. If the shares are taken by the sponsor, subsequent offer to the public may be made at such a price as the sponsor may deem fit. The promoters should retain 25% quota with a lock in period of 5 years, the sponsor should act as market maker for a period of at least 3 years and also find another market maker for compulsory market making. This condition was relaxed recently to encourage OTC Listing.

Underwriting Issues :

Underwriting is optional if the issues is made to the public and should not include reserved or preferential quota or employees quota. If the subscription is not up to 90% of the total issue from the public including contribution of underwriters, the public should be refunded of their subscription within 120 days from the date of opening the issue. The compulsory underwriting provision was also waived for smaller issues.

Composite issues :

Issues to the public by existing company can be priced differently as compared to the rights issued to shareholders. Fully Convertible Debentures (FCD) & Partially Convertible Debentures (PCD). The issues of Fully Convertible Debentures (FCDs) with a conversion period of more than 36 months will not be permissible unless conversion is optional. In case FCDs are convertible after 18 months, credit rating is compulsory; credit rating is now made compulsory for all issues made to public, other than equity. In case, the nonconvertible portion of the Partially Convertible Debentures is to be rolled over, non-maturing debenture holders should have option to withdraw from the scheme.

New Financial Instruments :

The terms and conditions of the new instruments such as Deep Discount Bonds, debentures with warrants and secured premium notes etc. should be disclosed clearly so that the investor can assess the risk and return scenario of the instrument.

Reservation in issues :

The unreserved portion offered to public should not be less than the minimum required for listing purposes. Preferential allotment, can be made to promoters, companies and shareholders of those companies, NRIs, employees and associate companies of

the same group. The allotment shall be subject to a lock in period of three years, if it is made on firm basis, outside public issue.

Deployment of issue proceeds :

Where the total proceeds exceed ₹250 crores, the company will voluntarily disclose the arrangements made to utilize proceeds. When the total issue proceeds exceed ₹500 crores, there is need for making compulsory disclosure and for the financial institutions to monitor the deployment of funds, to the stock exchanges.

Minimum interval between two issues :

12 months should elapse between the public or rights issue and bonus issue. The promoters should bring in their share of the capital before the public issue.

Employee's stock option scheme :

The reservation for employees should not be more than 10% at present and this quota is non-transferable for 3 years and subject to a maximum allotment of 200 shares per employee, and the lock in was removed later. The Lock in period for Promoters quota is 5 years and the lock in period for preferential allotment for associates and friends is 3 years.

Bonus Shares :

Bonus issues are to be made out of free reserves, the share premium collected in cash, Development Rebate Reserves (DRR) and Investment Allowance Reserve. Contingent liabilities disclosed in the audited accounts should be deducted from net profit for calculation of residual reserves. Residual reserves after the bonus issues should be at least 40% of the increased paid-up capital. 30% of the average profits before tax for the previous 3 years should yield a rate of dividend of 10% n the expanded capital base. Reserves out of revaluation should not be used for bonus payment. Bonus issues cannot be made in lieu of dividends, and if there are partly paid up shares; no bonus issue is permitted. Expanded paid-up capital after bonus issue should not exceed authorized share capital. When a company has PCD or FCD, pending conversion, no bonus issues can be made unless this right is kept open to the holders of PCD and PCD falling due for conversion within 12 months.

Debentures issues :

All debentures, which have a life of more than 18 months, should have a Development Rebate Reserve created by company out of profit. Development Rebate Reserve should be created only for nonconvertible portion of the debentures. Contribution to Development Rebate Reserve should commence from the date of commercial production and when there are profits after tax, interest and depreciation. The Development Rebate Reserve will be

considered as a part of the general reserves for payment of the bonus issues. Development Rebate Reserve should be created and maintained at 50% of the amount of the debentures before repayment starts. The company should have already redeemed some liability. Development Rebate Reserve and the creation of Debenture Trust are necessary only if the debentures have a maturity period exceeding 18 months. The Lead Institution for each issue should monitor the use of debenture funds either from the working capital or from the project finance. The SEBI insists on prior licensing of debenture Trustee; Trust deed should be ready within 6 months from the date of allotment.

By an amendment to Listing Agreement, the Companies have been asked to provide unabridged Balance Sheet to Shareholders. The companies have to give the disposition of the funds raised in public issues and compare the actual with targets every six months, when they present balance sheet to investors.

3.5 SEBI REFORMS ON STOCK EXCHANGES

The SEBI regulation of stock exchanges and their members had started as early as February 1992 and the reforms later introduced have been on a continuous basis. It was started with the licensing and registration of brokers and sub-brokers in the recognized stock exchanges. This was later extended to underwriters, portfolio managers and other categories of players in the stock market including foreign securities firms, Foreign Financial Institute (FFIS) Financial Investment Institute (FIIs), Debenture Trustee, Collecting Bankers, etc.

The other reforms are briefly summarized below :

1) Compulsory audit and inspection of stock exchanges and their member brokers and their accounts.
2) Transparency in the prices and brokerage charged by brokers by showing them in their contract notes.
3) Broker accounts and client accounts are to be kept separate and clients money is to be separately maintained in bank's accounts and the same to be reported to the stock exchanges.
4) Board of Directors of stock exchanges has to be reconstituted so as to include non-brokers, public representative, and Government representatives to the extent of 50% of the total number of members.
5) Capital adequacy norms have been laid down for members of various stock exchanges separately and depending on their turnover of trade and other factors.

6) Guidelines have been laid down for dealings of FIIs and Foreign broker firms in the Indian stock exchanges through Indian brokers.

7) New guidelines for corporate members have been laid down with limited liability of directors and opening up of their membership to more than one stock exchange without the limiting requirement of experience of five years in one exchange, as imposed earlier.

The term “Investor Protection” is a wide term encompassing various measures designed to protect the investors from malpractices of companies, brokers, merchant bankers, issue managers, Registrars of new issue, etc. “Investors Beware” should be the watchword of all programs for mobilization of savings for investment. As all investments have some risk element, this risk factor should be borne in mind by the investors and they should take all precautions to protect their interests in the first place. If caution is made to the investor and if they invest in any venture without a proper assessment of the risk, they have only to blame themselves. But if there are malpractices by companies, brokers, etc., they have every reason to complain. Such grievances have been increasing in number.

The complaints of investors come from two major sources :

- Against member broker of Stock Exchanges;
- Against companies listed for trading on the Stock Exchanges.

Besides, there can be complaints against sub-brokers, agents, merchant bankers, issue managers, etc., which cannot be entertained by the stock exchanges as per their rules.

Complaints against Members :

Investors have complaints against brokers regarding the price, quantity etc. at which transactions are put through, defective delivery or delayed delivery, delayed payment or non-payment etc., non-payment of agreed brokerage to authorized assistants, et. In the event of default of a member broker, the dues of clients are also to be looked into.

Complaints against Companies :

The complaints against companies are in the nature of non-receipt of allotment letters, refund orders, non-receipt of dividends, interest etc., delay in transfer of shares and in splitting and consolidation. The clearance of these complaints is attended to by the grievance cell by writing to the companies, follow-up telexes, etc. and finally by warning to de-list the companies concerned. But the clearances of these complaints are slow due to the non-compliance or slow compliance by the companies to the references

made b the cell. The powers of the Stock Exchange are limited to warnings and delisting of shares and as such compliance by the companies as poor. SEBI has now powers to penalize companies violating the listing norms.

Grievances Cell :

There is a Grievance Cell in all Stock Exchanges, which attends to investor complaints. Of the total, nearly 95% are against companies and they are more difficult to settle, as many companies do not attend to the complaints promptly despite reminders and warnings by the stock exchange, in view of the fact that penal powers of the Exchange are limited. The grievance procedure in respect of complaints against members is as follows :

1) Joint meeting of member vis-à-vis the clients for an amicable settlement.
2) Arbitration proceedings by the committee under the byelaws.
3) Special committee appointed by the Executive Director for settlement.
4) Disciplinary proceedings including warnings, fines, penalties etc. particularly in cases of fraud, cheating etc. by the members.

Customer's Protection Fund :

The Customer's Protection Fund is constituted by the Stock Exchanges to safeguard the interests of the investor clients from default of the stockbrokers. The Fund is financed by way of a levy on the turnover of members and from out of the listing fees, earmarked by the Exchanges. The Fund is being administered by the Stock Exchange for the benefit of the clients of the member brokers, in case of a default of a member. The compensation of any single client is, however, limited to Rs. 2 lakh at present. When a member is declared a defaulter, the net assets in the hands of the defaulter's Committee after defraying costs, charges, expenses etc., relating to the realization of the assets will be used to meet the claims of the exchange, clearing house and then the admitted claims of the members of the exchange against the defaulter. After meeting all these claims, if anything is left over, the claims of the clients of the defaulting member will be satisfied. If nothing is left over, the genuine claims of clients can be met from the Customer's Protection Fund. This is the same procedure adopted by other Exchanges also where this Fund was set up.

3.6 SEBI ON INITIAL PUBLIC OFFER (IPO)

The SEBI has listed companies whose shares have to be traded and settled in electronic book entry form 4th January, 2000. The demat form of issue of initial public offers of new issues is

made compulsory. This is made compulsory for all companies, so as to encourage demat form of trading through electronic book entry system. To develop the debt market, in collaboration with the RBI, a committee was appointed, as per the SEBI announcement early in February 2000. The SEBI also announced that Registrars of new issues under IPO could also undertake the depository functions for those issues. Some of the Reforms in the primary market were referred to earlier in this book. The major reforms relate to registration and enforcement of a code of conduct on all the intermediaries in the market, extension of regulation to UTI along with all mutual funds in the private and public sectors and to Money Market Mutual Funds which were so far regulated by the RBI and enforcement of all regulations on venture capital funds on par with all mutual funds and on FIIs and FFIs along with the powers exercised by the RBI under the FEMA. Even credit rating Agencies are brought under the Guidelines of the SEBI. New issues under IPOs are brought compulsorily under the fold of Demat form of allotment of new issues to 30 days and enforced stricter surveillance on end use of funds raised through public offer, reduced the malpractices in the new issue market, such as price rigging and insider trading etc. The problems of bad delivery and delays in transfer of shares odd lots etc. were solved by making the trading as well as transfers in demat form of electronic book entry.

3.7 ROLE OF SEBI IN REGULATING INDIAN CAPITAL MARKET

1) Power to make rules for controlling stock exchange :

SEBI has power to make new rules for controlling stock exchange in India for example, SEBI fixed the time of trading 9 AM and 5 PM in stock market.

2) To provide license to dealers and brokers :

SEBI has power to provide license to dealers and brokers of capital market. If SEBI sees that any financial product is of capital nature, then SEBI can also control to that product and its dealers. One of main example is ULIPs case. SEBI said, “It is just like mutual funds and all banks and financial and insurance companies who want to issue it must take permission from SEBI.”

3) To stop fraud in Capital Market :

SEBI has many powers for stopping fraud in capital market. It can ban on the trading of those brokers who are involved in fraudlent and unfair trade practices relating to stock market. It can impose the penalties on capital market intermediaries if they involve in insider trading.

4) To Control the Merger, Acquisition and Takeover the companies :

Many big companies in India want to create monopoly in capital market. So, these companies buy all other companies or deal in merging. SEBI sees whether this merger or acquisition is for development of business or to harm capital market.

5) To audit the performance of stock market :

SEBI uses his powers to audit the performance of different Indian stock exchange for bringing transparency in the working of stock exchanges.

6) To make new rules on carry – forward transactions :

Share trading transactions carry forward cannot exceed 25% of broker's total transactions 90 day limit for carry forward.

7) To create relationship with Institute of chartered Accountants of India (ICAI) :

ICAI is the authority for making new auditors of companies. SEBI creates good relationship with ICAI for bringing more transparency in the auditing work of company accounts because audited financial statements are mirror to see the real face of company and after these investors can decide to invest or not to invest. Moreover, investors of India can easily trust on audited financial reports. After Satyam Scam, SEBI is investigating with ICAI, whether CAs are doing their duty by ethical way or not.

8) Introduction of derivative contracts on Volatility Index :

1) For reducing the risk of investors, SEBI has now been decided to permit Stock Exchanges to introduce derivative contracts on Volatility Index, subject to the condition that;

a) The underlying Volatility Index has a track record of at least one year.

b) The Exchange has in place the appropriate risk management framework for such derivative contracts.

2) Before introduction of such contracts, the Stock Exchanges shall submit the following :

i) Contract specifications

ii) Position and Exercise Limits

iii) Margins

iv) The economic purpose it is intended to serve

v) Likely contribution to market development

vi) The safeguards and the risk protection mechanism adopted by the exchange to ensure market integrity, protection of investors and smooth and orderly trading.

vii) The infrastructure of the exchange and the surveillance system to effectively monitor trading in such contracts, and

viii) Details of settlement procedure & systems.

ix) Details of back testing of the margin calculation for a period of one year considering a call and a put option on the underlying with a delta of 0.25 & -0.25 respectively and actual value of the underlying.

9) To require report of Portfolio Management Activities :

1) SEBI has also power to require report of portfolio management to check the capital market performance.

2) To educate the investors
Time to time, SEBI arranges scheduled workshops to educate the investors. Investor can get education through SEBI leaders by getting up to date information.

3.8 IMPORTANT STEPS TAKEN BY SEBI FOR THE REGULATION OF MUTUAL FUNDS

1) Formation :

Certain structural changes have also been made in the mutual fund industry, as part of which mutual funds are required to set up asset management companies with fifty percent independent directors, separate board of trustee companies, consisting of a minimum fifty percent of independent trustees and to appoint independent custodians.

This is to ensure an arm's length relationship between trustees, fund managers and custodians, and is an contrast with the situation prevailing earlier in which all three functions were often performed by one body which was usually the sponsor of the fund or a subsidiary of the sponsor.

Thus, the process of forming and floating mutual funds has been made a tripartite exercise by authorities. The trustees, the asset management companies (AMCs) and the mutual fund shareholders form the three legs. SEBI guidelines provide for the trustees to maintain an arm's length relationship with the AMCs and do all those things that would secure the right of investors.

With funds being managed by AMCs and custody of assets remaining with trustees, an element of counter-balancing of risks exists as both can keep tabs on each other.

2) Registration :

In January, 1993 SEBI prescribed registration of mutual funds taking into account track record of a sponsor, integrity in business transactions and financial soundness while granting permission.

This will curb excessive growth of the mutual funds and protect investor's interest by registering only the sound promoters with a proven track record and financial strength. In February 1993, SEBI cleared six private sector mutual funds viz. 20th Century Finance Corporation, Industrial Credit & Investment Corporation of India, Tata Sons, Credit Capital Finance Corporation, Ceat Financial Services and Apple Industries.

3) Documents :

The offer documents of schemes launched by mutual funds and the scheme particulars are required to be vetted by SEBI. A standard format for mutual fund prospectuses is being formulated.

4) Code of advertisement :

Mutual funds have been required to adhere to a code of advertisement.

5) Assurance on returns :

SEBI has introduced a change in the Securities Control and Regulations Act governing the mutual funds. Now the mutual funds were prevented from giving any assurance on the land of returns they would be providing. However, under pressure from the mutual funds, SEBI revised the guidelines allowing assurances on return subject to certain conditions.

Hence, only those mutual funds which have been in the market for at least five years are allowed to assure a maximum return of 12 percent only, for one year. With this, SEBI, by default, allowed public sector mutual funds an advantage against the newly set up private mutual funds.

As per basic tenets of investment, it can be justifiably argued that investments in the capital market carried a certain amount of risk, and any investor investing in the markets with an aim of making profit from capital appreciation or otherwise, should also be prepared to bear the risks of loss.

6) Minimum corpus :

The current SEBI guidelines on mutual funds prescribe a minimum start-up corpus of ₹50 Crore for an open-ended scheme, and ₹20 Crore corpus for closed-ended scheme, failing which application money has to be refunded.

The idea behind forwarding such a proposal to SEBI is that in the past, the minimum corpus requirements have forced AMCs to solicit funds from corporate bodies, thus reducing mutual funds into quasi-portfolio management outfits. In fact, the Association of Mutual Funds in India (AMFI) has repeatedly appealed to the regulatory authorities for scrapping the minimum corpus requirements.

7) Institutionalization :

The efforts of SEBI have, in the last few years, been to institutionalize the market by introducing proportionate allotment and increasing the minimum deposit amount to ₹5000 etc. These efforts are to channel the investment of individual investors into the mutual funds.

8) Investment of funds mobilized :

In November, 1992 SEBI increased the time limit from six months to nine months within which the mutual funds have to invest resources raised from the latest tax saving schemes. The guideline was issued to protect the mutual funds from the disadvantages of investing funds in the bullish market at very high prices and suffering from poor NAV thereafter.

9) Investment in money market :

SEBI guidelines say that mutual funds can invest a maximum of 25 percent of resources mobilized into money-market instruments in the first six months after closing the funds and a maximum of 15 percent of the corpus after six months to meet short term liquidity requirements.

Private sector mutual funds, for the first time, were allowed to invest in the call money market after this year's budget. However, as SEBI regulations limit their exposure to money markets, mutual funds are not major players in the call money market. Thus, mutual funds do not have a significant impact on the call money market.

10) Valuation of investment :

The transparent and well understood declaration or Net Asset Values (NAVs) of mutual fund schemes is an important issue in providing investors with information as to the performance of the fund. SEBI has warned some mutual funds earlier of unhealthy market.

11) Inspection :

SEBI inspect mutual funds every year. A full SEBI inspection of all the 27 mutual funds was proposed to be done by the March, 1996 to streamline their operations and protect the investor's

interests. Mutual funds are monitored and inspected by SEBI to ensure compliance with the regulations.

12) Underwriting :

In July, 1994 SEBI permitted mutual funds to take up underwriting of primary issues as a part of their investment activity. This step may assist the mutual funds in diversifying their business.

13) Conduct :

In September, 1994 it was clarified by SEBI that mutual funds shall not offer buy back schemes or assured returns to corporate investors. The Regulations governing Mutual Funds and Portfolio Managers ensure transparency in their functioning.

14) Voting rights :

In September, 1993 mutual funds were allowed to exercise their voting rights. Department of Company Affairs has reportedly granted mutual funds the right to vote as full-fledged shareholders in companies where they have equity investments.

3.9 SELF STUDY

I. Fill in the blanks.

1) SEBI is regulator to control Indian _____ market.
2) SEBI is stricter with those who commit _____ in capital market.
3) The Government has set up the Securities & Exchange Board of India (SEBI) in _____.
4) The need for setting up independent Government agency to _____ the _____ Market in India.
5) The legislation giving powers to SEBI was passed on _____ in the form of the Securities & Exchange Board of India.
6) Free pricing is permitted only if the new company is promoted by the existing company with not less than _____.
7) Not less than _____ is to be offered to the public.
8) The promoters should retain _____ with a lock in period of _____.
9) If the subscription is not up to _____ of the total issue from the public including contribution of _____ the public should be refunded of their subscription within _____ from the date of opening the issue.

10) The issues of Fully Convertible Debentures (FCDs) with a conversion period of more than _____ will not be permissible unless conversion is _____.

11) _____ should elapse between the public or rights issue and bonus issue.

12) The reservation for employees should not be more than _____ at present and this quota is no-transferable for _____.

13) _____ issues are to be made out of free reserves.

14) _____ disclosed in the audited accounts should be deducted from _____.

15) The _____ will be considered as a part of the _____ for payment of the bonus issues.

16) The SEBI insists on prior _____ of debenture Trustees.

17) SEBI was started with the licensing and registration of _____ in the recognized stock exchanges.

18) The term _____ is a wide term encompassing various measures designed to protect the investors.

19) SEBI has now powers to penalize companies _____ the listing norms.

20) The Customer's Protection Fund is constituted by the Stock Exchanges to safeguard the _____ of the _____ clients from default of the stockbrokers.

21) The compensation of any single client is, however, limited to _____.

22) The SEBI has listed companies whose shares have to be traded and settled in electronic book entry form _____

23) SEBI has powers for stopping _____ in capital market.

24) SEBI uses his powers to audit the performance of stock exchange for bringing _____ in the working of stock exchanges.

25) In _____ SEBI prescribed registration of mutual funds taking into account track record of a sponsor.

Ans : 1) Capital, 2) Frauds, 3) April 1988,
4) regulate and develop, Stock and Capital,
5) 4 April 1992, 6) 50% of, equity, 7) 20% of equity
8) 25% quota, 5 years 9) 90%, underwriters, 120 days,
10)optional, 12 months, 11)36 months, 12)10%, 3 years

13)Bonus, 14)Contingent liabilities, net profit

15)Development Rebate, Reserve 16)General reserve;

17)Licensing, brokers and sub-brokers

18)"Investor Protection 19)violating

20)interests clients; 21)₹2 lakh

22)4th January, 2000 23)fraud

24)transparency 25)January, 1993

II State whether the following are True or False.

1) SEBI is regulator to control Indian financial markets.
2) SEBI is stricter with those who commit loss in financial market.
3) The Government has set up the Securities & Exchange Board of India (SEBI) in April 2000.
4) The need for setting up independent Government agency to regulate and develop the Stock and Capital Market in India.
5) The Government gives powers to SEBI was passed on 4th April, 1992 in the form of the Securities & Exchange Board of India.
6) Free pricing is permitted only if the new company is promoted by the existing company with not less than 50% of equity.
7) Not less than 50% of equity is to be offered to the public.
8) The promoters should retain 35% quota with a lock in period of 3 years.
9) If the subscription is not up 70% of the total issue from the public including contribution of underwriters, the public should be refunded of their subscription within 130 days from the date of opening the issue.
10) The issues of Full Convertible Debentures (FCDs) with a conversion period of more than 24 months will not be permissible unless conversion is optional.
11) 12 months should elapse between the public or rights issue and bonus issue.
12) The reservation for employee should not be more than 10% at present and this quota is non-transferable for 3 years.
13) Bonus issues are to be made out of development reserves.
14) Reserves disclosed in the audited accounts should be deducted from net profit.
15) The Development Rebate Reserve will be considered as a part of the general reserve for payment of the bonus issues.

16) The SEBI insists on prior licensing of debenture Trustees.

17) SEBI was started with the licensing and registration of Companies in the recognized stock exchanges.

18) The term “Investor Protection” is a wide term encompassing various measures designed to protect the investors.

19) SEBI has now powers to penalize companies violating the listing norms.

20) The Customer’s Protection Fund is constituted by the Stock Exchange to safeguard the interests of the Companies from default of the stockbrokers.

21) The compensation of any single client, is however, limited to ₹5 lakh.

22) The SEBI has listed companies whose share have to be traded and settled in electronic book entry form from 4th January, 2000.

23) SEBI has powers for stopping fraud in capital market.

24) SEBI uses his powers to audit the performance of stock exchange for bringing systematic performance in the working of stock exchanges.

25) In January, 1993 SEBI prescribed registration of mutual funds taking into account tract record of a sponsor.

Ans. True 4, 6, 11, 12, 15, 16, 18, 19, 22, 23, 25

False 1, 2, 3, 5, 7, 8, 9, 10, 13, 17, 20, 21, 24

III Answer the following :

1) Give an overview of Securities & Exchange Board of India?

2) Explain the functions of SEBI?

3) State 7 explain the malpractice in the primary & secondary market?

4) What are the objectives of SEBI?

5) State & explain the SEBI Guidelines for capital market?

6) State & explain the SEBI reforms on stock exchange?

7) What are the different sources of investor complaint?

8) What is grievance cell under SEBI?

9) Explain the role of SEBI on initial public offer?

10) What is the role of SEBI in regulating the capital market?

11) What are the important steps taken by SEBI for the regulation of mutual fund?

12) Write Short notes on

i) Consumer protection fund

ii) Derivative contract on volatility index

iii)SEBI on Initial Public Offer

iv) Grievance Cell

v) SEBI reforms on stock exchange

vi) Overview of SEBI

IV Match the following :

Sr. No.	A	Sr. No.	B
1.	SEBI	a.	Mutual Fund
2.	Legislation	b.	Protect investors from malpractice
3.	New issues by Private Limited Company	c.	Development Rebate Reserve
4.	Net Asset Value	d.	Non transferable for 3 years
5.	Promoter's Quota	e.	120 days
6.	Refund of public money	f.	5 years
7.	Employees State Option Scheme	g.	Market price for 3 years
8.	Debentures issue	h.	20% of equity
9.	Investors Protection	i.	4th April 1992
10.	Code of Advertisement	j.	April 1988

4

REGULATORY FRAMEWORK OF INDIAN FINANCIAL SYSTEM

Unit Structure :

4.1 INTRODUCTION

In every country there is one organization which works as the central bank. The function of the central bank of a country is to control and monitor the banking and financial system of the country. In India, the Reserve Bank of India (RBI) is the Central Bank. The regulators of the Indian financial sector are the Reserve Bank of India, the Ministry of Finance (Income Tax Department), Foreign Exchange Dealers Association of India, Deposit Insurance and Credit Guarantee Corporation, Fixed Income Money Market and Derivatives Association of India and the Clearing Corporation of India Ltd. This chapter shall deal with the most important of these regulators, the Reserve Bank of India.

4.2 ROLE OF RBI AS REGULATOR

Reserve Bank of India is the apex monetary Institution of India. It is also called as the central bank of the country. The Reserve Bank of India was established on April 1, 1935 in accordance with the provisions of the Reserve Bank of India Act, 1934. The Central Office of the Reserve Bank was initially established in Calcutta but was permanently moved to Mumbai in 1937. The Central Office is where the Governor sits and where policies are formulated. Though originally privately owned, since nationalization in 1949, the Reserve Bank is fully owned by the Government of India.

It acts as the apex monetary authority of the country. The Central Office is where the Governor sits and is where policies are formulated. Though originally privately owned, I since nationalization in 1949, the Reserve Bank is fully owned by the Government of India. This act empowers the central government, in consultation with the Governor of the Bank; to issue such directions to RBI as might be considered necessary in the public interest. A Central Board of Directors with 20 members consisting of the Governor and the Deputy Governors governs RBI. The Governor and the deputy Governors of the Bank are Government of India appointees.

The preamble of the reserve bank of India is as follows:

"...to regulate the issue of Bank Notes and keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage." Thus, the basic functions of the RBI as stipulated in the Preamble of the RBI Act are threefold: First, the RBI performs the function of regulating the issue of bank notes (the RBI also exchanges or destroys currency and coins not fit for circulation). In fact, by virtue of being the sole authority for the issue of currency in the country, the RBI is empowered to control money supply in the country; Second, the RBI keeps reserves in order to maintain monetary stability in India; Third, the RBI must operate the currency and credit system of India to its advantage. In pursuance of this function, the RBI also has the responsibility to maintain the internal and external value of the Indian Rupee.

One of the functions the RBI performs is that it has a monopoly with respect to the issue of currency (excluding one rupee coins and notes which are issued by the Government of India) according to section 22 of the RBI Act. The notes are the liability of the Issue Department of the RBI only and hence the assets of the Issue Department are also kept separate from that of the Banking Department of the RBI. Such assets, according to section 33 of the RBI Act, must consist of gold coins and bullion, foreign securities, rupee coin, Government of India securities and Bills of Exchange and Promissory Notes payable in India and as are eligible for purchase by the RBI. As per amendments to the RBI Act, it is mandated that the Issue Department of the RBI must at all times have an aggregate value of gold bullion and foreign securities worth not less than rupees two hundred crores of which gold coins and gold bullion should comprise no less that rupees hundred and fifteen crores. Provided such minimum was maintained by the RBI the volume of currency that can be issued by the RBI is not curtailed.

The RBI is also the regulator and supervisor of the financial system in India. Firstly, ii acts as a banker to both the Government

of India and the State Governments and therefore handles their current financial transactions and also manages public debt. The RBI accepts money on behalf of the government and also makes payments for the Government. Moreover, it acts, as a manger of foreign exchange under the Foreign Exchange Management Act, 1999 and facilitates external trade and payment. Secondly, it acts as a supervisor and regulator of the financial sector in India which consists of commercial banks, financial institutions and non-banking finance companies under the guidance of the Board for Financial Supervision which was established in 1994. It lays down broad guidelines for banking operations within the country and acts as a banker to the scheduled banks. Commercial banks are expected to keep deposits with the RBI and when necessary they borrow from the RBI (the RBI functions as a lender of last resort to the commercial banks). The RBI also ensures price stability within India by controlling the volume of credit created by the commercial banks,

Lastly, the RBI also has a development role in that it performs a variety of promotional functions directed at supporting national objectives. In pursuance of this function, the RBI has taken several promotional measures such as the establishment of financial corporations to ensure credit availability for the agricultural and industrial sector, the promotion of the establishment of Regional Rural Banks so that banking facilities may be available in the rural areas as well, the establishment of the Export-Import bank in India to finance exports and so on.

4.3 IMPORTANCE OF RBI AS REGULATORS

1) RBI is the Issuer of Monetary Policy

The RBI formulates monetary policy twice a year. It reviews the policy every quarter as well. The main objectives of monitoring monetary policy are:

- Inflation control
- Control on bank credit
- Interest rate control

The tools used for implementation of the objectives of monetary policy are:

- Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR),
- Open market operations,
- Different Rates such as repo rate, reverse repo rate, and bank rate.

2. RBI is the Issuer of Currency

Section 22 of the RBI Act gives authority to the RBI to issue currency notes. The RBI also takes action to control circulation of fake currency.

3. RBI is the Controller and Supervisor of Banking Systems

The RBI has been assigned the role of controlling and supervising the bank system in India. The RBI is responsible for controlling the overall operations of all banks in India. These banks may be:

- Public sector banks
- Private sector banks
- Foreign banks
- Co-operative banks, or
- Regional rural banks

The control and supervisory roles of the Reserve Bank of India is done through the following:

a) Issue of Licence :

Under the Banking Regulation Act 1949. the RBI has been given powers to grant licenses to commence new banking operations. The RBI also grants, licenses to open new branches for existing banks. Under the licensing policy, the RBI provides banking services in areas that do not have this facility.

b) Prudential Norms :

The RBI issues guidelines for credit control and .management. The RBI is a member of the Banking Committee on Banking Supervision (BCBS). As such, they are responsible for implementation of international standards of capital adequacy norms and asset classification.

c) Corporate Governance :

The RBI has power to control the appointment of the chairman and directors of banks in India The RBI has powers to appoint additional directors in banks as well.

d) Know Your Customer (KYC) Norms :

To curb money laundering and prevent the use of the banking system for financial crimes, The RBI has "Know Your Customer" guidelines. Every bank has to ensure KYC norms are applied before allowing someone to open an account.

e) Transparency Norms

This means that ever)' bank has to disclose their charges for providing services and customers have the right to know these charges.

f) Risk Management

The RBI provides guidelines to banks for taking the steps that are necessary to mitigate risk. They do this through risk management in Basel norms.

g) Audit and Inspection :

The procedure of audit and inspection is controlled by the RBI through off-site and on-site monitoring system. On-site inspection is done by the RBI on the basis of "CAMELS". (Capital adequacy; Asset quality; Management; Earning; Liquidity; System and control).

h) Foreign Exchange Control :

The RBI plays a crucial role in foreign exchange transactions. It does due diligence on every foreign transaction / including the inflow and outflow of foreign exchange. It takes steps to stop the fall in value of the Indian Rupee. The RBI also takes necessary steps to control the current account deficit. They also give support to promote export and the RBI provides a variety of options for NRIs.

i) Development :

Being the banker of the Government of India, the RBI is responsible for implementation of the government's policies related to agriculture and rural development. The RBI also ensures the flow of credit to other priority sectors as well. Section 54 of the RBI gives stress on giving specialized support for rural development.' Frivolity sector lending is also in key focus area of the RBI.

The RBI plays a very important role in every aspect related to banking and finance. Finally the control of NBFCs and others in the financial world is also assigned with RBL The above wide-reaching regulatory role of the RBI has placed it in a position which enables it to take any actions that may be required to maintain financial stability in the system. RBI's Report on Trend and Progress of Bunking in India states that die combination of the RBI's role as both the monetary authority and the regulator and supervisor of banks has worked out very well in face of a financial crisis as many believe that the cause of the crisis was a lack of coordination between separate authorities that' exist for the two functions in other nations. The Report states, "this is an arrangement that has stood the test of time, has protected financial stability even in the face of some severe onslaughts," *and* hence "it may be desirable to continue with the present arrangement in the interest of pre serving financial stability." It further states, "the responsibility for financial stability cannot be fragmented across several regulators; it has to rest unambiguously with a single regulator, and that single regulator optimally is the central bank."

4.4 SELF STUDY

I. Fill in the Blanks

1) The Reserve Bank of India was established on _____.
2) Reserve Bank of India Act, was enacted in the year _____.
3) The Central Office of the Reserve Bank was initially established in _____ but was permanently moved to Mumbai in _____.
4) A Central Board of Directors with _____ consisting of the _____ and the _____ governs RBI.
5) The RBI is also the regulator and _____ of the financial system in India.
6) RBI acts as a _____ to the scheduled banks.
7) The RBI formulates _____ policy twice a year.
8) _____ of the RBI Act gives authority to the RBI to issue _____ notes.
9) RBI is the _____ and Supervisor of Banking Systems.
10) RBI has been given powers to grant licenses to commence new _____.
11) RBI is a member of the _____ on Banking Supervision.
12) The RBI has power to control the appointment of the _____ of banks in India.
13) The RBI has powers to appoint additional _____ in banks as well.
14) The procedure of audit and inspection is controlled by the RBI through _____ system.
15) On-site inspection is done by the RBI on the basis of _____.

[Ans.: (1) April 1, 1935; (2) 1934; (3) Calcutta , in 1937; (4) 20 members, Governor, Deputy Governors; (5) supervisor; (6) banker; (7) monetary; (8) Section 22 , currency, (9) Controller; (10) banking operations; (11) Banking Committee; (12) chairman and directors; (13) directors; (14) off-site and on-site monitoring; (15) CAMELS]

II. State whether the following is True or False:

1. The Reserve Bank of India was established on April 1, 1939.
2. Reserve Bank of India Act, was enacted in the year 1934.

3. The Central Office of the Reserve Bank was initially established in Mumbai but was permanently moved to Delhi in 1937.
4. A Central Board of Directors with 20 members consisting of the Governor and the Deputy Governors governs RBI.
5. The RBI is also the regulator and supervisor of the financial market in India.
6. RBI acts as a banker to the scheduled banks.
7. The RBI formulates legal policy twice a year.
8. Section of the RBI Act gives authority to the RBI to issue moratorium.
9. RBI is the Controller and Supervisor of Banking Systems.
10. RBI has been given powers to grant licenses to commence issue new shares.
11. RBI is a member of the Banking Committee on Banking Supervision.
12. The RBI has power to control the appointment of the chairman and directors of banks of India.
13. The RBI has no powers to appoint additional directors in banks as well.
14. The procedure of audit and inspection is controlled by the RBI through CAMELS monitoring system.
15. On-site inspection is done by the RBI on the basis of CAMELS.

[True : 2,4, 6, 9,11,15 False : 1, 3, 5,7, 8,10,12,13,14]

III. Answer the following.

1. What is central Bank?
2. What is the role of RBI in financial system?
3. Explain the preamble of RBI?
4. State & explain the importance of RBI?
5. What are the functions of RBI?
6. What are prudential norms?
7. Explain the concepts :
   a) Foreign exchange control
   b) CAMELS
   c) Risk Management
   d) KYC norms
   e) Issue of licence

8. Write Short Notes on :
   a) Overview of RBI as a regulator
   b) Role of RBI
   c) Functions of RBI
   d) RBI as regulator & Supervision of the financial system

IV. Match the following:

Sr. No.	A	Sr. No.	B
1.	Central Office	a.	Banking Committee
2.	Nationalization	b.	Monopoly
3.	Members	c.	1949
4.	Issue of currency	d.	20
5.	Prudential Norms	e.	Mumbai

5

TIME VALUE OF MONEY

Unit Structure:

5.1 Introduction & Meaning of Time value of money
5.2 Formulae
5.3 Solved Problems

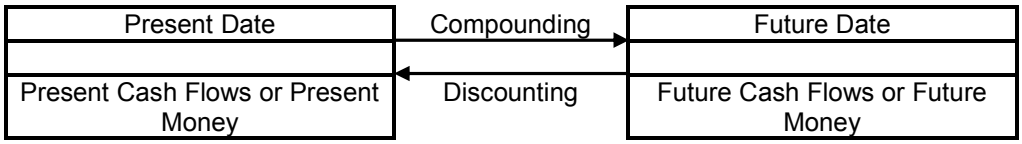
5.1 INTRODUCTION & MEANING:

The basic idea of time value of money is that a Rs today is worth more than a Rs tomorrow. This can be shown in many ways, many people find it easiest to understand if they think in terms of something they already know: food. For example having the money today allows you to buy some food immediately. Alternatively you may be willing to forgo current consumption and wait until later to purchase your food. Thus you could lend your “food money” to another with the promise of being paid back at some future time. Since you are passing up food today you would demand a return sufficient to allow you to buy at least as much food in the future that you are giving up now.

As we do not know the future this type of deal involves risks. For example the borrower may decided to not pay you back. This is called default risk. Or the borrower may pay you back but due to rising prices you can no longer purchase the same amount of food as you had expected to be able to buy. As a result of these risks (you as a lender) would require a higher interest rate to compensate for accepting the risks. However if you ask for too high of interest rates you will not find any takers for your loan.

5.2 FORMULAE

1. Compounding vs Discounting :



2. Simple Interest :

Simple Interest $= P \times N \times R$, where P = Principal Amount N = Number of years R = Interest Rate per annum	Amount = Principal + Interest Hence, $A = P + (P \times N \times R)$, $A = P\left[1 + (N \times R)\right]$

3. Compound Interest :

Amount under Compound Interest $= P(1+R)^{NK}$	Where P = Principal Amount. N = Number of years. K = Number of times compounding is done per year, e.g. Monthly (12), Quarterly (4), etc. R = Interest Rate per payment = $\frac{Interest\ Rate\ p.a.}{Number\ of\ payment\ periods\ p.a.} = \frac{1}{K}$

4. Effective Rate of Interest :

$E = \left(1 + \frac{1}{K}\right)^{K} - 1$	Where E = Effective Rate of Interest, K = Number of times Interest is paid in a year, and i = Rate of Interest per annum

5. Compounding and Future Value Formulae :

a) Future Value of a Single Cash Flow = Amount $(1+R)^{n}$

[Amount relates to Time 0]

b) Future Value of an Annuity = Amount $\times \frac{\left[(1+R)^{n} - 1\right]}{R}$

[Amount relates to n years]

Where n = number of years for which the money is invested,
R= rate of return on the investment.

6. Maturity Value of Annuity :

Maturity Value of an Annuity = Annuity Amount $\times \frac{\left[(1+R)^{n} - 1\right]}{R}$

[Amount relates to n years]

Where n = number of years for which the money is invested,
R = rate of return on the investment.

Note : Size of the Sinking Fund Deposit is also derived from the formula given above, by calculating the Annuity Amount as the balancing figure.

7. Discounting and Present Value Formulae :

a) Present Value of a Single Cash Flow = Amount $\times \frac{1}{(1+R)^n}$

(Amount relates to a future point of time)

b) Present Value of an Annuity = Amount $\times \frac{\left[(1+R)^n - 1\right]}{R(1+R)^n}$

(Amount relates to n years)

Where n = number of years for which the money is invested, R = rate of return on the investment.

8. Perpetuity Formulae :

PV of a Constant Perpetuity $= \frac{C}{R}$	Where C = Cash Flow i.e. Interest, Dividend, etc. per period. R = Interest Rate per payment period.
PV of a Growing Perpetuity $= \frac{C}{R-G}$	Where C = Cash Flow i.e. Interest, Dividend, etc. for the first period. R = Interest Rate per payment period. G = Rate of growth in Cash Flows.

Note: A stream of Cash Flows at a constant rate forever is known as Growing Perpetuity.

5.3 SOLVED PROBLEMS

1. TIME VALUE OF MONEY

Illustration 1 : Simple Interest – Computation :
If you invest ₹10,000 in a Bank at Simple Interest of 7% per annum, what will be the amount at the end of 3 years?

Here, P = Principal = ₹10,000	N = Number of years = 3,		R=Interest Rate p.a. = 7% = 0.07
Simple Interest = $P \times N \times R$	$= 10,000 \times 3 \times 0.07$	= ₹2,100	
Amount = Principal + Interest	=₹10,000 + ₹2,100	= ₹12,100	
[or] Amount = A = $P\left[1+(N \times R)\right]$	$= 10,000\left[1+(3 \times 0.07)\right]$	= 10,000 x 1.21 = ₹12,100	

Illustration 2 : Simple Interest – Computation
₹2,000 is deposited in a Bank for two years at Simple Interest of 6%. How much will be the balance at the end of 2 years?

Amount $= A = P\left[1+(N \times R)\right] = 2,000\left[1+(2 \times 0.06)\right] = 2,000 \times 1.12 = ₹2,240$

Illustration 3 : Simple Interest – Rate Calculation
Find the Rate of Interest if the amount owed after 6 months is ₹1,050, Borrowed Amount being ₹1,000.

Here, P = Principal = ₹1,000, N = Number of years = $\frac{6}{12}$,
R = Interest Rate p.a. = ?

Amount = A = $P\left[1+\left(N\times R\right)\right]=1,000\left[1+\left(\frac{6}{12}\times R\right)\right]=1,050.$

So, $\left(1+0.50R\right)=\frac{1,050}{1,000}=1.05$

$0.50R=1.05-1=0.05.$ So, $R=\frac{0.05}{0.50}=0.10=10\%$

Illustration 4 : Compound Interest – Interest Calculation
Determine the Compound Interest for an Investment of ₹7,500 at 6% compounded half-yearly. Given that $\left(1+R\right)^{NK}$ for R = 0.03 and NK = 12 is 1.42576.

Amount under Compound Interest Scheme $=7,500\left(1+0.03\right)^{12}$
$=7,500\times1.42576=$₹10,693.20.
Hence, Compound Interest = ₹10,693.20 – ₹7,500 = ₹3,193.20

Illustration 5 : Compound Interest – Interest Calculation
Determine the Compound Amount and Compound Interest on 1,000 at 6% compounded semi-annually for 6 years. Given that $\left(1+R\right)^{NK}$ =1.42576 for R = 3% NK = 12.

Here, P = Principal = ₹1,000,
N = Number of years = 6,
K = No. of time compounding = 2 p.a.
R = Interest Rate per period $=\frac{6\%}{2}=0.03$
Amount under Compound Interest Scheme $=P\left(1+R\right)^{NK}$
$=1,000\left(1+0.03\right)^{12}=1,000\times1.42576=$₹1,425.76.

Hence, Compound Interest for the 6 year period =
A – P = ₹1,425.76 – 1,000 = ₹425.76.

Illustration 6 : Compound Interest – Amount Calculation ₹2,000 is invested at annual rate of interest of 10%. What is the amount after 2 years if the compounding is done (a) Annually, (b) Semi-annually, (c) Monthly, (d) Daily?

	P = Principal	N = No. of years	K	R	Amount $= P(1+R)^{NK}$ =
(a)	₹2,000	2 years	1 p.a.	0.10	$2,000(1+0.10)^{2} = 2,420$
(b)	₹2,000	2 years	2 p.a.	0.05	$2,000(1+0.05)^{4} = 2,431$
(c)	₹2,000	2 years	12 p.a.	0.008	$2,000(1+0.008)^{24} = 2,440.58$
(d)	₹2,000	2 years	365 p.a.	0.00027	$2,000(1+0.00027)^{730} = 2,442.70$

Illustration 7 : Compound Interest - Rate Calculation
What annual Rate of Interest compounded annually doubles an investment in 7 years? Given that $2^{1/7}$=1.104090.

Here, P = Principal = ?,
N = No. of years = 7
K = No. of times compounding = 1 p.a.
R = Interest Rate per period = R% ÷ 1 = R%

Let Principal be ₹P. Since the investment doubles annually, the Amount = 2P.

Amount = $P(1+R)^{NK} = 2P.$ This means that, $P(1+R)^{7} = 2P$

Canceling P on both sides, we have, $(1+R)^{7} = 2.$

Hence, $(1+R) = 2^{1/7} = 1.104090.$

So, R = 0.104090. Hence, Rate of Interest = 10.41%.

Illustration 8 : Compound Interest - Relevant Computations
A Person opened an Account on April 2013 with a deposit of ₹80,000. The Account paid 6% Interest compounded quarterly. On October 1, 2013, he closed the account and added enough additional money to invest in a 6 month Time Deposit for ₹1,00,000 earning 6% compounded monthly.

a) **How much additional amount did the person invest on October 1?**
b) **What was the Maturity Value of his Time Deposit on April 1, 2014?**
c) **How much Total Interest was earned?**

Given that $(1+R)^{NK}$ is 1.03022500 for $R = 1\frac{1}{2}\%,$ NK = 2 and is 1.03.37751 for $R = \frac{1}{2}\%$ and NK = 6.

a) The Initial Investment earned interest for April - June and July - September quarter, i.e. for 2 quarters. In this case, $R = \frac{6}{4} = 1\frac{1}{2}\%, NK = 2$ and Compounded Amount = 80,000

$\left(1+1\frac{1}{2}\%\right)^2 = 80,000 \times 1.03022500$ =₹82,418. So, the additional amount invested on1st October = ₹1,00,000 - ₹82,418 =₹17,582

b) The Time Deposit has earned interest compounded monthly for 2 quarters.

Here, $R = \frac{6}{12} = \frac{1}{2}\%, NK = 6, P = 1,00,000$

Required Maturity Value = $P(1+R)^{NK} = 1,00,000 \times \left(1+\frac{1}{2}\%\right)^6$

$= 1,00,000 \times 1.03037751 =$ ₹1,03,038.

c) Total Interest Earned = 1st Deposit (82,418 - 80,000)+ 2nd Deposit (1,03,038 - 1,00,000) = (2,418 +,3,038) = ₹5,456

2. COMPOUNDING

Illustration 9 : Maturity Value of an Annuity
Find the amount of an annuity if Payment of ₹500 is made annually for 7 years at Interest rate of 14% compounded annually.

Maturity Value of an Annuity = Annuity Amount $\times \frac{\left[(1+R)^n - 1\right]}{R}$

Here, Annuity Amount = ₹500,
n = Number of years = 7,
R = Rate of Interest = 14%.

Thus, Maturity Value = ₹500 $\times \frac{\left[(1+0.14)^7 - 1\right]}{0.14} = 500 \times 10.7304915$
= ₹5,365.25.

Note : Value = 10.7304915 is obtained from the Future Value of Annuity (FVA) Tables.

Illustration 10 : Maturity Value of Annuity
A person is required to pay four equal annual payment of ₹5,000 each in his Deposit Account that pays 8% interest per year. Find out the Future Value of Annuity at the end of 4 years.

Maturity Value of an Annuity = Annuity Amount $\times \frac{\left[(1+R)^n - 1\right]}{R}$

Here, Annuity Amount = ₹5,000,
n = Number of years = 4,
R = Rate of Interest = 8%.

Thus, Maturity Value = ₹5,000 $\times \frac{\left[(1+0.08)^4 - 1\right]}{0.08} = 5,000 \times 4.507$
= ₹22,535.

Note : Value = 4.507 is obtained from the Future Value of Annuity (FVA) Tables (or) by direct calculation.

Illustration 11 : Maturity Value of an Annuity
₹2,000 is invested at the end of each month in an account paying interest 6% per year compounded monthly. What is the amount of this annuity after 10th payment? Given that $(1.005)^{10} = 1.0511$

Maturity Value of an Annuity = Annuity Amount $\times \frac{\left[(1+R)^n - 1\right]}{R}$

Here, Annuity Amount = ₹2,000,
n = Number of years = 10,
R = Interest = $\frac{0.06}{12} = 0.005.$

Thus, Maturity Value = ₹2,000 $\times \frac{\left[(1+0.005)^{10} - 1\right]}{0.005} = 2,000 \times 10.22$
= ₹20,440.

3. DISCOUNTING
Illustration 12 : Present Value of Future Cash Flows - Discounting - Use of PV Factor
What is the Present Value of ₹1 to be received after 2 years compounded annually at 10%?

Present Value = $\frac{A_n}{(1+R)^n}$ Here, A=₹1, R = 0.10 and N = 2. So, PV = $1 \times 0.8264 =$ ₹0.83

Notes :

a) $\left(\frac{1}{1.10}\right)^2$ = 0.8264 is obtained from the PV Tables.

b) Receiving ₹1 after 2 years, is as good as receiving ₹0.83 now.

c) if received today and invested at Compound Interest of 10% for 2 years, will lead to a Maturity Amount of ₹1.

Illustration 13 : Present Value of Future Cash Flows - Discounting - Use of PV Factor
Find the Present Value of ₹10,000 to be required after 5 years if the Interest Rate be 9%. Given that $(1.09)^5 = 1.5386$

Present Value = $\frac{A_n}{(1+R)^n}$ Here, A=₹10,000, R = 0.09 and N = 5. So,

PV = $10,000 \times 0.65 =$ ₹6,500

Notes :

a) $\left(\frac{1}{1.09}\right)^5 = \frac{1}{1.5386} = 0.65$

b) Receiving ₹10,000 after 5 years, is as good as receiving ₹6,500 now.

c) ₹6,500 if received today and invested to earn Compound Interest at 9% for 5 years, will lead to a Maturity Amount of ₹10,000.

Illustration 14 : Present Value of Future Cash Flows - Discounting - Use of PV Factor
Find the Present Value of ₹2,000 received after in 10 years hence, if Discount Rate is 8%.

Present Value = $\frac{A_n}{(1+R)^n}$ Here, A=₹2,000, R = 0.08 and N = 10. So,

PV = $2,000 \times 0.463 =$ ₹926

Notes :

a) $\left(\frac{1}{1.08}\right)^{10} = 0.463$ is obtained from the PV Tables.

b) Receiving ₹2,000 after 10 years, is as good as receiving ₹926 now.

c) ₹926 if received today and invested to earn Compound Interest at 8% for 10 years, will lead to a Maturity Amount of ₹2,000.

Illustration 15 : Present Value of Future Cash Flows - Discounting - Use of PV Factor
What is the Present Value of ₹50,000 to be received after 10 years at 10% compounded annually?

Present Value = $\frac{A_n}{(1+R)^n}$ Here, A=₹50,000, R = 0.10 and N = 10.

So, PV = $50,000 \times 0.385543 =$ ₹19,277.15

Notes :

a) $\left(\frac{1}{1.10}\right)^{10} = 0.385543$ is obtained from the PV Tables.

b) Receiving ₹50,000 after 10 years, is as good as receiving ₹19,277.15 now.

c) ₹19,277 if received today and invested to earn Compound Interest at 10% for 10 years, will lead to a Maturity Amount of ₹50,000.

Illustration 16 : Present Value of Annuity
Find out the Present Value of a 4 year annuity of ₹20,000 discounted at 10%.

Present Value of an Annuity = Amount $\times \frac{\left[(1+R)^n - 1\right]}{R(1+R)^n}$

Here, Annuity Amount = ₹20,000,
n = Number of years = 4,
R = Interest =0.10.

Thus, Present Value = ₹20,000 $\times \frac{\left[(1+0.10)^4 - 1\right]}{0.10(1+0.10)^4} = 20,000 \times 3.1699$

= ₹63,398.

Illustration 17 : Annuity - Required Investment
Z plans to receive an annuity of ₹5,000 semi-annually for 10 years after he retires in 18 years. Money is worth 9% compounded semi-annually.

a) How much amount is required to finance the Annuity?
b) What amount of Single Deposit made now would provide the funds for the Annuity?
c) How much will Mr. Z receive from the Annuity?

a) Required Present Value for the 10 years annuity -

Present Value of an Annuity = Amount $\times \frac{\left[\left(1+R\right)^{n}-1\right]}{R\left(1+R\right)^{n}}$

Here, Annuity Amount = ₹5,000,
n = $20\left(10\times 2\right)$
R = Interest = 4.5% (9%÷2)

Thus, Present Value = ₹5,000 $\times \frac{\left[\left(1+4.5\%\right)^{20}-1\right]}{0.045\left(1+4.5\%\right)^{20}} = ₹5,000\times 13.00793654$

= ₹65,039.68

b) To compute the amount of Single Deposit that matures to ₹65,039.68 in 18 years at 9% compounded semi-annually, the computation is as under -

Present Value = $\frac{A_n}{\left(1+R\right)^{n}}$ Here, A=65,039.68, R=4.5% (9 ÷2) and $N=18\times 2=36.$

So, Present Value = $65,039.68\times\left(\frac{1}{1.045}\right)^{36} = 65,039.68\times 0.20502817$

=₹13,334.97

c) Amount received from the Annuity = ₹ $5,000\times 20$ installments = ₹1,00,000

6

CAPITAL STRUCTURE

Unit Structure:

6.1 INTRODUCTION:

Capital structure is the mix of different securities to a firm's capitalisation. It is the permanent financing of the company represented primarily by long-term debt and shareholder's equity. It is also a part of a company's financial structure. The choice of capital structure depends upon a number of factors such as nature of business, regularity of earnings, conditions of the financial markets and attitudes of the investors. A capital structure will be considered appropriate if it possesses profitability, solvency, flexibility, conservatism and control. The capital structure of a company is to be determined initially at time of incorporation of a company. The initial capital structure will have long term implications. It may not be possible to have optimum capital structure but the management should set a target capital structure and the initial capital structure should be framed keeping in view the target capital structure. Therefore, the capital structure decision is a continuous one.

6.2 MEANING OF CAPITAL STRUCTURE:

Capital structure is the mix of firm's capitalisation. It includes long term sources of funds such as debentures, shares, etc. According to Gavstenberg, capital structure is the "make-up of a firm's capitalisation." Thus, it represents the mix of different sources of long term funds, in the capitalisation of the company. The term capitalisation is used with reference to the total long term funds raised by a company.

The decisions regarding the form of financing, their requirements and their relative proportions in the total capital of a company are known as capital structure decisions. The company management has to take extreme care and prudence in arriving at the proper capital structure. The term capital structure is used for the mix of capitalisation. The capitalisation is used for the sources of long-term capital of a company. The long term sources of raising capital are issue of shares, debentures or bonds and long-term borrowings. The share is a owned capital and debentures and bonds are borrowed capital Hence, there should be a mix of source of capital.
The capital structure of a company is to be determined initially, at the time of fotrmation of the company. The initial capital has long-term implication and hence proper care should be taken while deciding the sources of capital at the beginning. The capital structure should be flexible, profitable and simple. The initial cap[ital structure of a company depends upon many factors.

6.3 CAPITAL STRUCTURE THEORIES:

A firm has to maintain an optimum capital structure with a view to maintain financial stability. The optimum capital structure can be obtained when the market value per share is the maximum. Therefore, the objective of the firm should be taken to select a financing or debt equity mix which will maximise the value of the firm, optimum leverage can be the mix of debt-equity which maximises the value of a company. In order to achieve this goal, the finance manages has to follow the theories of capital structure of corporate enterprises. There are four major theories which explain the relationship between capital structure, cost of capital and value of the firm. These are as follows:

(1) Net Income Approach.
(2) Net Operating Income Approach.
(3) Modigliani-Miller Approach (MM).
(4) Traditional Approach.

However, in order to understand this relationship, following assumptions are made:

(1) The firm employs only two types of capital i.e. debt and equity capital.

(2) Taxes are not considered.

(3) The firm pays its earnings in full as divident. There is no returned earnings.

(4) The firm's total assets are given and there is no change in the assets.

(5)The firm's total financing remains constant. The firm can change its capital structure by interchanging the source of finance.

(6) The operating profit is not expected to change.

(7) The business risk remains constant and it is independent of capital structure ans financial risk.

(8) The firm has a perpetual life. It means the business is a going concern and it has long life.

(9) All the investors has the same subjective probability distribution of the future expected operating profit for a given firm.

(1) NET INCOME APPROACH (NI):

David durand, of USA, had suggested this approach. According to him, capital structure decision is relevant to the valuation of the firm. It means, a change in the capital structures causes a corresponding change in the overall cost of capital as well as the total of the firm.

This approach also suggests that a higher debt content in the capital structure will result in decline in the overall cost of capital. This will cause increase in the value of the firm and consequently in the value of equity shares of the company. The net income approach is based of the following assumptions:

(1) The cost of debt is less than cost of equity.

(2) The debt content does not change the risk perception of the investors.

Thus, the net income approach suggests that an increase in financial leverage will lead to decline in the weighted average cost of capital and the value of the firm as well as market price of equity shares will increase. On the other hand, a decrease in the financial leverage will cause on increase in the weighted average cost of capital and a consequent decline in the value as well as market price of equity shares.

The value of the firm on the basis of net income approach can be ascertained as follows:

$V=S+D$
where,
V=Value of the firm
S=Market value of equity
D=Market value of Debt

The market value of Equity can be ascertained as follows:

$$S = \frac{NI}{K_e}$$

where,
S=Market value of Equity
NI=Earning available to Equity shareholders
Ke=Equity capitalisation rate

Under net income approach, the value of the firm will be maximum at a point where weighted average cost of capital is minimum. Therefore, the theory suggest maximum possible debt-financing for minimizing the cost of capital. The overall cost capital is determined as follows:

$$\text{Overall cost of capital} = \frac{EBIT}{\text{Value of the firm}}$$

(2) NET OPERATING INCOME APPROACH (NOI):

This approach was also suggested by Mr. David Durand. Net operating income means earnings before interest and tax. This approach suggests that the market valie of the firm is not at all affected by the capital structure changes. The capital structure decisions of the firm are irrelevant. And change in the leverage will not lead to any change in the total value of the firm and the market price of the shares. The market value of the firm is ascertained by capitalising the net operating income at the overall cost of capital (K) which is considered to be constant. The market value equity is ascertained by deducting the market value of the firm.

The net operating approach is based on the following assumptions:

(1) The overall cost of capital (K) remains constant foe all degree of debt-equity mix.

(2) The market capitalises the value of the firm as whole and therefore, the spit between debt and equity is not relevant.

(3) The low cost of debt increase the risk of equity shareholders. This result in increase in equity capitalisation rate. An increase in the use of debt is offset by an increase in the equity is not relevant.

The value of the firm is determined as follows:

$$V = \frac{EBIT}{K}$$

Where, V=Value of the firm
K=Overall cost of capital
EBIT=Earning before interest and tax.

The value of equity can be determined by using the following formula:

S=V – D

S=Value of Equity

Where, V=Value of firm

D=Vale of Debt

(3) MODIGILIANI-MIK-LLER APPROACH (MM):

Modigiliani-Miller approach provides behavioural justification for constant overall cost of capital and total value of the firm. It does not provide operational justification for irrelveance of the capital structure in the valuation of the firm. According to this approach he value of a firm is independent of its capital structure. MM approach maintains that the average cost of capital does not change with change in the debt-equity mix or capital structure of the firm.

The three basic propositions of the MM approach are as follows:

(1) The overall cost of capital (K) and the value of the firm (V) are independent of the capital structure. In other words K and V are constant for all level of debt-equity mix. The total market value of the firm is given by capitalising the expected net operating income (NOI) by the rate appropriate for that risk class.

(2) The cost of equity (Ke) is equal to capitalisation rate of a pure equity stream plus a premium for the financial risk. The financial risk increase with more debt content in the capital structure. Thus, (Ke) increases in a manner to offset exactly the use of a less expensive source of funds represented by debt.

(3) The cut-off rate investment purpose is completely independent of he way in which an investment is financed.

MM approach is based on the following assumptions:

(1) Capital markets are perfect. This means investors are rational and are well informed.

(2) All the firm within the same risk class will have the same degree of business risk.

(3) All investors have the same expectaions of a firm's net operating income with which to evaluate the value of any firm.

According to MM approach the total investment value of a firm depends upon its underlying profitability and risk. The operational justification of MM approach can be explain through the functioning of the arbitrage process. Arbitrage refers to buying assets or security at lower price in one market and selling it at a higher price in another market. As a result equilibrium is attained in different markets. For example, there are two indentical firms. One

has debt in its capital structure and other is not having the debt. Investor of the firm whose value is higher will sell their shares buy the shares of the firm whose value is lower. They will able to be earn the same return at lower outlay with the same perceived risk or lower risk. They would, therefore, be better of. The value of the levered firm can neither be greater nor lower than that of an unlevered firm.Thus; there is neither advantage in using debt in firm's capital structure.

(4) TRADITIONAL APPROACH:

Traditional approach favours that as a result of financial leverage up to a certain level cost of capital comes down and value of the firm increase. However, beyond that level reserve trend emerges. Thus, the essence of the traditional approach lies in the fact that a firm through judicious use of debt-equity mix can increase its total value and thereby reduce its overall cost of capital. It is because debt is a cheaper source of funds as compared to raising money through shares because of tax advantage. However, raising debt beyond a certain point may become a financial risk and would result in higher equity capitalisation rate.

The principal implication of tradition approach is that the cost of capital is independent on the capital structure and there is an optimal capital structure which minimises cost of capital. At the optimal capital structure the real marginal cost of debt and equity is the same. Before the optimal point the real marginal cost of debt is less than real marginal cost of debt is more than the real marginal cost of equity and beyond this point the real marginal cost debt is more than the real marginal cost equity. Therefore, the firm should strive to reach the optimal capital structure and its total valuation through a judicious use of the debt and equity capital in capital structure. At the optimal capital structure the overall cost of capital will be minimum ans the value of the firm is maximum.

6.4 SOLVED PROBLEMS

Problem 1 :

Two firms, Ajay & Co. and Vilas& Co. are in the same identical business having the same risk; except that Ajay &Co. uses debt where as Vilas& Co. does not resort to debt funding.

Ajay & Co. has 27,00,000 12% Debentures. Both firms earn 20% before interest and taxes on the total assets of Company. The corporate tax rate is 35%. Capitalisation rate is 15%.

You are required to compute the value of both the companies using.

N1 and NOI Approach.

Solution :

(I) Value of firms under N1 Approach

	Ajay & Co.	**Vilas& Co.**
E.B.I.T. (20% on Rs. 50 lakhs)	10,00,000	10,00,000
Less : Interest	3,24,000	--
Earnings before taxes	6,76,000	10,00,000
Less : Tax	2,36,600	3,50,000
Earnings after taxes	4,40,000	6,50,000
Equity - Capitalisation Rate (Ke)	0.15	0.15
Market value of equity (s)	29,33,333	43,33,333
Market value debt (B)	27,00,000	
Total value of firm (V)	56,33,333	43,33,333

(II) Value of firm under NOI Approach

Value of Ajay & Co. (levered) $= \frac{EBIT(1-T)}{K_e}$

$= \frac{10,00,000(1-0.35)}{0.15}$]

$= Rs.43,33,333$

Value of Vilas& Co. = Value of levered firm + Bt
=20,00,000+27,00,000 (0.35)
=29,45,000

Problem 2 :

Sudeep Electronics Ltd. has current operating income of Rs. 12 lakhs. The Company has Rs. 60 lakhs 12 lakhs 12% Debentures.

The cost of equity capital is 15%

Calculate the current value of the firm, using traditional model.

= Rs. 23,00,000

Market Value of Firm A = 23,00,000 - 16,00,000

= Rs. 7,00,000

$$K_e = \frac{1,80,000}{7,00,000} \times 100 = 25.71\%$$

$$K_o = K_i\left(\frac{B}{V}\right) + K_e\left(\frac{S}{V}\right)$$

$$= 7.5\%\left(\frac{16,00,000}{23,00,000}\right) + 25.71\%$$

$$= 7.5\%(0.26) + 25.71\%(0.30)$$

$$= 1.95\% + 7.71\% = 9.66\%$$

Problem 3 :

Vijay Ltd. has currently, an ordinary share capital of Rs. 25 lakhs, consisting of 25,000 shares of Rs. 100 each. The management is planning to raise another Rs. 20 lakhs to finance major programe of expansion through one of four possible financing plans. The plans are

i) Entirely through ordinary shares

ii) Rs. 10 lakhs through ordinary hares and Rs. 10 lakhs long-term borrowing at 8 percent interest per annum.

iii) Rs. 5 lakhs through ordinary shares and Rs. 15 lakhs through long term borrowing at 9% interest per annum.

iv) Rs. 10 lakhs through ordinary shares and Rs. 15 lakhs through preference shares with 5 percent dividend.

The company's expected earnings before Interest and Taxes (EBIT) will be Rs. 8 lakhs. Assuming a corporate tax rate of 50%. Determine the earnings per share (EPS) in each alternative and comment on the implications of financial leverage.

(ICWA Final)

Solution :

Statement of Comparative EPS under the four possible financing plans

(Rs. In lakhs)

	(I)	(II)	(III)	(IV)
Equity Share Capital	20.00	10.00	5.00	10.00
Preference Share Capital	--	--	--	10.00
Long Term Borrowing	--	10.00	15.00	--
Total Financing	20.00	20.00	20.00	20.00
E.B.I.T.	8.00	8.00	8.00	8.00
Less : Interest	--	.80	1.35	
Profit before tax (PBT)	8.00	7.20	6.65	8.00
Less : Tax @ 50%	4.00	3.60	3.325	4.00
Profit After Tax (PAT)	4.00	3.60	3.325	4.00
Less : Preference share Dividend				0.50
Funds available to Equity shareholders	4.00	3.60	3.325	3.50
No. of Equity Shares	45,000	35,000	30,000	35,000
Earnings (EPS) Per Share	$\frac{4,00,000}{45,000}$	$\frac{3,60,000}{35,000}$	$\frac{3,32,500}{30,000}$	$\frac{3,50,000}{35,000}$
	=Rs. 8.89	=Rs. 10.29	=Rs. 11.08	=Rs. 10

Plan III is better as the EPS is highest so also the financial leverage which is 1:2 is highest

Problem 4 :

A company needs Rs. 12 lakhs for the installation of a new factory which would yield an annual EBIT of Rs. 2,00,000. The company has the objective of maximizing the earnings per share. It is considering the possibility of issuing equity shares plus raising a debt of Rs. 2,00,000, Rs. 6,00,000 or Rs. 10,00,000. The current market price per share is Rs. 40 which is expected to drop to Rs. 25 per share if the market borrowings were to exceed Rs. 7,50,000/-

Cost of borrowings are indicated as under :

Up to Rs. 2,50,000	10% p.a.
Between Rs. 2,50,001 and Rs. 6,25,000	14% p.a.
Between Rs. 6,25,001 and Rs. 10,00,000	16% p.a.

Assuming a tax rate of 50%, work out the EPS and the scheme which would meet the objective of the management.

(CA Final)

Solution :

Comparative Statement of Earnings Per Share

Particulars	**I Rs.**	**II Rs.**	**III Rs.**
Debt	2,00,000	6,00,000	10,00,000
Equity Capital	10,00,000	6,00,000	2,00,000
Total Investment	12,00,000	12,00,000	12,00,000
No. of Equity share	$\frac{10,00,000}{40}$ $= 25.000$	$\frac{6,00,000}{40}$ $= 15.000$	$\frac{2,00,000}{25}$ $= 8.000$
(a) E.B.I.T.	2,00,000	2,00,000	2,00,000
Less Interest on Debt			
@ 10%	20,000	25,000	25,000
@14%	--	49,000	52,500
@16%	--	--	60,000
(b) Total Interest	20,000	74,000	1,37,500
Profit Before tax (a) - (b)	1,80,000	1,26,000	62,500
Less : Tax @ 50%	90,000	63,000	31,250
Profit after tax	90,000	63,000	31,250
E.P.S. $\frac{\text{Profit after tax}}{\text{No. of equity shares}}$	$\frac{90.000}{25.000}$ $= 3.60$	$\frac{63.000}{15.000}$ $= 4.20$	$\frac{31.250}{8.000}$ $= 3.91$

Plan II is recommended since it gives the highest E.P.S. Also the debt equity ratio is within the limit of 2:1.

Problem 5 :

From the following alternatives determine the Ideal capital structure for the company.

	I	**II**	**III**	**IV**
Equity	1,00,000	75,000	50,000	25,000
Debt @ 12%	--	25,000	50,000	75,000
Total Financing	1,00,000	1,00,000	1,00,000	1,00,000
No. of Equity Shares	10,000	7,500	5,000	2,500

Profit before interest and taxes is Rs. 15,000/-
Tax rate is 50%

Solution :

	I Rs.	II Rs.	III Rs.	IV Rs.
EBIT	15,000	15,000	15,000	15,000
Less : Interest	--	3,000	6,000	9,000
Earning before tax	15,000	12,000	9,000	6,000
Less Tax @ 50%	7,500	6,000	4,500	3,000
Earning after tax	7,500	6,000	4,500	3,000
No. of shares	10,000	7,500	5,000	2,500
Earnings Per Share	$\frac{7.500}{10,000} = 0.75$	$\frac{6.000}{7.500} = 0.80$	$\frac{4.500}{5.000} = 0.90$	$\frac{3000}{2.500} = 1.20$

Problem 6 :

From the following data find out the value of each firm as per the Modigliani and Miller approach.

	Firm A	Firm B	Firm C
EBIT	Rs. 13,00,000	Rs. 13,00,000	Rs. 13,00,000
No. of shares	3,00,000	2,50,000	2,00,000
12% Debentures		Rs. 9,00,000	Rs. 10,00,000

Solution :

As per M. M. Approach the valuation of the firms is as follows

Formula for M.M. Approach	Firm A	Firm B	Firm C
$\frac{\text{Earnings before interest \& taxes}}{\text{Expected Return on Investment}}$	$\frac{13.00.000}{12\%}$	$\frac{13.00.000}{12\%}$	$\frac{13.00.000}{12\%}$
Value of the firm	1,08,33,333	1,08,33,333	1,08,33,333

Problem 7 :

Calculate EPS (Earning per share) of Small Ltd. and Big Ltd. assuming

a) 20% before tax rate of return on assets.
b) 10% before tax rate of return on assets.

Based on the following data.

	Small Ltd. (Rs. In lakhs)	Big Ltd. (Rs. In lakhs)
Assets	100	100
Debt	--	50 (12% Debenture and loan)
Equity	100 (share of Rs. 10 each)	50 (share of Rs. 10 each)

Assume a 50%. Income tax rate in both the cares. Give your comments on the financial leverage.

Solution :

	Small Ltd.		Big Ltd.	
	20% Before Tax Return	**10% Before Tax Return**	**20% Before Tax Return**	**10% Before Tax Return**
E.B.I.T.	20,00,000	10,00,000	20,00,000	10,00,000
Less : Int. and taxes	--	--	6,00,000	6,00,000
E.B.T.	20,00,000	10,00,000	14,00,000	4,00,000
Less : Tax	10,00,000	5,00,000	7,00,000	2,00,000
E.A.T.	10,00,000	5,00,000	7,00,000	2,00,000
No. of equity	10,00,000	10,00,000	5,00,000	5,00,000
Shares	Re. 1.00	Re. 0.50	Rs. 1.40	Re. 0.40
Earnings per share				

In the absence of Fixed charge (Interest) for Solid Ltd. There is no financial leverage. Hence a 50% decline in its before tax rate of return is followed by a equivalent decline is its earnings per shares. i.e. Re. 1 to Re. 0.50. Where as in the case of Sound Ltd. there is financial feverage. Hence, a 50 percent decline in its before tax rate value is followed by a decline of larger proportion earnings per share from Rs. 1.40 to Re. 0.40 which is 71% less.

Problem 8 :

Omkar Ltd. planning an expansion programme which will require Rs. 30 crores and can in the founded through one of the three following options :

a) Issue further equity shares of Rs. 100 each at par.
b) Raise loans at 15% Interest.
c) Issue preference shares at 12%.

Present paid up capital is Rs. 60 crores and average annual EBIT is Rs. 12 crores. Assume I.T. rate at 50%. After the expansions. EBIT is expected to be Rs. 15 crores per annum.

Calculate EPS under the three financing options to indicating the alternative giving the highest return to the equity share holders.

Solution :

Statement showing EPS under three financing options
(Rs. In crores)

	A **Equity Issue** **Rs.**	**B** **Loan** **Rs.**	**C** **Preference share** **Rs.**
E.B.I.T.	15.00	15.00	15.00
Interest	--	4.5	--
E.B.T.	15.00	10.50	15.00
Tax at 50%	7.50	5.25	7.50
E.A.T.	7.50	5.25	7.50
Preference Dividend	--	--	3.60
Earnings to equity shareholders	7.50	5.25	3.90
No. of Equity Share (Crores)	0.9	0.6	0.6
Earnings per share	Rs. 8.33	Rs. 8.75	Rs. 6.50

Plan B gives the highest return to the equity shareholders.

Problem 9 :

A new project under consideration require a capital outlay of Rs. 300 lakhs. The required funds can be raised either fully by equity share of Rs. 100 each or by equity shares of the value of Rs. 200 lakhs and by loan of Rs. 100 lakhs @ 15% interest. Assuming a tax rate of 50%. Calculate the figures of profit before interest and tax that would keep the equity investors indifferent to the two options. Verify your answer by calculating the EPS.

Solution :

The equation of EPS under the two financing options are worked as follows :

Option 1 :

Equity is Rs. 300 lakhs divided into 3,00,000 equity shares without loan.

Therefore $EPS = \frac{(PBIT - O)(1-5)}{3}$

Option 2 :

Equity is Rs. 200 lakhs divided into 2,00,000 shares with the loan of Rs. 100 lakhs @ 15% i.e. Interest is Rs. 15 lakhs.

Therefore $EPS = \frac{(PBIT - Rs.15)(1-5)}{2}$

Hence, the indifference level of PBIT found by equating the above two equations.

$$\frac{(PBIT-0)(1-5)}{3} = \frac{(PBIT-15)(1-5)}{2}$$

$$2\times(.5)\times PBIT = 3(PBIT-15)(.5)$$

$$PBIT = 1.5\,PBIT - 22.50$$

$$.5\,PBIT = 22.50$$

$$\therefore PBIT = Rs.45\,lakhs.$$

Verification

	Option I **Equity Funding Rs.**	**Option 2** **Equity loan financing Rs.**
EBIT	45,00,000	45,00,000
Less : Interest	--	15,00,000
E.B.T.	45,00,000	30,00,000
Less : Tax	22,50,000	15,00,000
E.A.T.	22,50,000	15,00,000
No. of equity shares	3,00,000	2,00,000
Earnings Per Share	Rs. 7.50	Rs. 7.50

Problem 10 :

Sandhya Industries Ltd. have submitted the following projections. You are required to work out yearly Debt.

Service Coverage Ratio (DSCR)

(figure Rs. In lakhs)

Year	Net Profit for the year	Interest on Term Loan during the year	Repayment of Term Loan in the year
1	21.67	19.14	10.70
2	34.77	17.64	18.00
3	36.01	15.12	18.00
4	19.20	12.60	18.00
5	18.61	10.08	18.00
6	18.40	7.56	18.00
7	18.33	5.04	18.00
8	16.41	Nil	18.00

The net profit has been arrived after charging depreciation of Rs. 17.68 lakhs every year.

Solution :

The calculation of DSCR is as follows :

	Years							
	1	2	3	4	5	6	7	8
(a) Net Profit	21.67	34.77	36.01	19.20	18.61	18.40	18.33	16.41
Depreciation	17.68	17.68	17.68	17.68	17.68	17.68	17.68	17.68
(b) Interest on Term Loan	19.14	17.64	15.12	12.60	10.08	7.56	5.04	Nil
(c) Total Cash Flow before Interest	58.49	70.09	68.81	49.48	46.37	43.64	41.05	34.09
(d) Loan Repayment	10.70	18.00	18.00	18.00	18.00	18.00	18.00	18.00
(e) Total of (b) + (d)	29.84	35.64	33.12	30.60	28.08	25.56	23.04	18.00
DSCR = (c) / (e)	1.96	1.97	2.08	1.62	1.65	1.71	1.78	1.89

$$\text{Average DSCR} = \frac{14.66}{8} = 1.83$$

Problem 11 :

The Sameer Ltd. needs Rs. 5,00,000 for commissioning of a new plant. The following three financial plans are feasible.

i) The company may issue 50,000 equity shares of Rs. 10 per share.

ii) The company may issue 25,000 equity shares at Rs. 10 per share and 2500 debentures of Rs. 100 denomination bearing an 8% rate of interest.

iii) The company may issue 25,000 equity shares at Rs. 10 per share and 2,500 preference shares at Rs. 100 per share bearing 8% rate of dividend.

If the Company's earnings before interest and taxes are Rs. 10,000, Rs. 20,000, Rs. 40,000, Rs. 60,000 and Rs. 1,00,000, what are the earnings per share under each of the three financial plans? Which alternative would you recommend and why? Assume corporate tax rate to be 50%.

Solution :

1st Alternative : 50,000 Equity shares of Rs. 10 each

	(I)	**(II)**	**(III)**	**(IV)**	**(V)**
EBIT	10,000	20,000	40,000	60,000	1,00,000
Less : Tax @ 50%	5,000	10,000	20,000	30,000	50,000
EAT	5,000	10,000	20,000	30,000	50,000
No. of Shares	50,000	50,000	50,000	50,000	50,000
EPS	$\frac{5.000}{50.000} = 0.10$	$\frac{10.000}{50.000} = 0.20$	$\frac{20.000}{50.000} = 0.40$	$\frac{30.000}{50.000} = 0.60$	$\frac{50.000}{50.000} = 1.00$

2nd Alternative : 25000 Equity shares of Rs. 10 each and 25000 Debenture of Rs. 100 each at 8% Interest.

	(I)	**(II)**	**(III)**	**(IV)**	**(V)**
EBIT	10,000	20,000	40,000	60,000	1,00,000
Less : Interest	20,000	20,000	20,000	20,000	20,000
FBT	(-) 10,000	--	20,000	40,000	80,000
Less : Tax @ 50%	--	--	10,000	20,000	40,000
EAT	(-) 10,000	--	10,000	20,000	40,000
No. of equity shares	25,000	25,000	25,000	25,000	25,000
E.P.S.	(-) 0.20	0	0.40	0.80	1.60

3rdAlternative : 25000 Equity shares of Rs. 100 each and 2500 Preference shares of Rs. 100 each at 8% dividend.

	(I)	(II)	(III)	(IV)	(V)
EBIT	10,000	20,000	40,000	60,000	1,00,000
Less : Tax @ 50%	5,000	10,000	20,000	30,000	50,000
EAT	5,000	10,000	20,000	30,000	50,000
Less : Pref. Dividend	20,000	20,000	20,000	20,000	20,000
Earnings to equity	(-) 15,000	(-) 10,000	Nil	10,000	30,000
Equity shares	25,000	25,000	25,000	25,000	25,000
EPS	(-) 0.6	(-) 0.4	0	0.4	1.20

2nd Alternative is better, and gives the highest EPS in case of EBIT of Rs. 40,000 shares.

Problem 12 :

Anil. Ltd. is considering three different plans to finance its total project costs of Rs. 100 lakhs.

There are as follows :

(Rs. In Lakhs)

	Plan A	Plan B	Plan C
Equity (Rs. 100 per share)	50	34	25
Debt : 8% Debenture	50	66	75
	100	100	100

Sales for the first three years of operations are estimated at Rs. 100 lakhs, Rs. 125 lakhs and Rs. 150 lakhs and a 10% profit before interest and taxes forecast to be achieved. Corporate taxation to be taken at 50%. Compute earnings per share in each of the alternative plans of financing for the three years.

Solution :

Statement showing Earnings per share

(Rs. In lakhs)

	Plan A			Plan B			Plan C		
	1	2	3	1	2	3	1	2	3
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
E.B.I.T.	10.00	12.50	15.00	10.00	12.50	15.00	10.00	12.50	15.00
Less Interest on Debentures	4.00	4.00	4.00	5.28	5.28	5.28	6.00	6.00	6.00
E.B.T.	6.00	8.50	11.00	4.72	7.22	7.72	4.00	6.50	9.00
Less : Tax 50%	3.00	4.25	5.50	2.36	3.61	4.80	2.00	3.25	4.50
P.A.T.	3.00	4.25	5.50	2.36	3.61	4.86	2.00	3.25	4.50
No. of shares	50,000	50,000	50,000	34,000	34,000	34,000	25,000	25,000	25,000
E.P.S.	6.00	8.50	11.00	6.94	10.62	14.29	8.00	13.00	18.00

Problem 13 :

A Company capital structure consists of the following :

	Plan A
Equity share of Rs. 100 each	20 Lakhs
Retained Earnings	10 Lakhs
9% Preference share	12 Lakhs
7% Debenture	8 Lakhs
Total	50 Lakhs

The Company earns 12% on capital. The income tax rate is 50%. The company requires a sum of Rs. 25 lakhs to finance expansion programme for which following alternatives are available to it.

i) Issue of 20,000 Equity shares at a premium of Rs. 25 per share.
ii) Issue of 10% Preference shares.
iii) Issue of 8% Debentures.

It is estimated that the P/E ratio in the cases of equity preference and debenture financing would be 21.4.17 and 15.7 respectively. Which of the three financing alternatives would you recommend and why?

Solution :

Statement showing Computations of E.P.S.

	Existing Position	**Issue of 20,000 Eq. Share are at premium of Rs. 25/- per share**	**Issue of 10% Preference shares**	**Issue of 8% Debentures**
	Rs.	Rs.	Rs.	Rs.
E.B.I.T.	6,00,000	9,00,000	9,00,000	9,00,000
Less Interest	56,000	56,000	56,000	56,000
E.B.T.	5,44,000	8,44,000	8,44,000	6,44,000
Less : Tax @ 50%	2,72,000	4,22,000	4,22,000	3,22,000
EAT	2,72,000	4,22,000	4,22,000	3,22,000
Less : Dividend on Pref. share	1,08,000	1,08,000	3,58,000	1,08,000
Earnings available to equity shareholder	1,64,000	3,14,000	64,000	2,14,000
No. of equity shares	20,000	40,000	20,000	20,000
Earnings per share	8.20	7.85	3.20	10.70
P/E Ratio	--	21.4	17	15.70
Market Price	--	**167.99**	**54.40**	**167.99**

Problem 14 :

Satish Ltd. have Equity Share Capital of Rs. 5,00,000 (face value Rs. 100) To meet the expenditure of an expansion programme, the company wishes to raise Rs. 3,00,000 and is having following four alternative sources to raise the funds :

Plan A : To have full money from equity shares :
Plan B : To have Rs. 1 Lakhs from equity and Rs. 2 Lakhs from borrowing from the financial Institution @ 10% p.a.
Plan C : Full money from borrowing @ 10% p.a.
Plan D : Rs. 1 Lakh in equity and Rs. 2 Lakhs from preference shares at 8% p.a.

The company is having present earnings of Rs. 1,50,000. The corporate tax is 50%. Suggest a suitable plan of the above four plans to raise the required funds.

Solution

Statement showing the EPS under the four plans

	Plan A	Plan B	Plan C	Plan D
Equity share capital	8,00,000	6,00,000	5,00,000	6,00,000
8% Pref. Share Capital	--	--	--	2,00,000
Borrowings @ 10%	--	2,00,000	3,00,000	--
	8,00,000	8,00,000	8,00,000	8,00,000
E.B.I.T.	1,50,000	1,50,000	1,50,000	1,50,000
Less : Interest @ 10%		20,000	30,000	
E.B.T.	1,50,000	1,30,000	1,20,000	1,50,000
Less : Tax	75,000	65,000	60,000	75,000
Less : Pref. Dividend				16,000
Earnings available to equity shareholders	75,000	65,000	60,000	59,000
No. of equity shares (Rs. 100)	8,000	6,000	5,000	6,000
Earnings per share	**9.38**	**10.83**	**12.00**	**9.83**

Plan C gives the highest EPS and therefore to be accepted.

Problem 15 :

Sikandar Limited provides you the following information :

	Rs.
Profit (EBIT)	2,80,000
Less : Interest on Debentures @ 10%	40,000
	2,40,000
Less : Income-tax @ 50%	1,20,000
	1,20,000
Number of Equity shares (Rs. 10 each)	30,000
Earnings per share (EPS)	Rs. 4
Ruling Market Price Per Share	Rs. 40
Price / EPS (PE) Ratio	10

The company has undistributed reserves of Rs. 7,00,000 and needs Rs. 4,00,000 further for expansion. This investment is expected to earn the same rate as funds already invested. You are informed that a debt equity $\frac{debt}{debt + equity}$ ratio higher than 32% will push the P/E ratio down to 8 and raise the interest.

Problem 16 :

A new project under consideration by your company require a capital investment of Rs. 150 Lakhs. The required funds can be raised either through the sale of equity shares or borrowed from financial institution. Interest on loan is 15% and tax rate is 50%. If the debt equity ratio insisted by the financial agencies is 2 : 1. Calculate the point of indifference for the project.

Solution :

If Capital Investment of Rs. 150 lakhs is financed through debt; then debt-equity ratio is required to be 2:1. Therefore equity will be Rs. 100 lakhs and debt at 15% will be Rs. 100 lakhs. Interest will work out to Rs. 15 lakhs.

When financed only through equity.

$$EPS = \frac{EBIT\,(1-0.5)}{No.\,of\ \ Eq.\,Shares}$$

When financed through equity and debt.

$$EPS = \frac{\left(EBIT - Interest\right)(1-05)}{No.\,of\ \ Eq.\,Shares}$$

Assuming per share face value of Rs. 100 and equating the above two equations we get,

When financed only through equity.

$$\frac{EBIT(1-0.5)}{150000} = \frac{\left(EBIT - 1500000\right)(1-0.5)}{500000}$$

$$\therefore .5\ EBIT = 1.5\,(EBIT - 15,00,000)$$

$$.5\ EBIT = 1.5\ EBIT - 22,50,000$$

$$\therefore EBIT = Rs.\,22,50,000$$

Verification

Particular	**Equity Rs.**	**Equity + Debt Rs.**
EBIT	22,50,000	22,50,000
Less : Interest	--	15,00,000
E.B.T.	22,50,000	7,50,000
Less : Tax	11,25,000	3,75,000
E.A.T.	11,25,000	3,75,000
No. of equity shares (N) (Rs. 100 each Assumed)	15,00,000	5,00,000
EPS $= \frac{EAT}{N}$	$\frac{11.25.000}{15.00.000} = 0.75$	$\frac{3.75.000}{5.00.000} = 0.75$

Problem 17 :

Ganesh Ltd is contemplating conversion of 8% convertible debentures of Rs. 1000 each. At present, it has 500 such debenture outstanding. The market price of the debenture is Rs. 1080. The debenture indenture provides that one debenture will be converted for 10 shares. The price earning ratios before redemption is 20:1 and anticipated price earning ratio after redemption is 25:1.

The number of shares outstanding prior to redemption was 10,000. Earning before interest and taxes amounted to Rs. 20,00,000. The company is in the 50% tax bracket. Should the company convert its debentures into shares?

Financing through Equity :

Sales	**EPS**	**P/E Ratio**	**Market value**
4 crores	1.10	5	5.50
8 crores	2.14	5	10.70
10 crores	2.69	5	13.45

Financing through Debt :

Sales	**EPS**	**P/E Ratio**	**Market value**
4 crores	1.15	4	4.60
8 crores	3.15	4	12.60
10 crores	4.15	4	16.60

Problem 18 :

Harsh Ltd. is considering three financing plans. The key information is as follows :

a) Total Investment to be raised Rs. 20,00,000

b) Plan of Financing proportion.

Plan	Equity	Debt	Preference shares
A	100%	--	--
B	50%	50%	--
C	50%	--	50%

c) Cost of Debt 8%

Cost of Preference shares 8%.

d) Tax rate 50%

e) Equity shares of the face value of Rs. 10 each will be issued at a premium of Rs. 10 per share.

f) Expected PBIT is Rs. 80,000.

Determine for each Plan :

i) Earnings per share (EPS) and

ii) The financial break even point.

iii) Indicate if any of the plans dominate and compute the PBIT range among the plans for indifference.

Solution :

Statement showing Earnings per share :

		Plans	
	A Rs.	B Rs.	C Rs.
Profits before Interest of tax	80,000	72,000	80,000
Less : Interest		8,000	
Profits before tax	80,000	80,000	80,000
Less : Tax	40,000	36,000	40,000
Profits after tax	40,000	36,000	40,000
Less : Dividend on Preference shares			8,000
Profits available to equity shareholders	40,000	36,000	32,000
No. of Equity shares	10,000	5,000	5,000
E.P.S.	Rs. 4.00	Rs. 7.20	Rs. 6.40

ii) Financial Breaks even point :
Plan A : Financial Break even Point is Nil, as there is no fixed (financial) charge.

Plan B : Financial Break even Point is Rs. 8,000; since it has to make upto interest payment of Rs. 8000.

Plan C : Financial Break even Point is Rs. 16,000 since, it has to pay preference dividend of Rs. 5000 after tax and therefore considering 50% tax i.e. Rs. 8,000, the FBEP is Rs. 16,000.

iii) (a) Calculation of PBIT range of indifference between A and B.

$$\text{A and B} = \frac{(PBIT - Fixed\ charge)(1 - Tax\ rate)}{No.\ of\ Share}$$

Since A = B, therefore

$$(PBIT - 0) \times .50 / 10,000 = \frac{(PBIT - 8000)(.50)}{5000}$$

$$\therefore 25,000\ PBIT = 5000\ PBIT - 4,00,000$$

$$\therefore 25,000\ PBIT = 4,00,00,000$$

$$PBIT = 16,000$$

b) Calculation of PBIT range for indifference between A and C.

$$C = \frac{(PBIT - Fixed\ charge)(1 - Tax\ rate) - Pref.\ Div}{No.\ of\ Shares}$$

$$= \frac{(PBIT - Nil)(1 - 0.50) - \%Rs.8000}{5000}$$

Since A = C

Therefore

$$= \frac{(PBIT - Nil)(0.50)}{10000} = \frac{(PBIT - Nil)(.50) - Rs.8000}{5000}$$

$$\therefore .50\ PBIT = PBIT - Rs.16000$$

$$\therefore PBIT = Rs.32000$$

c) Calculation of PBIT range of indifference between B and C
Since B = C

$$\therefore \frac{(PBIT - Rs.8000)(.50)}{5000} = \frac{(PBIT - 0)(.50) - Rs.8000}{5000}$$

$$\therefore .50\ PBIT - Rs.4000 = 0.50\ PBIT - Rs.8000$$

Thus there exists difference points between B and C
The ranking order of dominant schemes are as follows

A	Financial BEP	Nil
B	Financial BEP	Rs. 8,000
C	Financial BEP	Rs. 16,000

7

COST OF CAPITAL

Unit Structure:

7.1 MEANING OF COST OF CAPITAL

Capital is one of the most important factor for production and, like any other factor, it has cost. The required capital obtained from various available sources& cost of capital refers to the payment that a firm has to make to the suppliers of capital. This includesinterest payment for debt capital (Debentures & Loan funds), dividend payment to equity and preference shareholders etc.

The term 'cost of capital' means the overall cost of capital of a firm. This 'overall cost of capital' consist the cost of various sources of financing. The sources can be equity share capital, Preference share capital or Debt capital. Obviously, each of these sources has cost of its own. The overall cost of capital is also called as weighted average cost of capital. That is,

$$Ko = KeW1 + KrW2 + KpW3 + KdW4$$

where,

Ko = Overall cost of capital

Ke = Cost of equity

Kr = Cost of retained earning

Kp = Cost of preference shares

Kd = After-tax cost of debt

W1 = Proportion of equity to total capital

W2 = Proportion of retained earning to total capital

W3 = Proportion of preference share capital to total capital

W4 = Proportion of debt to total capital

Thus, to measure the overall cost of capital, it is necessary to determine:

1. the cost of each source of financing (equity, preference or debt), and
2. respective weights in the capital structure of the firm.

7.2 COST OF EQUITY SHARE CAPITAL

There are various methods of computing cost of equity. however, discuss here the important ones, viz.

i. Earning/price growth model
ii. Dividend growth model
iii. Earnings growth model
iv. Capital asset pricing model

Each method has its own advantages & Disadvantages. In practice, more than method may be used to estimate the firm's cost of capital. When the cost of equity is computed.

i. **Earnings/price model**

The earnings/price ratio is calculated by dividing the earnings per share by the current price per share. Thus, the cost of equity (Ke) is measured by

$$Ke = \frac{E}{P}$$

where,
E=Earnings per share (EPS)
P = Market Price per share (MPS)

ii. **Dividend growth model**

Under this model, the cost of equity is the dividend yield plus the expected dividend growth rate. Symbolically.

$$Ke = \frac{D}{P} + g$$

where,
D = Dividend per share at the end of a period
P = Market Price per share (MPS)
g = Dividend growth rate.

iii. **Earnings growth model**

This model replaces dividend by earnings in it, and the cost is measured by the equation,

$$Ke = \frac{E}{P} + g$$

where,

E = Earnings per share (EPS)
P = Market Price per share (MPS)
g = Growth rate in earnings

iv. **Capital Asset Pricing Model (CAPM)**

The CAPM is based on the assumptionthat the required rate of return on any security equals the risk-free rate of return plus a premium for risk. According to the CAPM,

R = Rf + β(Rm – Rf)

where,

R = Required rate of return on a share

Rf = Risk-free return

Rm = expected return on the market as a whole, or on an average share value

β = Beta coefficient which measures the systematic, or unavoidable, market risk.

7.3 COST OF RETAINED EARNINGS

Although these funds do not apparently cost anything, there is a definite opportunity cost involved. The opportunity cost of retained earnings is simply the dividend foregone by the shareholders.

7.4 COST OF PREFERENCE SHARE CAPITAL

This dividend payable to the preference shareholders is normally treated to be the cost of this source of finance. Thus, the cost of preference capital (Kp) would be determined as follows:

$$Kp = \frac{D}{1}$$

where,

D = Annual dividend
1 = Net proceeds of the preference share issue

The preference dividend is also paid after-tax and, hence, no adjustment is made regarding taxes.

7.5 COST OF DEBT

The amount of interest payable is the cost of debt capital (Kd). It should, however, be adjusted by the tax rate. As the interest payable is an admissible deduction for computing taxable income, it would considerably reduce the cost of debt capital. Symbolically,

$Kd = r (1 – t)$

where,

r = Interest rate payable

t = Marginal tax rate of the firm

7.6 OVERALL COST OF CAPITAL

The term 'cost of capital' is used to denote the composite or weighted average or the overall cost of capital. When specific cost are combine to arrive at the overall cost of capital, it is called the 'composite' or 'weighed average cost of capital'. As shown earlier, the weighted average cost of capital is computed as follows:

$Ko = KeW1 + KrW2 + KpW3 + KdW4$

where,

Ko = Overall cost of capital

Ke = Cost of equity

Kr = Cost of retained earnings

Kp = Cost of preference shares

Kd = After-tax cost of debt

W1 = Proportion of equity (S) to the total capital (V) =

W2 = Proportion of retained earnings (E) to the total capital

W3 = Proportion of preference share capital (P) to the total capital and

W4 = Proportion of debt (D) to the total capital =

- **Computation of Overall Cost of Capital**

This involves the following steps:

1. Compute specific cost of each other source capital.
2. Select appropriate 'weight'.
3. Multiply the cost of each of the sources by the appropriate weights.
4. Divide the total cost as per (3) above by total weight to arrive at the weighted or overall cost of capital.

It may be mentioned here that the weighted average cost of capital may change due to:

a. a change in the cost of each component
b. a change in the relative importance of each component (i.e. weight),
c. or a change in both.

7.7 SOLVED PROBLEMS

Illustrations

C. Computation of Cost of Debt

Illustration 1 : cost of Irredeemable Debt

Five years ago, Sona Limited issued 12% Irredeemable Debentures at 103, a 3 Premium to their Par Value of 100. The Current Market Price of these Debentures is 94. If the Company pays Corporate Tax at a rate of 35%, what is the Current Cost of Debenture Capital?

Solution :

$$K_d = \frac{Interest \times (100\% - Tax\ Rate)}{Net\ \text{Pr}oceeds\ of\ Issues} = \frac{12\% \times (100 - 35\%)}{94} = \frac{7.8}{94} = 8.3\%$$

Illustration 2 : Cost of Redeemable Debt

Indebted Ltd. issued 10,000, 10% Debentures of 100 each, redeemable in 10 years time at 10% premium. The cost of issues was 25,000. The Company's Income Tax Rate is 35%. Determine the Cost of Debentures, if they were issued - (a) at par, (b) at a premium of 10%, and (c) at a discount of 10%.

Solution :

	Particulars	Issue at Par	Issue at Premium	Issue at Discount
1.	Number of Debentures issued	10,000 nos.	10,000 nos.	10,000 nos.
2.	Issue Price	₹100	₹100+10%= ₹110	₹100-10%=₹ 90
3.	Gross Proceeds (1×2)	₹10,00,000	₹11,00,000	₹9,00,000
4.	Cost of Issue	₹25,000	₹25,000	₹25,000
5.	Net Proceeds (3 - 4)	₹9,75,000	₹ 10,75,000	₹8,75,000
6.	Redemption Value = Face Value + 10% Premium	₹11,00,000	₹11,00,000	₹11,00,000
7.	Average Liability $=\frac{(6)+(5)}{2}$	₹10,37,500	₹10,37,500	₹9,87,500
8.	Premium on Redemption = (6 - 5)	₹1,25,000	₹25,000	₹2,2525,000
9.	Average Premium on Redemption $=\frac{(8)}{10\ years}$	₹12,500	₹2,500	₹22,500
10.	Interest $\times(100\% - Tax\ Rate\ 35\%)$	₹65,000	₹65,000	₹65,000
11.	$K_d=\frac{(10)+(9)}{(7)}=\frac{₹65,000+₹12,500}{₹10,37,500}$, & so on	7.47%	6.21%	8.86%

Note : Cost of Debt K_d will not be equal to the Interest Rate on Debt. This is due to the following reasons -

- Expenses of Issue, i.e. difference between Face Value and Net Proceeds,
- Terms of Issue, i.e. Issue at Premium / Discount (if any),
- Terms of Redemption, i.e. period and Premium payable, and
- Tax-Saving Effect.

  (Note : It is assumed that Premium on Redemption of Debt is not tax - deductible.)

Illustration 3 : Cost of Redeemable Debt

A Company issued 10,000, 10% Debentures of `100 each on 1st April, with maturity period 5 years. The Company wants to know the Current Cost of its existing Debt and the Market Price of the Debentures is `80. Compute the Cost of Existing Debentures assuming 35% Tax Rate.

Solution :

$$K_d=\frac{Interest\times(100\%-Tax\ Rate)+\frac{RV+NP}{N}}{\frac{RV+NP}{2}}=\frac{10\times(100-35\%)+\frac{100+80}{5}}{\frac{100+80}{2}}=\frac{6.5+4}{90}=0.1166=11.66\%$$

B. Computation of Cost of Preference Capital

Illustration 4 : cost of Irredeemable Preference Shares
If a Company is issuing Preferred Stock at `100 per Share, with a stated Dividend of `12, and a Floatation Cost of 3% then, what is the Cost of Preference Share?

Solution :

$$K_p = \frac{\text{Preference Dividend}}{\text{Net Proceeds of Issues}} = \frac{\text{Preference Stock Dividend}}{\text{Market Price of Preferred Stock}\,(100\% - \text{Floatation Cost})} = \frac{12}{100\,(1 - 0.03)} = 12.4\%$$

Illustration 5 : cost of Irredeemable Preference Shares
XYZ & Co. issues 2,000 10% Preference Shares of `100 each at `95 each. Calculate the Cost of Preference Shares.

Solution :

$$K_p = \frac{\text{Preference Dividend}}{\text{Net Proceeds of Issues}} = \frac{10 \times 2,000}{95 \times 2,000} = \frac{10}{95} = 10.53\%$$

Illustration 6 : Cost of Redeemable Preference Shares
XYZ & Co. issues 2,000 10% Preference Shares of `100 each at `95 each. The Company proposes to redeem the Preference Shares at the end of 10th year from the date of issue. Calculate the Cost of Preference Shares.

Solution :

$$K_p = \frac{\text{Preference Dividend} + \dfrac{RV - NP}{N}}{\dfrac{RV + NP}{2}} = \frac{10 + \left(\dfrac{100 - 95}{10}\right)}{\dfrac{100 + 95}{10}} = 10.77\%$$

A. Computation of Cost of Equity

Illustration 7 : Cost of Equity - Dividend Price Approach
Dividend - Prayers Ltd. has a stable income and stable dividend policy. The average annual dividend payout is `27 per Share (Face Value = `100). You are required to find out -

1. Cost of Equity Capital, if Market Price in Year 1 is `150.
2. Expected Market Price in Year 2, if Cost of Equity is expected to rise to 20%.
3. Dividend Payout required in Year 2, if the Company were to have an expected Market Price of `160 per share, at the existing Cost of Equity.

Solution : Note : Year 0 and 1 distinction for MPS and DPS is not applied in the solution below.

1. $K_e = \frac{Dividend\ per\ share}{Market\ Price\ per\ Share} = \frac{DPS}{MPS} = \frac{₹27}{₹150} = 18\%$

2. $K_e = \frac{DPS}{MPS} = \frac{₹27}{MPS} = 20\%\ (given) \qquad So, MPS = \frac{₹27}{20\%} = ₹135\ (Note: DPS\ is\ uniform\ at\ ₹27)$

3. $K_e = \frac{DPS}{MPS} = \frac{DPS}{₹160} = 18\%\ (present\ K_e) \qquad So,\ DPS = ₹160 \times 18\% = ₹28.80$

Illustration 8 : Cost of Equity - Earnings Price Approach
Easy - Earners Ltd. has a uniform income that accrues in a four-year business cycle. It has an average EPS of 25 (per Share of 100) over its business cycle. You are required to find out -

1. Cost of Equity Capital, if Market Price in Year 1 is `150.

2. Expected Market Price in Year 2, if Cost of Equity is expected to rise to 18%.

3. EPS in Year 2, if the Company were to have an expected Market Price of `160 per Share, at the existing cost of Equity.

Solution : Note : Year 0 and Year 1 distinction for MPS and EPS is not applied in the solution below.

1. $K_e = \frac{Earnings\ per\ share}{Market\ Price\ per\ Share} = \frac{EPS}{MPS} = \frac{₹25}{₹150} = 16.67\%$

2. $K_e = \frac{EPS}{MPS} = \frac{₹25}{MPS} = 18\%\ (given) \qquad So, MPS = \frac{₹25}{18\%} = ₹138.89 \quad (Note: EPS\ is\ uniform\ at\ ₹25)$

3. $K_e = \frac{EPS}{MPS} = \frac{DPS}{₹160} = 16.67\%\ (present\ K_e) \qquad So, DPS = ₹160 \times 16.67\% = ₹26.67$

Illustration 9 : cost of Equity - Realised Yield Approach
Jet Ltd. is a large Company with several thousand shareholders. An investor buys 100 shares of the Company at the beginning of the year at a Market Price of `225. The Par Value of each Share is `10. During the year, the Company pays a dividend at 25%. The Price of the Share at the end of the year is `267.50. Calculate the total return on the investment. Suppose the Investor sells the shares at the end of the year, what would be the Cash Inflows at the end of the year?

Solution :

1. $$K_e = \frac{DPS_1 + (MPS_1 - MPS_0)}{MPS_0} = \frac{₹2.50 + (₹267.50 - ₹225.00)}{₹225} = 20.00\%$$

2. **Total Return =** Dividend + Capital Gain
   = $₹2.50 + (₹267.50 - ₹225.00)$ = `45 per Share, i.e. `4,500

3. **Cash Inflows** at the end of the year on cum-dividend sale of Shares $(₹26,750 + ₹250\ Dividend) = ₹27,000$

Illustration 10 : Cost of Equity - CAPM Approach
Calculate the Cost of Equity Capital of H Ltd. whose Risk Free Return equals 10%. The Firm's Beta is 1.75 and the Return on the Market Portfolio is 15%.

Solution : Under CAPM Approach,
$K_e = R_f + \beta(R_m - R_f) = 10.00\% + 1.75 \times (15.00 - 10.00\%) = 18.75\%$.

Illustration 11 : Cost of Equity - CAPM Approach
ABC Company provides the following details :
$R_f = 7\%, \beta = 1.20, (R_m - R_f) = 6\%$

Solution : Under CAPM Approach,
$K_e = R_f + \beta(R_m - R_f) = 7.00\% + 1.20 \times (6.00\%) = 14.2\%$.

D. Computation of Overall Cost of Capital, i.e. WACC

Illustration 12: Computation of EPS, Cost of Equity and Cost of Debt
The following is an extract from the Financial Statements of Deluxe Ltd. **(in`Lakhs)**

	Operating Profit	105
Less :	Interest on Debentures	33
	Net Operating Income before Tax	72
Less :	Income Tax	36
	Net Profit after Tax	36
	Equity Share Capital (Shares of`10 each)	200
	Reserves and Surplus	100
	15% Non-Convertible Debentures (of `100 each)	220
	Total Capital Employed	520

The market Price per Equity Share is 12 and per Debenture is ₹ 93.75.

1. What is the Earnings per Share?
2. What is the Percentage Cost of Capital to the Company for the Debenture Funds and the Equity?

Solution :

1. $EPS = \frac{Earnings\ After\ Tax}{No.\ of\ Equity\ Shares} = \frac{₹36\ Lakhs}{20\ Lakhs\ Shares} = ₹1.80.$

2. $K_e = \frac{EPS}{MPS} = \frac{₹1.80}{₹12.00} = 15\%$.

3. Cost of Debt K_d may be computed as under -

	Particulars	Book Value Basis	Market Value Basis
a)	$Interest \times (100 - Tax\ Rate\ 50\%)$	$33 \times 50\% = ₹16.50\ Lakhs$	$33 \times 50\% = ₹16.50\ Lakhs$
		Book Value	
b)	Value of Debentures	$= ₹220.00\ Lakhs$	$\frac{₹220\ Lakhs}{₹100\ Par\ Value} \times ₹93.75 = ₹206.25\ Lakhs$
c)	$K_d = \frac{Interest \times (100\% - Tax)}{Value\ of\ Debt} = \frac{(b)}{(a)}$	7.50%	8.00%

Illustration 13 :
D Limited has 5,00,000 Ordinary Shares whose Current Ex-Dividend Market Price is 1.50 per Share. The Company has just paid a Dividend of 27 paise per Share, and Dividends are expected to continue at this level for some time. If the Company has no Debt Capital, what is the Weighted Average Cost of Capital?

Solution :
$Market\ Value\ of\ Equity = 5,00,000 \times 1.50 = ₹7,50,000.$
Market Value of Debt = Nil

$K_e = \frac{DPS}{MPS} = \frac{27}{150} = 0.18 = 18\%.$
Since there is no Debt Capital,
$WACC = K_e = 18\%$

Illustration 14 : Computation of WACC
The Capital Structure of All - Good Ltd. is - Equity Capital 5 Lakhs, Reserves and Surplus 2 Lakhs and Debentures 3 Lakhs. The Cost

of Capital before Tax are - (a) Equity - 18% and (b) Debentures - 10%. You are required to compute the Weighted Average Cost of Capital, assuming a tax rate of 35%.

Solution :

Computation of WACC

Component	Amount	0%	Individual Cost in %	WACC %
Debentures	₹3,00,000	30%	$K_d = Interest \times (100\% - Tax) = 10\% \times (100\% - 35\%) = 6.50\%$	1.95%
Equity	₹5,00,000	50%	$K_e = (given) 18.00\%$	9.00%
Reserves	₹2,00,000	20%	$K_r = K_e = (given) 18.00\%$	3.60%
Total	₹110,00,000			$K_o = 14.55\%$

Note : Reserves are taken at same Cost as Equity.

Illustration 15: Computation of WACC using Market Value Weights.

Newly Formed Ltd. was incorporated recently. Its Capital Structure is as under in Market Value terms:

12% Debentures redeemable at par in 10 years time	`60 Lakhs
15% Preference Shares - irredeemable	`20 Lakhs
Equity Shares (320000 Shares)	`80 Lakhs

The Company's Income - Tax Rate is 35%. A study group has reported that the required return on Equity Capital is 24% for Companies in this line of business. You are required to compute the Company's WACC.

Solution :

Computation of WACC

Component	Amount	0%	Individual Cost in %	WACC %
Debt	₹60 Lakhs	37.50%	$K_d = Interest \times (100\% - Tax) = 12\% \times (100\% - 35\%) = 7.80\%$	2.925%
Preference	₹20 Lakhs	12.50%	$K_p = (\text{Preference Dividend Rate given}) 15.00\%$	1.875%
Equity	₹80 Lakhs	50.00%	$K_e = (given) 24.00\%$	12.00%
Total	₹160 Lakhs			$K_o = 16.80\%$

Illustration 16 : Computation of $K_d K_e$ and WACC

ABC Ltd. wished to raise additional finance of `20 Lakhs for meeting its investment plans. The Company has `4,00,000 in the form of Retained Earnings available for investment purposes. The following are further details -

1. Debt Equity Ratio 25:75.
2. Cost of Debt at the rate of 10% (before tax) upto 2,00,000 and 13% (before tax) beyond that.
3. Earnings Per Share = `12.
4. Dividend Payout = 50% of Earnings.
5. Expected Growth Rate in Dividend 10%.
6. Current Market Price per Share = `60.
7. Company's Tax Rate is 30% and Shareholder's Personal Tax Rate is 20%.

Calculate the following -
1. Post Tax Average Cost of Additional Debt.
2. Cost of Retained Earnings and Cost of Equity.
3. Overall Weighted Average (after tax) Cost of Additional Finance.

Solution :

Particulars	Result
1. $Loan\ required = 25\%\ of\ ₹20\ Lakhs$	₹5,00,000
2. $Interest\ on\ Loan = (₹2,00,000 \times 10\%) + (₹3,00,000 \times 13) = ₹20,000 + ₹39,000 =$	₹59,000
3. $K_d = \frac{Interest \times (100\% - Tax\ Rate)}{Net\ \text{Pr}oceeds\ of\ Issue} = \frac{₹59,000 \times (100\% - 30\%)}{Rs.5,00,000}$	8.26%
4. $K_r = K_e = \frac{DPS_1}{MPS_0} + g = \frac{₹12 \times 50\% \times 110\%}{₹60} + 10\% = 11\% + 10\% =$	21.00%
5. $K_o = (K_d \times W_d) + (K_e \times W_e) = (8.26\% \times 25\%) + (21\% \times 75\%) =$	17.82%

Note : DPS_1 has been considered in computation of K_e. Alternatively, Earnings - Growth model may also be applied. Shareholders' Personal Tax Rate is not considered since Dividends are exempt from Tax in their hands.

Illustration 17 : Cost of Equity using CAPM Approach and Computation of WACC
Given below is the information concerning projects to be undertaken by four different Companies -

Company	Project Cost	Debt Equity Mix
A	`100 Crores	`25 Crores by Equity and `75 Crores by Debt.
B	`70 Crores	Debt and Equity will be in equal proportion
C	`200 Crores	`120 Crores raised by way of Equity, and balance by Debt.
D	`50 Crores	`30 Crores by Debt and balance by Equity.

The above Companies carry an Equity Beta of 1.2, 1.8, 0.90 and 2.0 respectively. If the return on Market Portfolio is 14%, Treasury Bonds carry an Interest Rate of 8% and Pre-Tax Cost of Debt is 16%, ascertain the appropriate Discount Rate (i.e. Cost of Capital) for each of the above projects. Assume a tax rate of 30%.

Solution :

Computation of Cost of Equity (under CAPM Approach) and WACC

Particulars	A	B	C	D
$K_d = See\ Note$	11.20%	11.20%	11.20%	11.20%
$W_d = \%\ of\ Debt$	75%	50%	40%	60%
$K_e = R_f + \beta (R_m - R_f)$	8%+1.2(14%-8%) =15.20%	8%+1.8(14%-8%) =18.80%	8%+0.9(14%-8%) =13.40%	8%+2.0(14%-8%) =20.00%
$W_e = \%\ of\ Equity$	25%	50%	60%	40%
$K_o = (K_d \times W_d) + (K_e \times W_e)$	8.40%+3.80% =12.20%	5.60%+9.40% =15.00%	4.48%+8.04% =12.52%	6.72%+8.00% =14.72%

Note : Post Tax Cost of Debt = Interest x (100% - Tax Rate) = 16% x (100% - 30%) = 11.20%.

Illustration 18: Computation of WACC - Book Value and Market Value Weights M 07

You are required to determine the Weighted Average Cost of Capital of a Firm using - (a) Book-Value Weights, and (ii) Market Value Weights. The following information is available for your perusal :

1. Present Book Value of the Firm's Capital Structure is - Debentures of `100 each `8,00,000, Preference Shares of `100 each `2,00,000, Equity Shares of `10 each `10,00,000.
2. All these securities are traded in the capital markets. Recent Prices are : Debentures at `110, Preference Shares at `120 and Equity Shares at `22.
3. Ant6icipated external financing opportunities are as follows -
   - `100 per Debenture redeemable at par : 20 years maturity 8% Coupan Rate, 4% Floatation Costs, Sale Price `100.
   - `100 Preference Share redeemable at par : 15 years maturity, 10% Dividend Rate, 5% Floatation Costs, Sale Price `100.
   - Equity Shares :`2 per Share Floatation Costs, Sale Price `22.

In addition, the dividend expected on the Equity Share at the end of the year `2 per Share, the anticipated Growth Rate in Dividends is 5% and the Firm has the practice of paying all its earnings in the form of dividend. The Corporate Tax Rate is 50%.

Solution :

1. Computation of Individual Cost

a) Cost of Equity

$$K_e = \frac{DPS_1}{MPS_0} + g = \frac{₹2 \times 105\%}{₹22} + 5\% = 14.55\%$$

b) Cost of Preference Capital

$$K_p = \frac{\text{Pr } eference\ Dividend}{Net\ \text{Pr } oceeds} = \frac{₹2,00,000 \times 10\%}{₹2,00,000\ Less\ 5\%\ Floating\ Costs} = 10.53\%$$

c) Cost of Debt

$$K_d = \frac{Interest\ (100\% - Tax)}{Net\ \text{Pr } oceeds} = \frac{(₹8,00,000 \times 8\%) \times (100\% - 50\%)}{₹8,00,000\ Less\ 4\%\ Floating\ Costs} = 4.17\%$$

2. Computation of WACC (based on Book Value Proportions)

Component	₹	Proportion	Individual Cost	WACC
Equity Capital	10,00,000	$\frac{10}{20}$	$K_e = 14.55\%$	7.27%
Preference Share Capital	2,00,000	$\frac{2}{20}$	$K_p = 10.53\%$	1.05%
Debentures	8,00,000	$\frac{8}{20}$	$K_d = 4.17\%$	1.67%
Total	20,00,000		$WACC = K_0 =$	9.99%

3. Computation of WACC (based on Market Value Proportions)

Component	₹	Proportion	Individual Cost	WACC
ESC (1,00,000 Shares x ₹22)	22,00,000	$\frac{220}{332}$	$K_e = 14.55\%$	9.64%
PSC (2,000 Shares x ₹120)	2,40,000	$\frac{24}{332}$	$K_p = 10.53\%$	0.76%
Debentures (80,000 x ₹110)	8,80,000	$\frac{88}{332}$	$K_d = 4.17\%$	1.11%
Total	33,20,000		$WACC = K_0 =$	11.51%

Note : In the absence of actual cost as per books, WACC is computed based on current external financing costs.

Illustration 19: Computation of WACC - present and new Capital Structure RTP, M 03

JKL Ltd. has the following Book-Value Capital Structure as on 31st March -

Equity Share Capital (2,00,000 Shares)	40,00,000
11.5% Preference Shares	10,00,000
10% Debentures	30,00,000
Total	80,00,000

The Equity Shares of the Company sell for 20. It is expected that the Company will pay a Dividend of 2 per Share next year, this dividend is expected to grow at 5% p.a. forever. Assume 35% Corporate Tax Rate. You are required to -

1. Compute the Company's WACC based on the existing Capital Structure.
2. Compute the new WACC if the Company raises an additional 20 Lakhs debt by issuing 12% debentures. This would result in increasing the expected Equity Dividend to 2.40 and leave the growth rate unchanged, but the price of Equity Share will fall to 16 per Share.
3. Comment on the use of weights in the Computation of WACC.

Solution :

1. Computation of Individual Cost of Capital

a) $K_d = Interest \times (100\% - Tax) = 10\% \times (100\% - 35\%) = 6.50\%$

b) $K_p =$ Preference Dividend Rate = 11.50%

c) $K_e = \frac{DPS_1}{MPS_0} + g = \frac{₹2 + 5\%}{₹20} + 5\% = 10.50\% + 5\% = 15.50\%$

2. Computation of WACC under present Capital Structure (Book Value Weights)

Component	₹	0%	Individual Cost	WACC
Debt	30,00,000	37.50%	$K_d = 6.50\%$	2.44%
Preference Capital	10,00,000	12.50%	$K_p = 11.50\%$	1.44%
Equity Capital	40,00,000	50.00%	$K_e = 15.50\%$	7.75%
Total	80,00,000	100.00%	$WACC = K_0 = 33.50$	11.63%

3. Computation of WACC under new capital Structure (Book Value Weights)

Component	₹	0%	Individual Cost	WACC
Present Debt	30,00,000	30%	$K_d = 6.50\%$	1.95%
New Debt at 12%	20,00,000	20%	$K_p = 7.80\%$	1.56%
Preference Capital	10,00,000	10%	$K_e = 11.50\%$	1.15%
Equity Capital	40,00,000	40%	$K_e = 20.00\%$	8.00%
Total	1,00,00,000	100.00%	$WACC = K_0 =$	12.56%

Note : New Debt

$$K_d = Interest \times (100\% - Tax) = 12\% \times (100\% - 35\%) = 7.80\%$$

$$K_e = \frac{DPS_1}{MPS_0} + g = \frac{₹2.40}{₹16.00} + 5\% = 15\% + 5\% = 20.00\%$$

Revised

4. **Use of Weights :**Market Value weights may be preferred to Book Value weights since they represent the Company's true corporate facet. In the evaluation of a Company's performance, Cash Flows are preferred to mere Book Profits, also Market Value Balance Sheet is analysed in - depth rather than the Book Value Balance Sheet.

Illustration 20 : Computation of WACC - present and new Capital Structure (N 99)

The following is the Capital Structure of Simons Ltd. as on 31st December of a calendar year.

Equity Share - 10,000 Shares of `100 each	10,00,000
10% Preference Shares of `100 each	4,00,000
12% Debentures	6,00,000
Total	20,00,000

The Market Price of the Company's Share is ₹110 and its is expected that6 a Dividend of `10 per Share would be declared for the next year. The Dividend Growth Rate is 6%.

1. If the Company is in the 50% tax bracket, compute its WACC.
2. For an expansion plan, the Company will borrow ₹10 Lakhs at 14% rate of interest. What will be its revised WACC if this financing decision is expected to increase dividend from ₹10 to ₹12 per Share, and the revised Market Price of Equity Share will be `105 instead of ₹110?

Solution :

1. Computation of Individual Cost of Capital

a) $$K_d = Interest \times (100\% - Tax) = 12\% \times (100\% - 50\%) = 6.00\%$$

b) $K_p =$ Preference Dividend Rate = 10.00%

c) $$K_e = \frac{DPS_1}{MPS_0} + g = \frac{₹10}{₹110} + 6\% = 9.09\% + 6\% = 15.09\%$$

(Note : Given that Next Year Dividend is `10)

2. Computation of WACC under present Capital Structure (Book Value Weights)

Component	₹	0%	Individual Cost	WACC
Debt	6,00,000	30.00%	$K_d = 6.00\%$	1.80%
Preference Capital	4,00,000	20.00%	$K_p = 10.00\%$	2.00%
Equity Capital	10,00,000	50.00%	$K_e = 15.09\%$	7.55%
Total	20,00,000	100.00%	$WACC = K_0 =$	11.35%

3. Computation of WACC under new capital Structure (Book Value Weights)

Component	₹	0%	Individual Cost	WACC
Present Debt	6,00,000	20.00%	$K_d = 6.00\%$	1.20%
New Debt at 14%	10,00,000	33.33%	$K_d = 7.00\%$	2.33%
Preference Capital	4,00,000	13.33%	$K_p = 10.00\%$	1.33%
Equity Capital	10,00,000	33.34%	$K_e = 17.43\%$	5.81%
Total	30,00,000	100.00%	$WACC = K_0 =$	10.67%

Note : New Debt

$$K_d = Interest \times (100\% - Tax) = 14\% \times (100\% - 50\%) = 7.00\%$$

$$K_e = \frac{DPS_1}{MPS_0} + g = \frac{₹12}{₹105} + 6\% = 11.43\% + 6\% = 17.43\%$$

Revised

Particulars	A	B	C
Equity Share Capital (Face Value is 10)	`4,00,000	`2,50,000	`5,00,000
Market Value per Share	`15	`20	`12
Dividend per Share	`2.70	`4.00	`2.88
Debentures (Face Value is 100)	Nil	`1,00,000	`2.50,000
Market Value per Debenture	NA	`125	`80
Interest Rate	NA	10	8%

The current levels of Dividend are expected to continue indefinitely. Compute each Company's WACC, if Tax = 50%.

	Company A	Company B	Company C
a) $K_d = Interest \times (100\% - Tax)$	Nil	$10\% \times (100\% - 50\%) = 5\%$	$8\% \times (100\% - 50\%) = 4\%$
b) $K_e = \frac{DPS}{MPS}$	$\frac{₹2.70}{₹15.00} = 18\%$	$\frac{₹4.00}{₹20.00} = 20\%$	$\frac{₹2.88}{₹12.00} = 24\%$
c) Book Value of Debt	Nil	₹1,00,000	₹2,50,000
d) Book Value of Equity Capital	₹4,00,000	₹2,50,000	₹5,00,000
e) Book Value of Capital Employed	₹4,00,000	₹3,50,000	₹7,50,000
f) Book Value Debt Equity Ratio	$W_d = Nil, W_e = 100\%$	$W_d = 28.57\%, W_e = 71.43\%$	$W_d = 33.33\%, W_e = 66.67\%$
g) $K_o = (K_d \times W_d) + (K_e \times W_e)$ (based on Book Value weights)	$(18\% \times 100\%) = 18.00\%$	$(5\% \times 28.57\%) + (20\% \times 71.43\%) = 15.71\%$	$(4\% \times 33.33\%) + (24\% \times 66.67\% = 17.33\%$
h) Market Value of Debt	Nil	$\frac{₹1,00,000}{₹100} \times ₹125 = ₹1,25,000$	$\frac{₹2,50,000}{₹100} \times ₹80 = ₹2,00,000$
I) Market Value of Equity Capital	$\frac{₹4,00,000}{₹10} \times ₹15 = ₹6,00,000$	$\frac{₹2,50,000}{₹10} \times ₹20 = ₹5,00,000$	$\frac{₹5,00,000}{₹10} \times ₹12 = ₹6,00,000$
j) Mkt Value of Capital Employed	₹6,00,000	₹6,25,000	₹8,00,000
k) Mkt Value Debt Equity Ratio	$W_d = Nil, W_e = 100\%$	$W_d = 20\%, W_e = 80\%$	$W_d = 25\%, W_e = 75\%$
l) $K_o = (K_d \times W_d) + (K_e \times W_e)$ (based on Book Value weights)	$(18\% \times 100\%) = 18.00\%$	$(5\% \times 20\%) + (20\% \times 80\%) = 17.00\%$	$(4\% \times 25\%) + (24\% \times 75\%) = 19.00\%$

Illustration 21: Computation of WACC - Book Value & Market Value Proportions - with / without tax **RTP**

The following information has been extracted from the Balance Sheet of ABC Ltd. as on 31st December

Component of Capital	Equity Share Capital	12% Debentures	18% Term Loan	Total
Amount ` In Lakhs	400	400	1,200	2,000

1. Determine the WACC of the Company. It had been paying dividends at a consistent rate of 20% per annum.
2. What difference will it make if the Current Price of the `100 Share is `160?
3. Determine the effect of Income Tax on WACC under both the above situations. (Tax Rate = 40%)

Solution :

1. Computation of WACC (based on Book Value Proportions and ignoring Tax)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b) x (c)
Equity Share Capital	$\frac{4}{20}$	$K_e\left(Dividend\ Rate\right) = 20.00\%$	4.00%
12% Debentures	$\frac{4}{20}$	$K_d = 12.00\%$	2.40%
18% Term Loan	$\frac{12}{20}$	$K_d = 18.00\%$	10.80%
		$WACC = K_o =$	17.20%

Note :

1. $K_e =$ Dividend Rate of 20% (given).
2. Book Value Proportions have considered in Column (b) above.

2. (a) Computation of WACC (based on Book Value Proportions and ignoring Tax)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b) x (c)
Equity Share Capital	$\frac{4}{20}$	$K_e = \frac{DPS}{MPS} = \frac{Rs.20}{Rs.160} = 12.50\%$	2.5%
12% Debentures	$\frac{4}{20}$	$K_d = 12.00\%$	2.40%
18% Term Loan	$\frac{12}{20}$	$K_d = 18.00\%$	10.80%
		$WACC = K_o =$	15.70%

Note : However, it is more appropriate to use Market Value proportions in the above case, since the Market Price of Equity Share Capital has been considered in calculating K_e . Hence WACC using Market Value Proportions is as under -

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b) x (c)
Equity Capital ₹ 640 Lakhs	$\frac{64}{224}$	$K_e = \frac{MPS}{MPS} = \frac{Rs.20}{Rs.160} = 12.50\%$	3.57%
12% Debentures ₹ 400 Lakhs	$\frac{40}{224}$	$K_d = 12.00\%$	2.14%
18% Term Loan ₹1,200 Lakhs	$\frac{120}{224}$	$K_d = 18.00\%$	9.64%
Total ₹2,240 Lakhs		$WACC = K_o =$	15.35%

3. Effect of Tax Rate of 35% on WACC

a) Computation of WACC with6 tax (Situation 1 above based on Book Value Proportions)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b) x (c)
Equity Share Capital	$\frac{4}{20}$	K_e (Dividend Rate) = 20.00%	4.00%
12% Debentures	$\frac{4}{20}$	$K_d = 12.00\% \times (100\% - 40\%) = 7.20\%$	1.44%
18% Term Loan	$\frac{12}{20}$	$K_d = 18.00\% \times (100\% - 40\%) = 10.80\%$	6.48%
		$WACC = K_o =$	11.92%

WACC has reduced from 17.20% to 11.92%, due to tax saving effect.

b) Computation of WACC with tax (Situation 2(a) above based on Book Value Proportions)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b) x (c)
Equity Share Capital	$\frac{4}{20}$	$K_e = \frac{DPS}{MPS} = \frac{Rs.20}{Rs.160} = 12.50\%$	2.50%
12% Debentures	$\frac{4}{20}$	$K_d = 12.00\% \times (100\% - 40\%) = 7.20\%$	1.44%
18% Term Loan	$\frac{12}{20}$	$K_d = 18.00\% \times (100\% - 40\%) = 10.80\%$	6.48%
		$WACC = K_o =$	11.42%

WACC has reduced from 15.70% to 10.42%, due to tax saving effect.

c) Computation of WACC with tax (Situation 2(b) above based on Book Value Proportions)

Component (a)	Proportion (b)	Individual Cost (c)	WACC (d) = (b) x (c)
Equity Capital ₹ 640 Lakhs	$\frac{64}{224}$	$K_e = \frac{MPS}{MPS} = \frac{Rs.20}{Rs.160} = 12.50\%$	3.57%
12% Debentures ₹ 400 Lakhs	$\frac{40}{224}$	$K_d = 12\% \times (100\% - 40\%) = 7.20\%$	1.29%
18% Term Loan ₹1,200 Lakhs	$\frac{120}{224}$	$K_d = 18\% \times (100\% - 40\%) = 10.80\%$	5.78%
Total ₹2,240 Lakhs		$WACC = K_o =$	10.64%

WACC has reduced from 15.35% to 10.64%, due to tax saving effect.

Illustration 22 : Computation of WACC - Book Value & Market Value Proportions

Calculate WACC using the following data by using (a) Book Value Weights, (b) Market Value Weights. The Capital Structure of the Company is as under -

Particulars	Number of Securities	Amount (in `)
Debentures (₹100 per Debenture)	5,000 Debentures	5,00,000
Preference Shares (₹100 per Share)	5,000 Preference Shares	5,00,000
Equity Share (`10 per Share)	1,00,000 Equity Shares	10,00,000
Total		20,00,000

The Market prices of these Securities are -
Debenture - ₹105 per Debenture, Preferences - ₹110 per Preference Share, Equity - ₹24 each

Additional Information :

a) ₹100 per Debenture redeemable at par, 10% Coupan Rate, 4% Floatation Cost, 10 year Maturity.

b) ₹100 per Preference Share redeemable at par, 15% Coupan Rate, Floatation Cost, 10 year Maturity.

c) Equity Shares has ₹4 Floatation Cost and Market Price ₹24 per Share.

The next year expected dividend is ₹3 with annual growth of 5%. The Firm has practice of paying all earnings in the form of Dividend. Corporate Tax Rate is 50%.

Solution :

1. Computation of Individual Cost of Capital

Component & Formula	Computation	Cost
a) $K_d = \frac{Interest\,(100 - Tax\ Rate) + \frac{RV - NP}{No.\ of\ years}}{\frac{RV + NP}{2}}$	$\frac{10\%\,(100 - 50\%) + \frac{100 - 96}{10}}{\frac{100 + 96}{2}}$	5.51%
b) $K_p = \frac{\text{Preference Dividend} + \frac{RV - NP}{N}}{\frac{RV + NP}{2}}$	$\frac{15\% + \frac{100 - 98}{10}}{\frac{100 + 98}{2}}$	15.35%
c) $K_e = \frac{DPS1}{MPS_0} + g$	$\frac{3}{20} + 5\%$	20%

2. Computation of WACC based on Book Value Proportions

Component	Amount	Proportion	Individual Cost	WACC
10% Debentures	₹5 Lakhs	25%	5.51%	1.38%
5% Preference Shares	₹5 Lakhs	25%	15.35%	3.84%
Equity Shares	₹10 Lakhs	50%	20.00%	10.00%
Total	**₹20 Lakhs**	**100%**		**15.22%**

3. Computation of WACC based on Market Value Proportions

Component	Amount	Proportion	Individual Cost	WACC
10% Debentures	$(5,000 \times ₹105) = ₹5,25,000$	15.11%	5.51%	0.83%
5% Preference Shares	$(5,000 \times ₹110) = ₹5,50,000$	15.83%	15.35%	2.43%
Equity Shares	$(1,00,000 \times ₹24) = ₹24,00,000$	69.06%	20.00%	13.80%
Total	**₹34,75,000 Lakhs**	**100%**		**17.07%**

Illustration 23 : Computation of WACC
ABC Ltd. has the following capital structure which is considered to be optimum as on 31st March 2014 -

Particulars	Amount (in ₹)
14% Debentures	30,000
11% Preference Shares	10,000
Equity (10,000 Shares)	1,60,000
Total	**2,00,000**

The Company's Share has a Market Price of ₹23.60. Next year Dividend per Share is 50% of year 2014 EPS. The following is the trend of EPS for the preceding 10 years which is expected to continue in future -

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
EPS (`)	1.00	1.10	1.21	1.33	1.46	1.61	1.77	1.95	2.15	2.36

The Company issued new Debentures carrying 16% rate of interest and the Current Market Price of Debentures is ₹96. Preference Shares ₹9.20 (with Annual Dividend of ₹1.1 per Share) were also issued. The Company is in 50% tax bracket.

Required :

1. Calculate the After Tax Cost - (a) of new Debt and new Preference Share Capital, (b) of ordinary Equity, assuming new Equity comes from Retained Earnings.
2. Calculate the Marginal Cost of Capital when no New Shares are issued.
3. How much can be spent for Capital Investment before new ordinary share must be sold? Assuming that retained earning available for next year's investment are 50% of 2014 Earnings.
4. What will be Marginal Cost of Capital when the funds exceed the amount calculated in Part (3), assuming New Equity is issued at `20 per Share?

Solution :

1. Computation of Cost of Additional Capital (Component wise)

1. a) After Tax Cost of New Debt

$$K_d = \frac{Interest \times (100\% - Tax\ Rate)}{Net\ \text{Pr}oceeds\ of\ Issue} = \frac{16 \times (100\% - 50\%)}{96} = 8.33\%$$

1. b) After Tax Cost of New Preference Share Capital

$$K_p = \frac{\text{Pr}eference\ Dividend}{Net\ \text{Pr}oceeds\ of\ Issue} = \frac{1.10}{9.20} = 11.96\%$$

1. c) After Tax Cost of Ordinary Equity

$$K_e = \frac{DPS}{MPS} + g = \frac{50\% \times 2.36}{23.60} + 10\% = 15\%$$

2. Marginal Cost of Capital : Since the present Capital Structure is optimum (Refer 1st sentence in the question), the additional funds will be raised in the same ratio in order to maintain the capital. Hence, the Marginal Cost of Capital is 15.20%, computed as under:

Component	₹	%	Individual Cost	WACC
Debt	30,000	15%	$K_d = 8.33\%$	1.25%
Preference Capital	10,000	5%	$K_p = 12.00\%$	0.60%
Equity Capital	1,60,000	8%	$K_e = 15.00\%$	12.00%
Total	2,00,000	100%	$WACC = K_o =$	13.85%

3. Retained Earnings available for further investments = 50% of 2014 EPS.
$= 50\% \times ₹2.36 \times 10,000\ Shares = ₹11,800$

Hence, amount to be used by way of Retained Earnings, before selling New Ordinary Shares ₹ 11,800.

As Equity = 80% of Total Funds, the Total Capital before issuing fresh Equity Shares $= \frac{11,800}{80\%} ₹14,750$

4. Revised Marginal Cost of Capital if the Company spends in excess of `14,750 it will have to issue New Shares :

Note : Revised Cost of Ordinary Equity

$$K_e = \frac{DPS}{MPS} + g = \frac{1.18}{20} + 10\% = 15.9\%$$

Component	`	%	Individual Cost	WACC
Debt	30,000	15%	$K_d = 8.33\%$	1.25%
Preference Capital	10,000	5%	$K_p = 12.00\%$	0.60%
Equity Capital	1,60,000	8%	$K_e = 15.90\%$	12.72%
Total	2,00,000	100%	$WACC = K_o =$	14.57%

Illustration 24 : Computation of WACC and Marginal WACC
XYZ Ltd. (in 40% Tax bracket) has the following Book Value Capital Structure

Equity Capital (in Shares of ₹10 each, full paid-up at par)	₹15 Crores
11% Preference Capital (in shares of ₹100 each, full paid-up at par)	₹1 Corre
Retained Earnings	₹20 Crores
13.5% Debentures (of `100 each)	₹10 Crores
15% Term Loans	₹12.5 Crores

Other Information

- The next expected Dividend on Equity Shares is 3.60 per Share. Dividends are expected to grow at 7% and the Market Price per Share is ₹40.
- Preference Stock, redeemable after ten years, is currently selling at ₹75 per Share.
- Debentures, redeemable after 6 years, are selling at `80 per Debentures.

Required :

1. Compute the present WACC using - (a) Book Value Proportions, and (b) Market Value Proportions.
2. Compute the Weighted Marginal Cost of Capital if the Company raises `10 Crores next year, given the following data -

- The amount will be raised by Equity and Debt in equal proportions.
- The Company expects to retain ₹1.5 Crores earnings next year.
- The additional issue of Equity Shares will result in the Net Price per Share being fixed at ₹32.
- Debt Capital raised by way of Term Loans will Cost 15% for the first 2.5 Crores and 16% for the next ₹2.5 Crores.

Solution :

1. Computation of Cost of Debt

a) Present Cost of Debentures

$$K_d = \frac{Interest(100 - Tax) + \frac{\text{Re}demption\,Value - Net\ \text{Pr}oceeds}{Number\ of\ years}}{\frac{\text{Re}demption\,Value + Net\ \text{Pr}oceeds}{2}} = \frac{\left[(13.5 \times 60\%) + \frac{(100-80)}{6}\right]}{\frac{(100+80)}{2}} = 12.70\%$$

b) Present Cost of Term Loans

$$K_d = Interest(100\% - Tax\ Rate) = 15\% \times (100\% - 40\%) = 9.00\%.$$

c) Cost of Additional Debt for first `2.50 Crores = $Interest(100\% - Tax\ Rate) = 15\% \times 60\% = 9.00\%.$

d) Cost of Additional Debt for next `2.50 Cores $Interest(100\% - Tax\ Rate) = 16\% \times 60\% = 9.60\%.$

2. Computation of Cost of Preference Share Capital

$$K_p = \frac{\text{Preference Dividend} + \frac{\text{Redemption Value} - \text{Net Proceeds}}{\text{Number of years}}}{\frac{\text{Redeemption Value} + \text{Net Proceeds}}{2}} = \frac{\left[11 + \frac{(100-75)}{10}\right]}{\frac{(100+75)}{2}} = 15.43\%$$

3. Computation of Cost of Equity under Dividend + Growth Approach

a) Present Cost of Equity

$$K_e = \frac{DPS}{MPS} + g = \frac{Rs.3.60}{Rs.40.00} + 7\% = 9\% + 7\% = 16.00\%$$

b) Revised Cost of Equity

$$K_e = \frac{DPS}{MPS} + g = \frac{Rs.3.60}{Rs.32.00} + 7\% = 11.25\% + 7\% = 18.25\%$$

4. Computation of Present WACC based on Book Value Proportions

Particulars	Amount	Proportion	Individual Cost	WACC
Equity Capital	₹15.0 Crores	15/58.5	WN 3 = 16.00%	4.10%
Preference Capital	₹1.0 Crore	1/58.5	WN 2 = 15.43%	0.26%
Retained Earnings	₹20.0 Crores	20/58.5	WN 3 = 16.00%	5.47%
Debentures	₹10.0 Crores	10/58.5	WN 1 = 12.70%	2.17%
Term Loans	₹12.5 Crores	12.5/58.5	WN 1 = 9.00%	1.92%
	₹58.5 Crores	100%		$K_o = 13.92\%$

5. Computation of Present WACC based on Market Value Proportions

Particulars	Amount	Proportion	Individual Cost	WACC
Equity Capital	`60Crores	60/81.25	WN 3 = 16.00%	11.82%
Preference Capital	`0.75Crore	0.75/81.25	WN 2 = 15.43%	0.14%
Debentures	`8 Crores	8/81.25	WN 1 = 12.70%	1.25%
Term Loans	`12.5 Crores	12.5/81.25	WN 1 = 9.00%	1.38%
	`81.25Crores	100%		$K_o = 14.59\%$

Note : Retained Earnings are included in Market Value of Equity Share Capital, hence not applicable in this computation.

6. Computation of Marginal Cost of Capital

Marginal Cost of Capital is computed in different segments as under -

- For the first ₹1.5 Crores of Equity and Debt each - since Retained Earnings are ₹1.5 Crores.
- For the next ₹1 Crore of Debt and Equity each - since Cost or Debt changes beyond ₹2.5 Crores Debt.
- For the balance ₹2.5 Crores of Debt and Equity each.

Particulars	Debt	Equity	Total	Individual Cost	Marginal WACC
First ₹1.5 Crores	₹1.5 Crores	₹1.5 Crores	₹3 Crores	$WN\,3: K_d = 9.00\%$ $WN\,1: K_e = 16.00\%$	$(9.00\% \times 50\%) + (16.00\% \times 50\%) = 12.50\%$
Next ₹1 Crores	₹1 Crores	₹1 Crores	₹2 Crores	$WN\,3: K_d = 9.00\%$ $WN\,1: K_e = 18.25\%$	$(9.00\% \times 50\%) + (18.25\% \times 50\%) = 13.63\%$
Balance Amount	₹2.5 Crores	₹2.5 Crores	₹5 Crores	$WN\,3: K_d = 9.60\%$ $WN\,1: K_e = 18.25\%$	$(9.60\% \times 50\%) + (18.25\% \times 50\%) = 13.93\%$

Illustration 25 : Computation of K_e using WACC - Reverse Working

Backwork Ltd. has a Debt Equity Ratio of 2:1 and a WACC of 12%. Its Debentures bear interest of 15%. Find out the cost of Equity Capital. (Assume Tax = 35%)

Solution : Alternative 1 : Using M & M Approach :
Under M & M Approach,

$$K_e = K_o + \frac{Debt}{Equity}(K_o = K_d) = 12.00\% + \frac{2}{1} \times (12.00\% - 9.75\%) = 16.50\%$$

Alternative 2 : Computation of Cost of Equity using Table Method / Reverse Working

Component	0%	Individual Cost	WACC
Debt	2/3rd	$K_d = Interest \times (100\% - Tax) = 15\% \times (100\% - 35\%) = 9.75\%$	$9.75\% \times 2/3^{rd} = 6.50\%$
Equity	1/3rd	$K_e = (final\ bal.\ fig) = \frac{5.50}{1/3^{rd}} = 16.50\%$	$(b/f)(12\% = 6.5\%) = 5.50\%$
Total			$Given\ K_o = 12.00\%$

Note : Last column is updated first and 5.50% is computed as balancing figure. Thereafter, K_e is the balancing figure.

Illustration 28 : Computation of Debt - Equity Ratio using WACC

Ram Ltd. has a WACC of 18.00%. Its Capital Structure consists of Equity and Debt only. If the PE Ratio is 4, Interest Rate on Debt is 15%, Tax Rate is 35%, find out the Company's Debt - Equity Ratio.

Solution :

1.

$$K_d = Interest \times (100\% - Tax) = 15\% \times (100\% - 35\%) = 9.75\% \; K_e = \frac{1}{PE\ Ratio} = \frac{1}{4} = 25.00\%$$

2. Let Debt be D% of Total Capital. Hence, Equity = (100% - D%) = (1 - D)

3.

$$K_o = (K_d \times W_d) + (K_e \times W_e) = [9.75\% \times D] + [25.00\% \times (1 - D)] = 18.00\% \; (K_o \; given)$$

So, $9.75\%D + 25.00\% - 25.00\%D = 18.00\%$

Hence, $-15.25\%\mathrm{D} = -7.00\%$

On solving, we get, $D = \frac{7.00\%}{15.25\%} = 0.46 \; or \; 46\%$

Hence, Debt = 46% and Equity = 54%.

So, Debt - Equity Ratio = 46 : 54.

8

LEVERAGE ANALYSIS

Unit Structure

8.1 INTRODUCTION & MEANING:

The word **Leverage** means using borrowed money (funds) for investment in business to maximize the profits of the owners/Shareholders. A Business entity/firm with borrowed fund/debt fund in its capital structure is called Levered. A Business entity/firm with no debt fund is said to be Unlevered. The term leverage in general refers to 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, Earning before Interest & Tax (EBIT), Earning per Share (EPS), sales etc.

8.2 TYPES OF LEVERAGE:

1. Operating Leverage
2. Financial Leverage
3. Combined Leverage

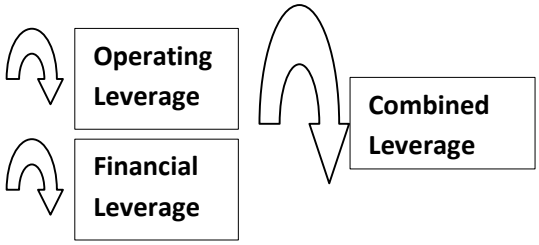
$$OperatingLeverage = \frac{Contribution}{EBIT}$$

$$FinancialLeverage = \frac{EBIT}{EBT}$$

$$CombinedLeverage = \frac{Contribution}{EBT}$$

Extract of Profit & Loss Statement (Vertical) to show Leverages:

Particulars	**Amount (Rs.)**
Sales	XXX
Less: Variable Costs	(XXX)
Contribution	***XXX***
Less: Fixed Costs	(XXX)
Operating Profit/ Earnings Before Interest & Tax (EBIT)	***XXX***
Less: Interest	(XXX)
Earnings Before Tax (EBT)	***XXX***



1. Operating Leverage: Financial Leverage measures business risk. Operating Leverage is the ratio of contribution and earnings before interest & tax (EBIT). Increase or decrease in operating leverage is impacted due to Existence of fixed operating cost. The firm will have higher operating leverage if it has high fixed costs & vice versa. Higher operating leverage will result in lower EBIT & vice versa.

Contribution	***XXX***
Less: Fixed Costs	(XXX)
Operating Profit/ Earnings Before Interest & Tax (EBIT)	***XXX***

i. The % change in EBIT due to % change in given sales is known as Degree of Operating leverage.

ii. Relationship: % change in EBIT = % change in Sales X D.O.L

(D.O.L =Degree of Operating Leverage)

iii. Linkage : Sales and EBIT

iv. So, Degree of Operating Leverage (D.O.L) can be calculated by using following formulae.

1.) $$D.O.L = \frac{Contribution}{EBIT}$$

2.) $$D.O.L = \frac{\%Change \in EBIT}{Change \in Sales} = \frac{\Delta EBIT / EBIT}{\Delta Sales / Sales}$$

Illustration

1) Contribution Rs. 25000 & EBIT Rs. 5000 Calculate D.O.L

$$D.O.L = \frac{Contribution}{EBIT} = \frac{25{,}000}{5{,}000} = 5\times$$

2) Sales Rs. 10000 & EBIT Rs. 2000 Calculate D.O.L if sales increases to Rs. 15,000 and EBIT Rs. 6000.

$$D.O.L = \frac{\%Change \in EBIT}{Change \in Sales} = \frac{\Delta EBIT/EBIT}{\Delta Sales/Sales}$$

% Change in EBIT = $\frac{\Delta EBIT}{EBIT} X100$

$= \frac{6000-2000}{2000} X100 = \frac{4000}{2000} X100 = 200$

% Change in Sales = $\frac{\Delta Sales}{Sales} X100$ = $\frac{15000-10000}{10000} X100 = \frac{5000}{10000} X100 = 50$

D.O.L $\frac{200}{50} = 4\times$

1) Financial Leverage: Financial leverage measures financial risks. Financial Leverage is the ratio of Earning before interest and tax (EBIT) & Earning before Tax (EBT). Increase or decrease in operating leverage is impacted due to Existence of Interest Expenses. The firm will have higher financial leverage if it has high Finance cost (interest expenses) & vice versa

Earnings Before Interest & Tax (EBIT)	***XXX***
Less: Finance Cost (Interest Expense)	(XXX)
Earnings Before Tax (EBT)	***XXX***

i. he % change in EPS due to % change in given EBIT is known as Degree of Financial leverage.

ii. Relationship: % change in EPS = % change in EBIT X D.F.L

iii. Linkage : EBIT and EPS

iv. So, Degree of Financial Leverage (D.F.L) can be calculated by using following formulae.

1)

a) $D.F.L = \frac{EBIT}{EBT}$ (if Preference dividend is not given in Ques.)

b) D.F.L $\frac{EBIT}{EBT - \left(\frac{Pref.\div idend}{1-t}\right)}$ (if Preference dividend is given in Ques.)

2) $D.F.L = \frac{\%Change \in EPS}{Change \in EBIT} = \frac{\Delta EPS/EPS}{\Delta EBIT/EBIT}$

Illustration

1) EBIT Rs. 5000 & EBT Rs. 1000 Calculate D.F.L

Note: Preference dividend is not given in question

$D.F.L = \frac{EBIT}{EBT} = \frac{5000}{1000} = 5x$

2) EBIT Rs. 5000, EBT Rs. 1000, 10% preference share capital Rs. 3000, Tax Rate = 40% Calculate Degree of Financial Leverage (D.F.L)

Note: Preference Dividend is given

Given: 10% preference share capital Rs. 3000 means

Pref. Dividend = Rs. 3000 X 10% = Rs. 300

D.F.L $\frac{EBIT}{EBT - \left(\frac{Pref.Dividend}{1-t}\right)} = \frac{Rs.5000}{Rs.1000 - \frac{Rs.300}{1-0.4}} = 10x$

3) EPS Rs 2 & EBIT Rs. 2000 Calculate D.F.L if EPS increases to Rs. 8 and EBIT Rs. 6000.

$D.F.L = \frac{\%Change \in EPS}{Change \in EBIT} = \frac{\Delta EBIT/EBIT}{\Delta Sales/Sales}$

% Change in EPS = $\frac{\Delta EPS}{EPS} X100 = \frac{8-2}{2} X100 = \frac{6}{2} X100 = 300$

% Change in EBIT = $\frac{\Delta EBIT}{EBIT} X100$

$= \frac{6000 - 2000}{2000} X100 = \frac{4000}{2000} X100 = 200$

D.F.L $\frac{300}{200} = 1.5$ x

2) Combined Leverage: Combined leverage measures total risk i.e. business risk & financial risk. Combined Leverage is the ratio of Contribution and Earning before tax. (EBT). Increase or decrease in combined leverage is impacted due to existence of Total Fixed Costs/Expenses (Operating Fixed Costs & Interest Expenses.

Extract of Profit & Loss Statement (Vertical) to show Leverages:

Particulars	**Amount (Rs.)**
Sales	XXX
Less: Variable Costs	(XXX)
Contribution	***XXX***
Less: Fixed Costs	(XXX)
Operating Profit/ Earnings Before Interest & Tax (EBIT)	***XXX***
Less: Interest	(XXX)
Earnings Before Tax (EBT)	***XXX***

Combined Leverage

i. The % change in Earning Per Share (EPS) due to % change in given Sales is known as Degree of Combined leverage. Relationship: % change in EPS = % change in Sales X D.C.L

ii. Linkage : Sales and EPS

iii. So, Degree of Combined Leverage (D.C.L) can be calculated by using following formulae.

1)

a) $D.C.L = \frac{Contribution}{EBT}$ (if Preference dividend is not given in Ques.)

b) D.C.L $\frac{Contribution}{EBT - \left(\frac{Pref.Dividend}{1-t}\right)}$ (if Preference dividend is given in Ques.)

2) $$D.C.L = \frac{\%Change \in EPS}{Change \in Sales} = \frac{\Delta EPS/EPS}{\Delta Sales/Sales}$$

3) D.C.L = Degree of Operating Leverage X Degree of Financial Leverage

8.3 SOLVED PROBLEMS

Problem 1 :

The operating information of Bacchan Enterprises are as follows :

Solution :

	Rs.
Sales (1000 units at Rs. 100)	30,00,000
Less : Variable cost	21,00,000
Contribution (C)	9,00,000
Less : Fixed costs	3,75,000
Operating Profit (OP) or EBIT	5,25,000
Less : Interest	2,25,000
Profit before tax (PBT)	3,00,000

Operating leverage $= \frac{C}{OP}$

$$= \frac{9,00,000}{5,25,000} = 1.71$$

Financial leverage $= \frac{EBIT}{PBT} = \frac{5.25.000}{3.00.000} = 1.75$

Combined leverage $= OP \times FL$

$$= 1.71 \times 1.75 = 2.99$$

ii) Additional sales to double EBIT :

	Rs.
Present EBIT	5,25,000
Increase in EBIT (equal amount)	5,25,000
EBIT Desired	10,50,000
Add : Fixed cost	3,75,000
Contribution required	14,25,000

Contribution Ratio $= \frac{C}{S} \times 100 = \frac{9,00,000}{30,00,000} \times 100 = 30\%$

Therefore, Sales for contribution of Rs. $14,25,000 = \frac{14,25,000}{30} \times 100 =$ Rs. 47,50,000

$\therefore$ Additional Sales Rs. 17,50,000

Problem 2 :

Calculate operating, financial and combined leverage under Financial Plan X and Financial Plan Y when the fixed costs are Rs. 1,00,000 in two different situations. The information regarding capital structure and other data are as follows :

	Rs.
Total Assets	5,00,000
Total Assets turnover based on sales	2
Variable cost as percentage of sales	60

	Financial Plan	
Firm	**X (Rs.)**	**Y (Rs.)**
Equity	5,00,000	1,00,000
10% Debenture	1,00,000	5,00,000

solution :

Comparative statement of Leverage :

Financial Plan	**A**		**B**	
Situation	(1)	(2)	(1)	(2)
Sales Revenue	10,00,000	10,00,000	10,00,000	10,00,000
Less : Variable Cost	6,00,000	6,00,000	6,00,000	6,00,000
Contribution (C)	4,00,000	4,00,000	4,00,000	4,00,000
Less : Fixed cost	50,000	1,00,000	50,000	1,00,000
Operating profit (EBIT)	3,50,000	3,00,000	3,50,000	3,00,000
Less : Interest	10,000	10,000	50,000	50,000
Profit before tax (PBT)	3,40,000	2,90,000	3,00,000	2,50,000
Operating Leverage : $\frac{C}{OP}$ (EBIT)	$\frac{4,00,000}{3,50,000} = 1.14$	$\frac{4,00,000}{3,00,000} = 1.33$	$\frac{4,00,000}{3,50,000} = 1.14$	$\frac{4,00,000}{3,00,000} = 1.33$
Finance Leverage : $\frac{EBIT}{PBT}$	$\frac{3,50,000}{3,40,000} = 1.03$	$\frac{3,00,000}{2,90,000} = 1.03$	$\frac{3,50,000}{3,00,000} = 1.16$	$\frac{3,00,000}{2,50,000} = 1.20$
Combined Leverage : $\frac{C}{PBT}$ (Also $CL = OL \times FL$)	$\frac{4,00,000}{3,40,000} = 1.18$	$\frac{4,00,000}{2,90,000} = 1.37$	$\frac{4,00,000}{3,00,000} = 1.33$	$\frac{4,00,000}{2,50,000} = 1.60$

Problem 3 :

Calculate operating leverage and financial leverage under situations 1 and 2 and financial plans A and B respectively from the following formation relating to the operation and capital structure of a company. What are the combinations of operating and financial leverage which give highest and the least value?

Installed capacity	- 2000 Units
Actual production & sales	- 50% of installed capacity
Selling price per unit	- Rs. 20
Variable cost per unit	- Rs. 10

Capital Structure :

Firm	Financial Plan	
	A (Rs.)	**B (Rs.)**
Equity	5,000	15,000
Debt. (cost of Debt. = 10%)	15,000	5,000
	20,000	20,000

solution :

Actual production and sales 50% of 2000 installed capacity = 1000 units.

Contribution per unit = Rs. 10

Total contribution $= 1000 \times 10 =$ Rs. 10,000/-

Comparative statement of Leverage :

Financial Plan	**A**		**B**	
Situation	(1)	(2)	(1)	(2)
Contribution (C)	10,000	10,000	10,000	10,000
Fixed cost	4,000	5,000	4,000	5,000
Operating profit (OP) or EBIT	6,000	5,000	6,000	5,000
Less : Interest	1,500	1,500	500	500
Profit before tax (PBT)	4,500	3,500	5,500	4,500
Operating Leverage : $\frac{C}{OP}$	$\frac{10,000}{6,000} = 1.67$	$\frac{10,000}{5,000} = 2$	$\frac{10,000}{6,000} = 1.67$	$\frac{10,000}{5,000} = 2$
Finance Leverage : $\frac{EBIT}{PBT}$	$\frac{6,000}{4,500} = 1.33$	$\frac{5,000}{3,500} = 1.43$	$\frac{6,000}{5,500} = 1.09$	$\frac{5,000}{4,500} = 1.11$
Combined Leverage : $\frac{C}{PBT}$ OR $CL = OL \times FL$	$\frac{10,000}{4,500} = 2.22$	$\frac{10,000}{3,500} = 2.86$	$\frac{10,000}{5,500} = 1.82$	$\frac{10,000}{4,500} = 2.22$

Highest value = 2.86 : Financial Plan A sit 2

Least value = 1.82 : Financial Plan B sit 1

Problem 4:

ABC Ltd. has an average selling price of Rs. 150 per unit. Its variable unit cost is Rs. 105 and fixed cost amount to Rs. 25 lakhs. It finances all its assets by equity funds. It pays 35% tax on its income. XYZ Ltd. is identical to ABC Ltd., except in respect of the pattern of financing. The latter finances its assets 50% by equity and 50% by debt, the interest on which amount to Rs. 3,00,000.

Determine the degree of operating financial and combined leverages at Rs. 1,00,00,000 sales for both the firms :

Solution :

Situation	**ABC Ltd.**	**XYZ Ltd.**
Sales	1,05,00,000	1,05,00,000
Variable Cost	73,50,000	73,50,000
Contribution (C)	31,50,000	31,50,000
Less : Fixed cost	25,00,000	25,00,000
Operating profit (OP) or (EBIT)	6,50,000	6,50,000
Less : Interest	--	3,00,000
Profit before tax (PBT)	6,50,000	3,50,000
Operating Leverage : $\frac{C}{OP}$	$\frac{31,50,000}{6,50,000} = 4.85$	$\frac{31,50,000}{6,50,000} = 4.85$
Finance Leverage : $\frac{EBIT}{PBT}$	$\frac{6,50,000}{6,50,000} = 1$	$\frac{6,50,000}{3,50,000} = 1.86$
Combined Leverage : $\frac{C}{PBT}$	$\frac{31,50,000}{6,50,000} = 4.85$	$\frac{31,50,000}{3,50,000} = 9$

ABC Ltd. is better as the CL is least.

Problem 5:

Bombay Textiles Ltd., has before it the following four methods of financing its expansion programme :

	Financial Plan			
	I	**II**	**III**	**IV**
Equity shares of Rs. 100 each	7,50,000	5,00,000	10,00,000	2,50,000
Preference shares (of Rs. 100 each)		5,00,000	5,00,000	
Debentures	7,50,000 (Cost : 10%)	5,00,000 (Cost : 11%)	--	12,50,000 (Cost : 12%)

The company is in the tax bracket of 35 percent. The company has EBIT of Rs. 2,00,000. Determine the degree of financial leverage of each plan.

Solution :

	Financial Plan			
	I	**II**	**III**	**IV**
EBIT	2,00,000	2,00,000	2,00,000	2,00,000
Less : Interest	75,000	55,000	--	1,50,000
Profit before tax (PBT)	1,25,000	1,45,000	2,00,000	50,000
Financial Leverage : $\frac{EBIT}{PBT}$	$\frac{2,00,000}{1,25,000} = 1.60$	$\frac{2,00,000}{1,45,000} = 1.38$	$\frac{2,00,000}{2,00,000} = 1$	$\frac{2,00,000}{50,000} = 4$

Practical Questions from Professional Exams

CA Exams Q. No.1 to 5

Question 1 :

An Income statement of SRK LTD is shown below : It is based on an output (Sales) level of 80,000 units.

Particulars	Rs.
Sales	9,60,000
Variable cost	5,60,000
Revenue before fixed costs	4,00,000
Fixed costs	2,40,000
Earning Before Interest and Tax (EBIT)	1,60,000
Interest	60,000
Earnings before tax (EBT)	1,00,000
Tax	50,000
Net Income (Earning After Tax)	50,000

Calculate the degree of (i) operating leverage (i) financial leverage and (iii) the combined leverages from the above data.

(C.A. - Final)

Solution :

i) Operating leverage $= \dfrac{Contribution}{Operation\ profit\ or\ EBIT}$

$= \dfrac{4,00,000}{1,60,000} = 2.5:1$

ii) Financial leverage $= \dfrac{Operating\ profit\ (OP)}{Profit\ before\ tax\ (PBT)}$

$= \dfrac{1,60,000}{1,00,000} = 1.6:1$

iii) Combined leverage $= \dfrac{Contribution}{PBT}$

$= \dfrac{4,00,000}{1,00,000} = 4:1$

OR

$$Operating\ leverage \times Financial\ leverage = 2.5 \times 1.6 = 4:1$$

Question 2 :

i) Find the operating leverage from the following data :

Sales	Rs. 50,000
Variable cost	60%
Fixed costs	Rs. 12,000

ii) Find the financial leverage form the following data

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

(CA Final)

Solution :

i) Statement of Operating Profit

Particulars	Rs.
Sales	50,000
Less : Variable cost	30,000
Contribution (C)	20,000
Less : Fixed costs	12,000
Operating Profit (EBIT)	8,000

Operating leverage $= \frac{C}{EBIT} = \frac{20,000}{8,000} = 2.5$

ii) Given net worth is 25,00,000 and

Debt Equity ratio is $\frac{3}{1}$

$$\therefore Debt = Net\ worth \times \frac{Debt}{Equity}$$

$$= 25,00,000 \times 3 = 75,00,000$$

$$\therefore Interest\ @ 12\%\ on\ Rs. 75,00,000 = Rs. 9,00,000$$

$$\therefore EBIT - Interest = PBT$$

$$\therefore 20,00,000 - 9,00,000 = 11,00,000$$

Financial Leverage = / f(EBIT,PBT) = / f(20,00,000, /11,00,000) = 1.818

Question 3:

The capital structure of the Progressive corporation consists of an ordinary share capital of Rs. 10,00,000 (shares of Rs. 100 per value) and Rs. 10,00,000 of 10% Debentures, sales increased by 20% from 1,00,000 units to 1,20,000 units, the selling price is Rs. 10 per unit; variable costs amount to Rs. 6 per unit and fixed expenses amount to Rs. 2,00,000. The income-tax rate is assumed to be 50%.

a) You are required to calculate the following :

i) The percentage increase in earnings per share.

ii) The degree of financial leverage at 1,00,000 units and 1,20,000 units.

iii) The degree of operating leverage at 1,00,000 units and 1,20,000 units.

b) Comment on the behavior of operating and financial leverages in relation to increase in production from 1,00,000 units to 1,20,000 units.

(C.A. Final)

Solution :

Statement showing operating, financial leverage and EPS

Particulars	**1,00,000 Units**	**1,20,000 Units**
Sales at Rs. 10 per unit	10,00,000	12,00,000
Less : Variable costs at Rs. 6 per unit	6,00,000	7,20,000
Contribution at Rs. 4 per unit	4,00,000	4,80,000
Less : Fixed expenses	2,00,000	2,00,000
Operating profit or EBIT	2,00,000	2,80,000
Less : Interest on Debentures 10% on Rs. 10 lakhs	1,00,000	1,00,000
Profit before tax (PBT)	1,00,000	1,80,000
Less : Tax at 50%	50,000	90,000
Profit after tax (PAT)	50,000	90,000
(i) EPS = PAT / No of shares	$\frac{50,000}{10,000}$ = Rs. 5	$\frac{90,000}{10,000}$ = Rs. 9
(ii) Degree of financial leverage $= \frac{EBIT}{PBT}$	$\frac{2,00,000}{1,00,000}$ = 2	$\frac{2,80,000}{1,80,000}$ =1.56
(ii) Degree of operating leverage $= \frac{Contribution}{EBIT}$	$\frac{4,00,000}{2,00,000}$ = 2	$\frac{4,80,000}{2,80,000}$ =1.714

b) In relation to increase in Production and Sales from 1,00,000 units to 1,20,000 units i.e. 20% increase. EPS has gone from Rs. 5 to Rs. 9 i.e. increase by 80%. But both the financial leverage and operating leverage have decreased consequent upon the increase in sales. Due to reduction both risks i.e. business risk and financial risk of the business are reduced.

Question 4:

A firm has sales of Rs. 10,00,000, variable cost of Rs. 7,00,000 and fixed costs of Rs. 2,00,000 and debt of Rs. 5,00,000 at 10% rate of interest. What are the operating, financial and combined leverages? If the firm wants to double up its earnings before interest and tax (EBIT), how much of a rise in sales would be needed on a percentage basis?

(CA Final)

Solution :

Statement of Operating Profit

Particulars	**Rs.**
Sales	10,00,000
Less : Variable cost	7,00,000
Contribution (C)	3,00,000
Less : Fixed costs	2,00,000
Operating Profit or EBIT	1,00,000
Less : Interest at 10% on Rs. 5,00,000	50,000
Profit before tax (PBT)	50,000

Operating leverage $= \frac{C}{OP} = \frac{3,00,000}{1,00,000} = 3$

Financial leverage $= \frac{OP}{PBT} = \frac{1,00,000}{50,000} = 2$

Combined leverage $= 3 \times 2 = 6$

Statement of Sales needed to double EBIT

Operating leverage is 3 times i.e. 33.33% increase in sales volume causes a 100% increase in operating profit or EBIT. Thus at the sales of Rs. 13,33,333,.33, the operating profit or EBIT will become Rs. 2,00,000 i.e. double the existing one.

This is verified as follows :

Sales	13,33,333.33
Less: Variable cost	(9,33,333.33)
Contribution	4,00,000.00
Less: Fixed costs	(2,00,000.00)
Operating Profit	**2,00,000.00**

ICWA Exams Q No. 5 To 10

Question 5:

Calculate the degree of operating leverage, degree of financial leverage and the degree of combined leverage for the following firms and interpret the results :

Firm	Amit	Babu	Chandu
Output (units)	60,000	15,000	1,00,000
Fixed costs (Rs.)	7,200	14,000	1,500
Variable cost per unit (Rs.)	0.20	1.50	0.02
Interest on borrowed capital (Rs.)	4,000	8,000	Nil
Selling price per unit (Rs.)	0.60	5.00	0.10

(ICWA - Final)

Solution :

	Firms		
Firm	**Amit**	**Babu**	**Chandu**
Output (Units)	60,000	15,000	1,00,000
	Rs.	**Rs.**	**Rs.**
Selling Price per unit	0.60	5.00	0.10
Variable cost per unit	0.20	1.50	0.02
Contribution per unit	0.40	3.50	0.08
Total Contribution	24,000	52,500	8,000
Less : Fixed costs	7,000	14,000	1,500
EBIT or Operating Profit	17,000	38,500	6,500
Less : Interest	4,000	8,000	Nil
Profit before tax (P.B.T.)	13,000	30,500	6,500
Degree of Operating Leverage	$\frac{24,000}{17,000}$	$\frac{52,500}{38,500}$	$\frac{8,000}{6,500}$
$= \frac{Contribution}{E.B.I.T}$	=1.41	=1.36	=1.23
Degree of Financial Leverage	$\frac{17,000}{13,000}$	$\frac{38,500}{30,500}$	$\frac{6,500}{6,500}$
$= \frac{E.B.I.T}{P.B.T}$	=1.31	=1.26	=1.00
Degree of Combined Leverage	$\frac{24,000}{13,000}$	$\frac{52,500}{30,500}$	$\frac{8,000}{6,500}$
$= \frac{Contribution}{P.B.T}$	=1.85	=1.72	=1.23

Comments :

Since firm Chandu has low fixed cost and no interest, it constitutes an ideal situation. P/V ratio also is highest which is 80%. Low Operating leverage combined with low financial leverage will constitute an ideal situation; whereas high operating leverage combined with high financial leverage will constitute risky situation.

Question 6

The following are the operating results of a firm :

Sales (units)	25,000	Interests per annum	Rs. 30,000
Selling price per unit	Rs. 24	Tax Rate	50%
Variable cost per unit	Rs. 16	No. of Equity shares	10,000
Fixed costs per annum	Rs. 80,000		

Compute : (i) Break-even sales, (ii) Earnings before interest and tax, (iii) Earnings per share, (iv) Operating leverage, (v) Financial leverage.

ICWA (Inter)

Answer :

Working Note :

1) Statement of Profit after tax

Sales 25,000 units at 24	6,00,000
Less : Variable cost 2500×16	(4,00,000)
Contribution	2,00,000
Less : Fixed costs	(80,000)
Financial Leverage	633
Operating profit i.e. EBIT	1,20,000
Less : Interest	(30,000)
PBT	90,000
Less : Tax 50%	(45,000)
PAT	45,000

2) Contribution = 24 - 16 Rs. 8 per unit

P.V. Ratio = $\frac{C}{S} \times 100 = \frac{8}{24} \times 100 = 33⅓\%$

Solution :

i) Break-even sales = F/P.V. ratio. $80000 / 33⅓\% = Rs.2,40,000$

ii) EBIT Rs. 1,20,000 (refer WN1)

iii) EPS = PAT / No. of Equity shares = Rs. 45,000/10,000 shares = Rs. 4.50

iv) Operating Leverage = $\frac{C}{EBIT} = \frac{2,00,000}{1,20,000} = 1.67$

v) Financial Leverage = $\frac{EBIT}{PBT} = \frac{1,20,000}{90,000} = 1.33$

Question 7

A small industrial Co., has a sales level of Rs. 8,40,000 with a 10% profit margin before int. and taxes. To sustain this business, the firm maintains a fixed assets investment of Rs. 3,00,000 and Rs. 1,50,000 as current assets.

i) Compute the asset turnover of the firm :

ii) What is the EBIT percent on investment?

iii) What will be the rate of return if current assets increased by Rs. 1,50,000?

iv) What will it be if current assets decreased by Rs. 75,000?

ICWA (Final)

Answer

i) Total Assets = Fixed assets + Current Assets

= 3,00,000 + 1,50,000 = 4,50,000

Sales turnover = $\frac{Sales}{total\ assets}$ = $\frac{8,40,000}{4,50,000}$ = 1.87

ii) EBIT = 10% of 8,40,000 = Rs. 84,000/

Percent of EBIT on investment = $\frac{84,000}{4,50,000} \times 100 = 18.67\%$

iii) Rate of return, if current assets are increased by Rs. 1,50,000

$$\frac{84,000}{6,00,000}\times 100 = 14\%$$

iv) $\frac{84,000}{3,75,000}\times 100 = 22.4\%$

Question 8

The Net Sales of Apex Co. are Rs. 15 crores. EBIT of the Company as a percentage of Net Sales is 12%. The Capital Employed comprises Rs. 5 crores of equity, Rs. 1 crore of Cumulative Redeemable Preference Shares bearing 13% rate of dividend and Debt Capital of Rs. 3 crores at an annual interest rate of 15%. Corporate Income Tax Rate is 40%.

Required

i) Calculate the Return on Equity (ROE) for the Company and indicate its segments due to the presence of Preference Share Capital and Debt Capital.

ii) Calculate the Operating Leverage of the Company given that its Combined Leverage is 3.

ICWA (Final) (2 Times)

Answer

a)	EBIT 12% of net sales i.e. 12% of 15 crores	1.80
	Less Interest 15% of Rs. 3 crores	0.45
	PBT	1.35
	Less tax at 40%	0.54
	PAT	0.81
	Preference Dividend 13% of 1 crore =	0.13
	Profit available to Equity shareholders	Rs. 0.68 crores

$$\text{ROE} = \frac{\text{Profit available to Equity shareholders}}{\text{Equity Capital}}\times 100$$

$$= \frac{\text{Rs. 0.68 crores}}{\text{Rs. 5.00 crores}}\times 100 = 13.6\%$$

Segment of ROE due to preference capital = 0.002 i.e. 0.2%

Segment of ROE due to Debt = 0.018 i.e. 1.8%

b) Financial leverage = EBIT / PBT

= 1.80 / 1.35 = 1.3333

Combined leverage = Financial leverage × operating leverage

3 = 1.3333 × Operating leverage

Operating leverage = 3/1.3333 = 2.25

Question 9

The following details of A Ltd. for the year ended 31.3.95 are furnished :

Operating Leverage	3 : 1
Financial Leverage	2 : 1
Interest charges per annum	Rs. 20 lakhs
Corporate Tax Rate	50%
Variable cost as percentage of sales :	60%

Prepare the Income Statement of the company

ICWA (Inter)

Answer

WN 1 : Financial leverage = 2 : 1

$$\text{Financial leverage} = \frac{EBIT}{PBT} = \frac{EBIT}{EBIT - Interest} = \frac{2}{1}$$

$$\frac{EBIT}{EBIT - 20} = \frac{2}{1}$$

By cross multiplication : -

EBIT = 2 (EBIT - 20)

EBIT = 2 (EBIT - 40)

2 EBIT - EBIT = 40

EBIT = Rs. 40 lakhs

2) Operating leverage = 3 : 1

Operating leverage = $\frac{Contribution}{EBIT} = \frac{3}{1}$

$\frac{Contribution}{40} = \frac{3}{1}$

Contribution $= 3 \times 40 =$ Rs. 120 lakhs

3) Variable cost is 60% of sales i.e., contribution is 40% of sales.

Hence,

Contribution 40 - Sales 100

Contribution 120 - ?

$\frac{120}{40} \times 100 =$ Rs. 300 lakhs sales

Solution

Income statement of A Ltd. for the year ended 31.3.95 (Rs. Lakhs)

Sales	300
Less : Variable cost 60% of sales	180
Contribution 40% sales (WN2)	120
Less : Fixed cost excluding interest (B/F)	80
EBIT (WN1)	40
Less : Interest	20
PBT	20
Less : Tax at 50%	10
PAT	10

Question 10

Prepare the Income statement of a firm which gives the following details relating to its operations :

Operating Leverage	=	4
Financial Leverage	=	2
Annual interest paid	=	Rs. 10 Lakhs
Contribution / sales	=	0.4
Tax rate	=	40

ICWA (Inter)

Answer

Working Note

Financial Leverage $= \frac{EBIT}{PBT}$

2 $= \frac{EBIT}{EBIT - Interest}$

i.e. 2 $= \frac{EBIT}{EBIT - Rs.10\,lakhs}$

EBIT = Rs. 20 lakhs

Operating leverage $= \frac{Contribution}{EBIT}$

4 $= \frac{Contribution}{Rs.20\,lakhs}$

Contribution $= 4 \times 20$ lakhs = Rs. 80 lakhs

Contribution / Sales = 0.4 i.e. P.V. Ratio = 0.4 i.e. 40%

Variable cost ratio = 60% of sales.

Contribution 40% ……. 80 lakhs

Sales 100% ……. ?

i.e. sales = Rs. 200 lakhs

Solution

Income Statement **(Rs. Lakhs)**

Sales	200	EBIT	20
Less : Variable cost 60%	120	Less Interest (given)	10
Contribution	80	PBT	10
Less : Fixed overheads (B/F)	60	Less : Tax 40%	4
EBIT	20	PAT	6

Question 11

If the combined leverage and operating leverage figures of a company are 2.5 and 1.25 respectively, find the financial leverage and P/V ratio, given that the equity dividend per share is Rs. 2, interest payable per year is Rs. 1 lakh, total fixed cost Rs. 0.5 lakh and sales Rs. 10 lakhs.

ICWA (Final)

$$Combined\ Leverage = \frac{Contribution}{PBT} = 2.5\ i.e.\ \frac{25}{10}$$

$$Operating\ Leverage = \frac{Contribution}{EBIT} = 1.25\ i.e.\ \frac{125}{100}$$

$$Combined\ Leverage = Operating\ leverage \times financial\ leverage$$

$$2.5 \quad = \quad 1.25 \times financial\ leverage$$

$$Financial\ Leverage = \frac{2.5}{1.25} = 2.0$$

$$i.e.\ financial\ Leverage = \frac{EBIT}{PBT} = 2.0\ i.e.\ \frac{20}{10}$$

$$Financial\ Leverage = \frac{EBIT}{EBIT - Interest}$$

$$2 = \frac{EBIT}{EBIT - 100}\ i.e.,\ EBIT\ Rs.\ 2.00\ lakhs$$

EBIT	Rs. 2.00 lakhs
Less : Interest	1.00 lakhs
PBT	1.00 lakhs
EBIT	2.00 lakhs
Add : Fixed Cost	0.50 lakhs
Contribution	2.50 lakhs
Sales	10.00 lakhs
Variable cost	7.50 lakhs

$$P/V\ Ratio = \frac{C}{S} \times 100 = \frac{2.50}{10.00} \times 100 = 25\%$$

Note :	Reconciliation	Rs. lakhs
	Sales	10.00
	Less : Variable cost	7.50
	Contribution	2.50
	Less : fixed cost	0.50
	EBIT (or operating profit)	2.00
	Less : interest	1.00
	PBT	1.00

$$Combined\ Leverage = \frac{C}{PBT} = \frac{2.50}{100} = 2.5 \text{ (given in question)}$$

$$Operative\ Leverage = \frac{C}{PBT} = \frac{2.50}{2.00} = 1.25 \text{ (given in question)}$$

Question 12

The following financial data have been furnished by A Ltd. and B Ltd. for the year ended 31.3.2014 :

	A Ltd.	B Ltd.
Operating leverage	3 : 1	4 : 1
Financial leverage	2 : 1	3 : 1
Interest charges per annum	Rs. 12 lakhs	Rs. 10 lakhs
Corporate tax rate	40%	40%
Variable cost as % of sales	60%	50%

Prepare Income statements of the two companies. Also comment on the financial position and structure of the two companies.

ICWA (Inter)

Answer

For preparing Income statements, the following workings are required :

Company	A Ltd.	B Ltd.
$Financial\ Leverage = \frac{EBIT}{PBT} =$	2 : 1	3 : 1
$i.e. \frac{EBIT}{EBIT - Interest} = \frac{EBIT}{EBIT - 12\ lakhs} =$	$\frac{2}{1}$	$\frac{EBIT}{EBIT - 10\ lakhs} = \frac{3}{1}$
$EBIT = Rs.24\ lakhs$		$EBIT = Rs.15\ lakhs$
$Operating\ Leverage = \frac{C}{EBIT} =$	3 : 1	4 : 1
$\frac{C}{24\ lakhs}$	$\frac{3}{1}$	$\frac{C}{15\ lakhs} = \frac{4}{1}$
C =	Rs. 72 lakhs	C = Rs. 60 lakhs
Variable cost to sales	60%	50%
P/v ratio	40%	50%
$Contribution = Sales \times P/v\ Ratio$		
$72\ lakhs = Sales \times 40\%$		$60\ lakhs = Sales \times 50\%$
$Sales = Rs.180\ lakhs$		$Sales = Rs.120\ lakhs$

Solution **Income Statement** **(Rs. Lakhs)**

Particulars	A Ltd.	B Ltd.
Sales	180	120
Less : Variable cost 60% of 180	108	60
Contribution	72	60
Less : Fixed overheads excluding Interest (B/F)	48	45
EBIT	24	15
Less : Interest charges	12	10
PBT	12	5
Less : Tax at 40%	4.80	2
PAT	7.20	3

Comments :

Financial position of A Ltd. is better than that of B Ltd. in view of the following reasons :

1) Operating leverage is lower

2) Financial leverage is lower

3) Degree of Combined Leverage

A Ltd. $3 \times 2 = 6$

B Ltd. $4 \times 3 = 12$

Degree of combined leverage also is lower. That is the total risk (business and financial) of A Ltd. is lower.

4. Interest coverage ratio is also higher. That is A Ltd. is far better to meet the interest liability.

Interest coverage ratio = $\frac{EBIT}{Interest}$

A Ltd. : $\frac{24\ lakhs}{12\ lakhs} = 2$

B Ltd. : $\frac{15\ lakhs}{10\ lakhs} = 1.5$

5) One disadvantage : P/v ratio of A Ltd. is lower. P/V Ratio of B Ltd. is better.

9

WORKING CAPITAL MANAGEMENT

Unit Structure

9.1 INTRODUCTION & MEANING

Any business requires minimum capital to run the day-to-day business activities. This minimum capital is known as working capital. The management of Working capital is one of the crucial activities of the finance manager. Working capital management is called short term financial management. Short term financial management means management of current assets and current liabilities. Current assets are assets which can be converted into cash within an accounting year and it includes cash, Receivables, sundry debtors, Inventory, prepaid expenses. Current liabilities are payables within an accounting year and includes Sundry creditors, Bills Payable, outstanding liabilities etc.

9.2 CONCEPTS OF WORKING CAPITAL:

1. **Gross working capital:** Gross working capital refers to firm's investment in current assets. Current assets means receivables, Sundry debtors, Stock of raw material and finished goods and work-in-progress , Cash and cash equivalents, marketable securities, prepaid expenses etc.

2. **Net working capital:** Net Working capital refers to the difference between current assets and current liabilities. Net working capital can be positive or negative.

   a. **Positive working capital:** When current assets exceed current liabilities it's called positive working capital.

   b. **Negative working capital:** When current liabilities exceed current liabilities it's called negative working capital.

3. **Fixed working capital:** A firm may have policy to maintain minimum working capital all the time due to uncertainty involved in business, this minimum capital which required to be maintained is called as fixed working capital.

4. **Fluctuating working capital:** A working capital excess of fixed working capital is known as fluctuating working capital.

9.3 OPERATING CYCLE OR WORKING CAPITAL CYCLE:

Operating cycle means total period required

i. To convert cash into raw material
ii. To convert material into work in progress
iii. To convert Work-in-progress into finished goods
iv. To convert finished goods into Debtors and receivables
v. To convert receivables into cash.

Operating Cycle

9.4 COMPONENTS OF OPERATING CYCLE

1. **R**aw material storage period
2. **W**ork-in-progress holding period
3. **F**inished goods storage period
4. **D**ebtors collection period
5. **C**redit period allowed by creditors.

Operating cycle = R+W+F+D-C

Illustration No. 1 Calculate operating cycle from the following:

1. Raw material storage period – 1 Month
2. Work in progress holding period – 1 Month
3. Finished goods storage period – 2 Months
4. Debtors collection period – 3 Months
5. Credit period allowed by suppliers – 2 Months

Solution: Operating cycle = R+W+F+D-C

Operating Cycle = 1 Month + 1Month + 2Month + 3Month - 2Month
= **5 Months**

Statement Showing Estimated Working Capital Requirement - Format

Particulars	Computation	Amount	
		(Rs.)	(Rs.)
A. Current Assets:			
1. Stock of Raw Material	Annual Production X (Avg. Storage Period / 12 Months /365 days/52 weeks	XX	
2. Stock of W-I-P		XX	
a. Raw Material	Annual Production X(Avg. Holding period / 12 Months /365 days/52 weeks) X 100 %*		
b. Wages/ Labour cost	Annual Production X(Avg. Holding period / 12 Months /365 days/52 weeks) X 50% *		
c. Mfg. Overheads	Annual Production X(Avg. Holding period / 12 Months /365 days/52 weeks) X 50% *		
3. Stock of Finished Goods	Annual Production X (Avg. Storage Period / 12 Months /365 days/52 weeks)	XX	
4. Sundry Debtors	Annual Production X (Avg. Collection Period / 12 Months /365 days/52 weeks	XX	
5. Cash in Hand		XX	
6. Prepaid Expenses		XX	
Total Current Assets			**XXX**

B. Current Liabilities:			
1. Sundry Creditors	Annual Production X (Avg. Credit period allowed / 12 Months /365 days/52 weeks	XX	
2. Outstanding Expenses	Annual Production X (Avg. Credit period / 12 Months /365 days/52 weeks	XX	
3. Provisions		XX	
Total Current Liabilities			**(XXX)**
C. Net Working Capital (A-B)			**XXX**
D. Safety Margin			**XXX**
E. Total Working Capital (C+D)			

Note: * In computation of W-I-P if % degree of completion is specified then those % to be used otherwise computation will be as given in the format.

9.5 SOLVED PROBLEMS

Problem 1 :

From the following information, you are required to estimate the net working capital :

	Cost per unit (Rs.)
Raw Material	400
Direct Labour	150
Overheads (excluding depreciation)	300
Total	850

Additional Information :

	Rs. 1000 per units
Selling price	52000 units per annum
Output	Average 4 weeks
Raw materials in stock	Average 2 weeks
Work-in-progress (assume 50% of Completion stage with full material consumption)	
Credit allowed by suppliers	Average 4 weeks
Credit allowed to debtors	Average 8 weeks
Cash at bank expected to be	Rs. 50,000

Assume that production is sustained at an even pace during the 52 weeks of the year. All sales are on credit basis. State any other assumptions that you might have made while computing.

Solution :

Statement of working capital estimation

Current Assets		**Rs.**
$Raw\ Material\left(\frac{52000\times400\times4}{52}\right)$		16,00,000
Work-in-progress :		
i) Raw Material $\left(\frac{52000\times400\times2}{52}\right)$	8,00,000	
ii) Direct labour and overheads (50% complete) $\left(\frac{52000\times850\times4}{52}\right)$	4,50,000	12,50,000
Finished goods $\left(\frac{52000\times850\times4}{52}\right)$		34,00,000

Debtors $\left(\frac{52000\times850\times8}{52}\right)$		68,00,000
Cash at Bank		50,000
		1,31,00,000
Less :	**Current Liabilities**	
	Creditors $\left(\frac{52000\times400\times4}{52}\right)$	**16,00,000**
Net Working Capital		**1,15,00,000**

Problem 2:

A proforma cost sheet of a company provides the following particulars :

Element of cost	**Amount per unit Rs.**
Raw material	80
Direct labour	30
Overheads	60
Total Cost	170
Profit	30
Selling price	200

The following further particulars are available :

Raw materials are in stock on average one month. Materials are in process on an average half a month. Finished goods are in stock on an average one month.

Credit allowed by suppliers is one month. Credit allowed to debtors is two months. Lag in payment of wages is 1.5 weeks. Lag in payment of overhead expenses is one month.

One-fourth of the output is sold against cash. Cash on hand and at bank is expected to be Rs. 25,000.

You are required to prepare a statement showing the working capital needed to finance a level of activity of 1,04,000 units of production.

You may assume that production is carried on evenly throughout the year, wages and overheads accrue similarly and a time period of 4 weeks is equivalent to a month.

Solution :

Statement of working capital requirement

Particulars	Rs.	Rs.
Current Assets :		
Cash at bank		25,000
Stock of Raw Materials		
(8000 units at Rs. 80 per unit)		6,40,000
Work-in-progress		
Material for 4000 units at Rs. 80 per unit	3,20,000	
Labour& Overheads equal to 2000 units at Rs. 90 per unit	1,80,000	5,00,000
Finished goods, 8000 units at Rs. 170 per unit.		13,60,000
Sundry Debtors (equivalent at cost) Sales units 16,000		
Less : Cash		
Sales 4,000		
12,000		
Credit units - 12,000 @ Rs. 170 per unit		**20,40,000**
Total current assets		**45,65,000**
Less : Current Liabilities :		
Sundry creditors for 8000 units		
atRs. 80 per unit.	6,40,000	
Outstanding expenses		
Wages (3000 units x Rs. 30)	90,000	
Overheads (8000 x Rs. 60)	4,80,000	12,10,000
Net Working Capital required		33,55,000

Working notes : Sales for the year 1,04,000 units, therefore for the week will be 1,04,000/52 = 2000 per week.

Depreciation included in overheads can not be separated because of lack of information.

Problem 3 :

Fulchand &Co. is desirous to purchase a business and has consulted you on one point on which you are asked to advise them is the average amount of working capital which will be required in the first year's working.

You are given the following estimates and are instructed to add 10 percent to your computed figure to allow for contingencies.

i)	Average amount locked up for stocks :	
	Stock of finished product	5,000
	Stock of stores, materials etc.	8,000
ii)	Average credit given :	
	Inland sales - 6 weeks credit	3,12,000
	Export sales - 1½ weeks credit	78,000
iii)	Lag in payment of wages and other outgoings	
	Wages 1½ weeks	2,60,000
	Stores, materials, etc. -1½ months	48,000
	Rent, Royalties - 6 months	10,000
	Clerical Staff - ½ month	62,400
	Manager Salary - ½ month	4,800
	Miscellaneous expenses - 1½ months	48,000
iv)	Payments in advance :	
	Sundry expenses (paid quarterly in advance)	8,000
v)	Undrawn profits on the average throughout the year	11,000

Set up your calculations for the average amount of working capital required.

Solution :

Statement of Average Working Capital Requirements

Particulars	Rs.	Rs.
Current Assets :		
Stock of Finished goods	5,000	
Stock of stores, materials, etc.	8,000	13,000
Debtors :		
Inland Sales - 6 weeks sales $(3,12,000/52\times6)$	36,000	
Export Sales - 1 weeks sales $(78,000/52\times1)$	2,250	38,250
Advance payment of expenses		2,000
Total current assets		53,250
Current liabilities :		
Lag in payments :		
Wages	7,500	
Stores, materials, etc.	6,000	
Rent, Royalties, etc.	5,000	
Clerical staff	2,600	
Manager's Salary	200	
Miscellaneous expenses	6,000	27,300
Net working Capital		25,950
Add : 10% for contingencies		2,595
Average working capital requirement		28,545

Note : Undrawn profit has not been considered since it is a source of funds which may or may not be used as working capital.

Problem 4 :

Deepesh Ltd., sells its products on a gross profit of 20% on sales. The following information is extracted from its annual accounts for the current year ended 31st December :

	Rs.
Sales at 3 months' credit	40,00,000
Raw material	12,00,000
Wages paid - average time lag 15 days	9,60,000
Manufacturing expenses paid - one month in arrears	12,00,000
Administrative expenses paid - one month in arrears	4,80,000
Sales promotion expenses - payable half yearly in advance	2,00,000

The company enjoys one month's credit from the suppliers of raw materials and maintains a 2 month's stock of raw materials and one-and-half months' stock of finished goods. The cash balance is maintained at Rs. 1,00,000 as a precautionary measure. Assuming a 10% margin, find out the working capital requirements of XYZ Cements Ltd.

Solution :

Statement showing the determination of working capital

A)	**Current Assets**		**Amount (Rs.)**
	Cash balance		1,00,000
	Inventories		
	Raw materials (Rs. 12,00,000 x 2/12)	2,00,000	
	Finished good : $\frac{Rs.3,20,000\times1.5}{12}$	4,00,000	6,00,000
	Debtors $\frac{(Rs.32,00,000\times3)}{12}$		8,00,000
	Prepaid sales expenses $\frac{(Rs.2,00,000\times6)}{12}$		1,00,000
	Total (A)		16,00,000

B) Current Liabilities

Creditors for goods $\frac{(Rs.12,00,000\times1)}{12}$		1,00,000
Wages $\frac{(Rs.9,60,000\times1)}{2\times12}$		40,000
Manufacturing expenses $\frac{(Rs.12,00,000\times1)}{12}$		1,00,000
Administrative expenses $\frac{(Rs.4,80,000\times1)}{12}$		40,000
	Total (B)	2,80,000
C)	Net Working Capital (A - B)	13,20,000
	Add 10% margin	1,32,000
		14,52,000

Working Note :

1	Sales	40,00,000
	Less gross profit 20%	8,00,000
	Cost of production	32,00,000

Problem 5 :

The management of Diamond Ltd. has called for a statement showing the working capital needed to finance a level of activity of 3,00,000 units of output for the year. The cost structure for the company's product, for the above mentioned activity level, is detailed below :

	Cost per unit (Rs.)
Raw materials	20
Direct labour	5
Overheads	15
Total cost	40
Profit	10
Selling price	50

Past trend indicate that the raw materials are held in stock, on an average, for two months.

Work-in-progress (50% complete) will approximate to half-a-month's production.

Finished goods remain in warehouse, on an average, for a month.

Suppliers of materials extend a month's credit. Two month's credit is normally allowed to debtors.

A minimum cash balance of Rs. 25,000 is expected to be maintained.

The production pattern is assumed to be even during the year.

Prepare the statement of working capital determination.

Solution :

Statement to determine net working capital of Diamond Ltd.

				Amount (Rs.)
A)	**Current Assets**			
	i)	Raw materials for 2 months		
		2 month's consumption		
		(25,000 units x 2 months x Rs. 20 per unit)		10,00,000
	ii)	Work-in-progress for ½ month		
		Raw materials (12,500 units x Rs. 10)	1,25,000	
		Direct labour (12,500 units x Rs. 2.5)	31,250	
		Overhead (12,500 units x Rs. 7.5)	93,750	2,50,000
	iii)	Finished goods for 1 month (25,000 units x Rs. 40)		10,00,000
	iv)	Debtors for two months $\frac{(3,00,000 \times Rs.40 \times 2)}{12}$		20,00,000
		Minimum cash balance		25,000
		Total Investment in current assets		42,75,000
B)	**Current Liabilities**			
		Creditors for 1 month		5,00,000
C)	**Net working capital (A - B)**			**37,75,000**

Problem 6 :

The board of directors of Shrirang Engineering Company Ltd. , requires you to prepare a statement showing the working capital requirements for a level of activity at 1,56,000 units of production.

The following information is available for your calculation.

		Cost per unit (Rs.)
A)	Raw materials	90
	Direct labour	40
	Overheads	75
	Total	205
	Profit	60
	Selling price unit	265

A)
i) Raw materials are in stock, on average, for one month.
ii) Materials are in process, (50% complete) on average for 4 weeks.
iii) Finished goods are in stock, on average, for one month.
iv) Credit allowed by suppliers is one month.
v) Time lag in payment from debtors is 2 months.
vi) Average lag in payment of wages is 1½ weeks.
vii) Average lag in payment of overheads is one month.

20% of the output is sold against cash. Cash in hand and in bank is expected to be Rs. 60,000. It is to be assumed that production is carried one evenly throughout the year, wages and overheads accrue similarly, and a time period of 4 weeks is equivalent to a month.

Solution :

Shrirang Engineering Company Ltd.

Statement showing determination of working capital

			Amount (Rs.)
A)	**Current Assets**		
i)	Stock of raw materials for 1 month $\frac{(1,56,000 \times Rs.90 \times 1)}{12}$		11,70,000
ii)	Work-in-progress for 2 weeks		
	a) Material $\frac{(1,56,000 \times Rs.90 \times 4) \times 50\%}{48}$	5,85,000	
	b) Labour $\frac{(1,56,000 \times Rs.40 \times 4) \times 50\%}{48}$	2,60,000	
	c) Overheads $\frac{(1,56,000 \times Rs.75 \times 4) \times 50\%}{48}$	4,87,500	13,32,500
iii)	Finished gods stock for 1 month $\frac{(1,56,000 \times Rs.205(Total\ Cost)) \times 1}{12}$		26,65,000
iv)	Debtors for 2 months (at cost) $\frac{(1,24,800 \times Rs.205 \times 2)}{12}$		
v)	Cash in hand and at bank		60,000
	Total Current Assets (A)		94,91,500

B) Current Liabilities

i)	Creditors (1 month) $\frac{1,56,000 \times Rs.90 \times 1}{12}$	11,70,000	
ii)	Time lag in payment of wages		
	$\frac{1,56,000 \times Rs.40 \times 1.5}{48}$	1,95,000	
iii)	Time lag in payment of overheads		
	$\frac{1,56,000 \times Rs.75 \times 1}{12}$	9,75,000	
	Total current liabilities (B)		23,40,000
C)	**Net working capital (A - B)**		71,51,500

Problem 7:

Estimate the working capital requirements from the following annual figures by adding 5% for contingencies.

		Amount (Rs.)
i)	Stock of finished products and stores & materials	13,000
ii)	Credit allowed :	
	Domestic sales - 6 weeks	3,12,000
	Export sales - 1½ weeks	75,000
iii)	Advance payment	
	Sundry Expenses (Quarterly Advance)	8,000
iv)	Outstanding : -	
	Wages 1½ weeks	2,60,000
	Stores & Materials 1½ months	48,000
iii)	Rent & Royalties - 6 months	10,000
	Clerical staff ½ month	62,400
iv)	Manager ½ month	4,800
	Miscellaneous Expenses 1½ months	48,000

Suggested solution :

Estimate of working capital

		Rs.	
Current Assets :			
Inventories		13,000	
Debtors			
Domestic $\frac{(3,12,000\times 6)}{52}$		36,000	
Export $\frac{(78,000\times 1.5)}{52}$		2,250	
Advance payment of Expenses $(1/4\times 8000)$		2,000	
	Total	53,250	
Current Liabilities :			
Outstandings			
Wages $\frac{(2,60,000\times 1.5)}{52}$		7,500	
Creditors $\frac{(48,000\times 1.5)}{12}$		6,000	
Rent / Royalty $\frac{(10,000\times 6)}{12}$		5,000	
Clerical staff $\frac{(62,400)}{24}$		2,600	
Manager salary $\frac{(4,800)}{24}$		200	
Miscellaneous Expenses $\frac{(48,000\times 1.5)}{12}$		6,000	27,300
			25,950
Add 5% for contingencies			1,298
Working Capital Estimate			27,248

Problem 8:

X wishes to commence a new trading business and gives the following information :

1) The detailed estimated sales in a year will be Rs. 12,00,000.
2) His expenses are estimated at a fixed expenses of Rs. 2,000 per month plus a variable expense equal to 5 percent of his turnover.
3) He excepts to fix a sale price for each product which will be 25 percent in excess of his cost of purchase.
4) He excepts to turnover his stock four times in the year.
5) The sales and purchases will be evenly spread throughout the year. All sales will be for cash, but he expects one month's credit for purchases.

Calculate :

a) His estimated profit for the year.

b) His average working capital requirement.

(Adopted for CA Final)

Suggested solution :

a) Statement of Estimated Profit :

		Rs.
Sales		12,00,000
Less : Cost of Goods sold		9,60,000
Gross Profit (25% as cost of purchase, i.e. 20% on sales)		2,40,000
Less : Expenses :		
Fixed (2000×12)	24,000	
Variable (5% of Rs. 12,00,000)	60,000	84,000
Net profit		1,56,000

b) Statement of Average Working Capital :

Current Assets	Rs.
Stock $\frac{(9,60,000\times 3)}{12}$	2,40,000
Cash (assumed to be equal to monthly expenditure)	7,000
	2,47,000
Less : Current Liabilities	
Creditors $\frac{(9,60,000)}{12}$	80,000
Working Capital Required	1,67,000

Problem 9:

Calculate working capital from the following particulars :

		Rs.	
a)	Annual expenses :		
	Wages	52,000	
	Stores & Material	9,600	
	Export $\left(\frac{15,600}{52}\times 1(1/2)\right)$	450	
	Prepaid Expenses $\left(\frac{1,600}{52}\times 3\right)$	400	
		10,650	

Less : Current Liabilities :

Creditors for stores & materials $\left(\frac{9,600}{52}\times 1.5\right)$		1,200
Creditors for expenses :		
Wages $\left(\frac{52,000}{52}\times 1.5\right)$	1,500	
Office salaries $\left(12,480\times\frac{1}{24}\right)$	520	
Rent $\left(\frac{2,000}{12}\times 6\right)$	1,000	
Office expenses $\left(\frac{9,600}{12}\times 1.5\right)$	1,200	4,220
Working capital required		6,430

Problem 10 :

X Ltd., sells goods at a gross profit of 25%, not counting depreciation as part of the cost of goods sold.

The annual figures are as follows :

Domestic sales (1 month credit)	12,00,000
Export sales (3 months credit with sales price 10% below domestic price)	5,40,000
Materials used (2 months credit)	4,50,000
Manufacturing expenses paid in cash with 1 month in arrears	5,40,000
Depreciation on fixed assets	60,000
Wages paid ½ month in arrears	3,60,000
Office expenses paid 1 month in arrears	1,20,000
Sales expense payable quarterly in advance	60,000
Income Tax payable in four installments of which one falls due in the next financial year	1,50,000

The company normally keeps one month's stock of raw material and finished goods and believing in not utilisingRs. 1,00,000 available to it, including overdraft limit of Rs. 50,000.

Compute the working capital requirements, assuming a 15% safety margin and ignoring work-in-progress.

Suggested solution :

Statement of working capital requirement

Current Assets		Rs.
Stock of Raw Material $\frac{(4,50,000\times1)}{12}$		37,500
Stock of finished goods …(1) $\frac{(13,50,000\times1)}{12}$		1,12,500
Cash in the bank …. (ii)		50,000
Debtors :		
Domestic $\frac{(9,00,000)}{12}$		75,000
Export $\frac{(4,50,000\times3)}{12}$		1,12,500
Prepaid Expenses		15,000
		4,02,500
Less : Current Liabilities		
Creditors for purchases $\frac{(4,50,000\times2)}{12}$	75,000	
Wages $\frac{\left(3,60,000\times\frac{1}{2}\right)}{12}$	15,000	
Manufacturing expenses $\frac{(5,40,000)}{12}$	45,000	
Office expenses $\frac{(1,20,000)}{12}$	10,000	
Tax liability	37,500	1,82,500
Working Capital required		2,20,000

Working Note :

i)	Domestic Sales		12,00,000
	Export sales :	5,40,000	
	Add : 10% of Sales price i.e. 1/9th of 5,40,000	60,000	6,00,000
			18,00,000
	Less : 25% Gross profit		4,50,000
			13,50,000

Stock of finished goods in one month

$$\frac{13,50,000}{12} = 1,12,500$$

ii) Cash at Bank :

Amount available for use is Rs. 1,00,000 including Bank overdraft limit of Rs. 50,000/-. Hence cash in Bank Rs. 1,00,000 - Rs. 50,000 = Rs. 50,000.

Problem 11 :

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

	Rs. (per unit)
Raw materials	5.00
Wages	3.00
Variable Overheads	2.00
Fixed Overheads	1.00
Profit	2.00
Selling price	13.00

On 31st December, 2015 the Current Assets and liabilities were as follows :

		Rs.
Raw materials	4000 units at cost	20,000
Work in process	1000 units at cost	8,000
Finished goods	3000 units at cost	33,000
Sundry debtors		78,000
Creditors for goods		30,000
Liability for wages		3,000
Liabilities for expenses		6,000

In view of the increased demand for the product, it has been decided that from 1st Jan. 2016, 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, rate 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. Work in process may be assumed to be 100% complete as regards materials and 50% as regards wages and overheads.

Solution :

1) At 60% capacity production is 24,000 unit per month.

   Therefore, per month production is 2000 units.

   a) Raw material stock is equivalent to $\frac{4000}{2000} = 2$ months

   b) Work-in-process $\frac{1000}{2000} = \frac{1}{2}$ month

   c) Finished good $\frac{3000}{2000} = 1\frac{1}{2}$ months

   d) Debtors :Rs. 78000 @ selling price of Rs. 13 per unit i.e. 6000 units sales is equivalent to 3 months sales.

e) Creditors for goods : $\frac{Rs.30000}{Rs.5} = 6000$ units is which equivalent to $\frac{6000}{2000} = 3$ months.

f) Liability for wages $\frac{Rs.3000}{Rs.3} = 1000$ units i.e. $\frac{1}{2}$ month

g) Liability for expenses $\frac{Rs.6000}{Rs.3\ per\ unit} = 2000$ units.

2) Present working capital

Current Assets		**Rs.**
Raw materials		20,000
Work-in-process		8,000
Finished goods		33,000
Debtors : (based on cost : 6,000 units x 11)		66,000
Cash in hand (assumed to equal to one month fixed overhead) i.e. 2000 x Re. 1		2,000
		1,29,000
Less : Current liabilities		
Crs-for Goods	30,000	
Liability for wages	3,000	
Liability for expenses	6,000	39,000
Net working Capital		**90,000**

3) Fixed overheads : at 60% capacity is Re. 1 per unit i.e. total to 24000. At 90% capacity the fixed overheads will be the same and therefore fixed overheads per unit will be $\frac{Rs.24000}{36000} = 0.67$ per unit.

Therefore cost price structure at 90% capacity will be as follows :

	Rs. (per unit)
Raw materials	5.00
Wages	3.00
Variable Overheads	2.00
Fixed Overheads	0.67
	10.67
Profit	2.33
Selling price	13.00

Statement of working capital required at 90% capacity (36000 units)

Current Assets :	**Rs.**
Raw materials $(3000\times2\times5)$	30,000
Work-in-process	
Material $3000\times\frac{1}{2}\times5=7,500$	
Wages and overheads $3000\times\frac{1}{2}\times5.67=8,505$	16,005
Finished goods $\left(3000\times\frac{3}{2}\times0.67\right)$	48,015
Debtors (based on cost) $(3000\times3\times10.67)$	96,030
Cash in hand (Assumed to be equivalent to one month fixed overhead)	2,000
Total (A)	1,92,050
Current Liabilities	
Creditors for goods : $(3000\times3\times Rs.5)$	45,000
Liability for wages $\left(3000\times\frac{1}{2}\times3\right)$	4,500
Liability of expenses $(3000\times1\times2.67)$	8,010
Total (B)	57,570
Net working capital required (A - B)	1,34,540

Therefore additional working capital required will be (Rs. 134540 - Rs. 90000) = Rs. 44540/-

Problem 12:

Tiger Ltd. is a manufacturer of cement. The Annual Accounts of the company revealed the information as follows:

1) Customers were allowed three months credit period.

2) Wages are paid after 15 days when they become due.

3) Advertising expenses are paid 6 months in advance.

4) Manufacturing expenses are paid after a month.

5) Suppliers of manufacturing items allows one month's credit.

6) Administrative expenses are paid with an average time lag of one month.

7) The cash balance is Rs. 50,000.

8) Finished goods are kept in stock for one and half months whereas raw material stock is kept for two months.

9) Contingency margin is 10% and other details are as follows:

	(Rs. In lacs)
Sales	20.00
Raw materials	6.00
Manufacturing Expenses	6.00
Wages	4.80
Administrative Expenses	2.40
Advertising Expenses	1.00

Gross profit is 20% on sales. Estimate the working capital requirement of the company.

Solution :

Statement of working capital Requirement

	Rs.
Current Assets :	
Raw materials $\left(\frac{Rs.6\,lacs}{12}\times 2\right)$	1,00,000
Finished Goods $\left(\frac{19.20}{12}\times\frac{3}{2}\right)$	2,40,000
Debtor $\left(\frac{19.70\times 3}{12}\right)$	4,80,000
Advertisement expenses in advance $\left(\frac{1.00\times 6}{12}\right)$	50,000
Cash balance	50,000
Total (A)	9,20,000
Less : Current liabilities	
Crs-Raw material $\left(\frac{6\times 1}{12}\right)$	50,000
Outstanding -for wages $\left(\frac{4.80}{12}\times\frac{1}{2}\right)$	20,000
M/g Exps. $\left(\frac{6.00}{12}\times 1\right)$	50,000
Admin Exps. $\left(\frac{2.40}{12}\times 1\right)$	20,000
Total (B)	1,40,000
Working capital (A) - (B)	7,80,000
Add 10% for contingency	78,000
Working Capital required	8,58,000

Problem 13 :

From the following information make an assessment of working capital required by a Lion Ltd. The firm has approached Bank A who have agreed to sanction the working capital limits based on the data furnished by the firm retaining margin as under :

Raw materials	:	25%
Stock in process	:	33.33%
Finished goods	:	25%
Bills	:	20%

You are required to work out the working capital limits proposed to be sanctioned by the bank.

Estimate for 2016 :

Monthly Sales	Rs. 1,00,000
Monthly cost of production	Rs. 72,000
Monthly raw materials consumption	Rs. 50,000

Envisaged stocking pattern :

Raw materials	:	1 month
Work in process	:	15 days
Finished goods	:	15 days

Whereas the firm may extend a credit of 1 month to its customers, it is hopeful of getting 15 days credit from its suppliers.

Solution :

Statement of working capital required

Current Assts	Rs.	% finance by bank after margin	Bank finance
Raw material	50,000	75%	37,500
Work-in-process	36,000	66.67%	24,000
Finished good	36,000	75%	27,000
S. Debtors	1,00,000	80%	40,000
	2,22,000		

solution :

Statement of working capital

	Rs.
Current Assets :	
Materials $\left(\frac{48}{12}\times 3\right)$	12.00
Work-in-progress Material $\left(\frac{48}{12}\times 1\right)4.00$	7.00
Expenses $\left(\frac{24}{12}\times\frac{3}{2}\right)3.00$	
Finished goods $\left(\frac{84}{12}\times 1\right)$	7.00
Debtors $\left(\frac{120}{12}\times 3\right)$	30.00
(A)	56.00
Less : Current liabilities	
Credition $\left(\frac{48}{12}\times\frac{3}{2}\right)$	6.00
Working capital required	50.00
As per Bank norms working capital	

Current Assets	
Raw material (2½ month)	10.00
Work-in-progress (1 month)	6.00
Finished goods (1 month)	7.00
Debtors : (1½ month)	
Total	38.00
Less : Current liabilities creditors (2½ month)	10.00
Working capital as per Bank	28.00

Considering 25% of Current Assets as margin money i.e. Rs. 9.50 lakh, the permissible Bank Borrowing works out to Rs. 18.50 lacs.

Problem 14 :

Vijay Manufacturing Ltd. plans to sell 30,000 units next year. The expected cost of goods sold is as follows :

	Rs. (per unit)
Raw materials	100
Manufacturing expenses	30
Selling, administration and financial Expenses	20
Selling price	200

The duration at various stages of the operating cycle is expected to be as follows :

Raw material stage	2 months
Work-in-process stage	1 month
Finished goods stage	½ month
Debtors stage	1 month

Assuming the monthly sales level of 2500 units -

i) Calculate the investment in various current assets and

ii) Estimate the gross working capital requirement if the desired cash balance is 5% of the gross working capital requirement.

Solution :

i) Calculation of investment in various Current Assets

a) Raw material $\left(\frac{3000000}{12}\times 2\right)$ (2 month) = Rs. 5,00,000

b) Work-in-process : $\left(\frac{3900000}{12}\times 1\right)$ = Rs. 3,25,000

(based on total M/g cost) 1 month

c) Finished good $\left(\frac{3900000}{12}\times \frac{1}{2}\right)$ = Rs. 1,62,500

(½ month)

d) Debtors : (based on total cost) $\left(\frac{4500000}{12}\times 1\right)$ = Rs. 3,75,000

ii) Gross working capital requirement

	Rs.
Raw materials	5,00,000
Work-in-progress	3,25,000
Finished goods	1,62,500
Debtors	3,75,000
	13,62,500

Cash balance (5% on gross w.c.) 71,711

i.e. $\left(\frac{1362500}{95}\times 5\right)$

Gross Working Capital 14,34,211

10

INVENTORY MANAGEMENT

Practical Problems from Professional Exams

CA Exams Q. No.1 to 10

Question 1:

The Complete Gardener is deciding on the economic order quantity for two brands of lawn fertilizer: Super, Gros and Nature's Own. The following information is collected:

	Fertilizer	
	Super Grow	**Nature's Own**
Annual Demand	1,125 bags	1,250 bags
Relevant ordering cost per purchase order	Rs. 200	Rs. 320
Annual relevant carrying cost per bag	Rs. 5	Rs. 5

Required:

i) Compute EOQ for Super Grow and Nature's Own.

ii) For the EOQ, what is the sum of the total annual relevant ordering costs and total annual relevant carrying costs for Super Grow and Nature's Own?

iii) For the EOQ. Compute the number of deliveries per year for Super Grow and Nature's Own.

(**CA Inter)**

Answer :

Particulars	**Super Grow**	**Nature's Own**
I. $EOQ = \sqrt{\frac{2AO}{C}}$	$\sqrt{\frac{2 \times 2250 \times 200}{5}}$ = 100 bags	$\sqrt{\frac{2 \times 1280 \times 1400}{560}}$ = 80 bags
II. Ordering cost = 2000. 100 = 20 order at Rs. 1200 =	24000	12/0/80 = 16 orders at Rs. 1400 = 22400
Carrying cost $\frac{100}{2} \times 480 =$	24000	80/2 x 560 = 22400
Total Cost	48000	44800
iii. Number of deliveries in a year = Annual demand / EOQ =	2000/100 = 20 deliveries	1280/80 = 16 deliveries

Question 2:

G Ltd. produces a product which has a monthly demand of 4,000 units. The product requires a component X which is purchased at Rs. 20. For every finished product, one unit of component is required. The ordering cost is Rs. 120 per order and the holding cost is 10% p.a.

You are required to calculate :

i) Economic order quantity :

ii) If the minimum lot size to be supplied is 4,000 units, what is the extra cost, the company has to incur?

iii) What is the minimum carrying cost, the company has to incur?

CA (Inter)
(C.S. (Inter) (2 times)

Answer:

For every finished product, one unit of component is required.

Annual consumption = $4,000 \times 1 \times 12$ months = 48,000 units of components. C = 10% of 20 = Rs. 2 per unit per annum.

i) $EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 48,000 \times 120}{2}}$ = 2,400 units.

ii) Ordering cost 48,000/4,000 = 12 orders at Rs. 120 1,440

Carrying cost $\frac{4,000+0}{2} \times 2$ 4,000

Total cost 5,440

In case of EOQ

Ordering cost 48,000/2,400 = 20 orders at Rs. 120 2,400

Carrying cost $\frac{2,400+0}{2} \times 2$ 2,400 4,800

Extra cost, the company has to incur : 640

iii) Minimum carrying cost : $\frac{2,400+0}{2} \times 2$ Rs. 2,400

Company has to incur

Question: 3

ABC Company buys in lots of 125 boxes which is a three month's supply. The cost per box is Rs. 125 and the ordering cost is Rs. 250 per order. The inventory carrying cost is estimated at 20% of unit value per annum. You are required to ascertain :

i) What is the total annual cost of the existing inventory, policy?
ii) How much money would be saved by employing the economic order quantity (EOQ)?

CA (Inter) ;C.S. (Inter)

Answer :

i) Buying quarterly i.e. 4 orders in a year at Rs. 250 = 1000.00
Carrying cost of average inventory

$\frac{125+0}{2} \times (20\% \, of \, 125) = 62.50 \times 25 =$ 1562.50

Total Annual cost of existing inventory policy Rs. 2562.50

ii) Annual Consumption = $4 \times 125 =$ 500 boxes

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 500 \times 250}{25}}$$

$$\sqrt{10000} = 100 \, units$$

Ordering cost 500/100 = 5 orders at Rs. 250 = 1250.00

Carrying cost = $\frac{100+0}{2} \times 25 =$ 1250.00

Total cost if EOQ is followed 2500.00

Total cost at present 2562.50
Saving by employing EOQ = Rs. 62.50

Question 4:

The quarterly production of a company's product which has a steady market is 20,000 units. Each unit of a product requires 0.5 kg of raw material. The cost of placing one order for raw material is Rs. 100 and the inventory carrying cost is Rs. 2 per annum. The lead time for procurement of raw material is 36 days and a safety stock of 1.000 kg of raw materials is maintained by the company

the company has been able to negotiate the following discount structure with the raw material supplier :

Order quantity Kgs.	Discount Rs.
Upto 6,000	Nil
6,000 - 8,000	400
8,000 - 16,000	2,000
16,000 - 30,000	3,200
30,000 - 45,000	4,000

Your are required to :

i) Calculate the re-order point taking 30 days in a month.

ii) Prepare statement showing the total cost of procurement and storage of raw materials after considering the discount if the company elects to place one, two, four or six orders in the year.

iii) State the number of orders which the company should place to minimize the cost after taking EOQ also into consideration.

(CA Inter)

Answer:

i) Re-order point = lead time consumption + safety stock
Annual Production = 20000×4 = 80000 units
Annual consumption of raw materials = 80000-0.5kg = 40000 kg
Lead time consumption = $40000 \times \frac{36\ days}{360\ days} = 4000\ kgs.$
Reorder Point = 4000 + 1000 = 5000 kg.

ii) Statement of Total cost

No. of orders	Ordering cost (Rs.)	Each order qty. (Kg.)	Storage cost of average inventory (Rs.)	Total Cost (Rs.)	Less discount	Net Amount (Rs.)
1	100	40000	$\frac{40000kg + 0 \times 2}{2} = 40000$	40100 -	4000	36100
2	200	20000	$\frac{20000kg + 0 \times 2}{2} = 20000$	20200 -	3200	17000
4	400	10000	$\frac{10000kg + 0 \times 2}{2} = 10000$	10400 -	2000	8400
6	600	6667	$\frac{6667kg + 0 \times 2}{2} = 6667$	7267 -	400	6867

iii) $EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 40000 \times 100}{2}} = 2000\ Kgs.$

The company should place 20 order (40000/2000 kg. EOQ) to minimize the cost as calculated below.

Ordering cost 20 order at Rs. 100 =	2000
Carrying cost of average inventory $\frac{2000 + 0 \times 2}{2} =$	2000
Total cost	Rs. 4000 (Minimum)

Note: The above cost of Rs. 4000 is minimum. It is also less than Rs. 6867 (after availing discount of Rs. 400). (See solution at (ii) above)

Question 5:

A firm requires 50 items every day for a machine. A fixed cost of Rs. 50 per order is incurred for placing an order. The inventory carrying cost per item amounts to Re. 0.02 per day. The lead period is 32 days. You are required to compute (i) economics order quantity : and (ii) re-order level.

(CA Inter)

Answer

WN : Annual consumption 50×365 days = 18.250 items
Inventory carrying cost per item per annum.
$0.02 \times 365 = Rs.7.30$

Solution :

i) $EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 18250 \times 50}{7.30}}$
= 500 items

ii) Re-order level = Maximum usage per day x maximum lead time
50×32 days = 1,600 items

Problem 6:

A manufacturer requires 10,00,000 components for use during the next year which is assumed to consist of 250 working days. The cost of storing one component for one year is Rs. 4 and the cost of placing order is Rs. 32. There must always be a safety stock equal to two working days usage and the lead time from the

supplier, which has been guaranteed will be five working days throughout the year.

Assuming that usage takes place at the end of the year and order are placed at the of working day, you are required for :

a) Calculate the EOQ.
b) Calculate the Re-order point.

(C.A. Final)

Solution:

$$EOQ = \sqrt{\frac{2AO}{C}}$$

$$= \sqrt{\frac{2 \times 10,00,000 \times 32}{4}}$$

Where

A = 10.00.000 units
O = Rs. 32
C = Rs. 4

= 4.000 Units

c) Re-order point is calculated as follows :
Re-order point = Safety Stock + (Average usage x Lead time)

$$\text{Safety Stock} = \frac{10,00,000 \times 2}{250\ days}$$

= 4.000 usage x 2
= 8.000 Nos.

Re-order point = 8.000 + (4.000 x 5)
= 8,000 + 20,000
= 28,000 Nos.

Problem 7
For the following inventory problem, find out :
a) How much should be ordered each time?
b) When should the order be placed?
c) What should be the inventory level (ideally) immediately before the material ordered is received?

Annual consumption	12,000 units (360 days)
Cost per unit	Re. 1
Ordering cost	Rs. 12 per order
Inventory carrying charge	24%
Normal lead time	15 days
Safety stock	30 days consumption

(CA Final)

Solution:

a) EOQ = $\sqrt{\frac{2AO}{C}}$

$= \sqrt{\frac{2 \times 12000 \times 12}{0.24}}$ Where

A = 12,000 units
O = Rs. 12
C = 24% of Rs. 1 = 0.24 per unit

= 1,096 Units

b) When should the order be placed i.e.
Re-order Level = Lead time demand + Safety stock
= 15 + 30 = 45 days usage
= $45 \times \frac{12,000}{360}$
= 1,500 Units.

Thus, whenever the stock in hand reaches 1,500 an order should be placed.

c) Ideally, the stock just before the receipt of materials ordered should be safety stock, i.e. 1,000 Units $\left(30 \times \frac{12,000}{360}\right)$.

Problem 8:

Anil Company buys its annual requirement of 36,000 in six instalments. Each unit cost Re. 1 and the ordering cost is Rs. 25. The inventory carrying cost is estimated at 20% of unit value. Find the total annual cost of the existing inventory policy. How much money can be saved by using EOQ.

(CA Final)

Solution :

i)	**Present cost per annum**	**Rs.**
	Inventory carrying cost $\frac{6,000 \times 1 \times 20\%}{2}$	600
	Ordering cost 6×25	150
		750
ii)	Computation of EOQ	
	$EOQ \sqrt{\frac{2AO}{C}}$	A = 36.000 units
	$= \sqrt{\frac{2 \times 36.000 \times 25}{0.20}}$	O = Rs. 25
	$= \sqrt{90.00.000}$	C = 20% of Rs. 1
	$= 3.000\, Units$	

Costs associated with EOQ :

No. of order $= \frac{36.000}{3000} = 12$

	Rs.
Ordering cost (12×25)	= 300
Carrying cost $\frac{3000}{2} \times Rs.1 \times 20\%$	= 300
Total	600

Saving in cost by following EOQ (i) - (ii) = Rs. 150.

Problem 9:

A Precision Engineering Factory consumes 50,000 units of a component per year. The ordering, receiving and handling costs are Rs. 3 per order while the trucking cost areRs. 12 per order. Further details are as follows :

a) Interest cost Re. 0.06 per unit per year.
b) Deterioration and obsolescence cost Re. 0.004 per unit per year.
c) Storage cost Rs. 1000 per year for 50,000 units.

Calculate the economic order quantity.

(CA Final)

Solution :

i) EOQ = $\sqrt{\frac{2AO}{C}}$

Where A = Annual Consumption
O = Ordering cost per order
C = Carrying cost

A = 50,000 Units
O = Rs. 3 + Rs. 12 = Rs. 15
C = Rs. 0.08 + 0.004 = Rs. 0.084

Therefore

EOQ = $\sqrt{\frac{2\times 50,000\times 15AO}{0.084}}$

$= \sqrt{\frac{2\times 50,000\times 15\times 1,000}{84}}$

$= \sqrt{\frac{150,00,00,000}{84}} = 4,226\,Units$

Problem 10:

Economic Enterprises require 90,000 units of a certain item annually. The cost per unit is Rs. 3, the cost per purchase was Rs. 300 and the inventory carrying cost Rs. 6 per unit per year.

i) What is the Economic order quantity?
ii) What should the firm do if the supplier offers discounts as below viz?

Order quantity	Discount %
4500 - 5999	2
6000 and above	3

(CA Final)

Solution :

i) EOQ $= \sqrt{\frac{2AO}{C}}$

$= \sqrt{\frac{2\times 90000\times 300}{6}} = 3,000\,Units$

ii) Calculation of optimum order size for the discount offers :

Annual repayment (a)		Order Qty. (b)	Average Qty. of Order (c) = b / 2	No. of Orders (d) = a/b	Unit price after discount	Purchase price Rs. (f) =a x e	Cost of carrying @ Rs. 6	Total Cost of ordering @ Rs. 300 (h) = d x 300	Total Cost (i) = f + g + h
					Rs.	Rs.	Rs.	Rs.	Rs.
1	90,000	3,000	1,500	30	3.00	2,70,000	9,000	9,000	2,88,000
2	90,000	4,500	2,250	20	2.94	2,64,600	13,500	6,000	2,84,100 (lowest)
3	90,000	6,000	3,000	15	2.91	2,61,900	18,000	4,500	2,84,400

2) Is lowest, hence order quantity should be 4500 units with 2% discount.

CS Exams Q. No.11 to 13

Question 11:

Calculate the economic order quantity from the following particulars:

Name of the component	Esko
Annual consumption	96,004 units
Cost of placing one order	Rs. 152
Cost per unit	Rs. 100
Storage and carrying cost of average stock	20%

(CS (Inter) (Modified)

Answer :

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 96004 \times 152}{20\% \; of \; 100 = 20}} = 1208 \; units$$

Question 12:

The annual demand for a product is 10,000 units. The unit cost is Rs. 6 and inventory carrying cost per unit per annum is 1/3rd of the average inventory cost. If the cost of procurement is Rs. 100, determine -

i) Economic order quantity (EOQ)
ii) Number of order per annum; and
iii) Time between two consecutive orders.

(CS (Inter)

Answer :

i) $EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 10,000 \times 100}{1/3 \, of \, 6}}$

$\sqrt{\frac{2 \times 10,000 \times 100}{2}} = 1000$

ii) No. of order per annum = 10,000/1000=10 orders.
iii) Time between two consecutive orders = 12 months/10 = 1.2 months

Question 13:

A company buys in lots of 12,500 units which is a three month's supply. The cost per unit is Rs. 1.20. Each order costs Rs. 45 and inventory carrying cost is 15% of average inventory value.

Required :

i) What is the total annual cost of existing inventory policy?
ii) How much money could be saved by employing the economic order quantity?

(CS Inter)

Answer :

i) Existing inventory policy — Rs.
Ordering cost : 4 orders at Rs. 45 = 180
Carrying cost : $\frac{12,500+0}{2} \times 15\% \times 1.20$ =
Total annual cost of existing inventory policy = 1,305

ii) Annual consumption = $12,500 \times 4$ quarters = 50,000 units

$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 50,000 \times 45}{15\% \, of \, 120}}$ = 5,000 units

Ordering cost: 50,000/5,000 = 10 orders at Rs. 45 = 450

Carrying cost $\frac{5,000+0}{2} \times 15\% \times 1.20$ = 450

Total annual cost as per EOQ = 900

Saving by employing EOQ = 1305 - 900 = Rs. 405

CWA Exams Q. No.14 to 17

Question 14:

Orbysol Ltd. purchases 8,000 units of a particular item per year at an unit cost of Rs. 20, the ordering cost per order is 50 Rs. and the inventory carrying cost is 25 percent. Find the optimal order quantity and minimum total cost including purchase cost.

If a 3 percent discount is offered by the supplier for purchases in lots of 1,000 or more, should the publishing house accept the proposal?

ICWA (Final), CS (Inter) (modified).

Answer :

In the case of proposals with discount, we have to work out all three costs i.e. ordering cost, carrying cost and purchase cost with discount and without discount and then evaluate the proposals.

1. Without discount

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 2,000 \times 50}{25\% \; of \; 20}}$$

$$= \sqrt{\frac{2 \times 2,000 \times 50}{5}} = 200 \; units$$

Optimal order quantity.

In a year $\frac{2,000}{200} = 10$ orders are to be placed.

			Rs.
a)	Ordering cost = 10 x 50	=	500
b)	Carrying cost of average inventory $\frac{200}{2} = 100 \times 5$	=	500
			1,000
c)	Purchase cost 2,000 x 20	=	40,000
	Minimum Total cost	=	41,000

2. With 3% discount

Purchase price = 20 (-) 3% = Rs. 19.40
Carrying cost = 25% of 19.4 = Rs. 4.85

			Rs.
a)	Ordering cost : 2 orders in lots of 1,000 = 2 x 50	=	100
b)	Carrying cost : $\frac{1,000}{2} = 500 \times 4.85$	=	2,425
			2,525
c)	Purchase cost 2,000 x 19.40	=	38,800
	Total cost	=	41,325

3% discount offer need not be accepted. The discount comes to Rs. 1,200 only whereas the increase in ordering cost and carrying cost would be Rs. 1,525. The net increase in total cost would be Rs. 325. Hence the proposal is to be rejected.

Note : If the supplier offers 4% discount, the proposal can be accepted. Negotiation may be had with the supplier in this regard.

Question 15:

Shrikant Ltd. purchases 24,000 pieces of a component from a Nishikant Ltd. at Rs. 500 per piece and uses them in its assembly department, at a steady rate. The cost of placing an order and following it up is Rs. 2,500. The estimated stock holding cost is approximately 1% of the value of average stock held. The company is at present placing order which at present very between an order placed every two months *i.e. six orders p.a.) to one order per annum. Which policy would you recommend?

(ICWA (inter, Dec., 2001)

Answer :

Stock holding cost = C = 1% of 500 = Rs. 5.00

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 24,000 \times 2,500}{5}} = 4,899\, units$$

No. of order	Ordering cost	Carrying cost	Total cost
6 (4,000 pieces each order)	$6 \times 2,500 = 15,000$	$\frac{4,000+0}{2} \times 5 = 10,000$	25,000
5 (4,800 pieces each order)	$5 \times 2,500 = 12,500$	$\frac{4,800+0}{2} \times 5 = 12,000$	24,500
4 (6,000 pieces each order)	$4 \times 2,500 = 10,000$	$\frac{6,000+0}{2} \times 5 = 15,000$	25,000
3 (8,000 pieces each order)	$3 \times 2,500 = 7,500$	$\frac{8,000+0}{2} \times 5 = 20,000$	27,500
2 (12,000 pieces each order)	$2 \times 2,500 = 5,000$	$\frac{12,000+0}{2} \times 5 = 30,000$	35,000
1 (24,000 pieces)	$1 \times 2,500 = 2,500$	$\frac{24,000+0}{2} \times 5 = 60,000$	62,500

Recommendation - 5 orders per annum is recommended because the total cost will be lowest at Rs. 24,500. This is never to EOQ also i.e. 4,800 pieces each order.

Question 16:

A manufacturer requires 9,600 units of a certain component annually. This is currently purchased from a regular supplier at Rs. 50 per unit. The cost of placing an order is Rs. 60 per order and the annual carrying cost is Rs. 5 per piece. What is the economic order quantity (EOQ) for placing order?

Recently, the supplier has expressed his willingness to reduce the price to Rs. 48, if the total requirements are obtained from him in two equal orders and to Rs. 47, if the entire quantity required is purchased in one lot. Analyse the costs of the three options and recommend the best course.

What other factors should also be considered before the decision is taken?

(ICWA Inter)

Answer :

$$EOQ = \sqrt{\frac{2AO}{C}} = \sqrt{\frac{2 \times 9600 \times 60}{5}} = 480\ units$$

Cost of 3 options :

Particulars		
1. EOQ Price Rs. 50	2. Price Rs. 48	3. Price Rs. 47
Purchase cost		
$9,600 \times 50 = 4,80,000$	$9,600 \times 48 = 4,60,800$	$9,600 \times 47 = 4,51,200$
Ordering cost		
$9,600 / 480 = 20$ orders at		
Rs. 60 = 1,200	2 order = 60 = 120	One order 60
Carrying cost :		
$\frac{480+0}{2} \times 5 = 1,200$	$\frac{4,800+0}{2} \times 5 = 12,000$	$\frac{6,600+0}{2} \times 5 = 24,000$
Total cost Rs. 4,82,400	4,72,920	4,75,260

Recommendation:

The best course is to purchase at Rs. 48.

Other factors:

In this case, there are two equal orders i.e. 9,600/2=4,800 units are to be ordered at a time.

Problem 17:

i) A factory requires 1,500 units of an item per month each costing Rs. 27. The cost per order is Rs. 150 and the inventory carrying charges work-out to 20% of the average inventory. Find out the Economic Order Quantity and the number of orders per year.

ii) Would you accept a 2% price discount on a minimum supply of 1,200 Nos.? Compare the total cost in both the cases.

(ICWA Final)

Solution :

i) EOQ = $\sqrt{\frac{2AO}{C}}$

$= \sqrt{\frac{2\times 18.000\times 150}{5.40}}$ Where

A = Annual Consumption
= 1,500 x 12 = 18,000 units

$= \sqrt{\frac{2\times 18.000\times 1500}{54}}$ O = Ordering cost per order

= Rs. 150 per order.

C = Carrying cost
= 20% of Rs. 27 = 5.40

= 10.00.000
= 1.000 Units.

No. of orders per year

$= \frac{18.000\,Units}{1.000\,Units} = 18\,Orders\ per\ annum$

ii) 2% price discount on a minimum supply quantity of 1,200 units.

a) No. of orders per year = $\frac{18.000}{1.200} = 15\,orders$

b) Original price Rs. 27.00
Less : Discount 0.54
Discounted price 26.46

Statement of comparative cost

Particulars	Without discount (Rs.)	With 2% discount (Rs.)
a) Ordering cost	$(150\times 18)\,i.e.\,2,700$	$(150\times 15)\,i.e.\,2,250$
b) Inventory carrying cost	$\frac{1.000\times 27\times 20}{2\times 100}$	$\frac{1.200\times 26.46\times 20}{2\times 100}$
	i.e. 2.700	i.e. 3.175.20
Total (a) + (b)	5.400	5.425.20

Offer of 2% discount results in higher cost, therefore not acceptable.

11

RECEIVABLES MANAGEMENT

Unit Structure:

11.1 MEANING & INTRODUCTION:

Receivable management means managing receivables in an effective manner so that it will maintain balance between profitability and liquidity. Receivable means firm's book debt receivable from debtors on account of credit sales. Receivables management is important due to risk element involve in it. Book debts arise due to credit allowed to customers. The purpose to allow credit is to increase sales and to meet competition. The Finance manager has to keep optimum balance between risk and profitability to maximise the total value of the firm

RECEIVABLE MANAGEMENT INVOLVES FOLLOWING MAIN COSTS:

1. **Cost of financing receivables**: Allowing credit to customers is like financing customers as firm's capital get blocked due to allowance of credit. A firm may have to pay interest on the capital if it is a borrowed one.

2. **Cost of Collection:** If customers are paying receivables within the credit period allowed to them then there will not be any cost of collection. But when customer's do not pay the receivables within the credit period allowed to them then firm have to incur the cost for recovery/collection of the receivables. Collection costs mainly include legal costs.

3. **Bad Debts:** When customer is unable to pay his debt its called bad debt. Effective receivable management can reduce the chances of bad debts. It is said that 'No risk, No return' hence it becomes necessary to firm to provide credit to customers to compete in the market and to increase the sales.

11.2 IMPORTANT ASPECTS OF RECEIVABLES MANAGEMENT

1. **Formulation of credit policy**:

    a. **Credit selection**: A firm can not afford to allow credit to anyone. A firm has to evaluate credit worthiness to allow credit to customers. Following are the points which help to evaluate credit worthiness of the customers.

        i. **Capacity**: The credit will be allowed after evaluating repaying capacity of the customer.

        ii. **Capital**: This is another point where customer's capital is evaluated to know the financial strength.

        iii. **Collateral security**: If credit is allowed to customer and later he is unable to pay his debt within the credit period allowed then how firm is going to recover the book debt from such customer hence collateral security available to the client becomes important to recover book debt.

        iv. **Character:** The customer's ability to repay the book debts evaluated by customer's record of meeting past financial obligations and past payment history.

2. **Credit Terms**: Credit terms are the conditions under which the firm sells goods and services on credit to the customers. Credit terms includes following :

    a. **Credit Period**: credit period is time allowed to customer within which customer has to make payment. For e.g. if credit period is net 30, it means customer has to make payment within 30 days.

    b. **Cash Discount:** Cash discount is a discount allowed to customer for making payment within a specified period of time. E.g. credit term '2/15, net 45' means 2 % cash discount will be allowed if payment is made within a

period of 15 days otherwise credit period allowed is 45 days and no cash discount will be allowed.

3. **Collection policy:** The firm should have effective collection policy to avoid and reduce risk of bad debts. The collection policy will cover steps to be taken and procedures to be followed when payment is not received within the credit period allowed to customer.

11.3 PURPOSE OF CREDIT POLICY:

The purpose of having credit policy is avoid and reduce cost in receivables. Effective credit policy will reduce the cost receivables and will maximise the value of the firm.

11.4 EVALUATION OF CREDIT POLICY

Evaluation of credit policy will involve estimation of following points:

a. Credit Sales

b. Cost of credit sales

c. Cash Discounts

d. Bad debts & Collection cost

e. Expected profit (Credit sales- Cost of credit sales, bad debts, collection costs, cash discounts and other relevant cost related to receivable)

f. Tax payable on expected profit and compute net profit after tax.

g. Computation of opportunity cost of investment in receivables. Opportunity cost means opportunity forgone due to investment in receivables.

Investment in account receivables = Cost of credit sales p.a. X Average collection period(days, weeks, Months)/365 days or 52 weeks, 12 months)

Opportunity Cost = Investment in Account receivables X expected rate of return.

h. If expected profit after tax is more than opportunity cost then only the credit policy will be accepted.

Statement Showing Evaluation of Credit Policy (Format)

Particulars	**Present Policy**	**Proposed Policy**	
		1	**2**
1. Expected Profit			
a) Credit Sales			
b) Total cost of sales			
c) Bad Debts			
d) Cash Discount			
e) Expected Net profit before tax [a) – b) – c) – d)]			
f) Tax at %			
g) **Expected profit after tax (e-f)**			
2. Opportunity cost of investment in receivables			
3. Net Profit (1-2)			

Decision: The policy with maximum benefits should be accepted.

11.5 SOLVED PROBLEMS

Problem 1 :

A firm has credit sales amounting to Rs. 60,00,000. The sales price per unti is Rs. 50, the variable cost is Rs. 32 and the average cost per unit is Rs. 36. The average age of accounts receivable of the firm is 60 days.

The firm wants to tighten its credit terms, as a result the sales volume will come down to Rs. 50,00,000 and the average-age of accounts receivable to 45 days.

Assuming a rate of return of 15%, is the proposal viable?

solution :

		Present Plan 1,20,000 units (Rs.)	Proposed Plan 1,00,000 units (Rs.)
a)	Sales (S)	60,00,000	50,00,000
	Less : Variable cost (V)	38,40,000	32,00,000
	Fixed costs (50000×6)	4,80,000	4,80,000
b)	Total Cost	43,20,000	36,80,000
c)	Investment in receivable	$\frac{43,20,000 \times 60}{360}$	$\frac{36,80,000 \times 45}{360}$
	$\frac{Total\ cost \times Cr.\ period}{360\ days}$	= 7,20,000	4,60,000
d)	Reduction of investment in receivables		2,60,000
e)	Savings on account of returns on reduction in investment [@15% on (d)]		39,000
f)	Contribution Rs. (S - V)	21,60,000	18,00,000
g)	Loss of contribution		3,60,000
h)	Net Loss (e) - (g)		(-) 3,21,000

It is not recommended to go in for stricter credit terms. The existing policy is better.

Problem 2 :

Deepak Machines Ltd., wants to relax its credit policy. It sells at present 50,000 units at a price of Rs. 150 per unit, the variable cost is Rs. 120 per unit and the average cost per unit is Rs. 126 per unit. All the sales are on credit, the average collection period being 30 days.

With the relaxation of credit policy it is expected that sales will increase by 10% and average age of receivables to 60 days. Assuming 15% returns, should the firm relax its credit policy?

solution :

Evaluation of Credit Policies

		Present Plan (Rs.)	Proposed Plan (Rs.)
a)	Sales (S)	75,00,000	50,00,000
	Less : Variable cost (V)	60,00,000	32,00,000
	Fixed costs (50000×6)	3,00,000	4,80,000
b)	Total Cost	63,00,000	36,80,000
c)	Investment in Receivable	$\frac{63,00,000 \times 30}{360}$	$\frac{69,00,000 \times 60}{360}$
	$\frac{Total\ cost \times Credit\ period}{360\ days}$	= 5,25,000	=11,50,000
d)	Cost of investment in receivables (@15%)	78,750	1,72,500
e)	Additional cost of investment		93,750
f)	Contribution (S - V)	15,00,000	16,50,000
g)	Additional contribution		1,50,000
h)	Net Gain (g) - (e)		56,250

The firm should relax its credit policy as there is a net gain of Rs. 56,250.

Problem 3 :

PQR Ltd., is considering relaxing its credit policy and evaluating two proposed policies. Currently the firm has annual credit sales of Rs. 50 lakhs and account receivable is Rs. 12,50,000. The current level of loss due to bad debts is Rs. 1,50,000. The firm is required to give a return of 20% on investment in new (additional) accounts receivable. The company's variable costs are 70% of the selling price.

The following further information is finished :

		Present Policy (Rs.)	Policy Option - I (Rs.)	Policy Option - II (Rs.)
1)	Annual credit sales	50,00,000	60,00,000	67,50,000
2)	Accounts receivable	12,50,000	20,00,000	28,12,500
3)	Bad Debt losses	1,50,000	3,00,000	4,50,000

You are the financial consultant of the firm. Advise the Managing Director which option should be exercised.

solution :

Statement of evaluation of credit policies

		Policy Option - I (Rs.)	**Policy Option - II (Rs.)**
a)	Annual credit sales	60,00,000	67,50,000
b)	Increase in sales over present sales	10,00,000	17,50,000
c)	Contribution on increase in sales @ 30% [i.e. 30% of (b)]	3,00,000	5,25,000
d)	Increase in bad debt losses over present bad debt losses	1,50,000	3,00,000
e)	Net contribution = (c) - (d)	1,50,000	2,25,000
f)	Additional A/c Receivables	7,50,000	15,62,500
g)	Required Return on Investment on additional account receivables @ 20% i.e. 20% of (f)	1,50,000	3,12,500
h)	Net Gain + / Net Loss (-) (e) - (g)	Nil	(-) 87,500

Option I can be exercised since required return is achieved.

Problem 4 :

A company's present credit sales amount to Rs. 50 lakhs. Its variable cost ratio is 60% of sales and fixed costs amount to Rs. 10 lakhs per annum. The company proposes to relax its present credit policy of 1 month to either 2 months or 3 months, as the case may be. The following information are also available :

	Present Policy	Policy Option - I	Policy Option - II
Average age of debtors	1 month	2 months	3 months
Increase in Sales	--	20%	30%
Percentage of bad debt	1%	2.5%	5%

If the company requires a return on investment of 20% before tax, evaluate the proposals.

solution :

Statement of evaluation of credit policies

		Present Policy (Rs.)	Policy Option - I (Rs.)	Policy Option - II (Rs.)
a)	Annual credit sales	50,00,000	60,00,000	65,00,0000
b)	Variable cost [60% of (a)]	30,00,000	36,00,000	39,00,000
c)	Fixed cost	10,00,000	10,00,000	10,00,000
	Total cost	40,00,000	46,00,000	49,00,000
d)	Average investment in Debtors [based on total (b) + (c)]	$\frac{40,00,000}{12}$ =3,33,333	$\frac{46,00,000}{12}\times 2$ =7,66,667	$\frac{49,00,000}{12}\times 3$ =12,25,000
e)	Additional investment in debtors		4,33,334	8,91,667
f)	Required return of 20% on investment		86,667	1,78,333

g)	Bad Debts.	50,000	1,50,000	3,25,000
h)	Additional sales over present sales		10,00,000	15,00,000
i)	Additional contribution [40% of (h)]		4,00,000	6,00,000
j)	Net contribution [(i) - (g)]		2,50,000	2,75,000
k)	Net Gain / Net Loss (j) - (f)		1,63,333	96,667

Policy I is more beneficial.

Problem 5 :

Super Sports Co. dealing in sports goods, have an annual sale of Rs. 50 lakhs and are currently extending 30 days credit to the dealers. It is felt that sales can pick up considerably if the dealers are willing to carry increased stocks, but the dealers have difficulty in financing their inventory. Super Sports Co. is therefore considering shifts in credit policy. The following information is available :

The average collection period now is 30 days.

Costs :

Variable costs - 80 percent on sales.

Fixed costs - Rs. 6 lakhs per annum.

Required return (pre-tax) on investment - 20%

Credit Policy	Average collection Period	Annual Sales (Rs. In lakhs)
A	45 days	56
B	60 days	60
C	75 days	62
D	90 days	63

Determine which policy the company should adopt.

solution :

		Existing Credit Policy	Proposed Credit Policy			
			A	**B**	**C**	**D**
a)	Sales (Rs. In lakhs)	50.00	56.00	60.00	62.00	63.00
b)	Contribution [20% of (a)]	10.00	11.20	12.00	12.40	12.60
c)	Increase in contribution		1.20	2.00	2.40	2.60
d)	Average investment in debtors (Variable Cost + Fixed Cost)	46	50.8	54	55.6	56.4
e)	Investment in Debtors $\frac{Total\ cost \times Cr.Period}{360}$	$\frac{46\times30}{360}$ =3.83	$\frac{50.8\times45}{360}$ =6.35	$\frac{54\times60}{360}$ =9	$\frac{55.6\times75}{360}$ =11.58	$\frac{56.4\times90}{360}$ =14.10
f)	Additional investment		2.52	5.17	1.75	10.27
	Return on investment @ 20%		0.50	1.03	1.55	2.05
	Net Gain / Net Loss (c) - (f)		0.70	0.97	0.85	0.55

Policy B recommended because of highest gain.

Problem 6 :

A trader 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	Payment Default anticipated
A	10 days	Rs. 30,000	1.5%
B	20 days	Rs.48,000	2%
C	30 days	Rs.75,000	3%
D	45 days	Rs.90,000	4%

The selling price per unit is Rs. 3. Average cost per unit is Rs. 2.25 and variable cost per unit is Rs. 2.

The current bad debt loss is 1%. Required return on additional investment is 20%. Assume 360 days a year.

Which of the above policies would you recommend for adoption?

solution :

	Existing Credit Policy	Proposed Credit Policy			
		A	**B**	**C**	**D**
Collection period (days)	**30**	**40 (30+10)**	**50 (30+20)**	**60 (30+30)**	**75 (30+45)**
a) Sales	6,00,000	6,30,000	6,48,000	6,75,000	6,90,000
b) Costs :					
Variable (Rs. 2 i.e. $66\frac{2}{3}$% of sales)	4,00,000	4,20,000	4,32,000	4,50,000	4,60,000
Fixed cost (25 paise at sales level of existing 2,00,000 investment)	50,000	50,000	50,000	50,000	50,000
Total Cost	4,50,000	4,70,000	4,82,000	5,00,000	5,10,000

c)	Investment in Debtors (at cost)					
	$\frac{Total\ cost \times Cr.\ Period}{360\ days}$	$\frac{450000 \times 30}{360}$	$\frac{470000 \times 40}{360}$	$\frac{482000 \times 50}{360}$	$\frac{500000 \times 60}{360}$	$\frac{510000 \times 75}{360}$
		37,500	52,222	66,944	83,333	1,06,250
d)	Additional Investment		14,722	29,444	45,833	68,750
e)	Required Return @ 20% on (d)		2,944	5,888	9,166	13,750
f)	Bad Debts Loss (%)	1%	1.5%	2%	3%	4%
	% of sales (Rs.)	6,000	9,450	12,960	20,250	27,600
	Increase in Bad Debt. (Rs.)		3,450	6,960	14,250	21,600
g)	Contribution (Increased sales x P/V Ratio)		10,000	16,000	25,000	30,000
h)	Net contribution (g) - (f)		6,550	9,040	10,750	8,400
i)	Net Gain / Net Loss [(h) - (e)]		3,606	3,152	1,584	(-)5,350

Credit Policy A is recommended as it gives the highest gain.

Problem 7 :

ABC Company's present sales amount to Rs. 30 lakhs at Rs. 12 per unit. Variable cost is Rs. 8 per unit and fixed costs amount to Rs. 2.50 lakhs per annum. Its present credit period of one month is proposed to be extended to either 2 or 3 months, whichever appears to be more profitable. The following estimates are made for the purpose :

Credit Policy	1 month	2 months	3 months
Increase in sales (%)	--	8%	30%
% Bad Debt to sales	1	2	6

Fixed costs will increase by Rs. 5,00,000 annually after any increase in sales above 25% over the present level.

The company requires a pre-tax return on investment of at least 20% for the level of risk involved.

What will be the most rewarding credit policy in case of ABC company under the above circumstances.

solution :

Statement showing evaluation of credit policies

	Particulars	1 month	2 months	3 months
		(Rs. In lakhs)		
a)	Sales	30.00	32.40 (8% Inc.)	39.00 (30% Inc.)
	Less variable costs (Rs. 8 i.e. $66\frac{2}{3}$% of sales	20.00	21.60	26.00
	Fixed cost	2.50	2.50	3.00
b)	Total cost	22.50	24.10	29.00
c)	Investment in Debtors			
	$\frac{Total\ cost \times Cr.\ Period}{12\ months}$	$\frac{22.50 \times 1}{12}$ = 1.88	$\frac{24.10 \times 2}{12}$ = 4.02	$\frac{29 \times 3}{12}$ =7.25
d)	Additional Investment		2.14	5.37
e)	Return Expected on addl. Investment [20% of (d)]		0.43	1.07
f)	Contribution	10.00	10.80	13.00
g)	Additional contribution		0.80	3.00
h)	Bad Debt (%)	(1% 0.30	(2%) 0.65	(6%) 2.34
i)	Increase in bad debts losses		0.35	2.04
j)	Net contribution (g) - (i)		0.45	0.96
k)	Net Gain / Net Loss (j) - (e)		0.02	(-) 0.11

Credit Policy of 2 months is recommended.

Problem 8 :

STS Ltd., which sells on credit basis has ranked its customers in categories 1 to 5 in order of credit risk :

Category	Percentage bad debts	Average collection period
1	0.0	30 days
2	1.00	45 days
3	2.00	60 days
4	5.00	90 days
5	10.00	120 days

The Company's current credit policy is to allow unlimited credit to firms in categories 1 to 3, limited credit to firms in category 4 and no additional credit to firms in category 5.

As a result, orders amounting to Rs. 25,00,000 from category 4 and Rs. 75,00,000 from category 5 customers are rejected every year. If the STS Ltd., makes a 10% gross profit on sales and has an opportunity cost on investment in receivables of 12%; what would be the effect on profits of allowing full credit to all categories of customers? Should credit be extended to all categories of customers?

solution :

Statement showing the effects on profits for full credit allowed

		Category 4	Category 5	Total
a)	Additional sales	25.00	75.00	100.00
b)	Additional contribution (G.P. - 10%)	2.50	7.50	10.00
c)	Bad debts losses (%)	5%	10%	
	Actual loss	1.25	7.50	8.75
d)	Investment in Debtors (90% of sales)	22.50	67.50	
	$\frac{Total\ Investment \times Cr.\ Period}{360\ days}$	$\frac{22.50 \times 90}{360}$ =5.63	$\frac{67.50 \times 120}{360}$ =22.50	
e)	Investment @ 12% on (d)	0.68	2.70	3.38
f)	Net contribution (b) - (c)	1.25	--	125
g)	Net Gain / Net Loss (f) - (e)	0.57	(-) 2.70	(-) 2.13

If full credit is allowed to all the categories of customers, the profit will lower by Rs. 2.13 lakhs.

If the credit is allowed to the categories 1 to 4 and the credit is rejected to category 5, the profit of the Company, will be higher by Rs. 57,000 as shown in the above workings.

Problem 9 :

Vinayak Enterprises have launched an economy drive in their firm in order to arrest the trend of declining profitability about which the firm's directors have been worried for quite some time. As one of the measures, the Board of Directors has proposed to cut down the expenditure of the credit collection Department from Rs. 45 lakhs to Rs. 37.50 lakhs per year and also to increase the average collection period from 40 days to 60 days. The proposal will involve a reduction in the staff strength of the department but it is expected that the redundant employees can be accommodated elsewhere without any financial burden whatsoever for the firm.

The details of the present and proposed situations are as follows :

Present :

Credit sales	:	4,00,000 units at Rs. 75 per unit
Variable cost	:	Rs. 50 per unit
Fixed cost	:	Rs. 12.50 per unit
Total cost	:	Rs. 62.50 per unit
Bad Debts	:	1% of credit sales

Proposed :

Sales volume is expected to increase by 10%.

Bad Debts are likely to go up 3%.

Assuming that the rate of return on investment is 20% p.a. What suggestion will you offer to the Directors?

Solution :

The proposal will have the effect of increasing the profit due to increased sales and reduction in collection expenditure. It will also have the effect of increasing the costs due to increase in interest on investment and higher bad debts. The comparison of the total effects will help in reaching the conclusion whether the proposal is beneficial.

a) Calculation of Increase in Profits due to increase in sales volume.

Marginal contribution = Sales price - Variable Cost.

= Rs. 75 - Rs. 50

= Rs. 25 per unit

Total contribution on Increased Volume

= 40,000 units x Rs. 25 per unit

= Rs. 10,00,000

b) Increase in profits due to reduction of collection charges :

Present collection charges = Rs. 45 lakhs.

Proposed collection charges = Rs. 37.50 lakhs.

Saving in collection charges = s. 7.50 lakhs

Total Benefits (a) + (b) = Rs. 10,00,000 + Rs. 7,50,000

= Rs. 17,50,000

c) Increase costs due to Interest on additional investment :

Present Average Investment :

	Rs.
Variable cost $(4,00,000 \times 50)$	2,00,00,000
Fixed cost $(4,00,000 \times 12.50)$	50,00,000
Total cost	2,50,00,000
Debtors : 40 days	
$\therefore \quad \frac{25000000}{360} \times 40$	27,77,778
Proposed Average Investment :	
Variable cost $(4,40,000 \times 50)$	2,20,00,000
Fixed cost	50,00,000
Total cost	2,70,00,000
Debtors : 60 days	
$\therefore \quad \frac{27000000}{360} \times 60$	45,00,000
Net Increases in Investment :	17,22,222
(45,00,000 - 27,77,778)	
Addl. Interest on Investment @ 20%	3,44,444

d) Increase in Costs due to increase in Bad Debts :

	Rs.
Loss on Bad Debts	
Present : $(4,00,000 \times Rs.75)$	3,00,000
= 3,00,00,000 @ 1%	
Proposed $(4,40,000 \times Rs.75)$	9,90,000
= 3,30,00,000 @ 3%	
Addl. Loss on account of Bad Debts.	6,90,000
Total Loss (c) + (d)	10,34,444

Since the total benefits is more than the costs increased, the proposal can be accepted.

Problem 10 :

Vishnu Trading Company desires to allow 3 percent discount for payment made before 10^{th} day after a credit sale. The Company's annual credit sales is expected to increase from 75,000 units to 1,00,000 units. The variable cost per unit is Rs. 30 and the average cost per unit is Rs. 36. The selling price per unit Rs. 45.

The management expects that the average collection period will come down from 30 days to 15 days. It is further expected that 50 percent of the total sales will be on discount.

Expected rate of return on investment is 20 percent.

Should the discount facility allowed?

		Present Plan (Rs.)	Proposed Plan (Rs.)
a)	Sales (S)	33,75,000	45,00,000
	Less : Variable cost (V)	22,50,000	30,00,000
	Fixed costs $(75,000 \times 6)$	4,50,000	4,50,000
b)	Total Cost	27,00,000	34,50,000
c)	Investment in Debtors	$\frac{27,00,000 \times 30}{360}$	$\frac{34,50,000 \times 15}{360}$
	$\frac{Total\ cost \times Credit\ period}{360\ days}$	= 2,25,000	=1,43,750
d)	Reduction of investment in Debtors		81,250
e)	Savings due to return of 20% on (d) above		16,250
f)	Contribution (S - V)	11,25,000	15,00,000
g)	Additional contribution		3,75,000
h)	Cost involved in cash discount on credit sale @ 3 percent		
	Total credit sales Rs. 45,00,000		
	50% Avail discount i.e. Rs. 2250000		
	3% Discount is Rs.		67,500
i)	Net Gain (e) + (g) - (h)		3,23,750

Discount Policy is recommended.

Problem 11 :

The Diamond Manufacturing Company Ltd. extends on an average credit to its customers for 60 days. It now intends to reduce the terms to 30 days by offering 2% discount for payment within 30 days. The annual sales of the company is Rs. 1,00,00,000. The firm sells 80% of total sales on credit basis. The sales are evenly spread over the year. The expected rate of return is 15%.

If the company follows the discount policy of 2%, it is expected that 60% of the customers would take the discount and the average collection period would be reduced to 40 days.

Should the company adopt the discount policy?

		Present Policy (Rs.)	Proposed Policy (Rs.)
	Total Sales	1,00,00,000	1,00,00,000
a)	Credit Sales (80%)	80,00,000	80,00,000
b)	Average Investments in Receivables $\frac{Credit\ Sales \times Credit\ period}{360\ days}$	$\frac{80,00,000 \times 50}{360}$ = 11,11,111	$\frac{80,00,000 \times 30}{360}$ = 6,66,667
c)	Reduction in Investment		4,44,444
d)	Saving due to return on (c) (15%)		66,667
e)	Cost of discount : (60% of Rs. 80,00,000) Sales on which discount will be availed		48,00,000
f)	Discount @ 2% on (e) above		96,000
g)	Net Loss (d) - (f)		(-) 29,333

Discount Policy is not recommended.

Note :

Since cost of sales information was not available, credit sales figure have been used for working of Average Investments in Receivables.

Problem 12 :

In order to increase sales from the normal level of Rs. 24 lakhs per annum, the Marketing Manager submits a proposal for liberalizing credit policy as under :

Normal sales	Rs. 2.4 lakhs
Normal credit period	30 days

Proposed increase in Credit period beyond Normal 30 days	Relevant increase Over normal sales Rs.
15 days	12,000
30 days	18,000
45 days	21,000
60 days	24,000

The P/V Ratio of the company is $33\frac{1}{3}\%$

The company expects a pre-tax return of 20% on investment.

Evaluate the above four alternatives and advise the Management. (Assume 360 days a year.)

Solution :

Statement showing evaluation of credit policies

Particulars		Present	Credit Policies Options			
			I	II	III	IV
	Collection period (days)	**30**	**45**	**60**	**75**	**90**
a)	Sales	2,40,000	2,52,000	2,58,000	2,61,000	2,64,000
b)	Variable Costs	1,60,000	1,68,000	1,72,000	1,74,000	1,76,000
c)	Contribution $\left(33\frac{1}{3}\%\right)$	80,000	84,000	86,000	87,000	88,000
d)	Addl. Contribution		4,000	6,000	7,000	8,000
e)	Investment in receivable : $\frac{Cost \times Credit\ period}{360\ days}$	$\frac{160000\times30}{360}$ = 13,333	$\frac{168000\times45}{360}$ = 21,000	$\frac{172000\times60}{360}$ = 28,667	$\frac{174000\times75}{360}$ = 36,250	$\frac{176000\times90}{360}$ = 44,000
f)	Addl. Investment in receivables		7,667	15,334	22,917	30,667
g)	Return on addl. Investment @ 20%		1,533	3,067	4,583	6,133
h)	Net Gain / (d) - (g) (Net Loss)		2,467	2,933	2,417	1,867

60 days credit i.e. increase by 30 days is more beneficial.

Problem 13 :

Sanjay Limited specialize in the manufacture of a computer component. The component is currently sold for Rs. 1,000 and its variable cost is Rs. 800. For the year ended 31.12.92, the Company sold on an average 400 components per month.

At present the company grants one months credit to its customers. The company is thinking of extending the same of two months on account of which the following is expected :
Increase in sales 25%.
Increase in stocks Rs. 2,00,000.
Increase in creditors Rs. 1,00,000

You are required :

To advise the company on whether or not to extend the credit terms if :

a) All customers avail the extended credit period of two months and

b) Only the new customers avail the two months credit. Assume in this case that the entire increase in sales is attributable to the new customers.

The company expect a minimum return of 40% on the investment.

Solution :

	Particulars	Existing	Proposal (a)	Proposal (b)
			All customers Avail two Months credit	**Only new Customers Avail two Months credit**
a)	Average credit period (days)	30	60	36
b)	Sales @ Rs. 1000 each	48,00,000	60,00,000	60,00,000
c)	Cost of Sales	38,40,000	48,00,000	48,00,000
d)	Contribution	9,60,000	12,00,000	12,00,000
	Additional contribution		2,40,000	2,40,000
e)	Investment in receivables	3,20,000	8,00,000	4,80,000
	$\frac{Cost\ of\ sales \times Credit\ Period}{360}$			
f)	Increase in addl. Investment			
	(Stock - Creditors)		1,00,000	1,00,000
g)	Total addl. Investment (e) + (f)		5,80,000	2,60,00
h)	Required return @ 40% of (g)		2,32,000	1,04,000
i)	Net Gain (d) - (h)		8,000	1,36,000

Proposal (b) is beneficial.

Problem 14 :

As a part of the strategy to increase sales and profit, the Sales Manager of a company proposes to sell goods to a group of new customers with 10% risk of non-payment. This group would require one and a half month credit and is likely to increase sales by Rs. 1,00,000 p.a. Production and selling expenses amount to

80% of sales and the income tax rate is 50%. The company's minimum required rate of return (after tax) is 25%.

Should the Sales Manager's proposal be accepted?

Also find the degree of risk of non-payment that the company should be willing to ensure if the required rate of return (after tax) were (i) 30%, (ii) 40% and (iii) 60%.

Suggested solution :

i)

	Rs.
Additional sales from new customer	1,00,000
Less : Risk of non-payment @ 10%	10,000
Less : Production & selling expenses @ 80%	80,000
Profits before tax	10,000
Less : Tax @ 50%	5,000
Profits after tax	5,000

Investment in Debtors :

Sales : Rs. 1,00,000

Cost of sales @ 80% is Rs. 80,000

$\therefore$ Debtors $= \frac{Cost}{12} \times \frac{3}{2}$ (1.5 month credit)

$= \frac{80,000}{12} \times \frac{3}{2}$

$= Rs.10,000$

Rate of Return :

$$\frac{\text{Profit after tax}}{Investment} \times 100$$

i.e. $\frac{5,000}{10,000} \times 100 = 50\%$

The Sales Manager's proposal is acceptable; rate of return being greater than 25%.

ii) Statement showing acceptable degree of risk of non-payment :

Rate or Return	I 30% Rs.	II 40% Rs.	III 60% Rs.
a) Average investment in debtors	10,000	10,000	10,000
b) Profit after tax (at rate of return)	3,000	4,000	6,000
c) Profit before tax (Grossing up by 50% tax)	6,000	8,000	12,000
d) Contribution of additional sales (sales less 80%)	20,000	20,000	20,000
e) Acceptable risk of non-payment	14,000	12,000	8,000
f) As a % of Sales	14%	12%	8%

Problem 15 :

A group of customers want to enter into a contact with you to buy goods worth Rs. 20 lakhs during 1998. The deliveries to be made in four equal instalments quarterly. The price of the commodity is Rs. 20 per unit on which you expect a profit of Rs. 10. The acceptance of this proposal would mean an additional recurring expenditure of Rs. 10,000 p.a. on your part.

The aging schedule of accounts receivables in respect of this group of customers in the past was as follows :

Period	Percentage of bills for Which payment received
At the end of 30 days	155
At the end of 60 days	25%
At the end of 90 days	40%
At the end of 100 days	20%

Assuming an opportunity cost of 20% of the funds locked up in account receivables, will it be desirable to accept the proposal?

Solution :

a) Calculation of Expected Profits from the contract :

Contribution @ 50% on contract value of Rs. 20 lakhs. (Since cost is Rs. 10 & price of Rs. 20 per unit)

Therefore contribution is Rs. 10 lakhs

Less : Additional recurring expenses Rs. 0.10 lakhs

Expected Profit Rs. 9.90 lakhs

b) Calculation of opportunity cost :

c) Delivers in 4 equal instalment quarterly, therefore sales in quarter is Rs. $20,00,000 \div 4 = Rs.5,00,000$

Realisation as per aging schedule

No. of Days		Rs.	Product
30	@ 15% of Rs. 5 lakhs	75,000	22,50,000
60	@ 25% of Rs. 5 lakhs	1,25,000	75,00,000
90	@ 40% of Rs. 5 lakhs	2,00,000	1,80,00,000
100	@ 20% of Rs. 5 lakhs	1,00,000	1,00,00,000
			3,77,50,000

Opportunity cost of Funds blocked.

@ 20% per quarter : $= \frac{37750000}{365} \times \frac{20}{100} = Rs.20,685$

Therefore for one year is $4 \times 20,685 = Rs.82,740$

Therefore Net Gain = Expected Profits - Opportunity cost of funds

= 9,90,000 - 82,740 = Rs. 9,07,260

Hence proposal is acceptable.

	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

Problem 16: Debtors Decision - Interest on Average Debtors

A Company currently has an annual turnover of 50 Lakhs and an average collection period of 30 days. The Company wants to experiment with a more liberal credit policy on the ground that increase in collection period will generate additional sales.

From the following information, kindly indicate which policy the Company should adopt :

Credit Policy	Average Collection Period	Amount Sales (₹in Lakhs)
A	45 days	56
B	60 days	60
C	75 days	62
D	90 days	63

Variable Cost is 80% of Sales. Fixed Cost is `6 Lakhs per annum.

Required (pre-tax) Return on Investment is 20%. A year may be taken to comprise of 360 days.

Solution :

Evaluation of alternative credit policies

	Particulars	Present	Policy A	Policy B	Policy C	Policy D
1.	Sales	₹50,00,000	₹56,00,000	₹60,00,000	₹62,00,000	₹63,00,000
2.	Variable Cost at 80%	₹40,00,000	₹44,80,000	₹48,00,000	₹49,60,000	₹50,40,000
3.	Contribution (1-2)	₹10,00,000	₹11,20,000	₹12,00,000	₹12,40,000	₹12,60,000
4.	Fixed Costs (given)	₹6,00,000	₹6,00,000	₹6,00,000	₹6,00,000	₹6,00,000
5.	Profit (3-4)	v4,00,000	₹5,20,000	₹6,00,000	₹6,40,000	₹6,60,000
6.	Cost of Debtors p.a. = Total Costs = (2+4)	₹46,00,000	₹50,80,000	₹54,00,000	₹55,60,000	₹56,40,000
7.	Collection Period	30 days	45 days	60 days	75 days	90 days
8.	Average Debtors $= \frac{(6)\times(7)}{360}$	₹3,83,333	₹6,35,000	₹9,00,000	₹11,58,333	₹14,10,000
9.	Interest on Avg. Debtors $\left[(8)\times 20\%\right]$	₹76,667	₹1,27,000	₹1,80,000	₹2,31,667	₹2,82,000
10.	Net Benefits (5 - 9)	₹3,23,333	₹3,93,000	₹4,20,000	₹4,08,333	₹3,78,000

Conclusion : The Company may choose Policy B to maximize Net Benefit.

Problem 17: Debtors Decision - Interest on Average Debtors

In order to increase sales from their present annual level of 2,40,000, Agni Associates is considering a more liberal credit policy. Currently, the Firm has an average collection period of 30 days. However, it is believed that as Collection Period is lengthened, sales will increase by following amounts -

Credit Policy	Increase in Average Collection Period	Increase in Sales
A	15 days	₹10,000
B	30 days	₹15,000
C	45 days	₹17,000
D	60 days	₹18,000

The Variable Costs of the Firm's product in 60% of Sale Price. If the Firm has a pre-tax opportunity cost of 20%, which credit policy should be pursued? (Assume a 360-day year).

Decision : The Firm should select Policy B, i.e. 60 days credit, since maximum benefit is obtained under that policy.

Problem 18: Debtors Decision - Interest on Average Debtors, Bad Debts

ABC Ltd. has a present annual Sales Turnover of ₹40,00,00. The unit Sale Price is ₹20. Variable Cost are ₹12 per unit and Fixed Costs amount to ₹5,00,000 p.a. The present credit period of 1 month is proposed to be extended to either 2 or 3 months whichever will be more profitable. The following data is also made available -

Credit Period	1 month	2 months	3 months
Increase in Sales	--	10%	30%
0% of Bad Debts to Sales	1	2	5

Fixed Cost will increase by 75,000 when Sales will increase by 30%. The Company requires a pre-tax return on investment at 20%. Evaluate the proposals and recommended best credit period for the Company.

Solution:

Particulars	Present	Proposal I	Proposal II
1. Quantity Sold $\left(Present \frac{₹40,00,000}{₹20}\right)$	2,00,000 units	2,00,000+10% = 2,20,000 units	2,00,000+30% = 2,60,000 units
2. Sales Value ₹20 per unit	₹40,00,000	₹44,00,000	₹52,00,000
3. Variable Costs at ₹12 per unit	₹24,00,000	₹26,40,000	₹31,20,000
4. **Contribution = (2 - 3)**	₹16,00,000	₹17,60,000	₹20,80,000
5. Fixed Costs (given)	₹5,00,000	₹5,00,000	₹5,75,000
6. **Profit = (4 - 5)**	₹11,00,000	₹12,60,000	₹15,05,000
7. Cost of Debtors p.a. = Total Cost = (3+5)	₹29,00,000	₹31,40,000	₹36,95,000
8. Collection Period	1 Month	2 Month	3 Month
9. Average Debtors $= \frac{(7)\times(8)}{12}$	₹2,41,667	₹5,23,333	₹9,23,750
10. Interest on Average Debtors $[(9)\times 20\%]$	₹48,333	₹1,04,667	₹1,84,750
11. Bad Debts (as % on Sales)	1% =₹40,000	2% =₹88,000	5% =₹2,60,000
12. **Net Benefit** = (6 - 10 - 11)	₹10,11,667	₹10,67,333	₹10,60,250

Conclusion : The Company can extend credit upto 2 months only, in order to derive maximum Net Benefit.

Problem 19: Debtors Decision - Interest on Average Debtors, Bad Debts

The current sales of Raja Ltd. are ₹250 Lakhs. It sells on terms of net 30 days and the average collection period (ACP) is 40 days. Bad Debt losses are 3% of Sales. The cost of funds blocked in receivables is reckoned at 18%. The Variable Costs are 80% of Sales. Since the Company has excess capacity, it can expand its sales substantially without additional Fixed Costs. The Management is evaluating three alternative credit policies -

1. Policy A : This calls for relaxing the credit standards. It is expected to increase sales by ₹40 Lakhs. On the new sales, ACP will be 50 days and the Bad Debt Loss is 15%.

2. Policy B : This involves changing the terms of credit from net 30 to net 45. this is expected to raise Sales by ₹15 Lakhs, lengthen the ACP to 60 days and result in a Bad Debt Loss of 4% on the new sales.

3. Policy C : This calls for decreasing the rigours of collection effort. This is expected to push sales up by ₹10 Lakhs, increase the ACP to 50 days and raise the Bad Debt Loss to 4%.

Determine the most optimum policy for the Company - Take 1 year = 360 days.

Particulars		Present	Policy A	Policy B	Policy C
1.	Sales	250.00	290.00	265.00	260.00
2.	Variable Cost at 80%	200.00	232.00	212.00	208.00
3.	Contribution = (1-2)	50.00	58.00	53.00	52.00
4.	Cost of Debtors p.a. = Variable Cost of Sales	200.00	232.00	212.00	208.00
5.	Collection Period	40 days	40 & 50 days	60 days	50 days
6.	Average Debtors	$200\times\frac{40}{360}=22.22$	$\left(200\times\frac{40}{360}\right)+\left(32\times\frac{50}{360}\right)$ $=22.22+4.44=26.66$	$212\times\frac{60}{360}=35.33$	$208\times\frac{50}{360}=28.89$
7.	Interest on Debtors at 18%	4.00	4.80	6.36	5.20
8.	Bad Debts (% on Sales)	$3\%\times250=7.50$	$(3\%\times250)+(15\%\times40)$ $=7.50+6.00=13.50$	$(3\%\times250)+(4\%\times15)$ $=7.50+0.60=8.10$	$4\%\times260=10.40$
9.	Net Benefits = (3 - 7- 8)	**38.50**	**39.70**	**38.54**	**36.40**

Decision : Policy A is the most paying (i.e. beneficial) policy for the Company.

Problem 20: Credit Decision - Interest on Average Debtors, Bad Debts

A Trader, whose current sales are in the region of 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	Percent default anticipated
A	10 days	₹30,000	1.5%
B	20 days	₹48,000	2%
C	30 days	₹75,000	3%
D	45 days	₹90,000	4%

The Selling Price per unit is 3. Average Cost per unit is 2.25 and Variable Costs per unit are 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?

	Particulars	Present	Policy A	Policy B	Policy C	Policy D
1.	Sales	₹6,00,000	₹6,30,000	₹6,48,000	₹6,75,000	₹6,90,000
2.	Variable Cost at 2/3rd	₹4,00,000	₹4,20,000	₹4,32,000	₹4,50,000	₹4,60,000
3.	Contribution (1-2)	₹2,00,000	₹2,10,000	₹2,16,000	₹2,25,000	₹2,30,000
4.	Fixed Costs (Note)	₹50,000	₹50,000	₹50,000	₹50,000	₹50,000
5.	Profit (3 - 4)	₹1,50,000	₹1,60,000	₹1,66,000	₹1,75,000	₹1,80,000
6.	Cost of Debtors p.a. = Total Costs = (2+4)	₹4,50,000	₹4,70,000	₹4,82,000	₹5,00,000	₹5,10,000
7.	Collection Period	30 days	40 days	50 days	60 days	75 days
8.	Average Debtors $= \frac{(6)\times(7)}{360}$	₹37,500	₹52,222	₹66,944	₹83,333	₹1,06,250
9.	Interest on Avg. Debtors $[(8)\times 20\%]$	₹7,500	₹10,444	₹13,389	₹16,666	₹21,250
10.	Bad Debts	₹6,000	₹9,450	₹12,960	₹20,250	₹27,600
11.	Net Benefit (5 - 9 - 10)	₹1,36,500	₹1,40,106	₹1,39,651	₹1,38,084	₹1,31,150

Note : Present Sale Quantity $= \frac{₹6\ Lakhs}{₹3\ p.u.} = 2,00,000$ units. Also, fixed Costs p.u. = Total Costs 2.25 less Variable Costs 2 = ₹0.25 p.u. Hence, Total Fixed Costs at present = 2,00,000 x ₹0.25 = ₹50,000, which remain constant.

Observations :

Policy A gives maximum Net Benefit and may be chosen.

Policy B and C give Net Benefit higher than present situation, and may be preferred in ranking.

Policy D should not be pursued at all, since the Net Benefit is lower than the present situation.

Problem 21: Debtors Decision - Interest on Average Debtors, Bad Debts

XYZ Corporation is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently, the Firm has annual credit sales of ₹50 Lakhs and Accounts

Receivable Turnover Ratio of 4 times a year. The current level of loss due to Bad Debts is ₹1,50,000. The Firm is required to give a Return of 25% on the Investment in new Accounts Receivables. The Company's Variable Costs are 70% of the Selling Price. Given the following information, which is the better option?

Particulars	Present Policy	Policy Option I	Policy Option II
Annual Credit Sales	50,00,000	60,00,000	67,50,000
Account Receivable Turnover Ratio	4 times	3 times	2.4 times
Bad Debt Losses	1,50,000	3,00,000	4,50,000

Solution :

	Particulars	Present	Policy I	Policy II
1.	Sales	₹50,00,000	₹60,00,000	₹67,50,000
2.	Variable Cost at 70% Sales	₹35,00,000	₹42,00,000	₹47,25,000
3.	Contribution (1-2)	₹15,00,000	₹18,00,000	₹20,25,000
4.	Cost of Debtors p.a. = Variable Costs = (2 only)	₹35,00,000	₹42,00,000	₹47,25,000
5.	Accounts Receivable Turnover Ratio (given)	4 times	3 times	2.4 times
6.	Average Debtors $= \frac{(4)}{(5)}$	₹8,75,000	₹14,00,000	₹19,68,750
7.	Interest on Avg Debtors $\left[(6) \times 25\%\right]$	₹2,18,750	₹3,50,000	₹4,92,188
8.	Bad Debts	₹1,50,000	₹3,00,000	₹4,50,000
9.	Net Benefits (3 - 7 - 8)	₹11,31,250	₹11,50,000	₹10,82,812

Observation : Option I is preferable due to maximum Net Benefit (i.e. surplus of ₹18,750 over present policy).

Problem 22: Debtors Decision - Interest on Average Debtors, Bad Debts, Collection Expenses

A Company has Sales ₹25,00,000. Average Collection Period is 50 days, Bad Debt losses are 5% of Sales and Collection Expenses are ₹25,000. The cost of funds is 15%. The Company has 2 alternative Collection Programmes :

Particulars	Programme I	Programme II
Average Collection Period reduced to	40 days	30 days
Bad Debt Losses reduced to	4% of Sales	3% of Sales
Collection Expenses	₹50,000	₹80,000

Evaluate which Programme is viable.

Particulars	Present	Program I	Program II
1. Sales	₹25,00,000	₹25,00,000	₹25,00,000
2. Collection Period	50 days	40 days	30 days
3. Average Debtors $= \frac{(1)\times(2)}{365}$	₹3,42,466	₹2,73,973	₹2,05,479
4. Interest on Debtors at 15%	₹51,370	₹41,096	₹30,822
5. Bad Debts (5%, 4%, 3% of Sales)	₹1,25,000	₹1,00,000	₹75,000
6. Collection Expenses	₹25,000	₹50,000	₹80,000
7. Total Expenses (4 + 5 + 6)	₹2,01,370	₹1,91,096	₹1,85,822

Conclusion : Due to least costs, Program II is most visible.

Problem 23: Evaluation of different grades of customers and credit policies.

The Credit Manager of Ram Ltd. is re-appraising the Company's credit policy. The Company sells the products on terms of net 30. Cost of Goods Sold is 85% of Sales and Fixed Costs are further 5% of Sales. The Company classifies its customers on a scale of 1 to 4. During the past five years, the experience was as under -

Scale	1	2	3	4
Default as a percentage of Sales	0%	2%	10%	20%
Average Collection Period in days, for non-defaulting accounts	45	42	40	80

The average rate of interest is 15%. What conclusions do you draw about the Company's credit policy? What other factors should be taken into account before changing the present policy? Discuss.

Solution :

1) Evaluation of different scale of cutomers

Scale	1	2	3	4
a) Sales	₹100.00	₹100.00	₹100.00	₹100.00
b) Cost of Goods Sold (85% given)	₹85.00	₹85.00	₹85.00	₹85.00
c) Contribution / Gross Profit (a - b)	₹15.00	₹15.00	₹15.00	₹15.00
d) Collection Period	45 days	42 days	40 days	80 days
e) Average Debtors $= \frac{(b)\times(d)}{365}$	₹10.48	₹9.78	₹9.32	₹18.63
f) Interest on Average Debtors $(e\times 15\%)$	₹1.57	₹1.47	₹1.40	₹2.79
g) Bad Debts	Nil	₹2.00	₹10.00	₹20.00
h) Net Benefit (c - f - g)	₹13.43	₹11.53	₹3.60	Loss (₹7.79)
i) Decision / Strategy	Continue Sale	Continue Sale	Continue Sale	Stop Selling

Note : Since the Sales amount for each scale is not given specifically, the above evaluation is made for every ₹100 of Sale in each category of customer. Also, Fixed Costs of 5% of Sales are not considered relevant for this decision.

2. Comments

a) Even though the terms are net 30, the Average Collection Period for all categories is above 30 days. This means that the Company is very lenient (or inefficient) in its collection policy.

b) Sales to the first 3 scales result in a Net Benefit. Hence, the Company can continue selling to such customers. However, Sales in Scale 4 category result in a loss of 7.79 for every 100 of Sale. Hence, the Company should stop selling to such customers. However, the Company can continue selling to such category customers and retain its market share, if it can control bad debts from the present high level of 20%, by atleast 7.80% (being the present loss)

c) Some other factors to be considered before changing the present credit policy are - (i) effect on the various scales of customers, (ii) past performance / experience with the customers, (iii) credit-worthiness etc.

Problem 24: Computation of Average Age of Receivables

From the following details, calculate the Average Age of Receivables and comment upon the results.

Month	Sales for the first 3 quarters of the year		
	Quarter 1	Quarter 2	Quarter 3
First	15,000	7,500	22,500
Second	15,000	15,000	15,000
Third	15,000	22,500	7,500
Total	45,000	45,000	45,000
Working Days	90	90	90

12

CASH MANAGEMENT (CASH BUDGET)

Unit Structure :

12.1 MEANING & INTRODUCTION

Cash management is management of cash in efficient and in effective manner. Organizations need to maintain cash for their daily requirements and this level of cash has to be set after analysing operating cycle of the particular organization. Larger the operating cycle large amount of cash will be required and vice versa. Cash management becomes necessary to maintain liquidity & solvency in business and to avoid situations of additional cash and shortage of cash.

12.2 CASH MANAGEMENT – PLANNING

Planning is required in any kind of task and in the same manner planning of cash is required for effective cash management. In cash planning, finance manager has to estimate future cash outflows and future cash inflows. Cash budget is required to be prepared to estimate cash outflows and cash inflows.

12.3 PURPOSES OF HOLDING CASH IN BUSINESS

Lord Keynes stated that there are 3 basic considering the amount of cash.

1. Transaction Need: Cash is required for day-to-day requirements e.g. purchases, payment of wages etc.

2. Speculative Need: Cash is held for taking advantage of profitable opportunities.

3. Precautionary Need: Cash is held for providing safety against unexpected events

12.4 CASH BUDGET

A cash budget is statement showing organization's estimated cash inflows and outflows for a particular time period. Cash budget statement helps financial manager to determine future cash needs of the business firm.

Cash Budget helps the organizations

- To know the shortage/surplus of cash.
- To determine the period for which the situation of surplus/shortage of cash is likely to be continued.
- To arrange for cash borrowings if cash shortages are expected.
- To plan for financing a new project.
- To plan for financing the expansion for expansion of existing.
- To take advantage of cash discount.

Format of Cash Budget

Cash Budget

	Particulars	**April**	**May**	**June**	**July**
		Rs.	**Rs.**	**Rs.**	**Rs.**
1	**Opening Cash Balance:**	**XXX**	**XXX**	**XXX**	**XXX**
2	**Add: Receipts**				
	1. Cash Sales	XXX	XXX	XXX	XXX
2.	2. Collection from Debtors	XXX	XXX	XXX	XXX
	3. Proceeds from issue of shares & Debentures	XXX	XXX	XXX	XXX
4.	4. Proceeds from sale of fixed assets.	XXX	XXX	XXX	XXX
	5. Misc. Non-operating income	XXX	XXX	XXX	XXX
	a. Dividend	XXX	XXX	XXX	XXX
	b. Interest	XXX	XXX	XXX	XXX

3	**Total Cash Receipts (1+2)**	**XXX**	**XXX**	**XXX**	**XXX**
4	**Less: Cash Payments**				
	6. Cash purchase of material	XXX	XXX	XXX	XXX
	7. Payment to suppliers of materials	XXX	XXX	XXX	XXX
	8. Payment of wages	XXX	XXX	XXX	XXX
	9. Payment of Factory, office and admin, Selling & distribution expenses	XXX	XXX	XXX	XXX
	10. Payment for purchase of fixed asset	XXX	XXX	XXX	XXX
	11. Payment for Dividend & Interest.	XXX	XXX	XXX	XXX
	Total Cash Payments	**(XXX)**	**(XXX)**	**(XXX)**	**(XXX)**
5	**Net Cash Available/ Closing balance of cash (3-4)**	**XXX**	**XXX**	**XXX**	**XXX**

12.5 SOLVED PROBLEMS

Problem 1

Prepare a cash budget for the three months ending 30th June, 2016 from the following information of XYZ Ltd.

a) Month wise Sales / Expenses :

Month	Sales	Materials	Wages	Overheads
2016 - February	14,000	9,600	3,000	1,700
2016 - March	15,000	9,000	3,000	1,900
2016 - April	16,000	9,200	3,200	2,000
2016 - May	17,000	10,000	3,600	2,200
2016 - June	18,000	10,400	4,000	2,300

b) Terms of credit : Sales / Debtors - 10% Sales are cash. 50% of Credit Sales are collected next month and the balance in the following month.

Creditors :

Materials - 2 months

Wages - ¼ months

Overheads - ½ month.

c) Cash and Bank balance on 1st April, 2016 is expected to be Rs. 6,000.

d) Other relevant information available revels that

i) Plant & Machinery will be installed in February, 2016 at a cost of Rs. 96,000. The repayment will be done from April, 2016 onwards in a monthly installment of Rs. 2,000.

ii) Dividend @ 5% on Preference share capital of Rs. 2,00,000 will be paid in June 2016.

iii) Advance for the sale of vehicle amounting Rs. 9,000 is to be received in June 2016.

iv) Dividends from investments amounting to Rs. 1,000 are expected to be received in June, 2016.

v) Income tax (Advance) of Rs. 2,000 is to be paid in June, 2016.

Solution :

PQR Ltd. Cash Budget

(for the three months ending 30th June 2016)

	April 16	**May 16**	**June 16**
Opening balance	6,000	3,950	3,000
Sales collection (working Note 1)	14,650	15,650	16,650
Advance for sales of vehicle			9,000
Dividends from Investments			1,000
Total Receipts (A)	20,650	19,600	29,650
Payments :			
Materials	9,600	9,000	9,200
Wages	3,150	3,500	3,900
Overheads	1,950	2,100	2,000
Plant & Machinery Instalment	2,000	2,000	2,000
Dividend on pref. Share capital			10,000
Income tax (advance)			2,000

Total Payments (B)	16,700	16,000	29,350
Closing Balance (A) - (B)	3,950	3,000	300

Working Notes :

a) Calculation of Sales Collections :

	April 16	**May 16**	**June 16**
10% Cash sales	1,600	1,700	1,800
Previous month sales			
50% of 90% of same month	6,750	7,200	7,650
50% of per month sales (remaining balance)	6,300	6,750	7,200
	14,650	15,650	16,650

b) Calculation of wages :

	April 16	**May 16**	**June 16**
¾ of current month	2,400	2,700	3,000
¼ of previous month	750	800	900
	3,150	3,500	3,900

c) Calculation of overheads :

	April 16	**May 16**	**June 16**
½ of current month	1,000	1,100	1,150
½ previous month	950	1,000	1,100
	1,950	2,100	2,250

Problem 2:

Mr. Vinayak has given the sales forecast for January to July 2016 and actual sales for November, December 2016 were as under. With the other particulars given, prepare Cash Budget (cash flow statement) for five months January- May.

		Rs.
Sales	November	80,000
	December	70,000
	January	80,000
	February	1,00,000
	March	80,000
	April	1,00,000
	May	90,000
	June	1,20,000
	July	1,00,000

a) Sales : 20 percent cash 80 percent credit collection in the third month (January sales in March).

b) Variable expenses 5 percent on turnover-time lag half month.

c) Commission 5 percent on credit sales payable in the third month.

d) Purchases 60 percent of the sales of the third month payment 3rd month of purchases.

e) Rent and other expenses Rs. 3,000 paid every month.

f) Other payment : Fixed Assets Purchase March Rs. 50,000.

g) Taxes April Rs. 20,000.

h) Opening Cash Balance Rs. 25,000.

Solution :

Cash Budget of 2016

Particulars	January	February	March	April	May
Opening balance	25,000	47,050	57,750	24,050	32,550
Receipts :					
Sales : Cash	16,000	20,000	16,000	20,000	18,000
Credit	64,000	56,000	64,000	80,000	64,000
Total Receipts (A)	1,05,000	1,23,050	1,32,750	1,24,050	1,14,550
Payment :					
Variable expenses	3,750	4,500	4,50	4,500	4,750
Commission at 5% of credit sales	3,200	2,800	3,200	4,000	3,200
Purchases	48,000	60,000	48,000	60,000	54,000
Rent / other expenses	3,000	3,000	3,000	3,000	3,000
Fixed Assets purchase	--	--	50,000	--	--
Taxes	--	--	--	20,000	--
Total payment (B)	57,950	70,300	1,08,700	91,500	64,950
Closing balance (A) - (B)	47,050	57,750	24,050	32,550	49,600

Working Notes :

Variable Expenses :

Particulars	January	February	March	April	May
½ of current month (5) i.e. 2½%	2,000	2,500	2,000	2,500	2,250
½ of per month	1,750	2,000	2,500	2,000	2,500

i.e. 2½%					
	3,750	4,500	4,500	4,500	4,750

Problem 3: Cash Budget

The following information relates to Raghav Limited:

The selling price of a book is 15, and Sales are made on credit through a Book Club and invoiced on the last day of the month.

Variable Costs of Production per Book are Materials (₹5), Labour (₹4), and Overhead (₹2).

The Sales Manager has forecasted the following volumes :

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
No. of Books	1,000	1,000	1,000	1,250	1,500	2,000	1,900	2,200	2,200	2,300

Customers are expected to pay as follows :

One month after the sale	**40%**
Two month after the sale	60%

The Company produces the Books two months before they are sold and the Creditors for Materials are paid two months after production.

Variable Overheads are paid in the month following production and are expected to increase by 25% in April. 75% of Wages are paid in the month of production and 25% in the following month. A Wage Increase of 12.5% will take place on 1st March.

The Company is going through are structuring and will sell one of its Freehold Properties in May for ₹25,000, but it is also planning to buy a new Printing Press in May for ₹10,000. depreciation is currently ₹1,000 per month, and will rise to ₹1,500 after the purchase of the New Machine.

The Company's Corporation Tax (of ₹10,000) is due for payment in March.

The Company presently has a Cash Balance at Bank on 1st January, of 1,500.

You are required to prepare a Cash Budget for the six months from January to June.

Solution :

1. Receipts from Customers (amounts in ₹ 000s)

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Sales Qtty (Units)	1,000	1,000	1,000	1,250	1,500	2,000	1,900	2,200
Sales Value at ₹15 pu	15,000	15,000	15,000	18,750	22,500	30,000	28,500	33,000
Collection from Debtors :								
1st Month 40%		6,000	6,000	6,000	7,500	9,000	12,000	11,400
2nd month 60%		–	9,000	9,000	9,000	11,250	13,500	18,000
	–	–	15,000	15,000	16,500	20,250	25,500	29,400

2. Payments to Creditors for Materials (amounts in ₹ 000s)

(**Note :** Book produced two months before sale)

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Production Quantity (units)	1,000	1,250	1,500	2,000	1,900	2,200	2,200	2,300
Material cost at ₹5 pu	5,000	6,250	7,500	10,000	9,500	11,000	11,000	11,500
Payment (2 months after)	–	–	5,000	6,250	7,500	10,000	9,500	11,000

3. Payment of Wages (amounts in ₹ 000s)

Month	Dec	Jan	Feb	Mar	Apr	May	Jun
Production Quantity (units)	1,250	1,500	2,000	1,900	2,200	2,200	2,300
Wages Cost at ₹4 pu	5,000	6,000	8,000				
Wages Cost at ₹4.5 pu				8,550	9,900	9,900	10,350
Payment :							
75% this month	3,750	4,500	6,000	6,412	7,425	7,425	7,762
25% this month		1,250	1,500	2,000	2,137	2,475	2,475
Total Payment		5,750	7,500	8,412	9,562	9,900	10,237

4. Payment of Variable Overheads (amounts in ₹ 000s)

Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Production Quantity (units)	1,000	1,250	1,500	2,000	1,900	2,200	2,200	2,300
Wages Cost at ₹2 pu	2,000	2,500	3,000	4,000	3,800			
Wages Cost at ₹2.5 pu						5,500	5,500	5,750
Payment One Month later		2,000	2,500	3,000	4,000	3,800	5,500	5,500

5. Cash Budget for the 6 months ended 30th June (amounts in ₹ 000s)

Particulars	Jan	Feb	Mar	Apr	May	Jun
A. Opening Balance	1,500	3,250	1,500	**(11,912)**	(15,024)	576
B. Receipts						
From Debtors	15,000	15,000	16,500	20,250	25,500	29,400
Sale of Freehold Property	--	--	--	--	25,500	--
Total Receipts	**15,000**	**15,000**	**16,500**	**20,250**	**50,500**	**29,400**
C. Payments						
Materials	5,000	6,250	7,500	10,000	9,500	11,000
Wages	5,750	7,500	8,412	9,562	9,900	10,237
Variable Overheads	2,500	3,000	4,000	3,800	5,500	5,500
Purchase of Press Machine	--	--	--	--	10,000	--
Corpn Tax (Income Tax)	--	--	10,000	--	--	--
Total Payments	**13,250**	**16,750**	**29,912**	**23,362**	**34,900**	**26,737**
D. Closing Balance (A + B + C)	**3,250**	**1,500**	**(11,912)**	**(15,024)**	**576**	**3,239**

Problem 4 : Cash Budget

From the information and assuming that the Cash Balance in hand on 1st January is 72,500, prepare a Cash Budget.

Assume that 50% of Total Sales are Cash Sales. Assets are to be acquired in the months of February and April. Therefore, provisions should be made for the payment of 8,000 and 25,000 for the same. An application has been made to the grant of a Loan of 30,000 and it is hoped that the Loan Amount will be received in the month of May.

It is anticipated that a Dividend of 35,000 will be paid in June. Debtors are allowed one month's credit. Creditors for Materials purchased and Overheads grant one month's credit. Sales Commission at 3% on Sales is paid to the Salesman each month.

The following further details are provided (amounts in ₹ 000s)

Month	Sales	Materials Purchases	Salaries & Wages	Production OH	Office and Selling OH
January	72,000	25,000	10,000	6,000	5,500
February	97,000	31,000	12,100	6,300	6,700
March	86,000	25,500	10,600	6,000	7,500
April	88,600	30,600	25,000	6,500	8,900
May	1,02,500	37,000	22,000	8,000	11,000
June	1,08,700	38,800	23,000	8,200	11,500

Solution :

Cash Budget (amounts in ₹ 000s)

Particulars	Jan	Feb	Mar	Apr	May	Jun
A. Opening Balance C & B	**72,500**	**96,340**	**1,21,330**	**1,55,650**	**1,51,292**	**2,05,767**
B. Receipts						
Cash Sales (50% of Total Sales)	36,000	48,500	43,000	44,300	51,250	54,350
From Debtors (50% of previous month Sales)	--	36,000	48,500	43,000	44,300	51,250
Bank Loan	--	--	--	--	30,000	--

Total Receipts	**36,000**	**84,500**	**91,500**	**87,300**	**1,25,550**	**1,05,600**

C.	**Payments**						
	Paid to Creditors (1 month delay)	--	25,000	31,000	25,500	30,600	37,000
	Salaries and Wages (paid same month)	10,000	12,100	10,600	25,000	22,000	23,000
	Production OH (1 month delay)	--	6,000	6,300	6,000	6,500	8,000
	Office & Selling OH (1 month delay)	--	5,500	6,700	7,500	8,900	11,000
	Sales Commission (3% on same month Sales)	2,160	2,910	2,580	2,658	3,075	3,261
	Capital Expenditure (given)	--	8,000	--	25,000	--	--
	Dividend (given)	--	--	--	--	--	
	Total Payments	**12,160**	**59,510**	**57,180**	**91,658**	**71,075**	**1,17,251**
D.	**Closing Balance C & B (A + B + C)**	**96,340**	**1,21,330**	**1,55,650**	**1,51,292**	**2,05,767**	**1,94,106**

Problem 5 : Cash Budget for Manufacturing Firm

From the following information relating to Chandra Ltd. you are required to prepare a Cash Budget for the forthcoming 3 months, viz., May, June and July. The management wishes to maintain a Cash Balance of ₹20 Lakhs at all times. Determine whether borrowing will be necessary during the period and if so when and for how much. As of April 30th, the Company had a Bank Balance of ₹20 Lakhs.

Month	Actual Sales (In Lakhs)	Month	Forecasted Sales (In Lakhs)
January	50	May	70
February	50	June	80
March	60	July	100
April	60	August	100

Additional Information :

1. 20% of the Sales are for Cash. Credit Sales are collected as 50% in the month of Sales, and balance equally in subsequent two months (there is normally no Bad Debts).

2. Manufacturing Cost of Good Sold is 60% of Sales. 10% of this cost is Depreciation. Out of the balance 90%, 60% is paid in the previous month, 20% in the month of sales and 10% in the subsequent month.

3. Selling and Administrative Expenses are fixed ₹4 Lakhs per month plus 10% of Manufacturing Cost of Goods Sold. All these expenses are paid during the month of sale.

4. Interest payment : Half-yearly Interest Payments on ₹300 Lakhs borrowings at 14% in January and July.

5. Dividends : ₹10 Lakhs Dividend is expected to be declared and paid in July.

6. Capital Expenditure : ₹40 Lakhs is expected to be invested in Plant and Machinery in June.

7. Income Tax Payment of ₹20 Lakhs will be made in July.

Solution :

1. Computation of Collection from Debtors and Payment of Manufacturing Costs (₹ Lakhs)

Particulars	Jan	Feb	March	April	May	June	July	August
a) Sales	50.00	50.00	60.00	60.00	70.00	80.00	100.00	100.00
b) Credit Sales at 80%	40.00	40.00	48.00	48.00	56.00	64.00	80.00	80.00
c) Debtors Collection 50% same Month 25% next Month 25 last month	20.00	20.00 10.00	24.00 10.00 10.00	24.00 12.00 10.00	28.00 12.00 12.00	32.00 14.00 12.00	40.00 16.00 14.00	40.00 20.00 16.00
d) Total Collection during 3 months					**52.00**	**58.00**	**70.00**	
e) Manufacturing Cost (60% of Sales)	30.00	30.00	36.00	36.00	42.00	48.00	60.00	60.00
f) Depreciation at 10% of (e)	3.00	3.00	3.60	3.60	4.20	4.80	6.00	6.00
g) Cash Costs (e - f)	27.00	27.00	32.40	32.40	37.80	43.20	54.00	54.00
h) Payment Pattern 61% Prev. Month 20% in Month of Sale 10% in subsequent month	18.00 6.00	21.60 6.00 3.00	21.60 7.20 3.00	25.20 7.20 3.60	28.80 8.40 3.60	36.00 9.60 4.80	36.00 12.00 4.80	 12.00 6.00
I)Total Payment during 3 months					**40.80**	**49.80**	**52.80**	

2. Cash Budget (₹ Lakhs)

Particulars	May	June	July
A. Opening Balance of Cash	**20.00**	**37.00**	(after borrowing) **20.00**
B. Receipts / Inflows :			
Cash Sales	$20\% \times 70 = 14.00$	$20\% \times 80 = 16.00$	$20\% \times 100 = 20.00$
Collection from Debtors	52.00	58.00	70.00
Total Receipts	**66.00**	**74.00**	**90.00**
C. Payments / Outflows			
Manufacturing Cost of Goods Sold	40.80	49.80	52.80
Selling & Admin. Expenses Fixed	4.00	4.00	4.00
Variable	$70 \times 60\% \times 10\% = 4.20$	$80 \times 60\% \times 10\% = 4.80$	$100 \times 60\% \times 10\% = 6.00$
Interest (for half year)	–	–	$300 \times 7\% = 21.00$
Dividends	–	–	**Given 10.00**
Capital Expenditure	–	**Given 40.00**	-
Income Tax	–	–	**Given 20.00**
Total Payments	**49.00**	**98.60**	**113.80**
D. Closing Balance of Cash (A + B + C)	**37.00**	**12.40**	**(3.80)**
E. Borrowings required to maintain Cash Balance at minimum ₹20 Lakhs	**Nil**	**7.60**	**23.80**

Problem 6: Cash Budget for Manufacturing Firm

Armaan Limited is into retail business. The following information is given for your consideration :

1. Purchase are 75% of Sales and Purchases are sold at Cost plus 33 1/3rd%.

2. Budgeted Sales, Labour Cost and expenses incurred are :

	Budged Sales (₹)	Labour Cost (₹)	Expenses incurred (₹)
January	40,000	3,000	4,000
February	60,000	3,000	6,000
March	1,60,000	5,000	7,000
April	1,20,000	4,000	7,000

3. 75% Sales are for Cash. 25% of Sales are one month's interest -free credit.

4. The policy of the Management is to have sufficient stock in hand at the end of each month to meet sales demand in the next half month.

5. Creditors for Materials and Expenses are paid in the month after the Purchases are made or the expenses incurred. Labour is paid in full by the end of each month.

6. Expenses include a monthly depreciation charge of ₹2,000.

7. The Company will buy Equipment costing ₹18,000 cash in February and will pay a Dividend of ₹20,000 in the month of March. The opening Cash Balance on February is ₹1,000.

Prepare for the month of February and March : (a) a Profit and Loss Account, and (b) a Cash Budget.

Solution :

1. Profit and Loss Account

	Particulars	February (₹)	March (₹)	Total (₹)
	Sales	60,000	1,60,000	2,20,000
Less :	Cost of Purchase (75%)	45,000	1,20,000	1,65,000
	Gross Profit = 1/3rd on Cost = 1/4th Sales	**15,000**	**40,000**	**55,000**
Less :	Labour	3,000	5,000	8,000
	Expenses (including Depreciation)	6,000	7,000	13,000
	Net Profit	**6,000**	**12,000**	**34,000**

2. Cash Budget for the Months of February and March

Particulars	February (₹)	March (₹)	Total (₹)
A. Opening Balance	1,000	(4,500)	(3,500)
B. Receipts / Inflows : Sales (WN 1)	55,000	1,35,000	1,90,000
Total Receipts	**55,000**	**1,35,000**	**1,90,000**
C. Payments / Outflows			
Trade Creditors (WN 2)	37,500	82,500	1,20,000
Expenses Creditors (WN 3)	2,000	4,000	6,000
Labour	3,000	5,000	8,000
Equipment Purchase	18,000	--	18,000
Dividend	--	20,000	20,000
Total Payments	**60,500**	**1,11,500**	**1,72,500**
D. Closing Balance / (Overdraft)	**(4,500)**	**19,000**	**14,000**

Working Notes :

1. Receipts

Month	Computation	₹
February	75% of February Sales (75% of ₹60,000) + 25% of January Sales (25% of ₹40,000)	55,000
March	75% of March Sales (75% of ₹1,60,000) + 25% of February Sales (25% of ₹60,000)	1,35,000

2. Purchases

Particulars	Computation	January(₹)	Computation	February(₹)
For January Sales	50% of ₹30,000	15,000	--	Nil
For February Sales	50% of ₹45,000	22,500	50% of ₹45,000	22,500
For March Sales	--	Nil	50% of ₹1,20,000	60,000
Total		**37,500**		**82,500**

These purchases are paid for in February and March.

3. Expenses : Cash Expenses in January (₹4,000 - ₹2,000) and February (₹6,000 - ₹2,000) are paid for in February and March respectively. Depreciation is not a Cash Item.

Problem 7 :

The following particulars have been obtained in respect of retail business of Lucky Ltd., for the three months ending March, 2016.

a) Working capital as on 1st January 1998 has been estimated as follows :

	Rs.
Cash and bank balance	10,900
Debtors	51,400
Creditors	42,200
Outstanding expenses	4,000
Dividend due	9,700
Tax due	6,400
Stock	26,000

b) Budget profit statement at the end of month.

	Jan. 98 Rs.	**Feb.98 Rs.**	**Mar.98 Rs.**
Sales	42,000	36,000	34,000
Less : Cost of sales	32,700	28,100	26,600
Gross Profit	9,300	7,900	7,400
Less : Administrative			
Selling and Distribution expenses	6,300	5,400	5,100
Net Profit before tax	3,000	2,500	2,300

c) Budgeted balance at the end of each month.

Solution :

Cash budget for Six months from January 1998 to June 1998

	Jan. 98	Feb. 98	Mar. 98	Apr. 98	May 98	Jun. 98
Opening balance	10,000	77,500	1,10,250	44,500	10,875	17,775
Cash sales						
Receipts from debtors	55,000	35,000	40,000	37,500	50,000	45,000
(working note)	1,51,500	1,47,750	1,17,750	1,15,875	1,23,000	1,40,625
Borrowings	--	--	--	10,000	10,000	--
(A)	2,16,500	2,60,250	2,68,000	2,07,875	1,93,875	2,03,400
Payments :						
Purchases	1,12,000	1,28,000	1,20,000	1,60,000	1,44,000	96,000
(working note 2)						
Office costs	25,000	20,000	40,000	35,000	30,000	45,000
Rent	2,000	2,000	2,000	2,000	2,000	2,000
Interest on debentures			7,500			7,500
Debentures repaid						40,000
Advance tax			54,000			
Interest on borrowing					100	200
(B)	1,39,000	1,50,000	2,23,500	1,97,000	1,76,100	1,90,700
Closing balance	77,500	1,10,250	14,500	10,875	17,775	12,700
(A) - (B)						

Working Notes :

a) Sales collection :

	Jan. 98	Feb. 98	Mar. 98	Apr. 98	May 98	Jun. 98
a) Cash sales (25%)	55,000	35,000	40,000	37,500	50,000	45,000
b) Credit sales (75%)	1,65,000	1,05,000	1,20,000	1,12,500	1,50,000	1,35,000
c) (i) 25% of (b) same month	41,250	26,250	30,000	28,125	37,500	33,750
ii) 60% of previous month credit sales	90,000	99,000	63,000	72,000	67,500	90,000
iii) 15% of 2nd Previous month	20,250	22,500	24,750	15,750	18,000	16,875
(i) + (ii) + (iii)	1,51,500	1,47,750	1,17,750	1,15,875	1,23,000	1,40,625

b) Purchases : Payment

Selling price is 25% over cost.

i.e. if the selling price is Rs. 100 cost will be Rs. 80 and profit Rs. 20.

∴ 80% of all sales are purchases which are paid for in the preceding month.

∴ Feb. 98 purchases which is 80% sales of Feb. 98 are paid in Jan. 98, similarly purchases for other months are worked out.

Problem 8:

A newly started company wishes to prepare Cash Budget from January 98. Prepare a Cash Budget for the first 6 months from the following estimated revenues and expenditures :

Month	Total sales Rs.	Material Rs.	Wages Rs.	Overheads	
				Production Rs.	Selling and Distribution Rs.
January 98	20,000	20,000	4,000	3,200	800
February 98	22,000	14,000	4,400	3,300	900
March 98	24,000	14,000	4,600	3,300	800
April 98	26,000	12,000	4,600	3,400	900
May 98	28,000	12,000	4,800	3,500	900
June 98	30,000	16,000	4,800	3,600	1,000

Cash balance on 1st January 1998 was 10,000.

A new machine is to be installed at Rs. 30,000 on credit to be repaid by two equal instalments in March and April.

Sales commission @ 5% on total sales to be paid within the month following actual sales.

Rs. 10,000 being the amount of second call may be received in March. Share premium amounting to Rs. 2,000 is also obtainable with 2nd call.

Period of credit allowed by suppliers 2 month.

Period of credit allowed to customers 1 month.

Delay in payment of overheads 1 month.

Delay in payment of wages ½ month.

Assume cash sales to be 50% of total sales.

Solution :

Cash Budget

	Jan. Rs.	Feb. Rs.	Mar. Rs.	Apr. 98	May 98	Jun. 98
Opening balance	10,000	18,000	29,800	20,000	6,100	8,800
Receipts :						
Cash sales	10,000	11,000	12,000	13,000	14,000	15,000
Collection from debtors		10,000	11,000	12,000	13,000	14,000
Share capital (2nd call)			10,000			
Share premium			2,000			
(A)	20,000	39,000	64,800	45,000	33,100	37,800
Payments :						
Creditors			20,000	14,000	14,000	12,000
Wages						
(½ same month)		2,200	2,300	2,300	2,400	2,400
(½ next month)		2,000	2,200	2,300	2,300	2,400
Sales commission		1,000	1,100	1,200	1,300	1,400
Production overheads		3,200	3,300	3,300	3,400	3,500
Selling and distribution		800	900	800	900	900
Overheads						
Machine purchased			15,000	15,000		
(B)	2,00	9,200	44,800	38,900	24,300	22,600
Closing balance (A) - (B)	18,000	29,800	20,000	6,100	8,800	15,200

Problem 9:

From the following information you are required to prepare a cash budget for six months from January 1987 to June 1987 month by month, showing also the cash credit facility available from Bank. Opening overdrawn balance is Rs. 1,50,000.

Month	Total sales Rs.	Material purchase Rs.	Wages Rs.	Production Expenses Rs.	Selling Distribution expenses Rs.	Admin Expenses Rs.
January	1,44,000	50,000	20,000	12,000	8,000	3,000
February	1,94,000	62,000	24,200	12,600	10,000	3,400
March	1,72,000	51,000	21,000	12,000	11,000	4,000
April	1,77,200	61,200	50,000	13,000	13,400	4,400
May	2,05,000	74,000	44,000	16,000	17,000	5,000
June	2,17,400	77,600	46,000	16,400	18,000	5,000

Following further information is available :

a) Out of total sales 50% are cash sales and balance 50% is received in the month following month of sale.

b) Payment for purchase of assets is to be made of Rs. 16,000 in February, Rs. 25,000 in March and Rs. 50,000 in April.

c) Proceeds from sales of scrap are to be received in May amounting to Rs. 6,000.

d) Dividend of Rs. 90,000 is to paid in June.

e) Sales commission is to be paid at 3% of total sales in same months in which sales are made.

f) Suppliers for materials are paid in the month following the month of purchases of materials.

g) Cash credit facility granted is Rs. 2,00,000.

h) Wages are paid in the same month.

i) Creditors of production, selling and distribution and Administration expenses are given one month's credit period.

Solution :

Cash budget

	Jan. 97	Feb. 97	Mar. 97	Apr. 97	May 97	Jun. 97
Opening balance	(1,50,000)	(1,02,320)	(52,340)	(8,700)	(17,416)	37,534
Receipts :						
Cash sales	72,000	97,000	86,000	88,600	1,02,500	1,08,700
Receipts from debtors		72,000	97,000	86,000	88,600	1,02,500
Sales of scrap					6,000	
(A)	(78,000)	66,680	1,30,600	1,65,900	1,79,684	2,48,734
Payments :						
Assets Purchases		16,000	25,000	50,000		
Dividend						90,000
Sales commission	4,320	5,820	5,160	5,316	6,150	6,522
Materials		50,000	62,000	51,000	61,200	74,000
Wages	20,000	24,200	21,200	50,000	44,000	46,000
Production expenses		12,000	12,600	12,000	13,000	16,000
Selling & Dist. Exps.		8,000	10,000	11,000	13,400	17,000
Admin Expenses		3,000	3,400	4,000	4,400	5,000
(B)	24,320	1,19,020	1,39,360	1,83,316	1,42,150	2,54,522
Overdrawn balance (A) - (B)	(1,02,320)	(52,340)	(8,700)	(17,416)	37,534	(5,788)

Problem 10 :

From the following budgeted data of ABC Ltd., prepare cash budget for the quarter ending 31st December, 1984.

Month	Sales	Purchases	Wages	Miscellaneous expenses
August	1,20,000	84,000	10,000	7,000
September	1,30,000	1,00,000	12,000	8,000
October	80,000	1,04,000	8,000	6,000
November	1,16,000	1,06,000	10,000	12,000
December	88,000	80,000	8,000	6,000

Additional Information : Cash on hand on 1.10.84 : Rs. 5,000

Sales : 20% realised in the month of sale. Less discount allowed 2%, balance realised in 2 subsequent months / equally.

Purchases : These are paid in the month following the month of supply.

Wages 25% in arrears paid in the following month.

Miscellaneous Expenses : Paid a month in arrears.

Rent : Rs. 1000 per month paid quarterly in advance due in October.

Income Tax : Instalments of Rs. 25,000 due on or before 15.12.84.

Income from Investment : Rs. 5,000 received quarterly April, July, October, etc.

Insurance Claim : Rs. 72,936 receivable in December.

(M.Com., October 1985)

Solution :

Cash budget for the Quarter Ending 31st December 2016

	October 94	November 94	December 94
Opening balance	5,000	5,680	(7,084)
Receipt :			
Sales collection :	15,680	22,736	17,248
20% same month			
(less discount 2%)			
40% 1st month	52,000	32,000	46,400
40% 2nd month	48,000	52,000	32,000
Income from Investment	5,000		
Insurance claim			72,936
(A)	1,25,680	1,12,416	1,61,500
Payments :			
Purchases	1,00,000	1,04,000	1,06,000
Wages :			
75% current month	6,000	7,500	6,000
25% next month	3,000	2,000	2,500
Miscellaneous expenses	8,000	6,000	12,000
Rent / Income Tax	3,000		25,000
(B)	1,20,000	1,19,500	1,51,500
Closing Balance (A) - (B)	5,680	(7,084)	10,000

Problem 11:

Mr. Ashok Nair, the Finance Manager of Atlas Castings Ltd. is preparing the cash budget for the first six months of 1982 on the basis of the following information :

a) Costs and price remains unchanged

b) Out of the total sales, cash sales are 25%, the balance being credit, sales, 60% of the credit sales are collected in the month after sales, 30% collected in the second month and the balance

10% in the third month after sale. He does not expect any bad debts.

c) The Gross Profit Margin is expected to be 20%.

d) Actual sales and forecasted sales are as follows :

October 81	Rs. 12,00,000	March 82	Rs.8,00,000
November 81	Rs.14,00,000	April 82	Rs.12,00,000
December 81	Rs.16,00,000	May 82	Rs.12,00,000
January 82	Rs.8,00,000	June 82	Rs.8,00,000
February 82	Rs.8,00,000	July 82	Rs.10,00,000

e) Anticipated Cash Purchases, there being no credit purchases :

January 82	Rs.6,40,000	April 82	Rs.9,10,000
February 82	Rs.7,00,000	May 82	Rs.6,40,000
March 82	Rs.10,00,000	June 82	Rs.9,60,000

f) Wages and salaries to be paid in cash :

January 82	Rs.1,40,000	April 82	Rs.2,20,000
February 82	Rs.1,60,000	May 82	Rs.1,60,000
March 82	Rs.2,00,000	June 82	Rs.1,40,000

g) Interest on 20,00,000 @ 8% debentures was due on June 30, 1982 (half yearly)

h) Excise deposit due on March 31, 1982 Rs. 3,00,000.

i) Acquisition of plant and equipment planned for May 1982 Rs. 10,00,000.

j) Miscellaneous Expenses on a cash basis every month at Rs. 15,000 plus 10% of sale.

k) The company will have cash balance of Rs. 5,00,000 on 31.12.81 Mr. Ashok Nair believes that this a high level and is planning on a continuous balance of Rs. 4,00,000.

Prepare the Cash Budget for six months to June 1982.

If additional finance is required, recommend the type of finance to be obtained.

(DBM II - May 1983)

Solution :

Cash Budget for Six months Ending June 1997

	Jan. Rs.	Feb. Rs.	Mar. Rs.	Apr. Rs.	May Rs.	Jun. Rs.
Opening balance	5,00,000	9,50,000	10,20,000	2,85,000	(80,000)	(9,35,000)
Receipts :						
Sales Collection	13,25,000	10,25,000	8,60,000	9,00,000	10,80,000	10,70,000
(A)	18,25,000	19,75,000	18,80,000	11,85,000	10,00,000	1,35,000
Payments :						
Purchases	6,40,000	7,00,000	10,00,000	9,10,000	6,40,000	9,60,000
Wages / Salaries	1,40,000	1,60,000	2,00,000	2,20,000	1,60,000	1,40,000
Interest on Debentures					10,00,000	80,000
Excise deposit plant / Equipment			3,00,000			
Miscellaneous Expense	95,000	95,000	95,000	1,35,000	1,35,000	95,000
(B)	8,75,000	9,55,000	15,95,000	12,65,000	19,35,000	12,75,000
Closing balance (A) - (B)	9,50,000	10,20,000	2,85,000	(80,000)	(9,35,000)	(11,40,000)

a) For acquisition of plant and equipment of Rs. 10,00,000 necessary term loan must be arranged from the bankers / financial institutions.

b) For the balance of Rs. 1,40,000, necessary overdraft facility or cash credit can be arranged from bankers.

Working Note :

Sales Collection :

	Jan. Rs.	Feb. Rs.	Mar. Rs.	Apr. Rs.	May Rs.	Jun. Rs.
Cash sales (25%)	2,00,000	2,00,000	2,00,000	3,00,000	3,00,000	2,00,000
Credit sales :						
60% 1st month	7,20,000	3,60,000	3,60,000	3,60,000	5,40,000	5,40,000
30% 2nd month	3,15,000	3,60,000	1,80,000	1,80,000	1,80,000	2,70,000
10% 3rd month	90,000	1,05,000	1,20,000	60,000	60,000	60,000
	13,25,000	10,25,000	8,60,000	9,00,000	10,80,000	10,70,000

b) Miscellaneous expenses :

	Jan. Rs.	Feb. Rs.	Mar. Rs.	Apr. Rs.	May Rs.	Jun. Rs.
Cash basis	15,000	15,000	15,000	15,000	15,000	15,000
Add 10% of Sales	80,000	80,000	80,000	1,20,000	1,20,000	80,000
	95,000	95,000	95,000	1,35,000	1,35,000	95,000

Problem 12:

Shangai Co. Ltd wishes to arrange overdraft facilities with its Bankers during the period form January to March 1992, when it will be manufacturing mostly for stock. Prepare a Cash Budget for the above period from the given information, indicating the extent of bank facilities the company will require at the end of the cash month.

(I)

	Sales Rs.	Purchases Rs.	Wages Rs.
November 1991	72,000	49,920	4,800
December 1991	76,800	57,600	5,600
January 1992	43,200	97,200	4,400
February 1992	69,600	98,400	4,000
March 1992	50,400	1,67,200	6,000

b) 50% of credit sales are realised in the month following the Sales and the remaining 50% in the second month following.

c) Creditors are paid in the month following the month of purchases.

d) Cash at Bank on 1.4.92 (estimated) Rs. 10,000.

Solution :

ABC Co.

Cash Budget (for January to March 1992)

Particulars	January Rs.	February Rs.	March Rs.
a) Estimated opening balance	10,000	21,200	(20,400)
b) Receipts from debtors (refer working notes)	74,000	60,000	56,400
(a) + (b)	84,400	81,200	36,000
(c) Payment :			
Creditors of previous month	57,600	77,200	98,400
Wages of previous month	5,600	4,400	4,000
Closing balance (a) + (b) - (c)	63,200	1,01,600	1,02,400
	21,200	(-) 20,400	(-) 66,400

Working Notes :

a) Realisation of debtors :

	Rs.
January 1981 :	
50% of November sales	36,000
50% of December sales	38,400
	74,400
February 1981 :	
50% of December sales	38,400
50% of January sales	21,600
	60,000
March 1981:	
50% of January sales	21,600
50% of February sales	34,800
	56,400

b) It has been assumed that wages are paid on monthly basis on the first of very next month.

Problem 13:

Arun Ltd., newly started company wishes to prepare cash budget from January. Prepare a cash budget for the first six months from the following estimated revenue and expenses :

Month	Total sales Rs.	Material Rs.	Wages Rs.	Overheads	
				Production Rs.	Selling and Distribution Rs.
January	20,000	20,000	4,000	3,200	800
February	22,000	14,000	4,400	3,300	900
March	28,000	14,000	4,600	3,400	900
April	36,000	22,000	4,600	3,200	900
May	30,000	20,000	4,000	3,200	900
June	40,000	25,000	5,000	3,600	1,200

Cash balance on 1st January was Rs. 10,000. A new machinery is to be installed at Rs. 20,000 on credit, to be repaid by two equal instalments in March and April.

Sales commission @ 5% on total sales to be paid with a month following actual sales.

Rs. 10,000 being the amount of 2nd call may be received in March. Share premium amounting to Rs. 2,000 is also obtainable with the 2nd call.

Period of credit allowed by suppliers 2 months

Period of credit allowed to customers 1 month

Delay in payment of overheads 1 month

Delay in payment of wages ½ month

Assume cash sales to be 50% of total sales.

Solution

Cash Budget

	Jan. Rs.	Feb. Rs.	Mar. Rs.	Apr. Rs.	May Rs.	Jun. Rs.
Opening balance	10,000	18,000	29,800	27,000	24,700	33,100
Estimated cash receipts						
Sales (cash)	10,000	11,000	14,000	18,000	15,000	20,000
Sales		10,000	11,000	14,000	18,000	15,000
(credit collections)						
Second call			10,000			
Share premium			2,000			
Total	20,000	39,000	66,800	59,000	57,700	68,100
Estimated						
Payments :						
Materials			20,000	14,000	14,000	22,000
Wages	2,000	4,200	4,500	4,600	4,300	4,500
Production overheads		3,200	3,300	3,400	3,500	3,200
Selling and distribution		800	900	900	1,000	900
Overheads						
Sales commission		1,000	1,100	1,400	1,800	1,500
Purchase of machinery			10,000	10,000		
Total	2,000	9,200	39,800	34,300	24,600	32,100
Closing balance	18,000	29,800	27,000	24,700	33,100	36,000

Problem 14 :

Mr. Tiwari has recently set up a restaurant in a prominent shopping complex. His business is good but because of heavy personal withdrawals, he is facing liquidity problem. To get a better handle over his cash flows, he requests you to prepare a cash budget for the next quarter, January through March, for him. He has provided you with the following information :

i) Sales are expected to be as follows. (All sales are cash sales) :

Jan. Rs. 50,000

Feb. Rs. 55,000

Mar. Rs. 60,000

ii) His estimated purchases are as follows :

Jan. Rs. 20,000

Feb. Rs. 22,000

Mar. Rs. 25,000

Payments for purchases will be made after a lag of one month. Outstanding on account of purchases in Dec. last are Rs. 22,000.

iii) The rent per month is Rs. 5,000 and his personal withdrawals per month are Rs. 5,000.

iv) Salaries and other expenses payable in cash are expected to be as follows :

Jan. Rs. 15,000

Feb. Rs. 18,000

Mar. Rs. 20,000

v) He plans to buy furniture worth Rs. 25,000 on cash payment in February.

vi) The cash balance at present is Rs. 5,000. His target cash balance is, however, Rs. 8,000.

What will be the surplus / deficit of cash in relation to his target cash balance?

Solution :

Cash Budget

(for the quarter January to March)

	January	February	March
Opening balance	5,000	8,000	(10,000)
Receipts			
Cash sales	50,000	55,000	60,000
(A)	55,000	63,000	50,000
Payment :			
Purchases	22,000	20,000	22,000
Rent	5,000	5,000	5,000
Drawings	5,000	5,000	5,000
Salaries / Other expenses	15,000	18,000	20,000
Furniture		25,000	
(B)	47,000	73,000	52,000
Closing Balance (A) - (B)	8,000	(10,000)	(2,000)
Target cash balance	8,000	8,000	8,000
Surplus / (Deficit)	--	18,000	10,000

Problem 15 :

Prepare a cash budget for the quarter ending on 31st July 2016 on the basis of the following information :

	April	May	June	July
Total Sales (Rs. In Lakhs)	2.00	2.50	3.00	3.50
Total Purchases (Rs. In Lakhs)	1.40	1.60	2.00	2.20

Other expenses amount to Rs. 10,000 per month plus 10% of sales and these expenses are paid in the same month.

10% of the total sales are cash sales. 50% of the credit sales are collected in the month of sale and balance 50% in collected in the following month. Collections from customers is subjected to 5% cash discount if collected in the month of sale and 2.5% cash discount if collected in the following month.

Creditors for purchases are paid either on a prompt or 30 days credit basis. It is estimated that 10% of the creditors are of prompt category.

It is the policy of the company to maintain a minimum cash balance of Rs. 15,000. Accordingly, the actual cash balance on 1st May 2016 was Rs. 15,000.

You can assume that any cash shortage is met by the company by borrowing funds from its bank on temporary basis.

Solution :

Cash Budget

(for the quarter ending 31st July 2016)

	May	**June**	**July**
Opening balance	15,000	57,625	1,21,562
Sales collection	2,27,500	2,77,500	3,27,500
Total Receipts (A)	2,42,500	3,35,125	4,49,062
Payments :			
Discount	7,875	9,563	11,250
Expenses :			
Creditors Purchase	35,000	40,000	45,000
Prompt	16,000	20,000	22,000
30 Day	1,26,000	1,44,000	1,80,000
Total payments (B)	1,84,875	2,13,563	2,58,250
Closing Balance (A) - (B)	57,625	1,21,562	1,90,812

Working Notes :

a) Calculation of Sales Collections :

	May	**June**	**July**
10% Cash sales	25,000	30,000	35,000
Credit sales :			
50% of 90% of same month	1,12,500	1,35,000	1,57,500
50% of 90% of per month	90,000	1,12,500	1,35,00
	2,27,500	2,77,500	3,27,500

b) Cash Discount :

5%	5,625	6,750	7,875
2 - 5%	2,250	2,813	3,375
	7,875	9,563	11,250