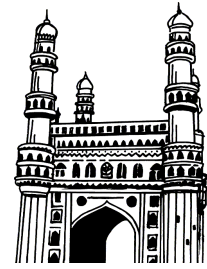


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Investment: Meaning – Characteristics – Importance – Objectives – Factors of Sound Investment – Investment Environment – Investment Media – Principles of Investment – Speculation – Gambling – Investment Process (Theory).

Financial Assets: Meaning – Classification – Shares – Debentures – Bonds – Innovative Financial Assets – Properties of Financial Assets (Theory).

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UNIT - I

1. What are the objectives of investments?

Ans : (Dec.-20, May-17, Imp.)

Refer Unit-I, Q.No. 7.

2. What is Financial Assets? Explain the different types of innovative financial assets.

Ans : (May-19, May-17, Imp.)

Refer Unit-I, Q.No. 43.

3. What are the steps involve in investment process?

Ans : (May-16, May-15, Imp.)

Refer Unit-I, Q.No. 20.

4. Explain the different types of financial assets.

Ans : (Dec.-20)

Refer Unit-I, Q.No. 22.

5. What is Financial Assets.

Ans : (Dec.-20, May-17)

Refer Unit-I, Q.No. 21.

6. What are the characteristics of investments ?

Ans : (Dec.-20, Imp.)

Refer Unit-I, Q.No. 4.

7. Explain the various principles of invest-ments.

Ans : (Dec.-20, May-15)

Refer Unit-I, Q.No. 15.

UNIT - II

1. What are the types of issues in Primary Market?

Ans : (Dec.-20, Imp.)

Refer Unit-II, Q.No. 13

2. Who are the players in the Primary Market

Ans : (Dec.-20, May-17, Imp.)

Refer Unit-II, Q.No. 14.

3. What are the documents required to be submitted for listing?

Ans : (May-19), (Imp.)

Refer Unit-II, Q.No. 28.

4. Discuss the trading procedure at stock exchange.

Ans : (May-19)

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5. What are the Functions of SEBI.

Ans : (Dec.-20, May-17, May-16, May-15, Imp.)

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6. Explain the Role of SEBI in primary market.

Ans : (Dec.-20)

Refer Unit-II, Q.No. 44.

7. Discuss the Need and Significance of Regulatory framework for the Protection of Investors.

Ans : (May-16)

Refer Unit-II, Q.No. 16.

8. Explain different types of floating New Issue Market

Ans : (Imp.)

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1. What do you meant by Holding Period Return?

Ans : (May-19, May-17, May-15, Imp.)

Refer Unit-III, Q.No. 2.

2. Write a notes on Expected Value Return

Ans : (Dec.-20, May-17)

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3. What is risk? Explain the various modes of risk

Ans : (May-17, May-16, May-14, May-12, May-11, Imp.)

Refer Unit-III, Q.No. 9, 12.

4. What are the differences between systematic risk and unsystematic risk

Ans : (May-19, Imp.)

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5. What is measuring returns from Historical Data

Ans : (Dec.-20)

Refer Unit-III, Q.No. 5.

UNIT - IV

1. What do you mean by Portfolio?

Ans : (Dec.-20)

Refer Unit-IV, Q.No. 1.

2. What are the differences between Traditional and Modern Portfolio Analysis?

Ans : (Dec.-20, May-17)

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3. What do you mean by Diversification of Investment?

Ans : (May-17, May-16, Imp.)

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4. What are the reasons for portfolio diversification?

Ans : (May-15, Imp.)

Refer Unit-IV, Q.No. 18.

5. What are the drawbacks of Markowitz Model?

Ans : (Imp.)

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UNIT - V

1. What is Portfolio Selection?

Ans : (Dec.-20, May-14, May-17)

Refer Unit-V, Q.No. 1.

2. What is Efficient Set of Portfolio Selection of Optimal Portfolio?

Ans : (Dec.-20, May-16)

Refer Unit-V, Q.No. 3.

3. What is Sharpe Single Index Model ?

Ans : (May-19, May-15)

Refer Unit-V, Q.No. 4.

4. Explain the assumptions and limitations of sharpe's single index model.

Ans : (May-16)

Refer Unit-V, Q.No. 7.

UNIT I

INTRODUCTION TO INVESTMENT MANAGEMENT

Investment

Meaning – Characteristics – Importance – Objectives – Factors of Sound Investment – Investment Environment – Investment Media – Principles of Investment – Speculation – Gambling – Investment Process (Theory).

Financial Assets

Meaning – Classification – Shares – Debentures – Bonds – Innovative Financial Assets- Properties of Financial Assets (Theory).

1.1 INVESTMENT

1.1.1 Meaning

Q1. What do you mean by Investment ?

(OR)

Define Investment.

Ans : (May-19, May-14, May-12, Imp.)

Meaning

Investment involves making of a sacrifice in the present with the hope of deriving future benefits. Two most important features of an investment are current sacrifice and future benefit. Investment is the sacrifice of certain present values for the uncertain future reward. It involves numerous decision such as type, mix, amount, timing, grade etc, of investment the decision making has to be continues as well as investment may be defined as an activity that commits funds in any financial/ physical form in the present with an expectation of receiving additional return in the future. The expectation brings with it a probability that the quantum of return may vary from a minimum to a maximum. This possibility of variation in the actual return is known as investment risk. Thus every investment involves a return and risk. Investment has many meaning and facets.

Definitions

Different Authors have defined Investment differently. Some of the definitions of Investment are as follows :

- (i) **According to F. Amling:** "Purchase of a financial Asset that produces a yield that is proportionate to the risk assumed over some future investment period."

- (ii) **According to Mrs. Joan Robinson:** "By investment is meant an addition to capital, such as occurs when a new house is built or a new factory is built. Investment means making an addition to the stock of goods in Existence.

- (iii) **According to Murad:** "Investment is an essential requirement for full employment and the key to prosperity in a capital economy."

- (iv) **According to Sharpe:** "Investment is Sacrifice of certain present value for some uncertain future value."

Q2. Who is an investors? Explain different types of investors.

Ans : (May-14)

Small business owners sometimes need to rely on investors for financing. Whether the company is introducing a new product, expanding operations or performing a capital upgrade on equipment to help lower production costs, investor resources can provide help. There are several types of business investors; in order to determine which kind is right for your company, become familiar with as many types of investors as possible.

1. Angel Investors

An angel investor is typically an individual with significant financial resources that invests in start-up businesses, according to Entrepreneur.com. An angel investor tends to follow his instincts and invest in businesses that may otherwise have a hard time attracting other kinds of investors. In some cases an angel investor may only want a percentage

of return on his investment, and in other cases he may ask for partial ownership in the company and a say in management decisions. Angel investor arrangements typically range from hundreds of thousands up to deals worth a few million dollars.

2. Peer-To-Peer Lending

Peer-to-peer lending is typically arranged via websites that bring investors and small business owners together, says Consumer Reports.org. Entrepreneurs create a profile and post a business plan on a peer-to-peer lending website, and lenders bid on investing the business. The owner and the lender, which is commonly a private individual, negotiate an interest rate for the investment and the lender then supplies the funds to the entrepreneur.

3. Venture Capitalists

A venture capitalist is a funding organization that typically gets involved in companies that have already shown a history of returns. Venture capitalist organizations are rarely interested in risky start-up companies that may require a small amount of capital to get started. Venture capitalist organizations are typically interested in deals worth several millions of dollars, according to CNN Money. Venture capitalists normally ask to be placed in a position of partial ownership in the company in which they invest, and also expect to have a say in management decisions.

4. Banks

A bank loan works in much the same way as other business investments. Banks require the entrepreneur to describe his business and present a business plan, and then decide whether it is interested in providing funding in the form of a loan.

5. Personal Investors

Friends and family members with means can also be considered business investors. CNN Money points out that it is important to use an investment contract with friends and family members, just as you would with any other type of investor. The contract should outline the size of the investment, the rate of return and any ownership arrangements that may also be part of the agreement.

Q3. Explain different types of Investments.

Ans :

There are Two concepts of Investment:

(a) Economic Investment

The concept of economic investment means addition to the capital stock of the society. The capital stock of the society is the goods which are used in the production of other goods. The term investment implies the formation of new and productive capital in the form of new construction and producers durable instrument such as plant and machinery. Inventories and human capital are also included in this concept. Thus, an investment, in economic terms, means an increase in building, equipment, and inventory.

(b) Financial Investment

This is an allocation of monetary resources to assets that are expected to yield some gain or return over a given period of time. It means an exchange of financial claims such as shares and bonds, real estate, etc. Financial investment involves contrasts written on pieces of paper such as shares and

debentures. People invest their funds in shares, debentures, fixed deposits, national saving certificates, life insurance policies, provident fund etc. in their view investment is a commitment of funds to derive future income in the form of interest, dividends, rent, premiums, pension benefits and the appreciation of the value of their principal capital. In primitive economies most investments are of the real variety whereas in a modern economy much investment is of the financial variety.

1.1.2 Characteristics

Q4. What are the characteristics of investments ?

(OR)

What are the features of investments ?

(OR)

What are the elements of investments ?

Ans :

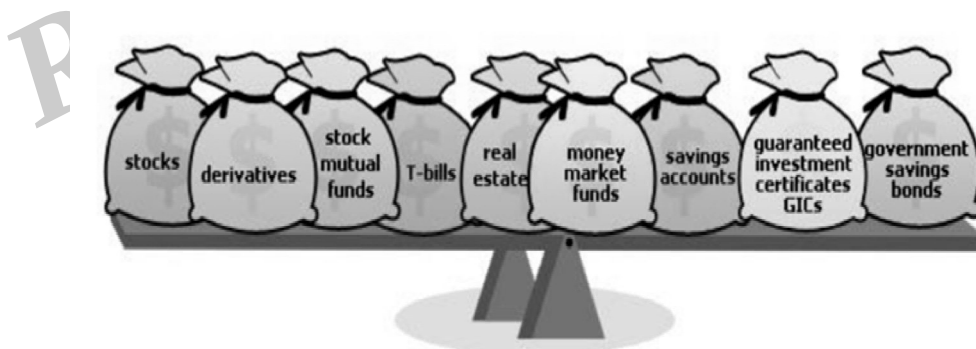
(Dec.-20, Imp.)

The following are the characteristics of Investment

(a) Return

All investments are characterized by the expectation of a return. In fact, investments are made with the primary objective of deriving a return. The return may be received in the form of yield plus capital appreciation. The difference between the sale price & the purchase price is capital appreciation. The dividend or interest received from the investment is the yield. Different types of investments promise different rates of return. The return from an investment depends upon the nature of investment, the maturity period & a host of other factors.

**Low-risk investments move less
than those with more risk.**



(b) Risk

Risk is inherent in any investment. The risk may relate to loss of capital, delay in repayment of capital, non-payment of interest, or variability of returns. While some investments like government securities & bank deposits are almost risk less, others are more risky. The risk of an investment depends on the following factors.

- The longer the maturity period, the longer is the risk.
- The lower the credit worthiness of the borrower, the higher is the risk.

The risk varies with the nature of investment. Investments in ownership securities like equity shares carry higher risk compared to investments in debt instrument like debentures & bonds.

(c) Safety

The safety of an investment implies the certainty of return of capital without loss of money or time. Safety is another features which an investors desire for his investments. Every investor expects to get back his capital on maturity without loss & without delay.

(d) Liquidity

An investment, which is easily saleable, or marketable without loss of money & without loss of time is said to possess liquidity. Some investments like company deposits, bank deposits, P.O deposits, NSC, NSS etc. are not marketable. Some investment instrument like preference shares & debentures are marketable, but there are no buyers in many cases & hence their liquidity is negligible. Equity shares of companies listed on stock exchanges are easily marketable through the stock exchanges.

An investor generally prefers liquidity for his investment, safety of his funds, a good return with minimum risk or minimization of risk & maximization of return.

1.1.3 Importance

Q5. Explain the importance of investments.

Ans :

Investments are important due to increase in life expectancy of a person, planning for retirement income, high planning for additional income due to high rates of taxation and inflationary pressure in an economy, the expectation of continuous stable income in the form of regular dividends, interests and other receipts. The following discussion provides an explanation of these issues.

1. Longer Life Expectancy

Investment decisions have become significant because statistics show that life expectancy has increased with good medical care. People usually retire between the ages of 60 and 65. The income shrinks at the time of retirement because the annual inflow of earnings from employment stops. If savings are invested at the right age and time, wealth increases if the principal sum is invested adequately in different saving schemes.

The importance of investment decisions is enhanced by the fact that there is an increasing number of women working in the organizations. Men and women are responsible for planning their own investments during their working life so that after retirement they are able to have a stable income through balanced investments.

2. Taxation

Taxation introduces an element of compulsion in a person's savings. Every country has different tax saving schemes for bringing down taxation levels of a person. Since investments provide regular and stable income and also give relief in taxation, they are considered to be very important and useful if investments are made by proper planning.

3. Interest Rates

Interest rates vary according to the choice of investment outlet. Investors prefer safe investments with a good return. A risk-less security will bring low rates of return. Government securities are riskfree.

However, market risk is high with high rates of return. Before allocations of any amount, the different types of securities must be analyzed to calculate their benefits and their disadvantages. The investor should make his portfolio with several kinds of investments. Stability of interest is as important as receiving a high rate of interest.

4. Inflation

Inflation In a developing economy, there are rising prices and inflationary trends. A rise in

prices has several problems coupled with a falling standard of living. Before funds are invested, they must be evaluated to find the right choice of investments to tide over inflationary situations. The investor will look at different investment outlets and compare the rate of return/interest to cover the risk of inflation. Security and safety of capital is important.

Therefore, he/she should invest in those securities that have an assured and regular return. An investor has to consider, the taxation benefit decides the safety of capital and its continuous return.

5. Income

Investment decisions are important due the general increase in employment opportunities and an understanding of investment channels for saving in India. New and well-paying job opportunities are in sectors like software technology; business processing offices, call centres, exports, media, tourism, hospitality, manufacturing sector, banks, insurance and financial services. The employment opportunities gave rise to increasing incomes.

Higher income has increased a demand for investments and earnings above the regular income of people. Investment outlets can be selected to make investments for supporting the regular income. Awareness of financial assets and real assets has led to the ability and willingness of working people to save and invest their funds for return in their lean period leading to the importance of investments.

6. Investment Outlets

The availability of a large number of investment outlets has made investments useful and important. Apart from putting aside savings in savings banks where interest is low, investors have the choice of a variety of instruments. The question to reason out is which is the most suitable channel? Which investment will give a balanced growth and stability of return? The investor in his choice of investment has the objective of a proper mix between high rate of return and stability of return to get the benefits of both types of investments.

Thus, the objectives of investment are to achieve a good rate of return in the future, reducing risk to get a good return, liquidity in time of emergencies, safety of funds by selecting the right avenues of investments and a hedge against inflation.

Q6. Explain the nature and scope of investments

Ans :

The nature of scope of investment management is:

- To understand the exact meaning of investment
- To find out different avenues of investment
- To maximize return and minimize risk
- To make a programme for investment through evaluating securities, constructing a portfolio and reviewing a portfolio
- To find out a time period for investments to take place
- To evaluate through various techniques to get the best return for the investor.

1.1.4 Objectives

Q7. What are the objectives of investments?

Ans :

(Dec.-20, May-17, Imp.)

Investing is a wide spread practice and many have made their fortunes in the process. The starting point in this process is to determine the characteristics of the various investments and then matching them with the individuals need and preferences. All personal investing is designed in order to achieve certain objectives. These objectives may be tangible such as buying a car, house etc. and intangible objectives

such as social status, security etc. Similarly; these objectives may be classified as financial or personal objectives. Financial objectives are safety, profitability, and liquidity. Personal or individual objectives may be related to personal characteristics of individuals such as family commitments, status, dependents, educational requirements, income, consumption and provision for retirement etc. The objectives can be classified on the basis of the investors approach as follows:

(a) Short term high priority objectives

Investors have a high priority towards achieving certain objectives in a short time. For example, a young couple will give high priority to buy a house. Thus, investors will go for high priority objectives and invest their money accordingly.

(b) Long term high priority objectives

Some investors look forward and invest on the basis of objectives of long term needs. They want to achieve financial independence in long period. For example, investing for post-retirement period or education of a child etc. investors, usually prefer a diversified approach while selecting different types of investments.

(c) Low priority objectives

These objectives have low priority in investing. These objectives are not painful. After investing in high priority assets, investors can invest in these low priority assets. For example, provision for tour, domestic appliances etc.

(d) Money making objectives

Investors put their surplus money in these kinds of investment. Their objective is to maximize wealth. Usually, the investors invest in shares of companies which provide capital appreciation apart from regular income from dividend.

Every investor has common objectives with regard to the investment of their capital. The importance of each objective varies from investor to investor and depends upon the age and the amount of capital they have.

These objectives are broadly defined as follows.

(a) Lifestyle

Investors want to ensure that their assets can meet their financial needs over their lifetimes.

(b) Financial Security

Investors want to protect their financial needs against financial risks at all times.

(c) Return

Investors want a balance of risk and return that is suitable to their personal risk preferences.

(d) Value for Money

Investors want to minimize the costs of managing their assets and their financial needs.

(e) Peace of Mind

Investors do not want to worry about the day to day movements of markets and their present and future financial security.

Achieving the sum of these objectives depends very much on the investor having all their assets and needs managed centrally, with portfolios planned to meet lifetime needs, with one overall investment strategy ensuring that the disposition of assets will match individual needs and risk preferences.

1.1.5 Factors of Sound Investment

Q8. Explain the factors that are being considered while taking investment decisions.

(OR)

Explain the factors that influence the investment.

Ans : (May-12)

(a) Return

Investors buy or sell financial instruments in order to earn return on them. The return on investment is the reward to the investors. The return includes both current income and capital gains or losses, which arises by the increase or decrease of the security price.

(b) Risk

Risk is the chance of loss due to variability of returns on an investment. In case of every investment, there is the chance of loss. It may be loss of interest, dividend or even principal amount of investment. However, risk and return are inseparable. Return is a precise statistical term and it is measurable. But the risk is not precise statistical term. However, the risk can be quantified. The investment process should be considered in terms of both risk and return.

(c) Time

Time is an important factor in investment. It offers several different courses of action. Time period (i.e., short-term or long-term) mainly depends on the type of the investor. As time moves on, analysts believe that conditions may change and investors may reevaluate the expected return and risk for each investment.

(d) Liquidity

An investment in shares can be readily converted into cash with the help of a stock exchange. Investment should be liquid as well as marketable. The portfolio should contain a planned proportion of high-grade and readily saleable investment. Bank F.D, Gold, Silver can also be readily converted into cash. Real Estate is comparatively illiquid.

(e) Safety

Safety means protection for investment against loss under reasonable variations. In order to provide safety, a careful regular review of economic and industry trends is necessary. In other words, errors in portfolio are sometimes unavoidable and it therefore requires appropriate diversification. Every investor wants that his basic amount of investment should remain safe.

(f) Tax Incentives

Investors try to minimize their tax liabilities from the investments. The portfolio manager has to keep a list of such investment avenues along with the risk-return profile, tax implication, yields and other details. An

investment programme without considering tax implications may be tax inefficient to investor. (PPF, EPF, Mutual Fund (ELSS) and Real Estate are tax efficient investment.)

Q9. Explain different sources of investments

Ans :

Various sources of investment information are :

➤ **International Affairs**

With the increasing globalization, International events affect the economy of the nation. Nations are economically and politically linked with each other. The policies of IMF and World Bank also affect the volume of loan for the development purpose. In addition to the economic events, political events and wars also affect the stock market. All the daily newspapers carry the international news. Some foreign journals like London Economist, Far East Economic Review and Indian magazines like Business World and Fortune India review the international events.

➤ **National Affairs**

The growth of the national economy and political events within the nation influence the investment decisions. The political events are provided by the newspapers, magazines. The economic events and their implication on the securities markets are analyzed in Financial Express, Economic Times, and Business Line. The Economic Survey of India and reports of companies also provide information regarding the economy, industry and other sectors.

➤ **Industry Information**

Information about the industry is required to identify the industries that perform better than the national economy as a whole. Financial newspapers regularly bring out industrial studies for the benefit of the investors.

➤ **Company Information**

A source of company information must be developed to facilitate the company analysis. The BSE, NSE and OTCEI provide details

about the listed companies in the web sites. All the financial journals provide the information regarding the company.

➤ **Stock Market Information**

All the financial dailies and investment related magazines publish the stock market news. Separate News Bulletins are issued by BSE, NSE, OTCEI provide information regarding the changes that take place in the stock market.

Q10. What are the investments avenues.

(OR)

Explain the important investment avenues available to savers in India.

Ans : **(May-11)**

There are a large number of investment avenues for savers in India. Some of them are marketable and liquid while other are non-marketable. Some of them are highly risky while some other are almost riskless. The investors have to choose proper avenues from various alternatives.

Various investment avenues are :

- (a) Corporate Securities
- (b) Deposits
- (c) UTI and Other Mutual Fund Schemes
- (d) Post Office Deposits and Certificates
- (e) Life Insurance Policies
- (f) Provident Fund Schemes
- (g) Government and Semi-Government Securities

(a) Corporate Securities

Corporate securities are the securities issued by joint stock companies in the private sector. These include equity shares, preference shares and debentures. Equity shares have variable dividend and very risky and provide high returns. Preference shares and debentures have fixed returns with lower risk.

(b) Deposits

Deposits are very popular among non-corporate investments. Deposits can be savings accounts and fixed deposits. Savings deposits have low interest rates and fixed deposits have higher interest rates varying with

the period of maturity. Joint stock companies also accept fixed deposits from the public. Fixed deposits in companies have high risk since they are unsecured, but they promise higher returns from bank deposits.

(c) UTI and Other Mutual Fund Schemes

Mutual funds offer various investment schemes to investors. UTI is the oldest and the largest mutual fund in the country. Unit Scheme 1964, Unit Linked Insurance Plan 1971, Master Share, Master Equity Plans, etc. are some of the popular schemes of UTI. A number of commercial banks and financial institutions have set up mutual funds.

(d) Post Office Deposits and Certificates

The investment avenues provided by post offices are generally non-marketable. The major investments in post office enjoy tax concessions. Post offices accept savings deposits as well as fixed deposits from the public. Six-year National Savings Certificates (NSC) is issued by post offices to investors. The interest on the amount invested is compounded half-yearly and is payable along with the principal at the time of maturity which is six years from the date of issue. Indira VikasPatra and KissanVikasPatra are savings certificates issued by post offices.

(e) Life Insurance Policies

Life Insurance Corporation (LIC) offers many investment schemes to investors. These schemes have the additional facility of life insurance cover. Some of the schemes of LIC are Whole Life Policies, Convertible Whole Life Assurance Policies, Endowment Assurance Policies, JeevanSaathi, Money Back Plan, JeevanDhara, Marriage Endowment Plan, etc.

(f) Provident Fund Schemes

Provident fund schemes are compulsory deposit schemes applicable to employees in the public and private sectors. There are three kinds of provident funds applicable to different sectors of employment. They are Statutory Provident Fund, Recognized Provident Fund and Unrecognized Provident Fund. There is

also a voluntary provident fund scheme which is open to any investor whether employed or not. This is known as the Public Provident Fund (PPF).

(g) Government and Semi-Government Securities

The Government and Semi-Government bodies like the public sector undertakings borrow money from the public through the issue of government securities and public sector bonds. These are less risky avenues of investment because of the credibility of the government and government undertakings.

1.2 INVESTMENT ENVIRONMENT

Q11. Write notes on investment environment

Ans :

Investment decisions to buy/sell securities taken by individuals and institutions are carried through a set of rules and regulations. There are markets money and capital which function subject to such rules and established procedures and are, in turn, regulated by legally constituted authority. Then there are securities or financial instruments, which are the objects of purchase and sale. Finally, the mechanism which expedites transfers from one owner to another comprises of a host of intermediaries. All these elements comprise the investment environment. Investors have to be fully aware of this environment for making optimal investment decisions.

Investment Environment Includes

- (a) Financial Markets
- (b) Financial Instruments
- (c) Creditor-ship Securities
- (d) Public-debt Instruments
- (e) Private Debt Instruments
- (f) Special Debt Instruments
- (g) Ownership Securities
- (h) Indirect Securities

Q12. What are the different types of investment environment?

Ans :

The following are the different types of Investment environments

(a) Financial Markets

- Securities markets can be seen as primary and secondary. The primary market or the new issues market is an informal forum with national and even international boundaries.
- Anybody who has funds and inclination to invest in securities would be considered a part of this market. Individuals, trusts, banks, mutual funds, financial institutions, pension funds, and for that matter any entity can participate in such a market. Companies enter this market with initial and subsequent issues of capital.
- They are required to follow the guidelines prescribed by the Controller of Capital Issues from time to time unless they are expressly exempted from doing so.
- A prospectus or a statement-in-lieu of prospectus is a necessary requirement because this contains material information on the basis of which the investor would form judgement to put or not to put his money.
- Concealment and misrepresentations in these documents have serious legal implications including the annulment of the issue.

(b) Financial Instruments

Financial assets or instruments can be classified in a variety of ways. We will classify them into creditorship and ownership securities on the basis of the nature of the buyer's commitment. The description will then be split into public and private issues differentiating the two major forms of issuance.

(c) Creditorship Securities

Debt instruments furnish an evidence of indebtedness of the issuer to the buyer. Periodic payments on such instruments are generally mandatory and all of them provide for the eventual repayment at maturity of the principal amount. Securities may also be sold at a price below the eventual redemption price, the difference between the redemption price and the sale price constituting the interest.

(d) Public Debt Instruments

Governments issue debt instruments for long and short periods. They are said to be the best in terms of quality and are risk-free. A common term used to designate them is 'gilt-edged securities'.

(e) Private Debt Instruments

They are issued by private business firms which are incorporated as companies under the Companies Act, 1956. Generally, these instruments are secured by a mortgage on the fixed assets of a company. Unsecured or naked debentures are now of theoretical importance. A very popular variety of such debentures is 'convertible' whereby the whole or part of the par value of a debenture is convertible (usually automatically) on the expiry of a stipulated period after issue. The terms of conversion are stated in advance.

(f) Special Debt Instruments

With a view to mop up resources and innovating the spectrum of debt-instruments, two new debt instruments deserve a special mention viz., Public Sector Undertaking (PSU) Bonds (long-term), and Certificates of Deposit (short-term).

The PSU bonds are issued to the general public and financial institutions by public sector undertakings, usually, with tax incentives.

(g) Ownership Securities

These instruments are called 'equities' because investors in them acquire a right to a share of residual profits. Equity investment may be acquired indirectly or directly or even through a hybrid instrument known as preference shares.

(h) Indirect Equities

The investor acquires special instruments of institutions who make the buy-sell decisions for him. Such institutions are unit trust or mutual funds. An individual who buys a unit gets a dividend from the Income of the trust/mutual fund after meeting all expenses of management. The units can be only bought from and sold to the institution (in the case of the UTI) at sale and repurchase prices announced from time to time (on a daily basis). In the case of other mutual funds like the can share or even the UTIs Mastershare, sales and purchases can be affected through secondary markets. The objective of trusts and mutual funds is to use their professional expertise in portfolio construction and pass on the benefits to the small, investor who cannot repeat such a performance if left alone to subscribe to equity shares directly

1.3 INVESTMENT MEDIA**Q13. Write a notes on Investment Media.**

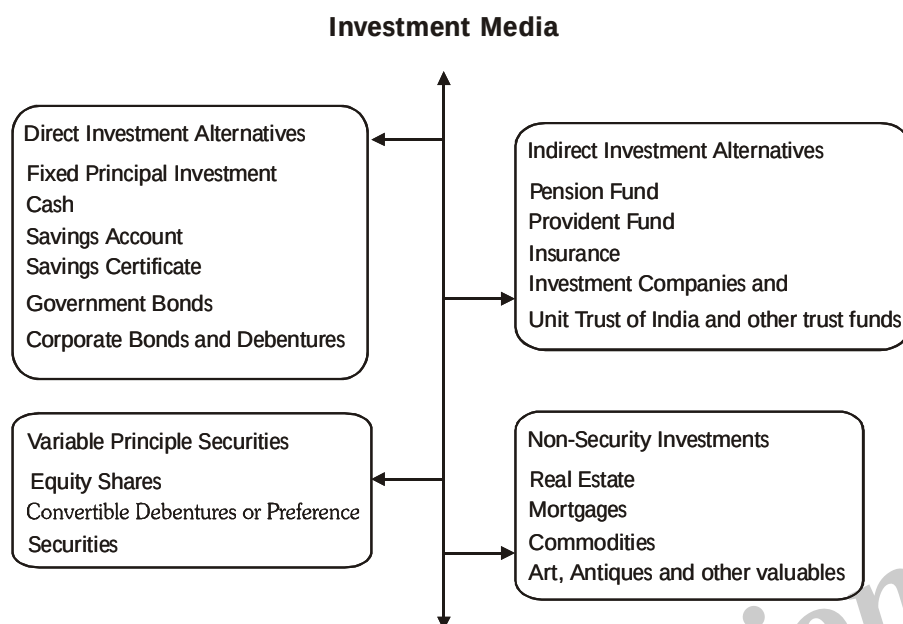
Ans :

(May-11)

In India, many types of investment media or channels are available for making investments. A sound investment program can be constructed if the investor familiarizes himself with the various alternative investments available.

Investment media are of several kinds. Some are simple and direct, others present complex problems of analysis and investigations. Some are familiar; others are relatively new and unidentified. Some investments are appropriate for one type of investor and another may be suitable to another person.

The ultimate objective of the investor is to derive a variety of investments that meet this preference for risk and expected return. The investor will select the portfolio which will maximize his utility. Securities present a wide range of risk-free instruments to highly speculative shares and debentures. From this broad spectrum, the investor will have to select those securities that maximize his utility.



Q14. Discuss the different channels available to an investors for making investments.

Ans :

(May-14)

Some major sources of Investment Media can be explain as follows:

1. Annual Stockholders' Reports

Every publicly traded corporation is required to provide its stockholders and other interested parties with annual stockholders' reports. These documents contain a wealth of information about the companies, including balance sheets, income statements, and other summarized statements for the latest fiscal year, plus several prior years. Annual reports usually describe the firm's business activities, recent developments, and future plans and outlook. Financial ratios describing past performance are also included, along with other relevant statistics. In fact, annual reports offer a great deal of insight into the company's past, present, and future operations, investor can obtain them for free directly from the companies, through a brokerage firm, or at most large libraries. With today's technology, most companies are also posting their annual reports on the Internet, so now investor can obtain them online. Here are some suggestions to help investor to get the most information when reading an annual report :

- i) **Start with the Highlights or Selected Financial Data Sections:** These provide a quick overview of performance by summarizing key information, such as the past two years' revenues, net income, assets, Earnings Per Share (EPS), and dividends. EPS has the most effect on the stock's price, so watch it closely.
- ii) **Read the Chief Executive's Letter:** But read it with a careful eye, looking for euphemisms like "a slowing of growth", meaning a "drop in earnings".
- iii) **Move on to the Discussion of Operations in Management's Discussion and Analysis:** This section provides information on sales, earnings, debt, inventory levels, litigation, taxes, and so on.
- iv) **Review the Financial Statements, Including the Notes:** These will tell investors about the company's financial condition and performance. Look for trends in sales, costs, profit, cash position, and net working capital.

- v) **Read the Auditor's Report:** This statement from the independent accountants who review the numbers has two paragraphs when everything is fine; a third paragraph or phrases like "except for" or "subject to" means there may be problems need to understand.

2. Financial Press

The most common source of financial news is the local newspaper. The newspapers in many larger cities often devote several pages to business news and information. Of course, big-city papers, like The New York Times, provide even more information. Other, more specific sources of financial news include The Wall Street Journal, Barron's, Investor's Business Daily, and the "Money" section of USA Today. These are all national publications that include articles on the behavior of the economy, the market, various industries, and individual companies. The most comprehensive and up-to-date coverage of financial news is provided Monday to Saturday by The Wall Street Journal. Other excellent sources of investment information include magazines, such as Money, Forbes, Fortune, Business Week, Smart Money, and Kiplinger's Personal Finance.

3. Internet

Some websites that are logical starting points when evaluating a stock investment, but there are many more than those described. Let us begin with information about the corporation that is available on the Internet.

Today, most corporations have a website, and the information provided by these websites is very useful. Some benefits of using websites are as follows :

- i) It is easily accessible. All investors have to do is type in the corporation's URL address or use a search engine to locate the corporation's home page.
- ii) The information on the corporate website may be more up-to-date and thorough, than printed material obtained from the corporation or outside sources.

Investor can also use websites like Yahoo! and other search engines to obtain information about stock investments. For example, the Yahoo! Finance Website provides a wealth of information. Under the stock research category, there is a stock screener that will help investor to pick stock investments. Investor can also get current market values by entering a corporation's stock symbol and clicking on the Go button.

In addition, investor can use professional advisory services like Standard & Poor's Financial Information Services (www.standardpoor.com), Morningstar (www.morningstar.com), and Value Line (www.valueline.com). While some of the information provided by these services is free, there is a charge for the more detailed information investor may need to evaluate a stock investment.

4. Stock Advisory Services

In addition to using online sources of information, investor can use the printed materials provided by stock advisory services to evaluate potential stock investments. In choosing among the hundreds of stock advisory services that charge fees for their information, investor must consider both the quality and the quantity of the information they provide. The information ranges from simple alphabetical listings to detailed financial reports.

5. Corporate News

Government requires corporations selling new issues of securities to disclose information about corporate earnings, assets and liabilities, products or services, and the qualifications of top management in a prospectus that they must give to investors. Even if investors are not a stockholder, he can obtain an annual report from the corporation. Investor can also write to the company or visit their website to obtain an annual report.

1.4 PRINCIPLES OF INVESTMENTS

Q15. Explain the various principles of investments.

(OR)

Discuss the principles of investment.

Ans : **(Dec.-20, May-15)**

1. Check Finances

Consumers should get a good grasp of their financial situation and figure out their risk tolerance as well as the goals they wish to achieve. It is essential to determine if their financial goals are short or long-term because it will help decide what kind of investment should be made for the best return.

2. Risk

Every investment involves some level of risk. When investing in bonds, stocks or mutual funds, it is important to understand that it is possible to lose some or all of investment. While high-risk investments can achieve higher returns, they can also lead to more significant losses. Low-risk investments usually mean slower earnings, so the chances of losing money overnight are slim.

3. Research

Buying and selling investments costs money, so it is important to do all the necessary research. Never purchase an investment from a solicitor or based on an advertisement. Be aware of the investment's volatility; meaning does it tend to fluctuate dramatically or not.

4. Don't invest in one place

Diversify the investments, spread the money out in different types of investments, and consider both low and higher-risk options.

5. Financial planner

The 'teach yourself' approach is not ideal for everyone. If you have tried and failed or you don't feel comfortable, seek out a financial planner to help lead the way.

1.5 SPECULATION

Q16. Write a note on Speculation.

(OR)

Define the term Speculation.

Ans : **(May-14, May-12, Imp.)**

"Speculation is an activity, quite contrary to its literal meaning, in which a person assumes high risks, often without regard for the safety of their invested principal, to achieve large capital gains." The time span in which the gain is sought to be made is usually very short. Speculation has a special meaning when talking about money. The person who speculates is called a speculator. A speculator does not buy goods to own them, but to sell them later. The reason is that speculator wants to profit from the changes of market prices. One tries to buy the goods when they are cheap and to sell them when they are expensive.

Speculation includes the buying, holding, selling and short selling of stocks, bonds, commodities, currencies, real estate collectibles, derivatives or any valuable financial instrument. It is the opposite of buying because one wants to use them for daily life or to get income from them (as dividends or interest).

Speculation should not be considered purely a form of gambling, as speculators do make an informed decision before choosing to acquire the additional risks. Additionally, speculation cannot be categorized as a traditional investment because the acquired risk is higher than average. More sophisticated investors will also use a hedging strategy in combination with their speculative investment in order to limit potential losses.

1.5.1 Differences between Investor and Speculation

Q17. What are the differences between investor and speculation?

(OR)

Investors or different with speculation? Explain.

(OR)

Investment and speculation are somewhat different and yet similar in certain respects. Explain.

Ans :

(May-17)

Nature	Investor	Speculator
i) Planning horizon	An investor has a Relatively longer planning horizon. His holding period is usually at least 1 year.	A speculator has a Very short planning horizon. His holding period may be a few days to a few months.
ii) Risk disposition	An investor is normally not willing to assume more than moderate risk. Rarely does he knowingly assume high risk.	A speculator is ordinarily willing to assume high risk,
iii) Return expectation	An investor usually seeks a modest rate of return which is commensurate with the limited risk assumed by him/her.	A speculator looks for a high rate of return in exchange for the high risk borne by him/her.
iv) Basis for decisions	An investor attaches greater significance to Fundamental factors and attempt a careful evaluation of the prospects of the firm.	A speculator Relies more on hearsay, tips, technical charts and market psychology.
v) Leverage	Typically an investor uses his own funds and eschews borrowed funds	A speculator normally resorts to borrowings, which can be very substantial, to supplement his personal resources.

1.6 GAMBLING

Q18. Define Gambling.

(OR)

Write a notes on Gambling.

Ans :

Gambling is defined as staking something on a contingency. Also known as betting or wagering, it means risking money on an event that has an uncertain outcome and heavily involves chance.

Investment can also be distinguished from gambling. Examples of gambling are horse race, card games, lotteries, and so on. Gambling involves high risk not only for high returns but also for the associated excitement. Gambling is unplanned and unscientific, without the knowledge of the nature of the risk involved. It is surrounded by uncertainty and a gambling decision is taken on unfounded market tips and rumors. In gambling, artificial and unnecessary risks are created for increasing the returns.

Investment is an attempt to carefully plan, evaluate, and allocate funds to various investment outlets that offer safety of principal and expected returns over a long period of time.

It is the wagering of money or something of material value on an event with an uncertain outcome with the primary intent of winning additional money and material goods. Typically, the outcome of the wager is evident within a limited period.

The term gaming in this context typically refers to instances in which the activity has been specifically permitted by law. The two words are not mutually exclusive. A "gaming" company offers "gambling" activities to the public. This distinction is not universally observed in the English-speaking world, however. For instance, in the UK, the regulator of gambling activities is called the Gambling Commission.

1.6.1 Investment vs. Gambling

Q19. What are the difference between investment and Gambling?

(OR)

Distinguish between investment and Gambling.

Ans :

(Imp.)

Basis of difference	Investment	Gambling
1) Creation of Risk	In the case investment the investors deal with pre-existing risk.	Here gambler creates risk.
2) Transfer of Risk	Transferring the risk from investors to insurance companies.	In the case of gambling, transferring or shifting the risks are not possible.
3) Expected Return	Investing has a positive expected return.	Gambling has a negative expected return.
4) Measure of Risk	The risk and uncertainty are measurable in the return on any investment.	The risk and uncertainty cannot be measured because of the high degree of uncertainty.
5) Activity	Investing is a productive activity that provides benefits to the society.	Gambling is an unproductive activity that harms the society.
6) Length of Proposals	It implies long-term proposals, greater is the risk and expects long term rate of return.	It implies short-term proposals, high risk and greater uncertainty, and expectation of high return.

1.7 INVESTMENT PROCESS

Q20. Explain the process of investment.

(OR)

What are the steps involve in investment process?

Ans :

(May-16, May-15, Imp.)

The process of investment is very important and plays a very key role. Investment process is a very complex process and involves a series of steps.

The investment process involves the following steps :

- (a) Investment Policy
- (b) Investment (or) Security Analysis

- (c) Investment (or) Security Valuation
- (d) Portfolio Construction
- (e) Portfolio Evaluation

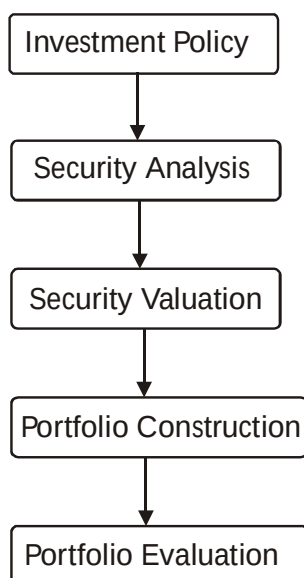


Fig.: Investment Process

(a) Investment Policy

Investment Policy involves the following steps :

i) Identification of Investor's Objectives, Constraints and Preference

Investors differ from each other in terms of objectives, constraints and preference. Therefore, collection of data on the investors' preferences objectives, constraints etc. is the foundation of investment management. This gives an idea of different ways of investment in terms of asset classes to be selected and securities to be chosen based upon the liquidity, requirement, time horizon, taxes, asset preference of investors, etc. These are the building blocks for construction of a portfolio.

ii) Formulation of Investment Policy and Strategy

After the investor's objectives, constraints have been identified, the investment policies can be formulated. This policy will lay down the weights to be given to different asset classes of

investment such as equity shares, preference shares, debentures, company deposits, etc. and the proportion of funds to be invested in each class and selection of assets and securities each class are made on this basis. The next stage is to formulate the investment strategy for a time horizon for income and capital appreciation and for a level of risk tolerance.

iii) Execution of Strategy

This stage involves the execution of the investment strategy which are formulated. Here the research, analysis and the judgement of the manager are very essential inputs in the process. His initiative, innovation and judgement would be the basis of his success in management. The performance of the portfolio is evaluated and adjustments are made in the portfolio composition from time to time. This is called Monitoring and Risk structuring of portfolios. This process is an adjustment of the components of the portfolio to improve the performance to make it optimal and efficient. The changes in investor's conditions and in the market conditions and in industry performance are taken into account in the portfolio adjustments.

iv) Monitoring of Investment Portfolios

Monitoring of these portfolios is a continuous upgrading and changes in asset composition to take advantage of the market conditions and economic performance. Portfolio monitoring is a continuous on - going assessment of the current portfolio to the goals, changes in investor's preferences, capital market conditions and expectations.

(b) Security (or) Investment Analysis

When an individual has arranged order to types of investment that he requires, on his portfolio, the next step is to analyze the securities available for investment. Then a comparative analysis is made regarding the type of industry, kind of security etc.

i) **Market Analysis:** The stock market mirrors the general economic scenario. The growth in gross domestic product and inflation are reflected in the stock prices. The recession in the economy results in a bear market. The stock prices may be fluctuating in the short run but in the long run they move in trends i.e., either upwards or downwards.

ii) **Industry Analysis:** The industries that contribute to the output of the major segments of the economy vary if their growth rates and their overall contribution to economic activity changes.

Some industries grow faster than the GDP and are expected to continue in their growth. The economic significance and the growth potential of the industry have to be analyzed.

iii) **Company Analysis:** The purpose of company analysis is to help the investor to make better decisions. The company's earnings, profitability, operating efficiency, capital structure and management have to be screened. These factors have direct bearing on the stock prices and the return of the investors. Appreciation of the stock value is a function of the performance of the company. Company with high product market share is able to create wealth to the investors in the form of capital appreciation.

(c) **Security Valuation**

After security analysis is done, next step is to value the securities. It is one of the most important step. Investment value is taken to be the present worth to the owners of future benefits from investments. The investor has to bear in mind the value of three investments. An appropriate set of weights have to be applied with the use of forecasted benefits to estimate the value of the investment assets. Comparison of the value with the current market price of the asset, allows the determination of the relative attractiveness of the asset. Each asset must be valued on its individual merit.

(i) **Intrinsic Value:** The intrinsic value to the share is measured through the book value of the share and price earnings rates. Simple

discounting model also can be adopted to value the shares. The real worth of the share is compared with the market price and then the investment decisions are made.

(ii) **Future Value:** Future value of the securities could be estimated by using a simple statistical technique like trend analysis. The analysis of the historic behavior of the price enables the investor to predict the future value.

(d) **Portfolio Construction**

Portfolio is a combination of securities/assets which is designed and selected by the investors in order to maximize return and minimize risk. Portfolio construction requires knowledge of the different aspects of securities. These aspects consist of safety, growth of principal, liquidity of assets after taking into account the stage involving investment timing, selection of investment, allocation of savings.

(i) **Diversification:** The main objective of diversification is the reduction of risk in the loss of capital and income. A diversified portfolio is comparatively less risky than holding a single security. There are several ways to diversify the portfolio.

(ii) **Debt and Equity Diversification:** Debt instruments provide assured return with limited capitals appreciation. Common stocks provide income and capital gain but with the flavor of uncertainty. Both debt instruments and equity are combined to complement each other.

(iii) **Industry Diversification:** Industries growth and their reaction to government policies differ from each other. Banking industry shares may provide regular but with limited capital appreciation. The information technology stock yield high return and capital appreciation, but their growth potential after the year 2002 is not predictable. Thus, industry diversification is needed as it reduces risk.

(iv) **Company Diversification:** Securities from different companies are purchased to reduce risk. Technical analysis suggests the investors

to buy securities based on the price movement. Fundamental analysts suggests the selection of financially sound and investors friendly companies.'

(e) Portfolio Evaluation and Revision

The process of investment is not complete after the construction of portfolio. The portfolio needs to be evaluated and revised at periodical intervals. In portfolio revision, some existing securities are sold whereas new securities are purchased. Normally those securities are purchased whose current market value is lower than their intrinsic value. Those existing securities are sold where current market value is higher than their intrinsic value. The investors can adopt a number of strategies for the evaluation and revision of portfolio. The central idea of all those strategies is to maximize return and minimize risk.

(i) Appraisal: The return and risk performance of the security may vary from time to time. The variability in returns of the securities is measured and compared.

The development in the economy, industry and relevant companies from which the stocks are bought have to be appraised, the approval warns the loss and steps can be taken to avoid such losses.

(ii) Revision: Revision depends on the results of the appraisal. The low yielding securities with high risk are replaced with high yielding securities with low risk factor. To keep the return at a particular level necessitates the investment to prwise the components of the portfolio periodically.

1.8 FINANCIAL ASSETS

1.8.1 Meaning

Q21. What is Financial Assets.

Ans : (Dec.-20, May-17)

The financial assets are also called financial claims or financial securities of paper assets. These financial securities are issued by deficit generating units in exchange for their savings. It is for this reason

that surplus generating units are called investors while deficit-generating units are called issuers. These investors and issuers of financial securities constitute two important elements of the securities man. The third critical element of markets is the intermediaries who act as conduits between the investors and issue. Regulatory bodies, which regulate the functioning of the securities markets, constitute the last but very significant dement of securities markets, Thus, there are four important elements of securities markets namely investors issuers, intermediaries and regulators. Now depending upon the nature of the relationship among these element of securities markets, the markets are classified as primary and secondary. Further, depending upon the main securities markets, the markets are classified as short-term and long-term and depending upon the issuers, these are classified government securities or industrial securities. Government securities arc also called gilt-edged securities. To pick up the right kind of securities, an investor or a portfolio manager should be folly conversant with the different segments of securities markets, different types of securities which are traded and different trading arrangement which exist in the market. In this unit, we shall distinguish between primary market and secondary market securities and discuss various traded securities and trading arrangements prevalent in India. Let us begin distinguishing primary and secondary markets.

The financial assets can be defined as an investment asset whose value is derived from a contractual claim of what they represent. These are liquid assets as the economic resources or ownership can be converted into something of value such as cash. These are also referred to as financial instruments or securities. They are widely used to finance real estate and ownership of tangible assets.

These are basically legal claims and these legal contracts are subject to future cash at a predefined maturity value and predetermined time frame.

1.9 TYPES / CLASSIFICATION OF FINANCIAL ASSETS

Q22. Explain the different types of financial assets.

(OR)

What are the classification of financial assets?

Ans :

(Dec.-20)

1. Certificate of Deposit (CD)

Certificates of deposit are a special form of term deposits, which are issued for a specific reference period, usually up to 12 months, for a certain amount and a certain interest rate, fixed or variable, traded in the secondary money market. Regardless of the duration of a CD, the issuing bank is bound to pay off the coupons to the holder.

2. Bonds

This type of financial asset is usually a debt instrument sold by companies or government in order to raise fund for short-term projects. A bond is a legal document that states money the investor has lent the borrower and the amount when it needs to be paid back (plus interest) and the bond's maturity date.

3. Stocks

Stocks do not have any maturity date. Investing in stocks of a company means participating in the ownership of the company and sharing its profits and losses. Stocks belong to shareholders until and unless they sell them.

4. Cash or Cash Equivalent

This type of financial asset is the cash or equivalent reserved with the organization.

5. Bank Deposits

These are the cash reserve of the organization with Banks in saving and checking accounts.

6. Loans & Receivables

Loans and Receivables are those assets with fixed or determinable payments. For banks, loans are such assets as they sell them to other parties as their business.

7. Derivatives

Derivatives are financial assets whose value is derived from other underlying assets. These are basically contracts.

All the above assets are liquid assets as they can be converted into their respective values

as per the contractual claims of what they represent. They do not necessarily have inherent physical worth like land, property, commodities, etc.

Q23. Define Certificate of deposits and explain its features.

Ans :

The Certificate of Deposit (CD) is an agreement between the depositor and the bank where a predetermined amount of money is fixed for a specific time period. Issued by the Federal Deposit Insurance Corporation (FDIC) and regulated by the Reserve Bank of India, the CD is a promissory note, the interest on which is paid by the bank. The Certificate of Deposit is issued in dematerialized form i.e. issued electronically and may automatically be renewed if the depositor fails to decide what to do with the matured amount during the grace period of 7 days. It also restricts the holder from withdrawing the amount on demand or paying a penalty, otherwise. When the Certificate of Deposit matures, the principal amount along with the interest earned is available for withdrawal.

Certificates of deposit are a special form of term deposits, which are issued for a specific reference period, usually up to 12 months, for a certain amount and a certain interest rate, fixed or variable, traded in the secondary money market. Regardless of the duration of a CD, the issuing bank is bound to pay off the coupons to the holder.

Short-term CDs have no coupons, and the holder receives the principal and accrued interest at maturity. However, in the case of a long-term certificate of deposit, the coupons are paid at regular intervals like, for example, every six months. The trading price of a CD in the secondary market is determined by its yield to maturity.

This type of financial asset is an agreement between an investor (here, company) and a bank institution in which the customer (Company) keep a set amount of money deposited in the bank for the agreed term in exchange for a guaranteed rate of interest.

Features➤ **Eligibility**

Not all institutions or banks are allowed to issue Certificates of Deposit and not every individual or organization can purchase one. There are certain conditions laid down by the RBI that allow the purchase of CDs.

➤ **Maturity Period**

A Certificate of Deposit issued by the commercial banks can have a maturity period ranging from 7 days to 1 year. For financial institutions, it ranges from 1 year to 3 years.

➤ **Minimum investment amount**

A CD can be issued to a single issuer for a minimum of Rs.1 Lakh and its multiples.

➤ **Transferability**

Certificates that are available in Demat forms must be transferred according to the guidelines followed by Demat securities. While dematerialized/electronic certificates can be transferred by endorsement or delivery.

➤ **Non-availability of loan**

Since these instruments do not have any lock-in period, banks do not grant loans against them. In fact, banks cannot even buy back certificates of deposit before maturity.

➤ **Discount offered**

Certificate of deposit is issued at a discounted rate on the face value. Moreover, banks and financial institutions can also issue CDs on a floating rate basis.

Q24. What are the advantages of Certificate of deposits

Ans :

Advantages**1. Safe investment option**

Certificates of Deposits are a comparatively safer investment instrument than other investments that are vulnerable to the volatility of the capital market like bonds and stocks.

Hence, their returns are not guaranteed. In the case of CDs, the authorized banks and financial institutions issuing the CDs invest the amount further in safe instruments that generate growth.

2. Fixed interest rate

CDs are offered at a pre-decided interest rate that remains constant throughout the investment tenure, enabling investors to predict their returns.

3. Higher interest rate than savings bank account

The interest rates of Certificates of Deposits are higher than that of savings bank accounts and are earned at the pre-determined fixed rate.

4. Short term investment option

CDs are accompanied by a short maturity term, implying that the invested amount will remain non-retrievable only for a short period of time.

5. Higher returns for higher maturity term

Staying invested for a longer tenure generates higher returns, ensuring flexibility.

6. Effective investment for idle capital

CDs are a smart investment for depositors with idle capital that they don't know how to utilize presently. This capital can be invested for a short term in a CD and renewed further, if required.

7. Versatile investment

The features and benefits of Certificates of Deposits ensure that they are well suited for investors across investment objectives and income groups.

8. Wide range of choices

There is an extensive list of commercial banks and financial institutions that have been authorized by the RBI to sell CDs. Hence, investors can select the one that meets their unique investment objectives the best.

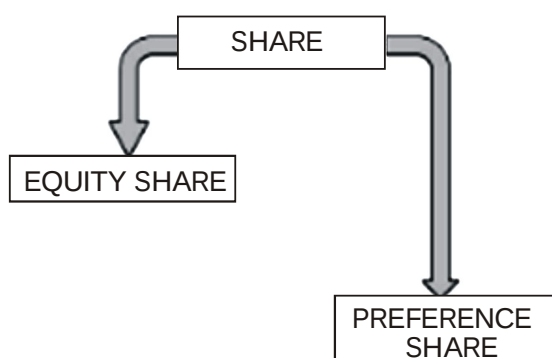
9. Grace period

The grace period after the completion of the maturity term, which generally spans for 7 days, enables the depositor to plan further investments with the matured amount.

1.9.1 Shares**Q25. Define the term shares.****Ans :**

The capital of a company is divided into different units called Shares. A share is the movable property of a "Shareholder and he has a liberty to transfer his share in the manner prescribed by the Articles of the company. Its distinct number distinguishes each share of a company.

- i) **Section 2(46) of the Companies Act, 1959**, defines the shares as "Share means share in the share capital of company, and include stock except where a distinction between stock and shares is expressed or is implied share may or may not be represented by a sum of money; it may be in the form of money's worth".
- ii) **According to Justice Farwel**, "A share is the interest of a shareholder in the company measured by a sum of money, for the purpose of liability in the first place and of interest in the second, but also consisting of mutual covenants entered into by all the shareholders in terms of the act and the articles".'

1.9.1.1 Types / Classification of Shares**Q26. Explain different types of shares.****(OR)****What are the classification of shares?****Ans :****(May-19)**

According to Section 43 of the Companies Act, 2013, the share capital of a company is of two types:

1. Preferential Share Capital

Preference shares refer to the shares that carry preferential right concerning the dividend payment (i.e. either certain amount, or at a certain rate) and repayment, at the time of winding up of the company.

It is, in fact, a hybrid source of finance which contains the features of both equity capital as well as debt capital. It is identical to equity capital because it carries dividend which is not tax deductible, but at the same time, the dividend rate is fixed which makes it similar to debt capital wherein the interest rate is certain.

The shares get preference over the equity shares as to the distribution of dividend and surplus at the time of winding up of the company. These shares are redeemable in nature, i.e. after a specific period of time, these shares are redeemed by the company either at par, premium or discount.

2. Equity Share Capital

Equity shares or otherwise called as ordinary shares are the shares, that carry :

- Voting rights at the Annual General Meeting of the company.

(OR)

- Differential voting rights relating to dividend, voting etc.

Ordinary shareholders share profits of the firm, in the form of dividend declared by the company and bonus shares. The dividend is paid to them at last, i.e. after paying off all the taxes, interest and dividend to preference shareholders.

The rate of dividend is not fixed, i.e. whatever the company earns as a profit, a certain percentage of it is declared as a dividend by the company to the equity shareholders.

Again, at the time of winding up of the company, equity shareholders are paid at last, i.e. after settling the claims of creditors, debenture holders and preference shareholders.

Funds raised by issued equity shares brings permanent capital to the company. As the equity shareholders undertake the highest risk, they are regarded as the true owners of the company. The cost of these shares is usually high, as the shareholders expect a good return on their investment, against the risk taken.

Equity shares are of several types, i.e. right shares, bonus shares, sweat equity shares, etc.

1.9.1.1.1 Equity Share Capital

Q27. Define equity share state the features of equity share capital.

Ans :

Equity Shares

Equity shares are, earlier, known as ordinary shares or common shares. Equity shareholders are the real owners of the company as they have the voting rights and enjoy decision-making authority on important matters, related to the company. The shareholders' return is in the form of dividend, which is dependent on the profits of the company and capital gain/loss, at the time of their sale. They enjoy higher returns if the company performs well and may not get any dividend, at all, if the company does not do well or when the Board of Directors do not recommend any dividend for payment. Therefore, equity shares are known as 'variable income security'. They are the last one to get repayment in the event of liquidation of the company.

Features

The following are the most significant features of equity shares:

1. **Owned Capital:** Equity share capital is owned capital because it is the money of the shareholders who are actually the owners of the company.
2. **Fixed Value or Nominal Value:** Every share has fixed value or a nominal value. For example, the price of a share is ₹10/- which indicates a fixed value or a nominal value.
3. **Distinctive Number:** Every share is given a distinct number just like a roll number for the purpose of identification.

4. **Attached Rights:** A share gives its owner the right to receive dividend, the right to vote, the right to attend meetings, the right to inspect the books of accounts.
5. **Return on Shares:** Every shareholder is entitled to a return on shares which is known as dividend. Dividend depends on the profits made by a company. Higher the profits, higher will be the dividend and vice versa.
6. **Transfer of Shares:** Equity shares are easily transferable, that is if a person buys shares of a particular company and he does not want them, he can sell them to any one, thereby transferring the shares in the name of that person.
7. **Benefit of Right Issue:** When a company makes fresh issue of shares, the equity shareholders are given certain rights in the company. The company has to offer the new shares first to the equity shareholders in the proportion to their existing share holding. In case they do not take up the shares offered to them, the same can be issue to others. Thus, equity shareholders get the benefits of the right issue.
8. **Benefit of Bonus Shares:** Joint stock companies which make huge profits, issue bonus shares to their ordinary shareholders out of the accumulated profits. These shares are issued free of cost in proportion to the number of existing equity share holding. In case they do not take up the shares offered to them, the same can be issued to others. Thus, equity shareholders get the benefits of the right issue.
9. **Irredeemable:** Equity shares are always irredeemable. This means equity capital is not returnable during the life time of a company.
10. **Capital Appreciation:** The nominal or par value of equity shares is fixed but the market value fluctuates. The market value mainly depends upon profitability and prosperity of the company. High rate of dividend is paid with high rate of profit, the shareholders capital is appreciated through an appreciation in the market value of shares, (i.e. higher the rate of dividend, higher the market value of the shares.

Q28. What are the advantages and limitations of equity shares?

(OR)

What are the merits and demerits of equity shares?

Ans : (May-15, Imp.)

Advantages

The advantages of equity shares are as follows:

1. Advantages to Investors: It includes:

- i) **Capital Profit:** In the case of progress and profit to the company the market value of the share increases. In this case the shareholders can sell the shares at higher prices to get the capital gains.
- ii) **Interest in the Company's Activities:** Equity shareholders are the owners of the company. They take a lot of interest in the company's affairs.
- iii) **Best for Investment:** The person who enjoys to take risks for them investment in equity share is good investment.
- iv) **Right to Interfere in Management:** Equity shareholders have the right to participate in management. They can take part in the general meetings with voting rights. They elect the board of directors.

2. Advantage to Company: It includes:

- i) **No-Fixed Burden of Dividend:** The dividend on equity shares is not fixed. It depends on the profits generated. Dividends are not the burden as in the case of fixed preference share.
- ii) **No Outflow of Cash:** It is a permanent source of capital. The company need not have any fear of redemption with the outflow of cash. These funds are available as long as the company does not go into liquidation.
- iii) **Bear the Risk:** Money from equity shares takes the risk of the company. It is a defense wall for the company. When the long-term finances are raised the company likes to take the risk for increasing the profitability.

- iv) **Availability of Fixed Capital:** By issuing the equity share the company fulfills the long-term financial needs. The finance from this source is issued to purchase the fixed assets.

Disadvantages

Equity shares may have following disadvantages:

1. Disadvantages to Investors: It includes:

- i) **Uncertainty of Income:** It is not obligatory on the part of the management to pay dividend even in the case of huge profits, management can retain all of its earnings for company's expansion or diversification.
- ii) **Irregular Income:** Payment of the dividend is dependent at the profits of the company. Many times when these are merge profits the dividends are very Sess.
- iii) **Capital Loss:** At the time of reduction of share prices it is not in the favour of investors to sell the shares. If one shareholder has the urgency to sell his shares then he has to incur capital loss.
- iv) **Less Attractive to Modest Investors:** Those investors who want regular and consistent income on their investment, the investment in equity shares is not very attractive.

2. Disadvantages to Company: It includes:

- i) **Difficult to Remove Over Capitalization:** In the condition of over capitalization it is very difficult to reduce in the number of equity shares.
- ii) **Centralization of Control:** Equity shares are transferable so few people can take the control of the company by purchasing the substantial number of shares. In this way the management of the company can go in the hands of few people.
- iii) **Change in Management Policy:** Due to sale purchase of equity share the holder changes. Many times due to the change in shareholders the management of the company also changes. It changes the policy of the management.

Q29. What are the different types of Equity shares ?**Ans :**

The different types of equity issues have been discussed below :

1. New Issue

A company issues a prospectus inviting the general public to subscribe its shares. Generally, in case of new issues, money is collected by the company in more than one installment known as allotment and calls. The prospectus contains details regarding the date of payment and amount of money payable on such allotment and calls. A company can offer to the public up to its authorized capital. Right issue requires the filing of prospectus with the Registrar of Companies and with the Securities and Exchange Board of India (SEBI) through eligible registered merchant bankers.

2. Bonus Issue

Bonus in the general sense means getting something extra in addition to normal. In business, bonus shares are the shares issued free of cost, by a company to its existing shareholders. As per SEBI guidelines, if a company has sufficient profits/reserves it can issue bonus shares to its existing shareholders in proportion to the number of equity shares held out of accumulated profits/ reserves in order to capitalize the profit/reserves. Bonus shares can be issued only if the Articles of Association of the company permits it to do so.

Advantage of Bonus Issues

From the company's point of view, as bonus issues do not involve any outflow of cash, it will not affect the liquidity position of the company. Shareholders, on the other hand, get bonus shares free of cost; their stake in the company increases.

Disadvantages of Bonus Issues

Issue of bonus shares decreases the existing rate of return and thereby reduces the market price of shares of the company. The issue of bonus shares decreases the earnings per share.

3. Rights Issue

According to Section 81 of The Company's Act, 1956, rights issue is the subsequent issue of shares by an existing company to its existing shareholders in proportion to their holding. Right shares can be issued by a company only if the Articles of Association of the company permits. Rights shares are generally offered to the existing shareholders at a price below the current market price, i.e. at a concessional rate, and they have the options either to exercise the right or to sell the right to another person. Issue of rights shares is governed by the guidelines of SEBI and the central government.

Rights shares provide some monetary benefits to the existing shareholders as they get shares at a concessional rate—this is known as value of right which can be computed as:

Value of right = $\frac{\text{Cum right market price of a share} - \text{Issue price of a new share}}{\text{Number of old shares} + 1}$

Advantages of Rights Issue

Rights issues do not affect the controlling power of existing share-holders. Floatation costs, brokerage and commission expenses are not incurred by the company unlike in the public issue. Shareholders get some monetary benefits as shares are issued to them at concessional rates.

Disadvantages of Rights Issue

If a shareholder fails to exercise his rights within the stipulated time, his wealth will decline. The company loses cash as shares are issued at concessional rate.

4. Sweat Issue

According to Section 79A of The Company's Act, 1956, shares issued by a company to its employees or directors at a discount or for consideration other than cash are known as sweat issue. The purpose of sweat issue is to retain the intellectual property and knowhow of the company. Sweat issue can be made if it is authorized in a general meeting by special resolution. It is also governed by Issue of Sweat Equity Regulations, 2002, of the SEBI.

Advantages of Sweat Issue

Sweat equity shares cannot be transferred within 3 years from the date of their allotment. It does not involve floatation costs and brokerage.

Disadvantage of Sweat Issue

As sweat equity shares are issued at concessional rates, the company loses financially.

1.9.1.1.2 Preference Share Capital

Q30. Define preference shares and explain the features of preference share capital.

Ans :

The preference shareholders are entitled to receive the fixed rate of dividend out of the net profits of the company. After the payment of dividends at fixed rate is made to them, the balance can be used for declaring a dividend on ordinary shares. Similarly, the assets remaining after payments of debts of the company are first used for returning the capital contributed by the preference shareholders. The rate of dividend on preference shares is specified in the articles of association.

Features of Preference Share Capital

Preference shares possess following features:

1. **Accumulation of Dividends:** Preference shares may be cumulative or non-cumulative with respect to dividends. Barring a few exceptions, preference shares in India carry a cumulative feature with respect to dividends. The unpaid dividends on cumulative preference shares are carried forward and payable when the dividend is resumed.
For example, if the dividend payment on a 13 per cent cumulative preferred share is skipped for 4 years, a dividend arrear of 52 per cent is payable. Note that a company cannot declare equity dividends unless preference dividends are paid with arrears.
2. **Call ability:** The terms of preference share issue may contain a call feature by which the issuing company enjoys the right to call the preference shares, wholly or partly, at a certain price.

3. **Convertibility:** Preference shares may sometimes be convertible into equity shares. The holders of convertible preference shares enjoy the option of converting preference shares into equity shares at a certain ratio during a specified period. **For example,** the preference shareholders may enjoy the option of converting preference shares into equity shares in the ratio of 1: 5 after 2 years for a period of 3 months.
4. **Redeemability:** Preference shares may be perpetual or redeemable. A perpetual preference share has no maturity period, whereas a redeemable preference share has a limited life after which it is supposed to be retired. Most preference issues are redeemable.
5. **Participation in Surplus Profits and Assets:** Companies may issue participating preference shares which entitle preference shareholders to participate in surplus profits (profits left after preference dividend and equity dividend at certain rates) every year and residual assets (assets left after meeting the claims of preference shareholders) in the event of liquidation according to a specific formula.
6. **Voting Power**
Before the commencement of the Companies Act, 1956, companies could issue preference shares carrying voting rights. Preference shares issued after the commencement of the Companies Act, 1956 do not carry voting right. A preference shareholder, however, is entitled to vote on every resolution placed before the company if:
 - i) The preference dividend is in arrears for two years or more in the case of cumulative preference shares, or
 - ii) The preference dividend has not been paid for a period of two or more consecutive preceding years or for an aggregate period of three, or more years in the preceding six years ending with the expiry of the immediately preceding financial year.

Q31. What are the different types of preference Shares?

Ans :

(a) Cumulative Preference Shares

These shares have a right to claim dividend for those years also for which there were no profits. Whenever there are divisible profits, cumulative preference shares are paid dividend for all the previous years in which dividend could not be declared.

(b) Non-Cumulating Preference Shares

The holders of these shares have no claim for the arrears of dividend. They are paid a dividend if there are sufficient profits. They cannot claim arrears of dividend in subsequent years.

(c) Redeemable Preference Shares

Formally, the capital of a company is repaid only at the time of liquidation. Neither the company can return the share capital nor the shareholders can demand its repayment. The company, however, can issue redeemable preference shares if articles of association allow such an issue. The company has a right to return redeemable preference share capital after a certain period.

The Companies Act has provided certain restrictions on the return of this capital. The shares to be redeemed should be fully paid up. The company should redeem these shares either out of profits or out of fresh issue of capital. The object of these restrictions is that the resources of the company are not depleted.

(d) Irredeemable Preference Shares

The shares which cannot be redeemed, unless the company is liquidated, are known as irredeemable preference shares.

(e) Participating Preference Shares

The holders of these shares participate in the surplus profits of the company. They are firstly paid a fixed rate of dividend and then a reasonable rate of dividend is paid on equity shares. If some profits remain after paying both these dividends, then preference shareholders participate in the surplus profits. The mode for dividing surplus profits between preference and equity shareholders is given in the articles of association.

(f) Non-Participating Preference Shares

The shares on which only a fixed rate of dividend is paid are known as non-participating preference shares. The shares do not carry the additional right of sharing of profits of the company.

(g) Convertible Preference Shares

The holders of these shares may be given a right to convert their holdings into equity shares after a specified period. These are called convertible preference shares. The right of conversion must be authorized by the articles of association.

(h) Non-Convertible Preference Shares

The shares which cannot be converted into equity shares are known as non-convertible preference shares.

Q32. What are the advantages and limitations of Preference Shares?**(OR)****What are the merits and demerits of preference shares***Ans :***Advantages**

The advantages of preference shares can be grouped under two categories:

1. Advantages to Investors: These include:

- i) **Priority in Re-payment of Capital:** Preference shareholders get the priority of repayment of capital as compared to equity shareholders.
- ii) **Best Security:** At the time of recession or decline profits preference shares are the best investment.
- iii) **Regular and Fixed Income:** Fixed and Regular dividend is paid on preference shares. It is a source of regular and fixed income for the investors.
- iv) **Safety of Interest:** Like the equity shareholders, preference share holders have the veto power to protect their rights.

2. Advantages to Company: It includes:

- i) **No Interference in Management:** Preference shareholders do not get the right to interfere in the management.
- ii) **Economical Financing:** Issuing the preference shares is cheaper than equity shares, so it is economical to get finance from this source.
- iii) **Availability of Wide Capital Market:** Non progressive and less risk taking investors prefer to invest in preference shares. In this way company gets a wide market for getting the capital.
- iv) **No Change on Assets:** For issuing these shares company need not to mortgage its assets. In this way the company doesn't have any problem in getting the finance in the future.

Disadvantages

Preference shares may have following disadvantages:

1. Disadvantages to Investors: It includes:

- i) **Dividend at Fixed Rate:** In this case of non-participative preference share, the dividend is paid at a fixed rate. So they are not benefited by the progress of the business.
- ii) **Uncertain Position of Redeemable Preference Shares:** Encashment of the redeemable preference shares on the will of the company. Whenever the management wants, it can return the money giving the information.
- iii) **Limited Voting Rights:** Preference shareholders have the limited voting right. Despite being the owner of the company, they cannot participate in the management of the company.

2. Disadvantages to Company: It includes:

- i) **Disadvantage to Equity Shareholders:** In the case of less profit equity shareholder suffers because preference shareholders get the dividend first at a fixed rate.
- ii) **Fixed Economic Burden:** Company has to incur fixed economic burden because in the case of no profit, the company have to pay the dividend.
- iii) **High Cost of Capital:** Dividend paid to preference shareholders is not free from tax. So it is costly to raise the capital from preference shares than debentures.

Q33. What are the differences between equity share capital and preference share capital?*Ans :*

Basis for comparison	Equity share capital	Preference share capital
Meaning	Equity shares are the ordinary shares of the company representing the part ownership of the shareholder in the company	preference shares are the shares that carry preferential rights on the matters of payment of dividend and repayment of capital
Payment of dividend	The dividend is paid after the payment of all liabilities.	Priority in payment of dividend over equity shareholders.
Repayment of capital	In the event of winding up of the company, equity shares are repaid at the end.	In the event of winding up of the company, preference shares are repaid before equity shares.
Rate of dividend	Fluctuating	Fixed
Redemption	No	Yes
Voting rights	Equity shares carry voting rights	Normally, preference shares do not carry voting rights. However, in special circumstances, they get voting rights.
Convertibility	Equity shares can never be converted.	Preference shares can be converted into equity shares.
Arrears of Dividend	Equity shareholders have no rights to get arrears of the dividend for the previous years	Preference shareholders generally get the arrears of dividend along with the present year's dividend, if not paid in the last previous year, except in the case of non-cumulative preference shares.

1.9.2 Bonds**Q34. Define the term bonds and Explain the features of bonds.***Ans :***Meaning**

A bond is more or less the same as a debenture. In India, the two terms are generally interchangeable. There is no significant distinction between the two and the difference if any, is for all practical purposes negligible. While some consider a bond as an American term for a debenture others reserve the term for public debt securities belonging to the government and public sector undertakings. In India, it is common to refer to the long-term debt securities issued by the state governments, or by undertakings owned by them or by development financial institutions, as bonds.

A bond is a contract that requires the borrower to pay the interest income to the lender. It resembles the promissory note and issued by the government and corporate. The par value of the bond indicates the face value of the bond i.e., the value stated on the bond paper. Generally, the face values of bonds are Rs. 1000, 2000, 5000 and alike. Most of the bonds make fixed interest payment till the maturity period. This specific rate of interest is known as coupon rate. Coupons are paid quarterly, semiannually and annually. At the end of the maturity period, the value is repaid.

Features**1. A Sealed Agreement**

The indenture is a long, complicated legal instrument containing the restrictions, pledges and promises of the contract. Bond indenture involves three parties. The first party is the debtor corporation that borrows the money, promises to pay interest, and promises to repay the principal borrowed. The bond holders are the second party; they lend the money. They automatically accept the indenture by acquiring their bonds. The trustee is the third party with whom the bond contract is made. The trustee ensures that the corporation keeps its promises and follows the provisions contained in the indenture. In other words, the trustee does the “watchdog” job for all the bond holders.

2. Repayment of Principal

Bonds are issued in denominations of Rs.1,000 but there are also bonds of values of Rs.500 and Rs.100 and of values as high as Rs.5,000 and Rs.10,000. Financial institutions are known to buy corporate bonds bearing higher values. The value of the bond is called the ‘face value, par value or maturity value.’ The face value of the bond represents the promise to repay the amount to the bondholder at the end of the specified period. This, in other words, may be called the most important feature of bond, return of the principal to the lender on a fixed date specified earlier.

3. Specified Time Period (Maturities)

Maturities vary widely. Bonds are usually grouped by their maturity classes. Short-term bonds are usually bonds maturing within 5 years. They may be secured or unsecured. These are common in industrial financing. Medium-term bonds mature in 5 to 10 years. If a bond is originally issued on a medium-term bond, it is usually secured by a real estate or equipment mortgage, or it may be backed by other security. Long-term bonds may run 20 years or more. Capital-intensive industries with long expectation of equipment life are the greatest users of this for bond financing.

4. Interest Payment

Bond interest is usually paid semi-annually, though annual payments are also popular. The method of payment depends upon whether the bond is a coupon (bearer) or registered bond.

5. Call

Bonds have an additional feature of ‘call.’ This is a privilege to the issuing company to repurchase bonds at a slightly higher price above the par value. For example, a bond of face value of Rs.1,000 and maturity of 20 years yields an interest of Rs.70 annually. After the first five years of issue, the market rate of interest on bonds falls considerably. The ruling rate being 5%, the company may choose to use the call feature and buy back the bond for Rs.1,050. This is a little higher than the face value of Rs.1,000. By calling the bonds, the company saves money. It may call back the bonds yielding interest of Rs. 70 and issue fresh bonds which will yield Rs. 50 per year. The firm has been able to save Rs. 20 per year per bond for the next 15 years till the maturity of the bond. By paying Rs. 50 higher than the face value on the bond for early redemption of the bond, the company saves a much higher amount. The bondholder is on the losing side because he gets the return of the principal amount earlier than he expected.

6. Pledge of Security

The issuing company sometimes promises to pay to the bondholder by offering some security like property. The pledge of security is a promise to the bondholders in writing and signed under seal and presented to the trustee by the company. A simple promise to pay without the proper formalities is not considered as a Pledge of security.

Q35. What are the different types of Bonds?

Ans :

Types of bonds available are as follows,

1. Zero Coupon Bonds

Zero coupon bonds are also known as zero-interest fully convertible debentures. It is converted into equity shares at the expiry of the prescribed date. They are issued without coupon payments.

2. Callable and Puttable Bonds

The borrower can retire or redeem the bond after the end of the initial specified period. This type of bond is known as callable bond. The holders are left with no option but to accept the redemption value, when borrower wishes to redeem the debt.

Puttable Bond

Puttable bonds are those which can be redeemed after the end of the initial specified period by lender. The holder has the option to redeem the bond when coupon rate becomes less than market interest rate.

3. Floating Rate Bonds

The bonds which do not have a fixed interest rate (coupon rate) are floating rate bonds. The interest rate of such bonds is related to the market rate known as benchmark.

4. Junk Bonds

Junk bonds are very risky in nature. The interest rate is high on these bonds. Interest risk and principal risk is also high in junk bonds. It is suitable for speculators.

5. Deep Discount Bonds

It is a kind of zero interest bond. Both coupon rate and interest is not paid on these bonds. They are non-convertible bonds which have a face value and issue price of these bonds is discounted value.

6. Municipal Bonds

The debt securities offered by the municipal authority in a particular city are called as municipal bonds. These bonds are used for the development of the city's infrastructure through raising funds. It is mainly issued to retail or institutional investors.

7. Inverse Floaters

Inverse floaters are same as floating rate bonds. The coupon rate is fixed in case of inverse floaters. When the market rate increases, the coupon rate decreases, that means there is inverse relationship between them.

8. Indexed Bonds

When coupon and maturity payments are linked to the general price index, then such type of bonds are known as indexed bonds. The coupon rate of such bonds are risk free interest rate or inflation free interest rate.

9. Perpetual Bonds

The bonds which cannot be redeemed are called as perpetual bonds. When a bond is considered as loan, it should be redeemed.

1.9.3 Debentures

Q36. Define the term Debentures, state the features of debentures.

(OR)

What do you mean by debentures. Explain the features of debentures.

Ans :

The word 'debenture' itself is a derivation of the Latin word 'debere' which means to borrow or loan. Debentures are written instruments of debt that companies issue under their common seal. They are similar to a loan certificate.

Debenture is used to issue the loan by government and companies. The loan is issued at the fixed interest depending upon the reputation of the companies. When companies need to borrow some money to expand themselves they take the help of debentures. There are four different types of debentures.

Debentures are issued to the public as a contract of repayment of money borrowed from them. These debentures are for a fixed period and a fixed interest rate that can be payable yearly or half-yearly. Debentures are also offered to the public at large, like equity shares. Debentures are actually the most common way for large companies to borrow money.

Features

Following are the features of debentures:

- 1. Fixed Interest Rate:** Debenture holders are the creditors of the company. They are entitled to periodic payment of interest at a fixed rate.
- 2. Maturity:** Debentures are repayable after a fixed period of time, say five years or seven years as per agreed terms.
- 3. No Voting Rights:** Debenture holders do not carry voting rights.
- 4. Secured Assets:** Ordinarily, debentures are secured. In case the company fails to pay interest on debentures or repay the principal amount, the debenture holders can recover it from the sale of the assets of the company.

Q37. What are the advantages and disadvantages of debentures?

(OR)

What are the merits and demerits of debentures?

Ans :

(May-15)

Advantages

The advantages of issuing debentures are as follows:

1. Advantages of the Company

- i) Lower Rate of Interest:** The rate of interest payable on debentures is not only fixed but is also usually lower than the rate of dividend paid on shares.
- ii) Trading on Equity:** By issuing debentures, company is enabled to trade on equity as because the rate of interest on debentures is usually lower than the rate of earnings and thus the company can declare a higher rate of dividend on equity shares.

- iii) **Tax-benefits:** The payment of interest on debentures is charged against profits of the company as per income tax rules whereas the payment of dividend is an appropriation of profit hence not a charge against profits. The profits of the company are reduced by the amount of interest paid to debenture holders which results in reducing the tax liability.
- iv) **Certainty of Finance:** Debentures are issued for a fairly long period. According to the new guidelines issued by the Government of India in 1982, the secured debentures shall not be redeemable before a period of seven years. Hence there is a certainty of finance for that specific period and the company may adjust its financial plans accordingly.
- v) **Capital from Moderate Investors:** Company can collect the finance from such investors who prefer fixed income with minimum risk rather than an uncertain high rate of dividend on capital. Security of capital is more important for them.
- vi) **Controlling Over-Capitalization:** The state of over-capitalization can very easily be controlled by redeeming the redeemable debentures. In this way, it provides flexibility in the capital structure.

2. Advantages to Investors

- i) **Fixed and Stable Income:** Debentures carry a fixed rate of interest. An investor can estimate his income well in advance. Thus debentures provide a fixed, regular and stable source of income to debenture holders.
- ii) **Safety Investment:** Debentureholders have specific or general charge on the assets of the company, so their investment is quite safe.
- iii) **Liquidity:** Debentures are more liquid investment, and have more ready market because they are safe and can be used as collateral security by the investors in raising loan from any financial institution. Under the new guidelines (1982), the 'rights' and secured (convertible and non-con-vertible) debentures shall be listed in a stock exchange.
- iv) **Fixed Maturity Period:** Many companies prefer issue of debentures because of a definite maturity period.
- v) **Conversion of Loan:** Debenture-holders can convert their holding in shares at appropriate time in case of convertible debentures.

Disadvantages

The disadvantages of debentures are as follows:

1. Disadvantages to Company

- i) **Fixed Charge on Assets:** Debentures carry a fixed charge on all assets of the company hence the company cannot raise loan on such assets again, if needed.
- ii) **Fixed Burden:** Interest payable on debentures is a charge on the profits of the company. It will be paid even if there is no profit. Thus, it is a burden on the company especially when there is no profits or inadequate profits.
- iii) **Risk of Winding up:** The debenture-holders have a right to claim winding up of the company, in case, the interest on debentures are not paid by the company. So, debenture issue is risky in lean period.

2. Disadvantages to Investors

- i) **No Control:** Debentureholders are creditors and not the owners of company and hence get no controlling authority over the affairs of the company.

- ii) **No Extra Profits:** Debentureholders get a fixed income as interest irrespective of the quantum of profits earned by the company. They cannot share the profits even if company earns huge amount as profits.
- iii) **Uncertainty:** In case of redeemable debenture payable within a specified period, investors have uncertainty in their minds as to their redemption.

Q38. What are the different types of debentures.

Ans :

Types of Debentures

Debentures are of following types:

1. From Security Point of View

- i) **Naked/Simple Debentures:** Naked/Simple Debentures are those which are not secured on any asset.
- ii) **Mortgage Debentures:** Mortgage Debentures are those which are secured either on a particular asset or on all the assets of the company in general. In India, only the secured debentures can be issued

2. From Permanence Point of View

- i) **Redeemable Debentures:** Redeemable Debentures are those which are repayable after a specified period in lump sum or by installments during the life time of the company.
- ii) **Irredeemable Debentures:** Irredeemable Debentures are those which are not redeemable during the life time of the company.

3. From Records Point of View

- i) **Bearer Debentures:** Bearer Debentures are those which are payable to the bearer thereof. These can be transferred merely by delivery. Interest is paid to the person who produces the interest coupon attached to such debentures.
- ii) **Registered Debentures:** Registered Debentures are those which are payable to the persons whose name appear in the Register of Debentureholders. These can be transferred only by executing a transfer deed. Interest is paid to the registered holder.

4. From Convertibility Point of View

- i) **Convertible Debentures:** Convertible Debentures are those, the holders of which have a right to convert them into shares.
- ii) **Non-Convertible Debentures:** Non-Convertible Debentures (NCD) are those, the holders of which do not have a right to convert them into shares.

5. From Priority Point of View

- i) **First Debentures:** First Debentures are those which have a first claim on the assets charged.
- ii) **Second Debentures:** Second Debentures are those which have a second claim on the assets charged.

Q39. What are the difference between shares and debenture.**Ans :**

The difference between share and debenture are as follows:

Basis of Difference	Shares	Debentures
1. Capital vs. Loan	Share is a part of owned capital.	Debenture constitutes a loan.
2. Reward for Investment	Reward is the payment of dividend.	Reward is the payment of interest.
3. Fluctuations in the rate of interest and dividend	The rate of dividend may vary from year to year depending upon the profit decisions of directors and members.	The rate of interest is fixed.
4. Charge vs. Appropriation	Payment of dividend is an appropriation out of profits and this cannot be made if there is no profit.	Payment of interest is a charge against profits and is to be made even if there is no profit.
5. Payment of Interest/Dividend.	Payment of dividend gets no priority over the payment of interest.	Payment of interest gets priority over the payment of dividend.
6. Repayment of Principal	Payment of share capital is made after the repayment of debentures.	Payment of debentures is made before the payment of share capital.
7. Secured by Charge	Shares are not secured by any charge.	Debentures are usually secured by a charge.
8. Restriction on Issue	Sec. 79 imposes certain restriction on issue of shares at discount.	No restriction is imposed on the purchase of debentures by the company.

Q40. List out the differences between Bonds and Debentures.**Ans :**

The differences between bonds and debentures is shown below,

Basis	Bonds	Debentures
1. Nature	Bonds can be either secured or unsecured.	Debentures are only unsecured.
2. Safety	Rank higher than debentures particularly	Not protected by a specific bin or mortgage on the government bonds. With credit rating PSU property of the company and hence less secure, bonds too would be safe.
3. Liquidity	Can be encashed after initial lock in period. No facility for nomination or bank loan except in specific cases. Weak secondary market.	Freely tradeable and transferable. Restricted liquidity due to lack of depth in secondary market. No facility of premature encashment. No nomination facility. Banks do not accept these as collateral against loans.
4. Yield	High yield ranging from 9% to 12%.	Highest ranging from 10% to 14%. Interest usually paid half-yearly.

1.10 INNOVATIVE FINANCIAL ASSETS

Q41. What is Financial Assets?

Ans :

New financial instruments have been introduced in the money market. On the recommendation of the Chakkraborty Committee, the RBI introduced 192 days T-bills since 1986. A new instrument in the form of 364 days T-bills was introduced at the end of April 1992. Again, new instruments such as CDs, CPs, and interbank participation certificates have been introduced. Necessary guidelines also have been issued for the operation of these instruments.

The Indian financial market has been primarily divided into three categories namely: Equity; Debt; Derivatives. Every category has its own importance in the development of financial markets. In most of the developed nations after the development of Equity now the major focus is on Debt and Derivatives market. The reason for this focus can be many supportive benefits which accrue to a market by development of double 'D' market.

Q42. Innovative financial instruments support economic growth. Explain.

Ans :

Innovative financial instruments can attract funding from other public or private investors in areas of EU strong interest but which are perceived as risky by investors. Examples include sectors with high economic growth or innovative business activities.

The fact that the EU invests risk capital in a certain fund or covers part of the risk associated with a certain type of projects can reassure other investors and encourage them to invest alongside the EU. Moreover, innovative financial instruments have important non-financial effects such as promotion of best practices.

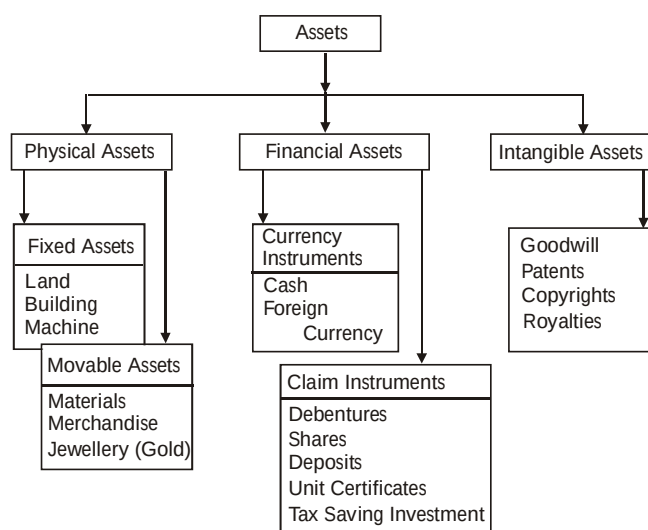
1.10.1 Properties of Financial Assets

Q43. What are Financial Assets? Explain the different types of innovative financial assets.

Ans :

(May-19, May-17, Imp.)

Financial assets have specific properties that distinguish them from physical and intangible assets. These properties are monetary value, divisibility, convertibility, liquidity, and cash flow.



➤ **Currency**

Financial assets are exchange documents with an attached value. Their values are denominated in currency units determined by the government of an economy. A note or a coin representing cash/money is a financial asset/instrument with an attached face value and is represented in TCSMS of the currency unit of a country. A ten-rupee note or a one hundred-rupee note is a financial instrument in India that can be exchanged for its attached value for any other asset.

➤ **Divisibility**

Financial instruments are divisible into smaller units. The total value is represented in terms of divisions that can be handled in a trade. The capital of a firm is collected through financial instruments that are issued in a unit format (shares). Each unit represents a face value of the total capital. The divisibility characteristic of financial assets enables all players, small or big, to participate in the market.

➤ **Convertibility**

Financial assets are convertible into any other type of asset. For instance, a borrowing can be converted into capital. A firm might issue, in the first place, a debt instrument, which is to be repaid after a specific time duration, say, three years. At the end of the third year, the firm could give the owner of the debt instrument an option to convert it into a share of the company. This characteristic of convertibility gives flexibility to financial instruments. Financial instruments need not necessarily be converted into another form of financial asset; they can also be converted into any other type of asset. The convertibility characteristic also enables trading of financial assets.

➤ **Reversibility**

This implies that a financial instrument can be exchanged for any other asset and, logically, the so formed asset may be transferred back into the original financial instrument. A firm can deposit currency in a bank and accept a deposit certificate that can be used to earn a rate of return. When the need for currency arises, the bank deposit can be withdrawn in the form of currency again and used as an exchange instrument to buy any other type of asset through which productive activity can be carried on.

➤ **Liquidity**

This is the immediate need value of the financial instrument. The characteristic of reversibility of the financial instrument also helps in its liquidity. Liquidity implies that the present need for other forms of assets prevails over holding the financial instrument. The immediate need of meeting hospital expenses, for example, would be possible if the asset is held in a financial form rather than in physical form. The Financial asset can be exchanged for currency with another market participant who does not have an immediate cash need, but expects future benefits.

➤ **Cash flow**

The holding of the financial instrument results in a stream of cash flows that are the benefits accruing to the holder of the financial instrument. For example, a deposit with a bank gives an inflow of interest to the deposit holder. Shares give the holder dividend or bonus. The extent of benefit derived from various financial instruments differs since their real returns are derived from their investment in other physical or intangible assets. A financial instrument by itself does not create a cash flow. Currency kept idle does not result in a flow of benefits, while currency invested in a physical activity gives the holder cash flow benefits/losses.

Short Question and Answers

1. Define Investment.

Ans :

Meaning

Investment involves making of a sacrifice in the present with the hope of deriving future benefits. Two most important features of an investment are current sacrifice and future benefit. Investment is the sacrifice of certain present values for the uncertain future reward. It involves numerous decision such as type, mix, amount, timing, grade etc, of investment the decision making has to be continues as well as investment may be defined as an activity that commits funds in any financial/ physical form in the present with an expectation of receiving additional return in the future. The expectation brings with it a probability that the quantum of return may vary from a minimum to a maximum. This possibility of variation in the actual return is known as investment risk. Thus every investment involves a return and risk. Investment has many meaning and facets.

Definitions

Different Authors have defined Investment differently. Some of the definitions of Investment are as follows :

- (i) **According to F. Amling:** "Purchase of a financial Asset that produces a yield that is proportionate to the risk assumed over some future investment period."
- (ii) **According to Mrs. Joan Robinson:** "By investment is meant an addition to capital, such as occurs when a new house is built or a new factory is built. Investment means making an addition to the stock of goods in Existence."
- (iii) **According to Murad:** "Investment is an essential requirement for full employment and the key to prosperity in a capital economy."
- (iv) **According to Sharpe:** "Investment is Sacrifice of certain present value for some uncertain future value."

2. Explain investment process.

Ans :

The process of investment is very important and plays a very key role. Investment process is a very complex process and involves a series of steps.

The investment process involves the following steps :

- (a) Investment Policy
- (b) Investment (or) Security Analysis
- (c) Investment (or) Security Valuation
- (d) Portfolio Construction
- (e) Portfolio Evaluation

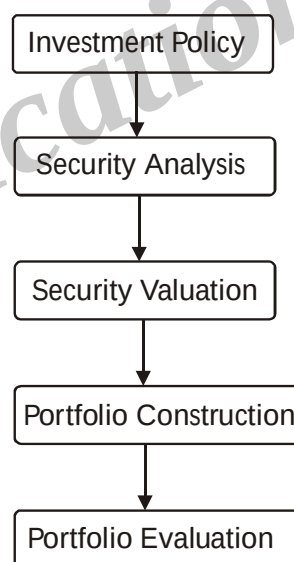


Fig.: Investment Process

3. Objectives of investments?

Ans :

Investing is a wide spread practice and many have made their fortunes in the process. The starting point in this process is to determine the characteristics of the various investments and then matching them with the individuals need and preferences. All personal investing is designed in order to achieve certain objectives. These objectives may be tangible such as buying a car, house etc. and intangible objectives such as social status, security etc. Similarly;

these objectives may be classified as financial or personal objectives. Financial objectives are safety, profitability, and liquidity. Personal or individual objectives may be related to personal characteristics of individuals such as family commitments, status, dependents, educational requirements, income, consumption and provision for retirement etc. The objectives can be classified on the basis of the investors approach as follows:

(a) Short term high priority objectives

Investors have a high priority towards achieving certain objectives in a short time. For example, a young couple will give high priority to buy a house. Thus, investors will go for high priority objectives and invest their money accordingly.

(b) Long term high priority objectives

Some investors look forward and invest on the basis of objectives of long term needs. They want to achieve financial independence in long period. For example, investing for post-retirement period or education of a child etc. investors, usually prefer a diversified approach while selecting different types of investments.

(c) Low priority objectives

These objectives have low priority in investing. These objectives are not painful. After investing in high priority assets, investors can invest in these low priority assets. For example, provision for tour, domestic appliances etc.

4. Speculation.

Ans :

"Speculation is an activity, quite contrary to its literal meaning, in which a person assumes high risks, often without regard for the safety of their invested principal, to achieve large capital gains." The time span in which the gain is sought to be made is usually very short. Speculation has a special meaning when talking about money. The person who speculates is called a speculator. A speculator does not buy goods to own them, but to sell them later. The reason is that speculator wants to profit from the changes of market prices. One tries to buy the goods when they are cheap and to sell them when they are expensive.

Speculation includes the buying, holding, selling and short selling of stocks, bonds, commodities, currencies, real estate collectibles, derivatives or any valuable financial instrument. It is the opposite of buying because one wants to use them for daily life or to get income from them (as dividends or interest).

Speculation should not be considered purely a form of gambling, as speculators do make an informed decision before choosing to acquire the additional risks. Additionally, speculation cannot be categorized as a traditional investment because the acquired risk is higher than average. More sophisticated investors will also use a hedging strategy in combination with their speculative investment in order to limit potential losses.

5. Investment Media.

Ans :

In India, many types of investment media or channels are available for making investments. A sound investment program can be constructed if the investor familiarizes himself with the various alternative investments available.

Investment media are of several kinds. Some are simple and direct, others present complex problems of analysis and investigations. Some are familiar; others are relatively new and unidentified. Some investments are appropriate for one type of investor and another may be suitable to another person.

The ultimate objective of the investor is to derive a variety of investments that meet this preference for risk and expected return. The investor will select the portfolio which will maximize his utility. Securities present a wide range of risk-free instruments to highly speculative shares and debentures. From this broad spectrum, the investor will have to select those securities that maximize his utility.

6. Define Gambling.

Ans :

Gambling is defined as staking something on a contingency. Also known as betting or wagering, it means risking money on an event that has an uncertain outcome and heavily involves chance.

Investment can also be distinguished from gambling. Examples of gambling are horse race, card games, lotteries, and so on. Gambling involves high risk not only for high returns but also for the associated excitement. Gambling is unplanned and unscientific, without the knowledge of the nature of the risk involved. It is surrounded by uncertainty and a gambling decision is taken on unfounded market tips and rumors. In gambling, artificial and unnecessary risks are created for increasing the returns.

Investment is an attempt to carefully plan, evaluate, and allocate funds to various investment outlets that offer safety of principal and expected returns over a long period of time.

7. Financial Assets.

Ans :

The financial assets are also called financial claims or financial securities of paper assets. These financial securities are issued by deficit generating units in exchange for their savings. It is for this reason that surplus generating units are called investors while deficit-generating units are called issuers. These investors and issuers of financial securities constitute two important elements of the securities market. The third critical element of markets is the intermediaries who act as conduits between the investors and issue. Regulatory bodies, which regulate the functioning of the securities markets, constitute the last but very significant element of securities markets. Thus, there are four important elements of securities markets namely investors issuers, intermediaries and regulators. Now depending upon the nature of the relationship among these elements of securities markets, the markets are classified as primary and secondary. Further, depending upon the main securities markets, the markets are classified as short-term and long-term and depending upon the issuers, these are classified government securities or industrial securities. Government securities are also called gilt-edged securities. To pick up the right kind of securities, an investor or a portfolio manager should be fully conversant with the different segments of securities markets, different types of securities which are traded and different trading arrangements which exist in the market. In this unit, we shall distinguish between primary market and secondary market securities and discuss various traded securities and trading arrangements prevalent in India. Let us begin distinguishing primary and secondary markets.

8. Different types of shares.

Ans :

i) Preferential Share Capital

Preference shares refer to the shares that carry preferential right concerning the dividend payment (i.e. either certain amount, or at a certain rate) and repayment, at the time of winding up of the company.

It is, in fact, a hybrid source of finance which contains the features of both equity capital as well as debt capital. It is identical to equity capital because it carries dividend which is not tax deductible, but at the same time, the dividend rate is fixed which makes it similar to debt capital wherein the interest rate is certain.

The shares get preference over the equity shares as to the distribution of dividend and surplus at the time of winding up of the company. These shares are redeemable in nature, i.e. after a specific period of time, these shares are redeemed by the company either at par, premium or discount.

ii) Equity Share Capital

Equity shares or otherwise called as ordinary shares are the shares, that carry :

- Voting rights at the Annual General Meeting of the company.

(OR)

- Differential voting rights relating to dividend, voting etc.

Ordinary shareholders share profits of the firm, in the form of dividend declared by the company and bonus shares. The dividend is paid to them at last, i.e. after paying off all the taxes, interest and dividend to preference shareholders.

The rate of dividend is not fixed, i.e. whatever the company earns as a profit, a certain percentage of it is declared as a dividend by the company to the equity shareholders.

Again, at the time of winding up of the company, equity shareholders are paid at last, i.e. after settling the claims of creditors, debenture holders and preference share holders.

9. Bond

Ans :

A bond is more or less the same as a debenture. In India, the two terms are generally interchangeable. There is no significant distinction between the two and the difference if any, is for all practical purposes negligible. While some consider a bond as an American term for a debenture others reserve the term for public debt securities belonging to the government and public sector undertakings. In India, it is common to refer to the long-term debt securities issued by the state governments, or by undertakings owned by them or by development financial institutions, as bonds.

A bond is a contract that requires the borrower to pay the interest income to the lender. It resembles the promissory note and issued by the government and corporate. The par value of the bond indicates the face value of the bond i.e., the value stated on the bond paper. Generally, the face values of bonds are Rs. 1000, 2000, 5000 and alike. Most of the bonds make fixed interest payment till the maturity period. This specific rate of interest is known as coupon rate. Coupons are paid quarterly, semiannually and annually. At the end of the maturity period, the value is repaid.

10. Different types of Bonds

Ans :

Types of bonds available are as follows,

i) Zero Coupon Bonds

Zero coupon bonds are also known as zero-interest fully convertible debentures. It is converted into equity shares at the expiry of the prescribed date. They are issued without coupon payments.

ii) Callable and Puttable Bonds

The borrower can retire or redeem the bond after the end of the initial specified period. This type of bond is known as callable bond.

The holders are left with no option but to accept the redemption value, when borrower wishes to redeem the debt.

Puttable Bond

Puttable bonds are those which can be redeemed after the end of the initial specified period by lender. The holder has the option to redeem the bond when coupon rate becomes less than market interest rate.

iii) Floating Rate Bonds

The bonds which do not have a fixed interest rate (coupon rate) are floating rate bonds. The interest rate of such bonds is related to the market rate known as benchmark.

iv) Junk Bonds

Junk bonds are very risky in nature. The interest rate is high on these bonds. Interest risk and principal risk is also high in junk bonds. It is suitable for speculators.

v) Deep Discount Bonds

It is a kind of zero interest bond. Both coupon rate and interest is not paid on these bonds. They are non-convertible bonds which have a face value and issue price of these bonds is discounted value.

vi) Municipal Bonds

The debt securities offered by the municipal authority in a particular city are called as municipal bonds. These bonds are used for the development of the city's infrastructure through raising funds. It is mainly issued to retail or institutional investors.

Choose the Correct Answer

1. After formulating the investment policy, securities are scrutinized through [d]
(a) Market analysis (b) Industry analysis
(c) Company analysis (d) None
2. Taking high risks not only for high return but also for thrill and excitement is, [a]
(a) Investment (b) Gambling
(c) Speculation (d) None of the above
3. The industries which are more volatile and do well when economy prospers and during depression they suffer a setback are considered as [b]
(a) Growth (b) Cyclical
(c) Defensive (d) Vertical
4. ____ shares refer to the shares that carry preferential right concerning the dividend payment. [a]
(a) Preference (b) Equity
(c) Bonds (d) None of the above
5. ____ is a trust that pools the savings of a numbers of investors who share a common financial goal [b]
(a) Debentures (b) Mutual fund
(c) Commodity (d) None
6. ____ of the securities could be estimate by using a simple statistical technique like trend analysis [c]
(a) Intrinsic value (b) Market value
(c) Future value (d) None of the above
7. ____ of investment is identified with the certainty of return of capital without loss to be liquid [b]
(a) Liquidity (b) Maturity
(c) Safety (d) Consideration
8. Some people invest their money in various financial products solely for reducing their ____ [a]
(a) Tax liability (b) Liquidity
(c) Income (d) Other objectives
9. The main objective of investment is to get the ____ which is known as profitability [d]
(a) Reasonable risk (b) Marketability
(c) Convenience (d) Realistic return
10. ____ are written instruments of debt that companies issue under their common seal. [d]
(a) Preference shares (b) Equity shares
(c) Bonds (d) Debenture

Fill in the blanks

1. The process of sacrificing something in present for the prospects of gaining something in future is _____.
2. _____ means taking up the business risk with an aim of getting short-term gain.
3. All investments are characterized by the expectation of a _____.
4. The higher return is a compensation expected by investors for their willingness to bear the _____.
5. The process of _____ refers to conversion of receivables (borrowers or customers) into tradeable securities.
6. _____ the most common source of financial news is the local news paper.
7. _____ involves a game of chance.
8. The _____ to the share is measured through the book value of the share and price earnings rates.
9. The main objective of _____ is the reduction of risk in the loss of capital and income.
10. Financial assets are assets which are needed by firm to carry on its _____.
11. _____ securities are the securities issued by joint stock companies in the private sector.
12. _____ are very popular among non-corporate investments.
13. The financial assets are also called _____.
14. FDIC stands for _____.
15. The capital of a company is divided into different units called _____.
16. Equity shares are, earlier, known as _____.
17. The word 'debenture' itself is a derivation of the Latin word 'debere' which means to _____ or loan.
18. New financial instruments have been introduced into the _____ market.

ANSWERS

1. Investment
2. Speculation
3. Return
4. Higher risk
5. Securitization
6. Financial press
7. Gambling
8. intrinsic value
9. Diversification
10. Business
11. Corporate
12. Deposits
13. Financial claims
14. Federal Deposit Insurance Corporation
15. Shares
16. Ordinary Shares
17. Borrow
18. Money

UNIT II

INDIAN CAPITAL MARKETS - AN OVERVIEW:

Primary Market: Meaning – Growth and Development – Role of NIM – Methods of Issues – Parties Involved – Allotment Process – Investor Protection – Recent Trends (Theory).

Secondary Market: Meaning – History – Functions – Regulatory Framework – Listing and Delisting of Securities – Trading Procedure – Stock Exchanges in India – Growth of Stock Exchanges in India – SEBI – Its Functions and Role (Theory).

Security Market Index: Meaning – Different Averages and Indices – The Construction of Indices – Maintenance Problems with Security Market Indices – Stock Market Index Revision (Including Problems)

2.1 INDIAN CAPITAL MARKET

Q1. Define Capital Market

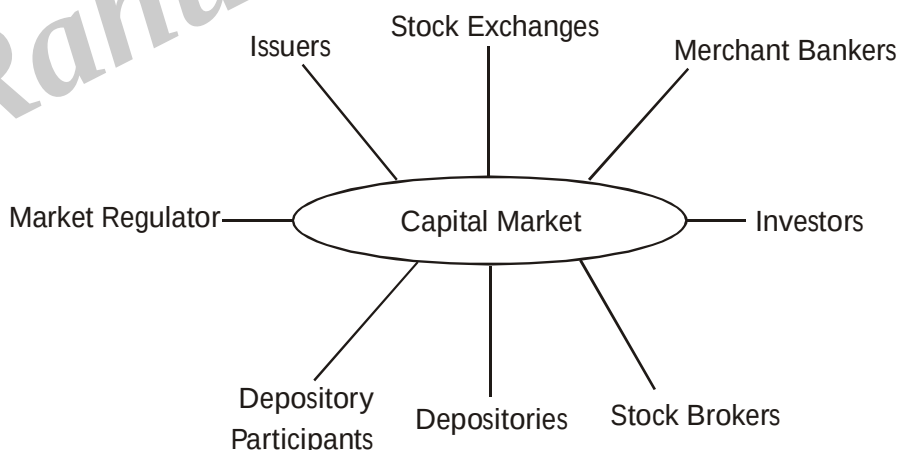
(OR)

What do you meant by Capital Market.

Ans :

(May-14, May-12, Imp.)

The capital market is a vital of the financial system. Capital market provides the support of capitalism to the country. The wave of economic reforms initiated by the government has influenced the functioning and governance of the capital market. The Indian capital market is also undergoing structural transformation since liberalization. The chief aim of the reforms exercise is to improve market efficiency, make stock market transactions more transparent, curb unfair trade practices and to bring our financial markets up to international standards. Further, the consistent reforms in Indian capital market, especially in the secondary market resulting in modern technology and online trading have revolutionized the stock exchange.



The Indian capital market is the market for long term loanable funds as distinct from money market which deals in short-term funds.

It refers to the facilities and institutional arrangements for borrowing and lending 'term funds', medium term and long term funds. In principal capital market loans are used by industries mainly for fixed investment. It does not deal in capital goods, but is concerned with raising money capital or purpose of investment.

Definitions

- (i) **According to Arun K. Datta.** The capital market may be define as “ The capital market is a complex of institutions investment and practices with established links between the demand for and supply of different types of capital gains”.
- (ii) **According to F. Livingston.** “In a developing economy, it is the business of the capital market to facilitate the main stream of command over capital to the point of the highest yield. By doing so it enables control over resources to pass into hands of those who can employ them most effectively thereby increasing productive capacity and spelling the national dividend”.

Q2. Explain the role of intermediaries in Capital market

Ans : (May-14)

Role of Intermediaries in Capital Market

Financial intermediary may refer to an institution, firm or individual who performs intermediation between two or more parties in a financial context. Typically 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, BFIs (Central banks and Commercial banks) and Non-Bank Financial Intermediaries, NBFIs (insurance companies, mutual trust funds, investment companies, pensions funds, discount houses and bureaux de change).

Financial intermediaries can be :

- Banks;
- Building Societies;
- Credit Unions;
- Financial adviser or broker;
- Insurance Companies;
- Life Insurance Companies;

- Mutual Funds; or
- 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.

1. 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 :

- i. Issue Management
- ii. Underwriting
- iii. Portfolio Management
- iv. Corporate Counselling

2. ASSET-BASED Financial Intermediaries

These Financial Intermediaries/Institutions finance the specific requirements of their clientele. The required infrastructure, 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.

2.1.1 Features of Capital Market**Q3. What are the features of Capital Market?**

Ans :

1. Dealing in long term securities

Capital market deals in securities for long and medium term like shares, debentures and bonds. It does not deal with channelize saving for less than one year.

2. Dealing in marketable and non-marketable securities

Capital market deals in both marketable and non-marketable securities. Marketable securities are those which can be transferred e.g. shares, debentures etc. Non-marketable securities are those which cannot be transferred e.g. term deposits with banks, loans and advances of banks and financial institutions.

3. Includes both individual and institutional investors

Capital market comprises both individual and institutional investors. Individual investors are general public and institutional investors include mutual funds, pension funds, LIC etc.

4. Includes both primary and secondary markets

Primary market relates to issue of fresh securities in the market and secondary market deals with sale and purchase of existing securities through stock exchange.

5. Utilizes intermediaries

operations in the capital market is conducted with the help of intermediaries like merchant bankers, underwriters, brokers, sub-brokers, collection bankers etc.

2.1.2 Role of Capital Market in India**Q4. Explain the role of Capital Market in India****(OR)****Explain the importance of Capital Market****(OR)****Explain the significance of Capital Market****Ans : (Imp.)**

The capital market has a crucial significance to capital formation. For a speedy economic development, the adequate capital formation is necessary. The significance of capital market in economic development is explained below:

1. Mobilization of Savings and Acceleration of Capital Formation

In developing countries like India, the importance of capital market is self-evident. In this market, various types of securities help to mobilize savings from various sectors of the population. The twin features of reasonable return and liquidity in stock exchange are definite incentives to the people to invest in securities. This accelerates the capital formation in the country.

2. Raising Long-Term Capital

The existence of a stock exchange enables companies to raise permanent capital. The investors cannot commit their funds for a permanent period but companies require funds permanently. The stock exchange resolves this dash of interests by offering an opportunity to investors to buy or sell their securities, while permanent capital with the company remains unaffected.

3. Promotion of Industrial Growth

The stock exchange is a central market through which resources are transferred to the industrial sector of the economy. The existence of such an institution encourages people to invest in productive channels. Thus it stimulates industrial growth and economic development of the country by mobilizing funds for investment in the corporate securities.

4. Ready and Continuous Market

The stock exchange provides a central convenient place where buyers and sellers can easily purchase and sell securities. Easy marketability makes an investment in securities more liquid as compared to other assets.

5. Technical Assistance

An important shortage faced by entrepreneurs in developing countries is technical assistance. By offering advisory services relating to the preparation of feasibility reports, identifying growth potential and training entrepreneurs in project management, the financial intermediaries in capital market play an important role.

6. Reliable Guide to Performance

The capital market serves as a reliable guide to the performance and financial position of corporate, and thereby promotes efficiency.

7. Proper Channelization of Funds

The prevailing market price of a security and relative yield are the guiding factors for the people to channelize their funds in a particular company. This ensures effective utilization of funds in the public interest.

8. Provision of Variety of Services

The financial institutions functioning in the capital market provide a variety of services such as a grant of long-term and medium-term loans to entrepreneurs, provision of underwriting facilities, assistance in the promotion of companies, participation in equity capital, giving expert advice etc.

9. Development of Backward Areas

Capital Markets provide funds for projects in backward areas. This facilitates economic development of backward areas. Long-term funds are also provided for development projects in backward and rural areas.

10. Foreign Capital

Capital markets make possible to generate foreign capital. Indian firms are able to generate capital funds from overseas markets by way of bonds and other securities. The government has liberalized Foreign Direct Investment (FDI) in the country. This not only brings in the foreign capital but also foreign technology which is important for economic development of the country.

11. Easy Liquidity

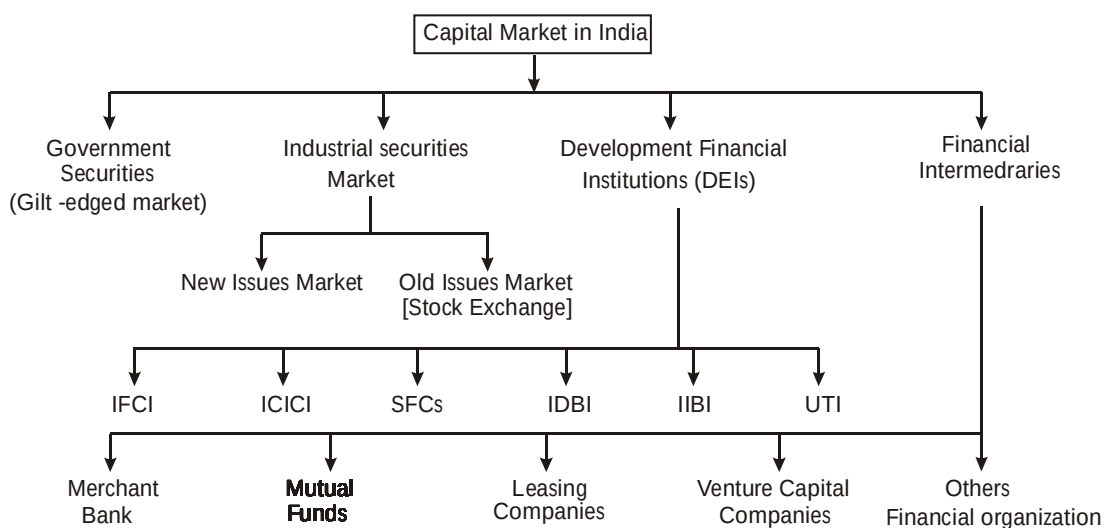
With the help of secondary market, investors can sell off their holdings and convert them into liquid cash. Commercial banks also allow investors to withdraw their deposits, as and when they are in need of funds.

Q5. Explain the Structure of Indian Capital Market.

Ans :

(May-12)

Broadly speaking the capital market is classified in to two categories. They are the Primary market (New Issues Market) and the Secondary market (Old (Existing) Issues Market). This classification is done on the basis of the nature of the instrument brought in the market. However on the basis of the types of institutions involved in capital market, it can be classified into various categories such as the Government Securities market or Gilt-edged market, Industrial Securities market, Development Financial Institutions (DFIs) and Financial intermediaries. All of these components have specific features to mention. The structure of the Indian capital market has its distinct features. These different segments of the capital market help to develop the institution of capital market in many dimensions. The primary market helps to raise fresh capital in the market. In the secondary market, the buying and selling (trading) of capital market instruments takes place. The following chart will help us in understanding the organizational structure of the Indian Capital market.



1. Government Securities Market

This is also known as the Gilt-edged market. This refers to the market for government and semi-government securities backed by the Reserve Bank of India (RBI).

2. Industrial Securities Market

This is a market for industrial securities i.e. market for shares and debentures of the existing and new corporate firms. Buying and selling of such instruments take place in this market. This market is further classified into two types such as the New Issues Market (Primary) and the Old (Existing) Issues Market (secondary). In primary market fresh capital is raised by companies by issuing new shares, bonds, units of mutual funds and debentures. However in the secondary market already existing i.e old shares and debentures are traded. This trading takes place through the registered stock exchanges. In India we have three prominent stock exchanges. They are the Bombay Stock Exchange (BSE), the National Stock Exchange (NSE) and Over The Counter Exchange of India (OTCEI).

3. Development Financial Institutions (DFIs)

This is yet another important segment of Indian capital market. This comprises various financial institutions. These can be special purpose institutions like IFCI, ICICI, SFCs, IDBI, IIBI, UTI, etc. These financial institutions provide long term finance for those purposes for which they are set up.

4. Financial Intermediaries

The fourth important segment of the Indian capital market is the financial intermediaries. This comprises various merchant banking institutions, mutual funds, leasing finance companies, venture capital companies and other financial institutions.

2.1.3 Growth and Development of Indian Capital Market

Q6. Explain the Growth of Indian Capital Market

Ans :

(Imp.)

➤ Indian Capital Market before Independence

Indian capital market was hardly existent in the pre-independence times. Agriculture was the mainstay of economy but there was hardly any long term lending to agricultural sector. Similarly the growth of

industrial securities market was very much hampered since there were very few companies and the number of securities traded in the stock exchanges was even smaller.

Indian capital market was dominated by gilt-edged market for government and semi-government securities. Individual investors were very few in numbers and that too were limited to the affluent classes in the urban and rural areas. Last but not the least, there were no specialized intermediaries and agencies to mobilize the savings of the public and channelize them to investment.

➤ **Indian Capital Market after Independence**

Since independence, the Indian capital market has made widespread growth in all the areas as reflected by increased volume of savings and investments. In 1951, the number of joint stock companies (which is a very important indicator of the growth of capital market) was 28,500 both public limited and private limited companies with a paid up capital of Rs. 775 crore, which in 1990 stood at 50,000 companies with a paid up capital of Rs. 20,000 crore. The rate of growth of investment has been phenomenal in recent years, in keeping with the accelerated tempo of development of the Indian economy under the impetus of the five year plans.

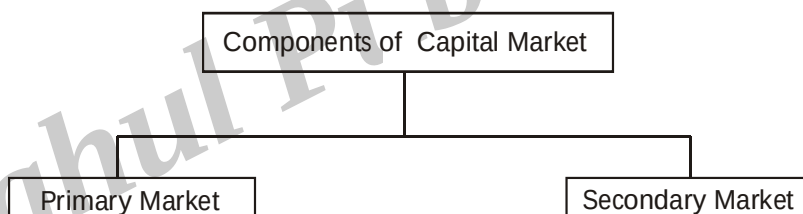
2.1.4 Components of Capital Market

Q7. Explain the components of capital market

Ans :

The main components of capital market are:

1. Primary Market
2. Secondary Market



1. Primary Market (New Issue Market)

Primary market is also known as new issue market. As in this market securities are sold for the first time, i.e., new securities are issued from the company. Primary capital market directly contributes in capital formation because in primary market company goes directly to investors and utilizes these funds for investment in buildings, plants, machinery etc.

The primary market does not include finance in the form of loan from financial institutions because when loan is issued from financial institution it implies converting private capital into public capital and this process of converting private capital into public capital is called going public. The common securities issued in primary market are equity shares, debentures, bonds, preference shares and other innovative securities.

2. Secondary Market (Stock Exchange)

The secondary market is the market for the sale and purchase of previously issued or second hand securities. In secondary market securities are not directly issued by the company to investors. The securities are sold by existing investors to other investors. Sometimes the investor is in need of cash and another investor wants to buy the shares of the company as he could not get directly from

company. Then both the investors can meet in secondary market and exchange securities for cash through intermediary called broker.

In secondary market companies get no additional capital as securities are bought and sold between investors only so directly there is no capital formation but secondary market indirectly contributes in capital formation by providing liquidity to securities of the company.

2.2 PRIMARY MARKET

2.2.1 Meaning

Q8. Define Primary Market and its features?

Ans :

The primary market is the part of the capital market that deals with issuing of new securities. Primary markets create long term instruments through which corporate entities raise funds from the capital market.

In a primary market, companies, governments or public sector institutions can raise funds through bond issues and corporations can raise capital through the sale of new stock through an initial public offering (IPO).

The process of selling new shares to investors is called underwriting.

Features of Primary Market :

- This is the market for new long term equity capital. The primary market is the market where the securities are sold for the first time. Therefore, it is also called the new issue market (NIM).
- In a primary issue, the securities are issued by the company directly to investors.
- The company receives the money and issues new security certificates to the investors.
- Primary issues are used by companies for the purpose of setting up new business or for expanding or modernizing the existing business.

- The primary market performs the crucial function of facilitating capital formation in the economy.
- The new issue market does not include certain other sources of new long term external finance, such as loans from financial institutions. Borrowers in the new issue market may be raising capital for converting private capital into public capital; this is known as "going public."

Q9. What are the functions of Primary Market?

(or)

State the functions of New Issue Market.

Ans :

(May-11, Imp.)

The main function of a new issue market is to facilitate transfer of resources from savers to the users. The savers are individuals, commercial banks, insurance companies etc. The users are public limited companies and the government. The new issue market plays an important role of mobilizing the funds from the savers and transfer them to borrowers for production purposes, an important requisite of economic growth. It is not only a platform for raising finance to establish new enterprises but also for expansion/diversification/modernizations of existing units. In this basis the new issue market can be classified as:

- Market where firms go to the public for the first time through initial public offering (IPO).
- Market where firms which are already trading raise additional capital through seasoned equity offering (SEO).

The main function of a new issue market can be divided into a triple service functions:

1. Origination
2. Underwriting
3. Distribution

1. Origination

Origination refers to the work of investigation, analysis and processing of new project

proposals. Origination starts before an issue is actually floated in the market. There are two aspects in this function:

- (i) A careful study of the technical, economic and financial viability to ensure soundness of the project. This is a preliminary investigation undertaken by the sponsors of the issue.
- (ii) Advisory services which improve the quality of capital issues and ensure its success.

The advisory services include:

- (a) Type of Issue. This refers to the kind of securities to be issued whether equity share, preference share, debenture or convertible debenture.
- (b) Magnitude of issue
- (c) Time of floating an issue
- (d) Pricing of an issue - whether shares are to be issued at par or at premium.
- (e) Methods of issue
- (f) Technique of selling the securities

2. Underwriting

Underwriting is an agreement whereby the underwriter promises to subscribe to a specified number of shares or debentures or a specified amount of stock in the event of public not subscribing to the issue. If the issue is fully subscribed, then there is no liability for the underwriter. If a part of share issues remains unsold, the underwriter will buy the shares. Thus, underwriting is a guarantee for the marketability of shares.

Method of Underwriting

An underwriting agreement may take any of the following three forms:

(i) Standing behind the Issue

Under this method, the underwriter guarantees the sale of a specified number of shares within a specified period. If the

public do not subscribe to the specified amount of issue, the underwriter buys the balance in the issue.

(ii) Outright Purchase

The underwriter, in this method, makes outright purchase of shares and resells them to the investors.

(iii) Consortium Method

Underwriting is jointly done by a group of underwriters in this method. The underwriters form a syndicate for this purpose. This method is adopted for large issues.

Advantages of Underwriting

Underwriting assumes great significance as it offers the following advantages to the issuing company.

1. The issuing company is relieved from the risk of finding buyers for the issue offered to the public. The company is assured of raising adequate capital.
2. The company is assured of getting the minimum subscription within the stipulated time, a statutory obligation to be fulfilled by the issuing company.
3. Underwriters undertake the burden of highly specialized function of distributing securities.
4. They provide expert advice with regard to timing of security issue, the pricing of issue, the size and type of securities to be issued etc.
5. Public confidence on the issue is enhanced when underwritten is done by reputed underwriters.

3. Distribution

Distribution is the function of sale of securities to ultimate investors. This service is performed by brokers and agents who maintain a regular and direct contact with the ultimate investors.

Q10. What are the advantages of Primary Market?

(OR)

What are the merits of Primary Market?

(OR)

What are benefits of Primary Market?

(OR)

What are the advantages of New Issue Market?

(OR)

What are the benefits of New Issue Market?

Ans :

1. It Provides Opportunity for New Investors to Start New Enterprises

Persons with technical know-how may resort to promote new ventures which are profit-oriented. The new issue market gives them an opportunity to materialize their ideas.

2. Existing companies will be in a position to expand their activities

When the existing companies find their products obsolete, they would like to venture into new areas of production for which they require additional capital. The new issue market helps them raise the required funds.

3. Promotion of partnership firm into Public Limited companies or merger of companies or facilitates buy-back of shares

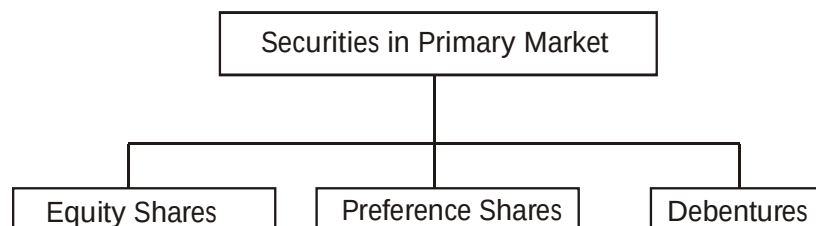
When new ventures are started, a management may wish to have a control on the ownership and for this purpose, they would like to enter into a buy-back arrangement. By this arrangement, the shares will be issued to a group of persons (NRIs) for a specific period after which they will be bought back from out of the profits. This ensures the retention of ownership and prevents any change in management.

Q11. Explain the classification of Securities in primary market

Ans :

Securities dealt in the new issue market or primary market are classified as

1. Equity Shares.
2. Preference Shares.
3. Debentures.



1. Equity Shares

These are shares issued by companies for raising capital. The owners of these shares are shareholders. Normally, the face value of the shares may be Rs.10 or Rs.100. A group of fully paid shares are called stock and these can be transferred. The shareholders are entitled for profit, which are distributed to them in the form of dividend. The share capital will be refunded to them only during the winding up of the company, provided the company has sufficient assets.

2. Preference Shares

Preference shares are similar to equity shares but are given on a preference basis to certain shareholders like promoters, auditors, etc. There are cumulative, non-cumulative, participating, redeemable, irredeemable, convertible and non-convertible preference shares. Preference shareholders will get the first preference in the distribution of dividend over equity shareholders. The same condition applies in the repayment of capital at the time of winding up.

3. Debentures

It is a loan obtained by the company from the public for a fixed interest rate for a fixed period. Those investors who do not want to take any risks will prefer debentures as they have less risk on the repayment compared to shares. There are debentures which have mortgage charge on the assets of the company and these debenture holders are assured of the repayment.

2.2.2 Growth and Development of Primary Market.

Q12. What are the primary market reforms in India? Explain the SEBI guidelines.

(or)

Discuss the Growth and Development of Primary Market Operations in India.

Ans : **(May-16, May-15)**

SEBI has introduced various guidelines as regulatory measures for capital issues. They are as below:

1. Disclosure of All Material Facts is made Compulsory

SEBI has made it compulsory for companies do disclose all the facts and risk factors regarding the projects undertaken by the company. The basis on which the premium amount is calculated should also be disclosed by the company as per SEBI norms. SEBI also advises the code of ethics for advertising in media regarding the public issue.

2. Encouragement to Initial Public offers

In order to encourage Initial Public Offers (IPO) in the primary market, SEBI has permitted companies to determine the par value of shares issued by them. SEBI has allowed issues of IPOs to go for "Book Building" – i.e. reserve and allot shares to individual investors. But the issuer will have to disclose the price, the issue size and the number of securities to be offered to the public.

3. Increase of Popularity to Private Placement Market

In recent years, private placement market has become popular with issuers because of stringent entry and disclosure norms for public issues. Besides low cost of issuance, ease of structuring investments and saving of time lag in issuance are the other causes responsible for the rapid growth of private placement market.

4. Underwriting has made Optional

To reduce the cost of issue in primary market, SEBI has made underwriting of issue optional. However, the condition that if an issue was not underwritten and was not able to collect 90% of the amount offered to the public, the entire amount collected would be refunded to the investor is still in force.

5. Issue of Due Diligence Certificate

The lead managers have to issue due diligence certificate, which has now been made part of the offer document.

6. Conditions regarding Application Size etc.

SEBI has raised the minimum application size and also the proportion of each issue allowed for firm allotment to institutions such as mutual funds.

7. Regulation of Merchant Banking

SEBI has brought Merchant banking under its regulatory framework. The merchant bankers are now to be authorized by SEBI. Merchant bankers, now have a greater degree of accountability in the offer document and issue process.

8. Imposition of Compulsory Deposit on Companies making Public Issues

In order to induce companies to exercise greater care and diligence for timely action in matters relating to the public issues of capital, SEBI has advised stock exchanges to collect from companies making public issues, a deposit of one per cent of the issue amount which could be forfeited in case of non-compliance of the provisions of the listing agreement and, non-dispatch of refund orders and share certificates by registered post within the prescribed time.

9. Reforms as to Mutual Funds

The Government has now permitted the setting up of private mutual funds and a few have already been set up. UTI has now been brought under the regulatory jurisdiction of SEBI. All mutual funds are allowed to apply for firm allotments in public issues. To improve the scope of investments by mutual funds, the latter are permitted to underwrite public issues. Further, SEBI has relaxed the guidelines for investment in money market instruments. Finally, SEBI has issued fresh guidelines for advertising by mutual funds.

10. Vetting of offer Document

SEBI gets offer documents to make sure that the company listing the shares has made all disclosures in it. All the guidelines and regulatory measures of capital issues are meant to promote healthy and efficient functioning of the issue market (or the primary market).

2.2.3 Methods of Issues**Q13. What are the types of issues in Primary Market?****(or)**

Explain different types of floating New Issue Market.

Ans : **(Dec.-20, Imp.)**

The various methods which are used in the floatation of securities in the new issue market are:

- (i) Public issues
- (ii) Offer for sale
- (iii) Placement
- (iv) Rights issues Public Issues

(i) Public Issue

Under this method, the issuing company directly offers to the general public/institutions a fixed number of shares at a stated price through a document called prospectus. This is the most common method followed by joint stock companies to raise capital through the issue of securities. The prospectus must state the following:

- Name of the company
- Address of the registered office of the company
- Existing and proposed activities
- Location of the industry
- Names of Directors
- Authorized and proposed issue capital to the public
- Dates of opening and closing the subscription list
- Minimum subscription
- Names of brokers/underwriters/bankers/managers and registrars to the issue.
- A statement by the company that it will apply to stock exchange for quotations of its shares.

Merits of Issue through Prospectus

- Sale through prospectus has the advantage of inviting a large section of the investing public through advertisement.
- It is a direct method and no intermediaries are involved in it.
- Shares, under this method, are allotted to a large section of investors on a non-discriminatory basis. This procedure helps in wide dispersion of shares and to avoid concentration of wealth in few hands.

Demerits

- It is an expensive method. The company has to incur expenses on printing of prospectus, advertisement, bank's commission, under writing commission, legal charges, stamp duty listing fee and registration charges.
- This method is suitable only for large issues

(ii) Offer of Sale

The method of offer of sale consists in outright sale of securities through the intermediary of Issue Houses or sharebrokers. In other words, the shares are not offered to the public directly. This method consists of two stages:

The first stage is a direct sale by the issuing company to the Issue House and brokers at an agreed price. In the second stage, the intermediaries resell the above securities to the ultimate investors. The Issue Houses or stock brokers purchase the securities at a negotiated price and resell at a higher price.

The difference in the purchase and sale price is called turn or spread. It is otherwise called Bought Out Deals (BOD).

(iii) Placement

Under this method, the Issue Houses or brokers buy the securities outright with the intention of placing them with their clients afterwards. Here the brokers act as almost wholesalers selling them in retail to the public. The brokers would make profit in the process of reselling to the public. The Issue Houses or brokers maintain their own list of clients and through customer contact sell the

securities. There is no need for a formal prospectus as well as underwriting agreement.

Placement has the following advantages

- Timing of issue is important for successful floatation of shares. In a depressed market conditions when the issues are not likely to get public response through prospectus, placement method is a useful method of floatation of shares.
- This method is suitable when small companies issue their shares.
- It avoids delays involved in public issue and it also reduces the expenses involved in public issue.
- There are no entry barriers for a Company to access the private placement market. This route is also available to unlisted and closely held public companies.
- A private placement deal can be successfully executed much faster than a public offering. The procedural formalities for a private placement are minimal. A private placement deal can be successfully closed in 4 to 6 weeks.
- There is greater flexibility in the working out the terms of the issue. The issues deals with only a few institutional investors and hence renegotiating the terms of issue is easy.
- This method is also suitable to first generation entrepreneurs who are less known to the public which makes the public issue less successful.
- The issue expenses in case of private placement is low. The absence of several statutory and non-statutory expenses associated with underwriting, brokerage, printing, promotion etc., makes the transaction cost of private placement approximately 2% of the total cost of issue.

iv) Rights Issue

Rights issue is a method of raising funds in the market by an existing company.

A right means an option to buy certain securities at a certain privileged price within a certain specified period. Shares, so offered to the existing shareholders are called rights shares.

Rights shares are offered to the existing shareholders in a particular proportion to their existing share ownership. The ratio in which the new shares or debentures are offered to the existing share capital would depend upon the requirement of capital. The rights themselves are transferable and saleable in the market.

Section 81 of the Companies Act deals with rights issue. According to this section, where a company increases its subscribed capital by the issue of new shares either after two years of its formation or after one year of its first issue of share whichever is earlier, these have to be first offered to the existing shareholders with the right to reserve them in favour of a nominee.

Advantages

- The cost of issue is minimum. There is no underwriting, brokerage, advertising and printing of prospectus expenses.
- It ensures equitable distribution of shares to all existing shareholders and so control of company remains undisturbed as proportionate ownership in the company remains the same.
- It prevents the directors from issuing new shares in their own name or to their relatives at a lower price and get controlling right.

2.2.4 Parties Involved in New Issue Market**Q14. Who are the players in the Primary Market****(OR)****Who are the players in new issue market?****Ans :** **(Dec.-20, May-17, Imp.)**

There are many players in the new issue market. The important of them are the following:

1. Merchant Bankers
2. Registrars
3. Collecting and co-ordinating bankers
4. Underwriters and brokers

1. Merchant Bankers

They are the issue managers, lead managers, co-managers and are responsible to the company and SEBI. Their functions and working are described in a separate chapter.

2. Registrars

Registrars are an important category of intermediaries who undertake all activities connected with new issue management. They are appointed by the company in consultation with the merchant bankers to the issue. Registrars have a major role, next to merchant bankers, in respect of servicing of investors.

The role of Registrar in the pre-issue, during the currency of issue, pre-allotment, allotment and post-allotment are described below:

Role of Registrar in Pre-issue

- (i) Suggest draft application form to the merchant bankers.
- (ii) Help in identifying the collection centres. The choice of collection centre and of collecting banker is critical to the success of the issue.
- (iii) Assist in opening collection accounts with banks and lay down procedure for operation of these accounts.
- (iv) Send instructions to collecting branches, for collection of application along with cheques, drafts, stock invest separately and remittance of funds.
- (v) Workout modalities to receive the collection figures on a regular basis until the subscription list is closed.

During the Currency of Issue

- Receive the collection figures every day.

- Tabulate and classify the collection data on the basis of the standard proforma of slabs of shares applied for.
- Keep the merchant bankers and the company informed of the progress of total subscriptions.
- Inform the stock exchange about the closure of issue.

Pre-Allotment Work

- Get all application forms from the collecting bankers and sort out valid and invalid application forms.
- The valid applications are to be categorized and grouped as cash, draft and stock invest applications.
- Reclassify the valid applications eligible for allotment.
- Prepare the list with inverted numbers and then approach the regional stock exchange for finalizing the basis of allotment, in the event of over subscription.
- Finalize the allotment as per the basis approved by the stock exchange.
- Tally the final list approved for allotment and rejections with the in house control numbers and correct mistakes, if any.

Allotment Work

The most important work of a Registrar is allotment of shares. The system of proportional allotment was adopted for new issues in 1993. A new quota system was approved by SEBI in April, 1995. According to the new system 50% of quota is for small investors and another 50% for other categories. The small investors include all applicants upto 1,000 shares. It has also been revised recently.

Post-Allotment Work

1. Get the letters of allotment and refund orders printed ready for despatch. They have to be mailed on or before 70 days from the closing date of subscription. For any delay, get the permission of the

Registrar of Companies and the relevant regional stock exchange.

2. Submit all statements to the company for their final approval.
3. Arrange to pay the brokerage and underwriting commission and submit their relevant statements.
4. Assist the company in getting the allotted shares listed on the stock exchange.

➤ Qualifications for Registrars to the Issue

To be appointed as Registrar to the Issue, registration with SEBI is essential. The criteria adopted by SEBI for registration are the competency and expertise, quality of manpower, their track record, adequacy of infrastructure such as computers, storage space etc. and capital adequacy. A net worth of Rs. 6 lakhs is essential for Registrars. SEBI has laid down a code of conduct for their observance. They have to maintain proper books of accounts and registers for a period of three years.

3. Collecting and Co-ordinating Bankers

Collecting bankers collect the subscriptions in cash, cheques, stockinvest etc. Co-ordinating bankers collect information on subscriptions and co-ordinate the collection work. They monitor the work and inform it to the registrars and merchant bankers.

Collecting banker and co-ordinating banker may be the same bank or different banks.

4. Underwriters and Brokers

The functions and role of underwriters are explained separately.

Brokers along with the net work of sub-brokers market the new issues. They send their own circulars and applications to the clients and do follow up work to market the securities.

2.2.5 Allotment Process**Q15. Explain the allotment Process of Primary market.**

Ans :

The category-I merchant bankers manage the capital issues. The public issue of corporate securities include marketing of capital issues of new and existing companies, additional issues of existing companies involving rights issue and dilution of shares by offer letter. The involvement of different agencies such as underwriters, brokers, bankers, advertising agency, printer, auditors, legal advisers, registrar to the issue and merchant bankers offering specialized services, manages the public issue for making it more successful. The merchant banker acts as an agency at the apex level which plans, coordinates and regulates the whole issues activity and guides various agencies for successful marketing of securities. The procedure used for effectively managing a public issue : the merchant banker is broadly classified into two which are as follows,

1. Pre-issue management and
2. Post-issue management.

1. Pre-issue Management

The different steps which are involved in managing the pre-issue activity are as follows,

- (a) To gain stock exchange approvals to memorandum and articles of association.
- (b) To take appropriate measures as per the SEBI guidelines.
- (c) To finalize the appointment of the various agencies such as,
 - (i) Co-managers/advisers to the issue.
 - (ii) Underwriters to the issue
 - (iii) Brokers to the issue
 - (iv) Bankers to the issue and refund banker
 - (v) Advertising agency
 - (vi) Printers and
 - (vii) Registrar to the issue.

- (d) To give advise to the company for appointing auditors, legal advisers and broad base board of directors.
- (e) To draft prospectus.
- (f) To gain approvals from the company's legal adviser, underwriting financial institutions/ banks for draft prospectus.
- (g) To take the consent from all the parties and agencies which are acting for the issue to be enfolded with the prospectus.
- (h) To obtain the approval of prospectus by board of directors in the meeting and the signing of the prospectus by all the directors or power of attorney on behalf of any absentee director.
- (i) To get approval of prospectus from securities and exchange board of India.
- (j) To file prospectus with the registrar of companies.
- (k) To make an application for enlistment with stock exchanges along with a copy of prospectus.
- (l) To make a publicity of the issue by advertisement and conferences.

2. Post-issue Management

The different steps which are involved in post-issue management are as follows

- (a) To inspect and assure that the issue is subscribed to the degree of 90% involving development from under writers if there is under subscription.
- (b) To assess and coordinate the allotment process of registrar to the issue according to the specified stock exchange guidelines.
- (c) To assure the issue of refund order, allotment letters/ certificates within the stipulated time period of 10 weeks after the closure of subscription list.
- (d) To submit the reports regularly to SEBI regarding the progress in the matters associated with the allotment and refunds.

- (e) To assure the listing of securities at stock exchanges.
- (f) To resolve the investor's grievances about the public issue.

2.2.6 Investor Protection

Q16. Discuss the Need and Significance of Regulatory framework for the Protection of Investors.

Ans : (May-16)

Securities and Exchange Board of India (SEBI) prescribed a legal framework for the operations of the intermediaries such as merchant bankers in the primary market. This framework consists of series of guidelines for the intermediaries for strict compliance. The activities of merchant banks are supervised and regulated by SEBI and RBI. SEBI monitors issues relating to issue of corporate securities. If the merchant banks are the subsidiaries of commercial banks, then also come under the purview of RBI.

SEBI has issued clear guidelines to merchant bankers in respect of capital adequacy norms, their responsibility towards investors about pricing, fixation of premium for issues, disclosure norms and so on. The following are the salient features of SEBI legal framework on operation of merchant bankers :

(a) Registration Mandatory for Category I Merchant Banker

The registration with SEBI is compulsory for the merchant banker to carry out his activities. Based on the activities carried on, the merchant bankers can be classified into four categories.

- i) **Category I Merchant Bankers** can carry issue related major activity such as preparation of prospectus, determining the details of financial structure and so on. It can act as advisor, consultant, manager, underwriter or portfolio manager.
- ii) **Category II Merchant Bankers** can act as advisor, consultant, co-manager, underwriter and portfolio manager.

iii) **Category III Merchant Bankers** can act as an underwriter, advisor and consultant to an issue.

iv) **Category IV Merchant Bankers** can act as an advisor, consultant, and portfolio manager.

(b) Grant of Certification of Registration

SEBI grants Certificate of Registration only after considering all pertinent matters such as professional qualifications, infrastructural facilities, and number of employees, past experience, market reputation and ability to organize the transactions relating to issue effectively and efficiently.

(c) Capital Adequacy Requirement

SEBI prescribed minimum net worth requirement for each category of merchant banker and registration is permitted only subject to the condition that net worth requirement will be maintained all through. Every merchant banking institution has to file its half-yearly unaudited financial results with SEBI to facilitate time to time monitoring.

(d) Fee for Registration and Renewal

Every merchant banker has to pay the prescribed fee at the time of registration and also to get his registration renewed from year to year.

(e) Obligations and Responsibilities

The following are the some of the major obligations and responsibilities of every merchant banker.

- i) He has to maintain high standards of integrity and fairness in all his dealings.
- ii) He has to render at all times high standards of service with diligence and proper care.
- iii) He has to exercise independent professional judgement.
- iv) He should not misguide his clients.
- v) He should not take part in manipulations such as rigging, sharing price-sensitive information with others.

(f) Limit on Number of Lead Managers

The size of the public issue decides the number of lead managers. For example, for an issue of size less than Rs. 50 crore, two lead managers are appointed.

(g) Duties and Responsibilities of Lead Managers

There should be specific agreement between every lead manager and the client/ the issuing companies, setting out their mutual rights, liabilities, obligation relating to such issues and in particular to disclosures, allotment and refund. The details must be furnished to SEBI at least one month before the opening of the issue for subscription.

(h) Due Diligence Certificate

For the accuracy and exactness of contents in the prospectus, the lead manager is responsible. A diligence certificate must be filed with the SEBI by the lead manager at least two weeks before the opening of the issue for subscription specifying that

- i) The contents of the prospectus are in conformity with the available documents,
- ii) All the legal requirements underlying the issue are fully complied with and
- iii) The disclosure is true and fair adequate to enable the investors to make a well-informed decisions as to the investments in the proposed issue.

(i) Submission of Documents

The documents such as draft prospectus/letter of offer, particulars of the issue have to be submitted to SEBI with necessary prescribed fee at least two weeks before the date of filing with the Registrar of Companies/Regional stock exchange or both.

(j) Acquisition of Shares Prohibited

It is quite likely that the merchant banker comes across price-sensitive unpublished information in the course of the professional assignment. He should not take advantage of such information. He is prohibited from

acquiring shares of any company based on such information. Within 15 days from the date of the transaction, if any, the merchant banker has to submit to the SEBI full details of any acquisition of shares of a company whose issues is being managed.

(k) Made Responsible and Accountable

A merchant banker has to disclose to the SEBI all the details about his professional activities such as information relating to his activities as manager, underwriter etc. SEBI can take up inspection of the books of accounts, records and documents of a merchant banker to ensure that the rules and regulations are properly complied with. The SEBI may even impose penalties for non-compliance of conditions for registration and contravention of the regulations. Thus, the merchant banker is made more responsible and accountable.

Q17. What are the disadvantages of Primary Market.

Ans :

The following are the reasons for the poor performance of the primary market.

(i) Possibility for deceiving investors

There is ample scope for attracting investors by giving mis-leading informations. The issuing companies are often tempted to present a rosy picture about the prospective projects. They make exaggerated claims about their prospects as well as over-subscription. As a result, innocent investors are affected.

(ii) No fixed norms for project appraisal

There is no adequate institutional arrangement for the appraisal of the projects to be undertaken by the new companies. Again, there are no fixed norms for getting the appraisals approved by designated institutions. Hence, poor investors have no scope to ascertain the actual profitability of a project.

(iii) Lack of post issue seriousness

Moreover, there is no seriousness among most of the investors to check the performance of the company after the issue. Once the issue is subscribed, their duty is over.

(iv) Ineffective role of merchant bankers.

The merchant bankers do not pay adequate attention to the technical, managerial and feasibility aspects while appraising the project proposals. In fact they do not seem to play a development role as a result of which the small investors are duped by the companies.

(v) Delay in the allotment process

There is inordinate delay in receiving allotment letters/share certificates, refund orders etc. If shares are not allotted, the investor suffers loss of interest. There is delay in effecting transfer of shares. All these factors tend to affect the small investors who hesitate to approach a primary market for investing their funds.

(vi) Poor Mobilization of savings

The new issue market is not able to mobilize adequate savings from the public. It is estimated that only 5% to 10% of financial savings of the household sector go to the primary market.

(vii) Hesitancy to invest on shares

Generally, there is a tendency on the part of the investors to prefer fixed income bearing securities like preference shares and debentures. They hesitate to invest in equity shares since they do not fetch any fixed income. This risk aversion factor stands in the way of development of a healthy primary market.

2.2.7 Recent Trends in Primary Market**Q18. What are the recent trends in Primary Market?****(or)**

Explain the Recent Developments in Indian Primary Market

Ans : **(May-14)**

Average annual capital mobilization from the primary market, which used to be about Rs. 70 crore in the 1960s and about Rs. 90 crore in the 1970s, increased manifold during the 1980s, with the amount raised in 1990-91 being Rs. 4,312 crore.

It received a further boost during the 1990s with the capital raised by non-government public companies. There is a preference for raising resources in the primary market through private placement of debt instruments. Private placements accounted for about 91% of total resources mobilized through domestic issues by the corporate sector during 2000-01. Rapid dismantling of shackles on institutional investments and deregulation of the economy are driving growth of this segment. There are several inherent advantages of relying on private placement route for raising resources (Box-1). While it is cost and time effective method of raising funds and can be structured to meet the needs of the entrepreneurs, it does not require detailed compliance with formalities as required in public or rights issues. It is believed in some circles that private placement has crowded out public issues. However, to prevent public issues from being passed on as private placement, the Companies (Amendment) Act, 2001 made offer of securities to more than 50 persons a public issue.

2.3 SECONDARY MARKET (STOCK EXCHANGE)**2.3.1 Meaning****Q19. What do you meant by Secondary Market?****(OR)****What is Secondary Market?****Ans :**

Secondary Market is a market place for trading in existing securities. The stock market is an integral part of secondary market. The stock market provides a platform for trading in old securities which are listed on a stock exchange. The secondary market for unlisted securities is yet to be developed.

A market which deals in securities that have been already issued by companies is known as 'the secondary market'. It is also called the stock exchange or the share market.

Definition:

According to Pyle "Securities exchanges are market places where securities that have been listed thereon may be bought and sold for either investment or speculation."

2.3.2 History**Q20. Explain the evolution of Stock Exchange**

Ans :

- The first organized stock exchange in India is the Bombay Stock Exchange (BSE), which was established in 1875. But trading in securities used to take place much earlier in the 18th century, and share quotations were published in contemporary newspapers.
- However, dealings were not regulated by any code of rules, nor any hours of business prescribed nor was there any committee to supervise the conduct of members of the exchange.
- Dealers congregated under some tree in open fields for the purpose of transacting business.
- The advent of western styled business practices in India in the early 18th century commenced with the establishment of the East India Company's office in India. Towards the close of the 18th century, the East India Company naturally dominated business in securities and loan transactions.
- Evidence of the existence of trading in stocks of banks and certain companies is available in price quotations in contemporary newspapers. By the 1830s, there was a perceptible rise in the volume of business in loans of corporate stocks and shares.
- In 1836, the "Englishman" of Calcutta reported quotations of 4 percent, 5 percent and 6 percent loans of the East India Company as well as shares of Bank of Bengal.
- Shares of banks like the "Corporation Bank", the "Chartered Mercantile Bank", the "Chartered Bank", the "Oriental Bank", and the old "Bank of Bombay" were traded.
- In 1839, the trading list became broader in Calcutta, where newspapers gave quotations of banks like the "Union Bank", the "Agra Bank" and business ventures like "Bengal Bonded Warehouse", the "Docking Company" and "Steam Tug Company".
- Between 1840 and 1850, banks recognized about half-a-dozen brokers and merchants in Bombay.
- In 1850, the Companies Act introducing limited liability was enacted and the era of joint stock enterprises thus began in India.
- By the mid-19th century, railways were extended, telegraph was introduced, and hence communication expanded.
- Consequently, the country witnessed rapid development of commercial activity. Internal trade and commerce gradually improved and broadened.
- This was followed by a growth in corresponding demand for Indian goods in Europe.
- Eventually, the brokers participated in this general progress and prosperity.
- The American Civil War of 1860-65 had widespread impact on the fledgling Indian securities market.
- The supply of cotton to Europe was totally stopped, and India, especially Bombay, the cotton belt, became the major supplier. There was an unlimited demand for Indian cotton.
- Exports doubled between 1861-65. The price of cotton shot up as the Civil War progressed. The bulk of these exports was paid in bullion. The largest flow was in 1864-65, the last year of the war. The flush of gold bullion spawned numerous ventures in a wave of speculation.
- Companies were floated for every imaginable purpose banks, financial association, land reclamation, trading, cotton cleaning, pressing, hotels, shipping, and steamer companies, etc. Every company that was floated commanded a premium.
- Brokerage business became attractive, and in 1860 there were 60 brokers. Their acknowledged leader was Premchand Roychand who was the first broker to read and speak English.

- He was a genius and a brilliant financial strategist. He was called the Napoleon of Finance. But the bubble burst on 1st of July 1865. Like the South Sea Bubble and Tulip Mania in Europe, the crash had disastrous effect on Bombay and its environs. Innumerable companies failed; only a few were left solvent in Bombay.
- The share mania left desolation in its wake. Nevertheless, it was responsible for initiating the process of establishing the Stock Exchange in Bombay.

2.3.3 Functions of Stock Exchange

Q21. What are the functions of Stock Exchange

Ans :

The following are the functions of stock exchange

1. Maintains Active Trading

Shares are traded on the stock exchanges, enabling the investors to buy and sell securities. The prices may vary from transaction to transaction. A continuous trading increases the liquidity or marketability of the shares traded on the stock exchanges.

2. Fixation of Prices

Price is determined by the transactions that flow from investors' demand and supplier's preferences. Usually the traded prices are made known to the public. This helps the investors to make better decisions.

3. Ensures Safe and Fair Dealing

The rules, regulations and by-laws of the stock exchanges' provide a measure of safety to the investors. Transactions are conducted under competitive conditions enabling the investors to get a fair deal.

4. Aids in Financing the Industry

A continuous market for shares provides a favorable climate for raising capital. The negotiability and transferability of the securities helps the companies to raise long-term funds. When it is easy to trade the securities, investors are willing to subscribe to the initial public offerings. This stimulates the capital formation.

5. Dissemination of Information

Stock exchanges provide information through their various publications. They publish the share prices traded on daily basis along with the volume traded. Directory of Corporate information is useful for the investors' assessment regarding the corporate. Handouts, handbooks and pamphlets provide information regarding the functioning of the stock exchanges.

6. Performance Inducer

The prices of stock reflect the performance of the traded companies. This makes the corporate more concerned with its public image and tries to maintain good performance. Self-regulating Organization : The stock exchanges monitor the integrity of the members, brokers, listed companies and clients. Continuous internal audit safeguards the investors against unfair trade practices. It settles the disputes between member brokers, investors and brokers.

7. Regulatory Framework

A comprehensive legal framework was provided by the Securities Contract Regulation Act, 1956 and the Securities and Exchanges Board of India Act, 1992. A three tier regulatory structure comprising the Ministry of Finance, the Securities and Exchanges Board of India and the Governing Boards of the Stock Exchanges regulates the functioning of stock exchanges.

Q22. What are the Characteristics of a Stock Exchange?

Ans :

The following are the characteristics of Stock Exchange

1. It is an organized capital market.
2. It may be incorporated or non-incorporated body (association or body of individuals).
3. It is an open market for the purchase and sale of securities.
4. Only listed securities can be dealt on a stock exchange.

5. It works under established rules and regulations.
6. The securities are bought and sold either for investment or for speculative purpose.

Q23. What are the benefits of Stock Exchange**(OR)****What are the advantages of stock exchange****(OR)****What are the merits of stock exchange****Ans :****A. Benefits to Investors**

1. The stock exchange plays the role of a friend, philosopher and guide to investors by providing information about the prices of various securities.
2. It offers a ready market for buying and selling securities.
3. It increases the liquidity of the investors.
4. It safeguards the interests of investors through strict rules and regulations.
5. It enables the investors to know the present worth of their securities.
6. It helps investors in making wise investment decisions by providing useful information about the financial position of the companies.
7. The holder of a listed security can easily raise loan by pledging it as a collateral security.

B. Benefits to Companies

1. A company enjoys greater reputation and credit in the market. Image of the company goes up.
2. A company can raise large amount of capital from different types of securities.
3. It enjoys market for its shares.
4. The market price for shares and debentures will be higher. Due to this the bargaining power of the company increases in the events of merger or amalgamation.

C. Benefits to Community and Nation

1. Stock exchange encourages people to sell and invest their savings in shares and debentures.
2. Through capital formation, stock exchange enables companies to undertake expansion and modernization. Stock exchange is an 'Alibaba Cave' from which business community draw unlimited money.
3. It helps the government in raising funds through sale of government securities. This enables the government to undertake projects of national importance and social value.
4. It diverts the savings towards productive channels.
5. It helps in better utilization of the country's financial resources.
6. It is an effective indicator of general economic conditions of a country.

2.3.4 Regulatory Framework**Q24. Explain the Regulatory Frame Work of Stock Exchange.****(or)****Describe the Regulatory Mechanism for Secondary Market Operations in Recent times.****Ans :****(May-15, Imp.)**

The stock exchange in India have to be recognized by the Central Government under SCRA and SEBI and they have to comply with the provisions of the SCRA and SEBI and also the bye-laws and regulations duly approved by the Government.

Any stock exchange which needs recognition under SEBI Act has to submit an application in the prescribed manner to the Central Government. This application must be accompanied by the following documents:

- (i) A copy of the bye-laws of the stock exchange for its operation.

- (ii) A copy of the rules relating to its constitution, governing body, powers and duties of the office-bearers, the admission procedure etc.

➤ **Grant of Recognition**

Recognition will be granted by the Central Government provided the following conditions are fulfilled:

- (i) The rules and bye-laws of the stock exchange applying for registration must ensure fair dealing and protect the interest of investors.
- (ii) The stock exchange concerned must be willing to comply with any other conditions that may be imposed by the Government from time to time.
- (iii) The grant of recognition must be in the interest of trade as well as in the public interest.

While granting recognition, the central government may prescribe conditions regarding the qualifications for membership, the method of entering into contracts, the representation of the central government on the stock exchange and the maintenance of accounts and their audit.

➤ **Renewal of Recognition**

If any stock exchange intends to renew its recognition, it must once again make an application to the Central Government in the aforesaid manner three months before the expiry of the period of recognition.

➤ **Withdrawal of Recognition**

The central government may withdraw the recognition granted to any stock exchange at any time if it opines that the recognition granted is against the interest of trade or public interest. While doing so, it must give sufficient opportunity to the governing body of the stock exchange to explain its position. However, such a withdrawal will have no effect on the contracts entered into before the date of withdrawal.

2.4 LISTING OF SECURITIES

Q25. What is Listing of Securities and what are the objectives of listing?

Ans : **(May-19)**

A stock exchange does not deal in the securities of all companies. Only those securities that are listed are dealt with the stock exchange. For the purpose of listing of securities, a company has to apply to the stock exchange. The stock exchange will decide whether to list the securities of the company or not. If permission is granted by the stock exchange to deal with the securities therein, then such a company is included in the official trade list of the stock exchange. This is technically known as listing of securities. Thus listing of securities means permission to quote shares and debentures officially on the trading floor of the stock exchange. Listing of securities refers to the sanction of the right to trade the securities on the stock exchange. In short, listing means admission of securities to be traded on the stock exchange. If the securities are not listed, they are not allowed to be traded on the stock exchange.

Objectives of Listing

The main objectives of listing are:

1. To ensure proper supervision and control of dealings in securities.
2. To protect the interests of shareholders and the investors.
3. To avoid concentration of economic power.
4. To assure marketing facilities for the securities.
5. To ensure liquidity of securities.
6. To regulate dealings in securities.

Q26. What are the advantages and disadvantages of Listing?

Ans :

Advantages

The advantages of listing may be summarized as follows:

i) Facilitates Buying and Selling Securities

Listing paves way for easy buying and selling of securities constant marketing facilities are assured for listed securities.

(ii) Ensures Liquidity

The prices of listed securities are quoted daily in the market. Hence, securities can be converted into cash readily at quoted prices and thus listing ensures liquidity.

(iii) Offers wide Publicity

Listed securities give wide publicity to the companies concerned. It is so because the names of listed companies are frequently mentioned in stock market reports, T.V., Newspapers, Radio, etc. This has an advertising effect for such companies and this will automatically widen the market for their securities. According to Hasting, "A listed security will receive more attention from investment advisory services than an unlisted one".

(iv) Assures Finance

The very fact that a security is listed in a recognized stock exchange adds to the prestige of that company and it enables the company to raise the necessary finance by the issue of such securities expeditiously.

(v) Enables Borrowing

Listed securities are preferred as collateral securities by commercial banks and other lending institutions because they are rated high in market quotations and there is a ready market for them also. Thus borrowings are made easier against the securities of the listed companies.

(vi) Protects Investors

Listing companies have to necessarily submit themselves to the various regulatory measures by disclosing vital informations about their assets, capital structure, profits, dividend policy, allotment procedure, bonuses etc. Hence, listing aims at protecting the interest of investors to a greater extent.

Disadvantages

At the same time, listing brings some bad effects also. The disadvantages of listing are as follows:

(i) Leads to Speculation

Listed securities offer wide scope for the speculators to manipulate the values in such a way as may be detrimental to the interests of the company. In such a situation, artificial forces play a more dominant role than the free market forces. The stock market may not reflect the true picture of a listed security. Again, the managerial personnel may themselves indulge in speculative activities with regard to listed securities by misusing the inside information available to them.

(ii) Degrades Company's Reputation

Some times listed securities are subject to wide fluctuations in their values. They may become a victim of depression. They are immediately reflected on the stock exchange whereas unlisted securities escape from this misery. These wide fluctuations in their values have the effect of degrading the company's reputation and image in the eyes of the public as well as the financial intermediaries.

(iii) Discloses Vital Informations to Competitors

For getting the securities listed, a company has to disclose vital informations such as, dividends and bonuses declared, a brief history of the company, sales, remuneration to managerial personnel and so on. It amounts to leaking of secrecy of the company's operations to trade rivals. Even trade unions may demand higher wages and bonus on the basis of these informations. Thus, listing may prove disadvantageous to a company.

Q27. Explain the classification of listing of securities

Ans :

Group A, Group B and Group C Shares (BSE)

The listed shares are generally divided into two categories namely:

- (i) Group A shares (Specified shares or cleared securities).
- (ii) Group B shares (Non-specified shares or non-cleared securities).

Group A shares represent large and well established companies having a broad investor base. These shares are actively traded. Naturally, these shares attract a lot of speculative multiples. These facilities are not available to Group B shares. However, shares can be moved from Group B to Group A and vice versa depending upon the criteria for shifting. For instance, the Bombay Stock Exchange has laid down several criteria for shifting shares from Group B to Group A, such as, an equity base of Rs. 10 crores, a market capitalization of Rs. 25-30 crores, a public holding of 35 to 40 per cent, a shareholding population of 15,000 to 20,000, good dividend paying status etc. Group B2 shares are again divided into B1 and B shares on the Bombay Stock Exchange. B1 shares represent well traded scrips among the B Group and they have weekly settlement.

Apart from the above, there is another group called Group C shares. Under Group C, only odd lots and permitted securities are included. A number of shares that are less than the market lot are known as odd lots. Market lot refers to the minimum number of shares of a particular security that must be transacted on a stock exchange. Odd lots have settlement once in a fortnight or once on Saturdays. Permitted securities are those that are not listed on a stock exchange but are listed on other stock exchanges in India. So they are permitted to be traded on this stock exchange. Odd lots cannot be easily transacted on the stock exchange and so they are illiquid in nature.

Q28. What are the procedure of listing

(OR)

What are the requirements of Listing?

(OR)

What are the documents required to be submitted for listing?

Ans : (May-19), (Imp.)

Listing enables a company to include its securities in the official list of one or more recognized stock exchanges for the purpose of trading. A company which requires its securities to be listed must comply with the following formalities:

The company concerned must apply in the prescribed form along with the following documents and details:

- (i) Certified copies of Memorandum and Articles of Association, Prospectus or Statement in lieu of Prospectus, Underwriting agreements, agreements with vendors and promoters etc.
- (ii) Specimen copies of shares and debenture certificates, letter of call, allotment, acceptance and renunciation.
- (iii) Copies of balance sheets and audited accounts for the last 5 years.
- (iv) Copies of offers for sale and circulars or advertisements offering any securities for subscription or sale during the last 5 years'
- (v) Certified copies of agreements with managerial personnel.
- (vi) Particulars of dividends and bonuses paid during the last 10 years.
- (vii) A statement showing dividends or interest in arrears if any.
- (viii) A brief history of the company since its incorporation, giving details of its activities.
- (ix) Particulars regarding its capital structure.
- (x) Particulars of shares and debentures for which permission to deal is applied for and their issue.
- (xi) A statement showing the distribution of shares along with a list of highest 10 holders of each class or kind of securities of the company stating the number of securities held by them.
- (xii) Particulars of shares forfeited.
- (xiii) Certified copies of agreements if any with the Industrial Finance Corporation, ICICI etc.
- (xiv) Listing agreement with the necessary initial and annual listing fee.

Q29. Explain the Criteria for Listing.

Ans :

A company which desires its securities to be listed on a recognized stock exchange must satisfy the following conditions :

- (i) At least 60% of each class of securities issued must be offered to the public for subscription and the minimum issued capital should be Rs. 3 crores.
- (ii) The minimum public offer for subscription must be at least 25% of each issue and it must be offered through advertisement in newspapers at least for a period of 2 days.
- (iii) The company should be of a fair size having broad based capital structure and public interest in its securities.
- (iv) There must be at least 10 public shareholders for every Rs. 1 lakh share of fresh issue of capital and it is 20 in the case of subsequent issue of shares. This criterion is different for investment companies.
- (v) A company having more than Rs. 5 crore paid up capital must list its securities on more than one stock exchange. Listing on the regional stock exchange is compulsory.
- (vi) The company must pay interest on the excess application money received at the rates ranging between 4% and 15% depending on the delay beyond 10 weeks from the date of closure of the subscription list.

The Articles of Association of the company must provide for the following:

- (a) A common form of transfer shall be used.
- (b) Fully paid shares will be completely free from lien.
- (c) Partly paid up shares will be subject to lien only to the extent of call money due at a fixed time.
- (d) Calls in advance carry only interest and not dividend rights.
- (e) Unclaimed dividends shall not be forfeited before the claim becomes time barred.
- (f) The right to call of shares shall be given only after the necessary sanction by the general body meeting.
- (g) Transfer of shares shall be registered within 30 days of deposit of request and the balance certificates shall be issued within the same period.
- (viii) The existing companies must adhere to the ceiling in expenditure of public issues.
- (ix) A certificate to the effect that shares from promoter's quota are not sold or transferred for a period of 3 years must be submitted.

2.5 DELISTING OF SECURITIES

Q30. What do you understand by Delisting of Securities.

Ans :

The destiny of securities means if any had incurred losses during the proceeding the years, remained infrequently loaded, if they still would remain listed on at least one exchange. If a company did not fulfill any of the conditions, an approval of the government was required. SEBI issued a detailed circular on 29-4-1998 to provide for voluntary and compulsory delist its securities from a stock exchange after providing an exit opportunity to holders of securities at a price determine.

The following are the rules of distilling.

The company has incurred losses during the proceeding three consecutive years and it has negative networkth.

Trading in the securities of the company has remainder suspended for a period of more than six months.

The securities of the company have remained infrequently traded during the preceding 3 years.

1. The company (or) any of its promoters (or) directors have been convicted for failure to comply with the securities laws and awarded a penalty of not less than rupee on crore.
2. The address of the company (or) any of its promoters (or) any of its directors are not know (or) false address have been furnished (or) company has changed its registered office in Companies Act 1956.

2.6 TRADING PROCEDURE

Q31. Explain briefly about Trading Procedure of Secondary Market.

(OR)

Discuss the trading procedure at stock exchange.

Ans :

(May-19)

In case any investor purchases shares, the payment for the shares is required to be done prior to the pay in date for the relevant settlements. Of course it is subject to the rules and regulations of the exchange also.

Similarly, in the case of sale of shares, the delivery of shares has to be made prior to the pay in date for the relevant settlement or as otherwise provided in the rules and regulations of the exchange.

On the other hand, brokers are required to make payment or give delivery of securities within 24 hours of the pay out day since T + 2 rolling settlement is being followed w.e.f. April 1, 2003.

There is a provision to get direct delivery of shares in investors/clients beneficiary accounts instead of getting them through their brokers. In such a case, the investor has to give details of his beneficiary account and his Depository Participants identity number to his broker along with the standing instructions for "Delivery In" to his Depository Participant for accepting shares in his beneficiary account. The Clearing Corporation/ House in such a case will send the payout instructions directly to the Depositors so that the securities may be credited directly to the beneficiary account when the exchange makes payment or delivers the securities to the broker. Since the settlement cycle is on T+2 basis, the exchanges have to ensure that the payout of funds and securities to the clients is done by the brokers within 24 hours of the payout.

Generally, the pay in and payout day for funds and securities have been prescribed as per the settlement cycle.

A typical settlement cycle for normal (regular) market segment is given in the following table.

TABLE : Showing Typical Settlement Cycle for Various Activities

Item	Activity	Day
Trading	Rolling Settlement Trading	T
Clearing	Custodial confirmation	T + 1 working days
	Delivery generation	T + 1 working days
Settlement	Securities and funds pay-in	T + 2 working days
	Securities and funds payout	T + 2 working days
Post Settlement	Valuation debit	T + 2 working days
	Auction	T + 3 working days
	Bad delivery reporting	T + 4 working days
	Auction settlement	T + 5 working days
	Close out	T + 5 working days
	Rectified bad delivery pay in	T + 6 working days and payout.
	Re-bad delivery reporting and	T + 8 working days pick up
	Close out of re-bad delivery	T + 9 working days

➤ **Settlement and Payment**

Till January 1, 2002 an Account Period Settlement was in vogue. It has been discontinued since January 1, 2002 pursuant to SEBI directives. An account period settlement is a settlement where the trades pertaining to a period stretching over more than one day are settled on a net basis. For example, trades for the period Monday to Friday are settled together on a net basis.

➤ **Rolling Settlement**

In the place of account period settlement, rolling settlement has been introduced. In a rolling settlement, trades executed during the day are settled based on the net obligations for that day. At present the trades pertaining to the rolling settlement are settled on T+2 day basis where T stands for the trade day. It means that trades executed on Monday have to be settled on the following Wednesday provided there are no intervening holidays. The settlement cycle is on T + 2 rolling settlement basis w.e.f. April 1, 2003.

➤ **Pay-in Day and Payout Day**

As far as the payment is concerned, one should have an exposure to pay-in day and payout day. Pay-in day is the day when the brokers shall make payment or make delivery of securities to the exchange. On the other hand, payout day is the day. When the exchange makes payment or delivery of securities to the broker.

➤ **Market Trade' and Off Market Trade'**

Any trade settled through a clearing corporation is called 'marked trade'. These trades are carried out through stock brokers on a stock exchange. On the other hand if a trade is settled directly between two parties without the involvement of clearing corporation, it is termed as 'off market trade'. The same delivery instruction slip can be used for both by specifying one of the two options.

➤ **Good Delivery and Bad Delivery**

A share certificate together with its transfer deed which meets all the requirements of title transfer from the transferor (seller) to the

transferee (buyer) is called good delivery in the market. For example, if the share certificate is genuine and the transferor has good title to it, the delivery of such document together with transfer deed will be called good delivery.

On the other hand, delivery of a share certificate together with a deed of transfer which does not meet the requirements of title transfer from the seller to the buyer is called a bad delivery in the market. For example delivery of a fake or stolen share certificate together with a deed of transfer is a clear case of bad delivery.

➤ **Lodging for Transfer and Return of Certificates**

Finally, the shares have to be registered in the name of the buyer. For this purpose, the share certificate along with the duly filled transfer deed must be sent to the company. The transfer deed should bear adequate share transfer stamp. After verifying the bona fide of the transfer, the company has to transfer the shares in the name of the buyer and send them back within 2 months. The share certificate should bear a new ledger folio number, transfer number, buyer's name etc. on the reverse side of it. This completes the legal formality for transfer of shares from the seller to the buyer.

Q32. Explain the different types of Members in Stock Exchange

Ans :

Types of Members in a Stock Exchange The various types of members of a stock exchange are as follows:-

1. Jobbers

They are dealers in securities in a stock exchange. They cannot deal on behalf of public. They purchase and sell securities on their own names. Their main job is to earn profit due to price variations.

2. Commission brokers

They are nothing but brokers. They buy and sell securities no behalf of their clients for a

commission. They are permitted to deal with non-members directly. They do not purchase or sell in their own name.

3. Tarawaniwalas

They are like jobbers. They handle transactions on a commission basis for their brokers. They buy and sell securities on their own account and may act as brokers on behalf of the public.

4. Sub-brokers

Sub brokers are agents of stock brokers. They are employed by brokers to obtain business. They cannot carry on business in their own name. They are also known as remisiers.

5. Arbitrageurs

They are brokers. They buy security in one market and sell the same in another market to get opportunistic profit.

6. Authorized clerks

Authorized clerks are those who are appointed by stock brokers to assist them in the business of securities trading.

Defects of Stock Exchanges (or Capital Market) in India

Q33. What are the Defects of Stock Exchange in India

Ans :

The Indian stock market is suffering from a number of weaknesses. Important weaknesses are as follows:

1. Speculative activities

Most of the transactions in stock exchange are carry forward transactions with a speculative motive of deriving benefit from short term price fluctuation. Genuine transactions are only less. Hence market is not subject to free interplay of demand and supply for securities.

2. Insider trading

Insider trading has been a routine practice in India. Insiders are those who have access to unpublished price-sensitive information. By

virtue of their position in the company they use such information for their own benefits.

3. Poor liquidity

The Indian stock exchanges suffer from poor liquidity. Though there are approximately 8000 listed companies in India, the securities of only a few companies are actively traded. Only those securities are liquid. This means other stocks have very low liquidity.

4. Less floating securities

There is scarcity of floating securities in the Indian stock exchanges. Out of the total stocks, only a small portion is being offered for sale. The financial institutions and joint stock companies control over 75% of the scrips. However, they do not offer their holdings for sale. The UTI, GIC, LIC etc. indulge more in purchasing than in selling. This creates scarcity of stocks for trading. Hence, the market becomes highly volatile. It is subject to easy price manipulations.

5. Lack of transparency

Many brokers are violating the regulations with a view to cheating the innocent investing community. No information is available to investors regarding the volume of transactions carried out at the highest and lowest prices. In short, there is no transparency in dealings in stock exchanges.

6. High volatility

The Indian stock market is subject to high volatility in recent years. The stock prices fluctuate from hour to hour. High volatility is not conducive for the smooth functioning of the stock market.

7. Dominance of financial institutions

The Indian stock market is being dominated by few financial institutions like UTI, LIC, GIC etc. This means these few institutions can influence stock market greatly. This actually reduces the level of competition in the stock market. This is not a healthy trend for the growth of any stock market.

8. Competition of merchant bankers

The increasing number of merchant bankers in the stock market has led to unhealthy competition in the stock market. The merchant bankers help the unscrupulous promoters to raise funds for non-existent projects. Investors are the ultimate sufferers.

9. Lack of professionalism

Some of the brokers are highly competent and professional. At the same time, majority of the brokers are not so professional. They lack proper education, business skills, infrastructure facilities etc. Hence they are not able to provide proper service to their clients.

Q34. What are the Differences between Primary Market and Secondary Market

Ans :

S.No.	Primary Market	S.No.	Secondary Market
1.	It is a market for new securities.	1.	It is a market for existing or second hand securities
2.	It is directly promotes capital formation.	2.	It is directly promotes capital formation.
3.	Investors can only buy securities. They cannot sell them.	3.	Both buying and selling of securities takes place
4.	There is no fixed geographical location.	4.	There is a fixed geographical location (stock exchanges)
5.	Securities need not be listed.	5.	Only listed securities can be bought and sold
6.	It enables the borrowers to raise capital	6.	It enables the investors to invest money in securities and sell and encash as they need money

2.7 STOCK EXCHANGES IN INDIA**Q35. What are the major Stock Exchange in India**

Ans :

(Imp.)

At present there are 24 recognized stock exchanges in India. Further OTCEI, NSE also has started functioning in our country. Brief descriptions of major Stock Exchanges are given below:

1. Bombay Stock Exchange(BSE)

BSE is the leading and the oldest stock exchange in India as well as in Asia. It was established in 1887 with the formation of "The Native Share and Stock Brokers' Association". BSE is a very active stock exchange with highest number of listed securities in India. Nearly 70% to 80% of all transactions in the India are done alone in BSE. Companies traded on BSE were 3,049 by March, 2006. BSE is now a national stock exchange as the BSE has started allowing its members to set-up computer terminals outside the city of Mumbai (former Bombay). It is the only stock exchange in India which is given permanent recognition by the government.

2. National Stock Exchange (NSE)

Formation of National Stock Exchange of India Limited (NSE) in 1992 is one important development in the Indian capital market. The need was felt by the industry and investing community since 1991. The NSE is slowly becoming the leading stock exchange in terms of technology, systems and practices in due course of time. NSE is the largest and most modern stock exchange in India. In addition, it is the third largest exchange in the world next to two exchanges operating in the USA.

3. Over the Counter Exchange of India (OTCEI)

The OTCEI was incorporated in October, 1990 as a Company under the Companies Act 1956. It became fully operational in 1992 with opening of a counter at Mumbai. It is recognized by the Government of India as a recognized stock exchange under the Securities Control and Regulation Act 1956. It was promoted jointly by the financial institutions like UTI, ICICI, IDBI, LIC, GIC, SBI, IFCI, etc.

Q36. Who are Speculators?

Ans :

The speculators are not genuine investors. They buy securities with a hope to sell them in future at a profit. They are not interested in holding the securities for longer period. Hence, their very object of buying the securities is to sell them and not to retain them. They are interested only in price differentials.

In reality, there is not a hundred percent speculator or an investor. Each investor is to a certain extent a speculator. Similarly, every speculator to a certain extent is an investor. Thus, the difference between the two is a matter of degree only.

Q37. Explain the different types of Speculators

Ans :

1. Bull

A bull is an optimistic speculator. He expects a rise in the price of the securities in which he

deals. Therefore, he enters into purchase transactions with a view to sell them at a profit in the future. If his expectation becomes a reality, he shall get the price difference without actually taking delivery of the securities.

2. Bear

A bear is a pessimistic speculator who expects a sharp fall in the prices of certain securities. He enters into selling contracts in certain securities on a future date. If the price of the security falls as he expects he shall get the price difference.

In simple words a bear is a mandiwala speculator expects prices to fall in future and sells securities at present with a view to purchase them at lower prices in future.

A bear does not take delivery of securities but takes the difference if prices fall down. In case prices rise then he will have to pay the difference between the prices at which he purchased the securities and the prevailing price on the date of delivery.

3. Stag

A stag is considered as a cautious investor when compared to the bulls or bears. He is a speculator who simply applies for fresh shares in new companies with the sole object of selling them at a premium or profit as soon as he gets the shares allotted.

4. Lame Duck

When a bear is unable to meet his commitment immediately, he is said to be struggling like a lame duck.

Q38. Explain the different types of speculative transaction.

Ans :

The various types of transactions, which facilitate speculative dealings, can be classified into the following:

1. Option Dealings,
2. Margin Trading,
3. Arbitrage,

4. Wash Sales,
5. Blank Transfer,
6. Carry Over or Budla Transactions,
7. Cornering,
8. Rigging the Market.

1. Option Dealings

The term option means a right. Option dealing is an arrangement of right to buy or sell a certain number of specified securities at a predetermined price within a prescribed time limit. Option dealing is a highly risky transaction in securities whose price fluctuates violently. To avoid the risk of loss, the speculators enter into option dealings.

In option dealing, the speculator enters into a contract with another person and thereby acquires the right to deal with him either to buy or sell certain securities at a specified price on a specified date. If he is a bull speculator, he shall enter into purchase options and if the speculator is a bear, he will contract sale options. The speculator should also pay a certain sum of money as consideration. It is known as option money.

However, the speculator has no actual intention to take or to give delivery of the securities, but simply to gain or lose when there is a rise or fall in the prices in future. Thus option dealings have the element of price insurance against fluctuation.

Kinds of Option dealings

Option dealings can be classified into three categories viz.,

- Call,
- Put, and
- Call and Put.

2. Margin Trading

Margin trading is a system of purchasing securities with funds borrowed from brokers. For margin trading, the client opens an account with the broker by depositing a certain amount in cash or securities. He also agrees to maintain the margin at a certain level.

The broker will debit the client's account with the amount of purchases and various charges like brokerage, commission etc. and credit the account with the cash deposited and the sale proceeds. Generally, the price difference is credited or debited as the case may be.

3. Arbitrage

Arbitrage is a highly specialized and skilled speculative activity. It is undertaken to make profit out of the differences in prices of a security in two different markets. The speculator buys the security in one market where its price is cheaper and sells it in another market where its price is high. These transactions aim to bring about a leveling of prices in two markets.

4. Wash Sales

Wash sales are fictitious transactions. Under this method, the speculator sells his securities and then repurchases the same through a broker at a higher price. Actually, no transaction takes place in the wash sales. By this process, an artificial demand can be created which will ultimately lead to an artificial rise in price. The speculator will then sell the securities at the increased price and makes the profit.

5. Blank Transfer

It is a method of the transfer without mentioning the name of the transferee in the transfer deed. Blank transfer, in fact, is a routine method of transferring the securities from one person to another. Therefore, it is not a speculative activity. However, it is quite helpful in making speculation in securities easier.

The usual method of transfer is that the transferor i.e. the seller should write the name of the transferee i.e. the buyer and he should pay the stamp duty. But in case of a blank transfer, he simply signs on the instrument of transfer and merely delivers the securities along with the instrument. By this process the shares can be transferred in any number of times and finally any transferee who wants to get the shares registered in his name can submit the blank transfer form along with the security and get them transferred in his name. It saves stamp duty on every transfer.

6. Carry Over or Budla Transactions

In case of forward delivery contracts, if both the parties agree, the contract can be settled in the next settlement date (probably in the next month or fortnight). Such postponement is called "Carry Over" or "Budla". This is usually done if the prices move against the expectations of the speculator.

7. Cornering

A corner is the condition of the market in which an individual or a group of individuals holds almost the entire supply of a particular security. The speculators will enter into purchasing contracts with the bears in certain securities. Thereafter, by purchasing substantially the whole of the available securities and getting their actual delivery, the speculator will make such securities to go out of the market. In such an event, he will insist the bear speculators to make actual delivery of the securities, on the fixed date.

The bears will find it difficult to effect actual delivery since such securities have already disappeared from the market. At this stage, the speculator will be able to dictate the terms and the bears in the market are said to "Squeezed". The bear will now be a lame duck.

8. Rigging the Market

Rigging means artificially forcing up the market price of a particular security. The bull speculators generally carry on this activity. Due to strong bull movement, the price of certain security will go up and a demand shall be created. When the prices rise, they will sell the securities and make the profit. Rigging is another unhealthy practice, which disturbs the free interplay of demand and supply.

2.7.1 Growth of Stock Exchange**Q39. Explain the growth and origin of stock exchange.**

Ans :

The National Stock Exchange of India was set up by Government of India on the recommendation of Pherwani Committee in 1991.

Since then there has been lot of changes and the exchange has witnessed a great height. Actually, the stock exchange in India originated in 1800 and has developed since then in different stages.

➤ 1800-1865

In the initial stages, The East India Company floated shares through a very small group of brokers. Between the years 1840-1850, there were only half a dozen brokers but in, 1850 the number rose to about 60 brokers. In 1860, the entire market was attracted with the concept of shares which lasted till 1865.

➤ 1866-1900

This period also saw a drastic change in the history of Stocks and led to the foundation of a regular market for securities. The Bombay market became the leading and the most organized stock exchange in India. A number of code of conduct were developed by the brokers during this period.

➤ 1901-1913

The share investment grew during this period because of development in the political field. The industrial enterprises grew after the Swadeshi Movement led by Mahatma Gandhi. Also Calcutta became a major trading center. New ventures were floated and in 1920 another stock exchange was established in Madras.

➤ 1935-1965

The industrial development planning was done during this period and two more stock exchanges, one at Hyderabad and another at Delhi was established. Also 12 more stock exchanges were set up after independence, between the years 1946 and 1990.

There are 24 stock exchanges in India which are as follows:

1. The Bombay Stock Exchange.
2. The Ahmedabad Stock Exchanges of India.
3. Bangalore Stock Exchange.
4. The Calcutta Stock Exchange Association.
5. Cochin Stock Exchange.

6. The Delhi Stock Exchange Association.
7. The Guwahati Stock Exchange.
8. Hyderabad Stock Exchange (HSE).
9. Jaipur Stock Exchange (BE).
10. Kanara Stock Exchange.
11. The Ludhiana Stock Exchange Association.
12. Madras Stock Exchange (MSE).
13. Madhya Pradesh Stock Exchange.
14. Magadh Stock Exchange.
15. Mangalore Stock Exchange.
16. Pune Stock Exchange.
17. Saurashtra Kutch, Stock Exchange.
18. The Uttar Pradesh Stock Exchange Association.
19. Vadodara Stock Exchange.
20. Coimbatore Stock Exchange.
21. Meerut Stock Exchange.
22. Over the Counter (OTC) Exchange of India.
23. National Stock Exchange of India (NSE).
24. Inter-connected Stock Exchange of India (ISE).

2.8 SECURITIES AND EXCHANGE BOARD OF INDIA (SEBI)

Q40. What is SEBI ?

Ans :

Securities and Exchange Board of India (SEBI) is a statutory regulatory body entrusted with the responsibility to regulate the Indian capital markets. It monitors and regulates the securities market and protects the interests of the investors by enforcing certain rules and regulations.

SEBI was founded on April 12, 1992, under the SEBI Act, 1992. Headquartered in Mumbai, India, SEBI has regional offices in New Delhi, Chennai, Kolkata and Ahmedabad along with other local regional offices across prominent cities in India.

The objective of SEBI is to ensure that the Indian capital market works in a systematic manner and provide investors with a transparent environment for their investment. To put it simply, the primary reason for setting up SEBI was to prevent malpractices in the capital market of India and promote the development of the capital markets.

2.8.1 Functions of SEBI

Q41. What are the Functions of SEBI.

Ans : (Dec.-20, May-17, May-16, May-15, Imp.)

Section 11 of the SEBI Act specifies the functions as follows:

1. Regulatory Functions

- (a) Regulation of stock exchange and self regulatory organizations.
- (b) Registration and regulation of stock brokers, sub-brokers, registrar to all issue, merchant bankers, underwriters, portfolio managers and such other intermediaries who are associated with securities market.
- (c) Registration and regulation of the working of collective investment schemes including mutual funds.
- (d) Prohibition of fraudulent and unfair trade practices relating to securities market.
- (e) Prohibition of insider trading in securities.
- (f) Regulating substantial acquisitions of shares and take over of companies.

2. Developmental Functions:

- (a) Promoting investor's education.
- (b) Training of intermediaries.
- (c) Conducting research and published information useful to all market participants.
- (d) Promotion of fair practices. Code of conduct for self-regulatory organizations.
- (e) Promoting self-regulatory organizations.

Q42. What are the Powers of SEBI

Ans :

SEBI has been vested with the following powers:

1. Power to call periodical returns from recognized stock exchanges.
2. Power to call any information or explanation from recognized stock exchanges or their members.
3. Power to direct enquiries to be made in relation to affairs of stock exchanges or their members.
4. Power to grant approval to bye-laws of recognized stock exchanges.
5. Power to make or amend bye-laws of recognized stock exchanges.
6. Power to compel listing of securities by public companies.
7. Power to control and regulate stock exchanges.
8. Power to grant registration to market intermediaries.
9. Power to levy fees or other charges for carrying out the purpose of regulation.
10. Power to declare applicability of Section 17 of the Securities Contract (Regulation) Act in any state or area to grant licences to dealers in securities.

Q43. What are the SEBI Guidelines for Settlement of Disputes

Ans :

Under SEBI guidelines, following procedures are adopted for the settlement of disputes:

1. The proposal to settle a dispute is placed before a high-powered advisory committee of the regulator.
2. If the proposal is approved by the committee, the terms of settlement are drafted and orders are passed by a panel of 2 whole time directors of SEBI after the cause and nature of violation is established.

3. Normally, a penalty is imposed on the offenders and also can be suspended by the panel.
4. If a case is pending before the Securities Appellate Tribunal (SAT), the committee files the terms of settlement before the tribunal.
5. It is compulsory for the accused to give an undertaking to the regulator that it will refrain from taking any legal action against it.
6. The regulator can revive its legal action if the accused violates any condition of the settlement.

2.8.2 Role of SEBI**Q44. Explain the Role of SEBI in primary market.**

Ans : (Dec.-20)

To protect the interest of the investors and to bring back the small investor to the market, several measures have been undertaken by SEBI. Entry and disclosure norms are tightened to prevent the exploitation of investors by the unscrupulous promoters. Allocation of shares and promoters' contribution are regulated.

1. Entry Norms

SEBI has issued guidelines to tighten the entry norms for companies access the capital market.

- i) A company should have a track record of dividend payment for a minimum period of 3 years preceding the issue.
- ii) A company whose shares are already listed would fulfill the entry level requirement only if the post issue networth becomes more the five times the pre issue networth.
- iii) If a manufacturing company does not have such a track record, it could access the public issue market, provided its project is appraised by a public financial institution or a schedule commercial bank. The appraising entity should also participate in the project fund.

- iv) It would be necessary for a corporate body making a public issue to have atleast five public shareholders for every Rs. 1 lakh of the net capital offer made to the public.
- v) SEBI would not vet offer documents of companies having a track record of 3 year consistent dividend payment. Likewise, offer documents of companies seeking list - on OTCEI would not be vatted by SEBI. Further banks are required to satisfy the criteria of two years of profitability for issues above par.

2. Promoters' Contribution

Promoters' contribution means contribution by those described in the prospectus such as promoters, directors, friends, relatives and associates.

- i) Promoters' contribution should not be less than 20% of the issued capital irrespective of the issue size.
- ii) The entire promoters' contribution should be received before the public issue. If the issue size exceeds Rs. 100 crores, the promoters can bring in not less than 50% of their contribution before opening of the issue and bring in the balance before the calls are made on the shareholders.
- iii) SEBI announced that not more than 20 percent of the entire contribution brought in by promoters cumulatively in public or preferential issue would be locked in for 5 years. SEBI lifted the provision of lock in period for promoter, contribution in case of listed companies with 3 years track record of dividend payment.
- iv) According to the decision taken by the SEBI Board, in case of non-under written public issue, promoters could bring own money or procure subscription from elsewhere within 60 days of the closure of the issue subject to such disclosures in the offer document.

3. Disclosure

The draft prospectus filed with SEBI is made as a public document to enhance transparency. The draft prospects should provide all the needed information to the investor regarding the present position of the company, the future prospect and the risk factors associated with the investment of the company. In August 1997, SEBI introduced compendium of disclosure and investor protection guidelines, deleting the provisions that have lost relevance and rationalizing the over lapping provision. In accordance with the recommendation of C.B. Bhav committee, SEBI has advised all the listed companies to publish unaudited financial results on a quarterly basis.

4. Book Building

Book building has been accepted as one of the modes of public issue. SEBI issued guideline relating to 100 percent book-building in an issue of security to the public through prospectus. It recommended a two-tier underwriting system for book built issues. The syndicate members would be responsible for the primary underwriting and the book runners would take on their liability in case of default. SEBI also stipulated that there should be atleast 30 book building centres with the syndicate members being present at each centres.

5. Allocation of Shares

To bring back the small investors to the primary market, the minimum application of share has been reduced from 500 to 200. Proportionate allotment of shares is made. A reservation of minimum 50% of net offers to the small investors is being made. Small investors mean those who have applied for 1000 or fewer shares or securities. The companies were required to complete the allotment of securities within 30 days of the closure of the public issue. There after, they would be required to pay an interest at the rate of 15 percent annum, if refund of application money is not made within the specified period.

6. Market Intermediaries

Licensing of merchant bankers or authorization by SEBI was the first step undertaken to regulate the intermediaries. This licensing of merchant bankers is based on the capital adequacy as well as the track record of the capital market related activities. In course of time, other financial intermediaries such as underwriters, registrars and transfer agents came to be licensed. SEBI has the right to inspect the records of the intermediaries.

Q45. Explain the Role of SEBI in Secondary Market.

Ans : (May-17)

SEBI has introduced a wide range of reforms in the secondary market, the important areas are as given below,

1. Governing Board

Governing board of the stock exchanges were reconstituted according to the NSE's directives. Broker and non-broker representations are made 50:50. Sixty percent of non-broker representation was given in the arbitration, disciplinary and default committees of the exchanges. Regulations regarding the public representatives and the government nominees on the government boards of stock exchanges were issued. As non participants in the market, they have to ensure an impartial and fair governance in the stock exchanges. As per the new guidelines of SEBI, trading members will be given only 40% representation in the governing council of derivatives.

2. Infrastructure

To sophisticate the trade on the stock exchange NSE was established with the screen based trading. Then SEBI has allowed the stock exchanges to expand its on-line screen based trading terminals to locations outside their jurisdiction subjected to certain criteria. SEBI decided that recognition to new stock exchanges would be allowed subject to the conditions on line screen based trading for trade purpose.

3. Settlement and Clearing

Carry forward transactions were withdrawn and reintroduced by SEBI with modified regulations. SEBI notified all stock exchanges to introduce weekly settlement. Besides, auctions have to be conducted by stock exchanges within eight days of the settlement in case members fail to deliver the shares. The renewal of contract in cash groups from one settlement to another is not permitted.

In the case of short sales, in terms of recommendation of the B.D. Shaw committee, SEBI issued directives to all stock exchanges to submit scrip-wise information (for select scrips) on net short sales position at the end of each trading day for dissemination of information to the public.

SEBI advised all the stock exchanges to set up clearing house. Clearing corporations or settlement guarantee fund for expediting the process of dematerialization of securities and settlement transaction in the depository mode. SEBI has introduced rolling the settlement trading in the demat segment for all companies with effect from January 15, 1998.

Warehousing facility has been permitted by the SEBI. The 'warehousing' of transaction facilitates execution of a firm client's order for a large quantity in parts during the same trading cycle and the issue of only one contract note at the weighted average price in the end of the trading cycle. SEBI allowed, institutional investors, FIs, stock brokers, stock exchanges to make use of the facility of 'warehousing' of trades, subject to certain conditions.

4. Debt Market Segment

Wholesale debt market segment in the NSE enables the traders to trade in debt instruments. To expedite the settlement SEBI (Depository and participants) Regulations 1996, has been amended. It allowed dematerialization of government securities SEBI has allowed the listing of debt instrument on the stock exchange even if the company's equity was not listed earlier. FIs were allowed

to invest up to 100 percent of the funds in debt instruments of India companies through 100 percent, dedicated debt fund.

SEBI has made it mandatory for all the debt instruments to be rated from any one of the authorized credit rating company. Recently, SEBI made dual rating mandatory the issues of size above Rs. 500 million. By doing this the SEBI expects to put an end to credit rate shopping, which allows a company not to disclose an adverse rating and instead seek a favourable rating from other agency. A company will not be allowed to get a rating from an agency which is its associated firm.

5. Price Stabilization

SEBI has set up a division to monitor the unusual movements in prices, in coordination with the stock exchanges. SEBI has asked stock exchanges to monitor the prices of newly listed permitted scrips from the first day of trading. Necessary circuit breaker system and other market monitoring restrictions could be applied. In case of newly listed scrips, when there is an abnormal price variation, the exchange would impose a special margin of 25 percent or more on purchase in addition to regular margin. The penal margin is retained by the exchanges for a period of three months or one month after delivery. Intra day margin, gross exposure margin, net exposure margin, mark to market margin, concentration margin and special margins are also imposed on the traders by the stock exchanges to reduce the price volatility.

To prevent circular trading and price rigging, SEBI has introduced a host of price filters. Intra day price band permits the stock to be traded within a range during a trading session. It aims at preventing intra day price swings. Inter week price band has a wide range within that stocks are permitted to be traded in a week. It prevents wild swings in prices rippling into the next settlement cycle. SEBI imposed a uniform intra-day price and band of 10 percent for all securities on all stock exchanges, in addition to the 25 percent weekly price cap being followed by all exchanges.

6. Delisting

SEBI tightened the delisting norms by permitting delisting only in accordance with the norms specified by Chandratre committee. The norms are,

- i) On voluntary delisting from regional stock exchanges, the company would have to make a buy offer of all the shareholders in the particular region.
- ii) The promoters would have to buy or arrange buyers for the security and
- iii) The listing fees for the years should be taken from the companies at the time of delisting and be kept in Escrow Account with the stock exchange.

7. Brokers and SEBI

The regulation of the functioning of the brokers starts with the registration of the brokers. The registration is given on the basis of the eligibility to be a member of any stock exchange, infrastructure facilities like adequate office space, equipment and man power. He should have past experience in the business of buying, selling or dealing in securities. Capital adequacy norms are laid down depending on the stock exchanges and the members turnover. Registration fees also has to be paid by the brokers.

2.9 SECURITY MARKET INDICES / INDEX

2.9.1 Meaning

Q46. Explain in detail about security market indexes. Also highlight the user of security market indexes.

OR

“Stock market indices are the barometers of the stock market”. Discuss.

Ans :

(Imp.)

Security Market Indexes

A securities market index represents the performance of the market and ascertains the mean (average) value of a several securities which are selected as a sample which represents the behaviour

of general market. Indexes are mainly developed to provide the indepth, independent and impartial and constant barometers of a board market.

In order to ascertain various trends the investors mostly make use of indexes which helps them in making correct decisions. Some of the popular indexes are as follows.

1. Dow Jones Industrial Average (DJIA)

The Dow Jones Industrial Average (DJIA) is one of the widely used indexes. It involves only the prices of 30 actively traded blue-chip stocks which includes the reputed companies like American express, AT&T, Caterpillar, Citigroups, Coca-Cola, Wal-Mart and Walt Disney. The average is computed by summing up the closing prices of the 30 stocks and dividing it by a number used for adjusting splits, spin offs and dividends.

2. Standard and Poor's 500 Index

The famous standard and Poor's (S&P) 500 Index highlights the fluctuation of prices of 500 stocks of well established, large organizations. It comprises the stocks of 400 industrial firms, 40 financial institutions, 40 public utilities and 20 transportation companies. The index is greatly influenced by the companies who hold the highest market value.

3. NASDAQ Composite Index

The NASDAQ composite index takes into consideration nearly all the U.S stocks that were traded in the Over-The-Counter (OTC) market in the automated quotations system which are taken care by the national association of securities dealers.

4. Russell 3000 Index

On the basis of the total market capitalization, the Russell 3000 Index evaluates the performance of 3000 largest U.S companies.

5. Wilshire 5000 Index

The Wilshire 5000 Index reflects the aggregate market value of nearly 6000 plus U.S headquartered stocks which are traded on major exchanges.

6. Foreign Stock Exchanges

The stock exchanges which are situated big cities of the world like London, Sydney, Tokyo, Toronto and Kuala Lumpur are called as foreign stock exchange. The investors in U.S usually examines the stock exchanges the whole night in order to get a clue of what will happen during the day time in U.S stock market.

Uses of Security Market Indexes

Security Market Indexes are useful in serving various specific purposes. The major use of index values is to calculate the aggregate returns for the total market or few part of market during a particular period of time. The rates of return that are being calculated are used as benchmark to analyzing the individual's portfolio performance.

While assessing the portfolio's performance the investors must be capable of experiencing a selecting i.e., comparable to market return by rand only choosing the large number of stocks or bonds from the total market. Hence, in order to analyze the performance of professional money managers an aggregate stock or bond market index is being used as a benchmark.

The indicator series are also useful in developing an index portfolio. It is not possible for many money managers to effectively out perform particular or certain market indexes on a risk-adjusted basis over time. This result in the formation of index funds which basically aims at monitoring the performance of the particular market series which derives the similar rate of return.

Security market indexes are used by securities analysts, portfolio managers and others for determining the factors which affects aggregate security price changes. It is also useful in analyzing the relationship among stock and bond returns of various countries.

Technicians is the another group who are also interested in aggregate market series and who holds an assumption that the previous price changes can be used for forecasting the future price changes. Systematic risk is a relationship that exists among the rates of return for a risky asset and rate of return for a market portfolio of risky assets. Hence, while

calculating the systematic risk, it is essential to know individual risky asset so that its returns are related to the returns for an aggregate market index which are used as a proxy of the market portfolio of risky assets.

In short the, security market indexes are used,

1. Security market indexes are used as benchmarks for analyzing the performance of professional money managers.
2. It is useful in developing and examining an index fund.
3. It is useful in assessing the market rates of return in economic studies.
4. It is used by technicians for forecasting the future market fluctuations.
5. It can be also used as a proxy for market portfolio of risky assets while computing the systematic risk of an asset.

Q47. What are the important indices in India

Ans :

The following are the important indices :

1. BSE Sensex

The Bombay Stock Exchange's Sensitive Index, also called Sensex or BSE Sensex, is one of the leading stock market benchmark indices in India. It tracks the movement of stock prices on the exchange and functions as an indicator of market sentiments.

Launched by BSE in 1986, Sensex consists of 30 components (stocks) that represent, broadly, the composition of the entire market. Each of the scrips is assigned a weightage on the index that is linked to its market capitalization. It measures a particular stock's ability to influence movements in the index. The base year of the Sensex is 1978-79 with the base index value taken as 100 points.

2. S & P CNX Nifty

The S&P CNX Nifty or more popularly the Nifty is a stock market index of the National Stock Exchange and comprises of 50 stocks that form the index. While the BSE has the Sensex, the NSE has the Nifty. While the

Sensex comprises only 30 top listed stocks, based on various criteria, there are 50 stocks that form part of the Nifty.

Q48. What is BSE-SENSEX and what are the objectives of BSE-Sensex

Ans :

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Objectives of BSE-Sensex:

The objectives of the index are:

1) To measure Market Movements

Given its long history and its wide acceptance, no other index matches the SENSEX® in reflecting market movements and sentiments. SENSEX is widely used to describe the mood in the Indian Stock markets.

2) Benchmark for Funds Performance

The inclusion of Blue chip companies and the wide and balanced industry representation in the SENSEX makes it the ideal benchmark for fund managers to compare the performance of their funds.

3) For Index Based Derivatives Products

Institutional investors, money managers and small investors all refer to the SENSEX for their specific purposes. The SENSEX is in effect the proxy for the Indian stock markets. Since SENSEX comprises of leading companies in all the significant sectors in the economy, we believe that it will be the most liquid contract in the Indian market and will garner a pre-dominant market share.

2.9.2 Construction of Stock Index

Q49. Explain the procedure of construction of stock index.

Ans :

A stock index is created by choosing high performing stocks. Index can be calculated by two ways by considering the price of component stock alone. By considering the market value or size of the company called market capitalization method. Two main stock index of India are Sensex and Nifty. Any of the following methods can be used for calculating index

Weighted Capitalization Method

This method easily accommodates stock splits and stock dividends, because they do not change the market capitalization of the company, and therefore, the weighting in the index. The market cap is computed by multiplying the share price times the number of shares.

(a) Full Market Capitalization Method

Scripts weightage in the index under this method is calculated by multiplying the number of shares outstanding with the market price of the companies share. The shares with higher market capitalization will have higher weightage and will be most influential. Presently, all equity indices in India, except the BSE-TECK index, are calculated using the Full Market Capitalization Methodology.

(b) Free-float Market Capitalization Method or Modified Market Capitalization Methodology

A free-float methodology is a method by which the market capitalization of an index's underlying companies is calculated. Free-float methodology market capitalization is calculated by taking the equity's price and multiplying it by the number of shares readily available in the market. Instead of using all of the active and inactive shares, as with the full-market capitalization method, the free-float method excludes locked-in shares such as those held by insiders, promoters and governments.

Free-float capitalization can also be called float-adjusted capitalization. The free-float method is considered a better way of calculating market capitalization, because it provides a more accurate reflection of market movements and stocks actively available for trading in the market. When using a free-float methodology, the resulting market capitalization is smaller than what would result from a full market capitalization method.

(c) Price weighted index method

Price weighting is based on the prices of each stock. A price-weighted portfolio would have the same number of shares of each stock. Price weighting is equal to the sum of the prices of each individual stock in the index divided by the number of stocks. When there are stock splits or dividends, the divisor must be adjusted; otherwise, the index would not measure actual growth. For instance, if there were 2 companies composing an index with the stock of each priced at \$100, then the average price is their sum divided by 2, which is \$100. However, if one company has a 2-for-1 stock split, then its stock will be priced at \$50 per share (the number of shares will also double), then the average becomes $(100 + 50)/2 = 75$, even though the size of each company and its market value has not changed. In order to keep the average the same, the divisor must be changed so that the average stays the same.

(d) Equal weighting method

Equally weighted indexes simply gives each stock an equal weight, regardless of stock price or market capitalization, so, obviously, stock splits and stock dividends will not affect an equally weighted index. An equally weighted portfolio would have the same amount of money invested in each unique stock. Therefore, the number of shares of each stock would be different, with more shares of cheaper stocks. An equally weighted portfolio would have to be rebalanced more frequently to maintain equal weight, because stocks prices would diverge quickly.

An equally-weighted index will be more diversified than a value-weighted index, because it will not be dominated by large companies, so investments based on an equally weighted index may have higher returns, since small companies generally have a greater growth potential than large companies.

Q50. What are the Comparison with between Free Float Market Capitalization Method and Full Market Capitalization Method?

Ans :

1. Free-float factors in the constituent shares of a company to the extent they are available for trading in the stock market. Therefore, free-float is considered to be rational.
2. The free-float method eliminates the undue influence of closely held large capitalization stocks on the movement of index and prices.
3. The free-float method assists in designing a broad base index and reduces the influence of top few companies on index movement.
4. The free-float method is useful to the fund managers as it provides a benchmark their fund returns vis-a-vis an investible index.
5. The free-float method eliminates multiple counting of company shares via cross holdings.

Q51. What are the advantages of Free-Float Market Capitalization Method?

Ans :

1. It reflects investible market capitalization.
2. It eliminates the influence of a few companies on index movement.
3. It assists active fund managers to benchmark their returns.
4. It assists passive fund managers in tracking and replicating.

The free-float market capitalization methodology has been very popular all over the globe. With effect from 2001, the Financial Time Stock Exchange (FTSE) indices, S&P indices, Dow

Jones indices have been fully free-float adjusted. In India, the BSE Sensex has also become a free-float Sensex with effect from September 2003.

Development

An index is made up of similar stocks based on market capitalization, industry or company size. Upon selection of stocks, the index value is computed. Each stock will have a different price and price change in one stock would not be proportionately equal to the price change in another. So, the value of the index value cannot be arrived at as a simple sum of the prices of all the stocks.

Here is when the importance of assigning weights to stocks comes into play. Each stock in the index is assigned a particular weightage based on its market capitalization or price. The weight represents the extent of the impact that the stock's price change has on the value of the index.

The two most commonly used stock market indices are as follows:

(a) Market-cap weightage

Market capitalization refers to the total market value of the stock of a company. It is calculated by multiplying the total number of outstanding stocks floated by the company with the share price of a stock. It, therefore, considers both the price as well as the size of the stock. In an index which uses market-cap weightage, the stocks are assigned weightage based on their market capitalization as compared to the total market capitalization of the index.

In India, free-float market capitalization is used by most of the indices. Here, the total number of shares listed by a company is not used to compute market capitalization. Instead, use only the amount of shares available for trading publicly. Consequently, it gives a smaller number than the market capitalization.

(b) Price weightage

In this method, the value of an index value is computed based on the stock price of a company rather than the market capitalization. Thus, the stocks which have higher prices receive greater weightages in the

index as compared to the stocks which have lower prices. This method has been used in The Dow Jones Industrial Average in the US and the Nikkei 225 in Japan.

2.9.3 Maintenance problems with security market indices

Q52. Explain the problems in construction of indices.

Ans :

1. Reliability of Indices

Indices are based on samples. These indices are highly reliable in nature. Index with a small sample of large companies is usually preferable, in case when the objective is to determine the fluctuations that takes place in the stock value. This is because in a small sample, only few large companies hold maximum number of stocks.

2. Diversification

Diversification of index is found to be helpful in reducing the risk in stock at a diminishing rate. That is, by increasing the number of stocks in index, it would result in decreasing risk rate of the index. But in case of increasing the number of stocks, it is also possible that the illiquid stocks may enter into the market. These illiquid stocks greatly affects the quality as well as the value of index. Therefore, while diversifying stock indices, liquidity aspect needs to be taken into consideration.

3. Objective or Goal of Index

Setting up objective/goal/motto is also a bigger challenge while constructing stock market index. Major indices of the world basically aims at the following two objectives i.e., firstly, representing fluctuations in the aggregate value of all stocks or, secondly, representing fluctuations in the price of typical or aggregate stock.

When an index aims at representing fluctuations in aggregate value of all stocks, then it is also called as a "value-weighted index".

PROBLEMS

1. An analyst obtained the following information regarding an equity market index created at the beginning of 200S:

Particulars	2008	2009
Price Return	7.5%	8.3%
Total Return	12.6%	13.4%

Given that the index value at inception is 1.000. calculate the values of price return and total return indices at the end of 200D and 2009.

Sol :

Price Return Index

Value at the end of 2008 = $1,000 \times 1.075 = 1,075$

Value at the end of 2009 = $1,000 \times 1.075 \times 1.083 = 1,164.225$

Total Return Index

Value at the end of 2008 = $1,000 \times 1.126 = 1,126$

Value at the end of 2009 = $1,000 \times 1.126 \times 1.134 = 1,276.884$

2. A price-weighted equity index consists of one share each of 5 securities. The prices of these securities at the end of 2008 and 2009 are given below:

Securities	Price at the end of 2008	Price at the end of 2009
A	30	34
B	22	28
C	35	31
D	50	54
E	48	44

- Calculate the value of the index at the beginning of 2009.
- Calculate the weights of each security at the beginning of 2009.
- Calculate the price return of the index for 2009.

Sol :

- i) **Value of the index at the beginning of 2009:**

$$= \frac{(30 \times 1) + (22 \times 1) + (35 \times 1) + (50 \times 1) + (48 \times 1)}{5} = 37\%$$

- ii) Weight of security A = $30/185 = 16.22\%$

Weight of security B = $22/185 = 11.89\%$

Weight of security C = $35/185 = 18.92\%$

Weight of security D = $50/185 = 27.03\%$

Weight of security E = $48/185 = 25.95\%$

- iii) **Value of the index at the end of 2009:**

$$= \frac{(34 \times 1) + (28 \times 1) + (31 \times 1) + (54 \times 1) + (44 \times 1)}{5} = 38.2\%$$

Price return of the index for 2009 = $(38.2 - 37) / 37 \times 100 = 3.24\%$

3. An equal-weighted equity index with an initial value of 10,000 consists of 5 securities whose prices as at the end of 2008 and 2009 are given below:

Securities	Price at the end of 2008	Price at the end of 2009
A	30	34
B	22	28
C	35	31
D	50	54
E	48	44

- i) Calculate the number of shares of each security included in the equal-weighted index.
- ii) Calculate the index value at the end of 2009.
- iii) Calculate the price return of the index for 2009.

Sol :

Since the index consists of 5 securities, each security will be assigned a weight of 20% in the index. As the total value of the index is 10,000, the value assigned to each security will be 2,000.

- i) Number of shares of Stock A = $2,000/30 = 66$
 Number of shares of Stock B = $2,000/22 = 90$
 Number of shares of Stock C = $2,000/35 = 57$
 Number of shares of Stock D = $2,000/50 = 40$
 Number of shares of Stock E = $2,000/48 = 41$

- ii) The value of the index position in each security at the end of 2009 is calculated as:

Security A: $66 \times 34 = 2,244$

Security B: $90 \times 28 = 2,520$

Security C: $57 \times 31 = 1,767$

Security D: $40 \times 54 = 2,160$

Security E: $41 \times 44 = 1,804$

Therefore, the total value of the index at the end of 2009 is calculated as:

$$2,244 + 2,520 + 1,767 + 2,160 + 1,804 = 10,495$$

- iii) The price return of the index for 2009 = $\left(\frac{10,495 - 10,000}{10,000} \right) \times 100$

4. **A market-capitalization weighted equity index consists of 5 securities whose prices and number of shares outstanding are given below:**

Securities	Price at the end of 2008	Price at the end of 2009	Shares Outstanding
A	30	34	4,000
B	22	28	6,000
C	35	31	2,000
D	50	54	2,500
E	48	44	3,000

- i) Calculate the weight of each security in the index at the beginning of 2009.
- ii) Calculate the value of the divisor that gives an index value of 1,000 at the beginning of 2009.
- iii) Calculate the price return of the index for 2009.

Sol :

i) **Total market capitalization at the beginning of 2009 :**

$$= (30 \times 4,000) + (22 \times 6,000) + (35 \times 2,000) + (50 \times 2,500) - (48 \times 3,000) \\ = 5,91,000$$

The weights of each of the 5 securities are calculated below:

$$\text{Security A} = (30 \times 4,000) / 591,000 = 20.30\%$$

$$\text{Security B} = (22 \times 6,000) / 591,000 = 22.34\%$$

$$\text{Security C} = (35 \times 2,000) / 5,91,000 = 11.84\%$$

$$\text{Security D} = (50 \times 2,500) / 591,000 = 21.15\%$$

$$\text{Security E} = (48 \times 3,000) / 591,000 = 24.37\%$$

ii) Value of the divisor = $591,000 / 1,000 = 591$

iii) **Total market capitalization at the end of 2009:**

$$= (34 \times 4,000) + (28 \times 6,000) + (31 \times 2,000) + (54 \times 2,500) + (44 \times 3,000) \\ = 633,000$$

$$\text{Price return of the index for 2009} = \left(\frac{6,33,000 - 5,91,000}{5,91,000} \right) \times 100 = 7.106$$

5. A float-adjusted market-capitalization weighted equity index consists of 5 securities. Further information is provided in the table below:

Securities	Price at the end of 2008	Price at the end of 2009	Shares Outstanding	Percentage of Shares in Market Float
A	30	34	4,000	40
B	22	28	6,000	70
C	35	31	2,000	80
D	50	54	2,500	50
E	48	44	3,000	60

i) Calculate the number of shares of each security that will be included in the index.

ii) Calculate the total float-adjusted market-capitalization at the beginning of 2009.

Sol :

i) **The number of shares of each security to be included in the index is:**

$$\text{Security A} = 4,000 \times 40\% = 1,600$$

$$\text{Security B} = 6,000 \times 70\% = 4,200$$

$$\text{Security C} = 2,000 \times 80\% = 1,600$$

$$\text{Security D} = 2,500 \times 50\% = 1,250$$

$$\text{Security E} = 3,000 \times 60\% = 1,800$$

ii) **The total float-adjusted market-capitalization at the beginning of 2009 is**

$$(30 \times 1,600) + (22 \times 4,200) + (35 \times 1,600) + (50 \times 1,250) + (48 \times 1,800) = 345,300$$

Short Question and Answers

1. What is Listing of Securities.

Ans :

A stock exchange does not deal in the securities of all companies. Only those securities that are listed are dealt with the stock exchange. For the purpose of listing of securities, a company has to apply to the stock exchange. The stock exchange will decide whether to list the securities of the company or not. If permission is granted by the stock exchange to deal with the securities therein, then such a company is included in the official trade list of the stock exchange. This is technically known as listing of securities. Thus listing of securities means permission to quote shares and debentures officially on the trading floor of the stock exchange. Listing of securities refers to the sanction of the right to trade the securities on the stock exchange. In short, listing means admission of securities to be traded on the stock exchange. If the securities are not listed, they are not allowed to be traded on the stock exchange.

2. Delisting of Securities.

Ans :

The destiny of securities means if any had incurred losses during the proceeding the years, remained infrequently loaded, if they still would remain listed on at least one exchange. If a company did not fulfill any of the conditions, an approval of the government was required. SEBI issued a detailed circular on 29-4-1998 to provide for voluntary and compulsory delist its securities from a stock exchange after providing an exit opportunity to holders of securities at a price determine.

3. Functions of SEBI.

Ans :

Section 11 of the SEBI Act specifies the functions as follows:

1. Regulatory Functions

- (a) Regulation of stock exchange and self regulatory organizations.

- (b) Registration and regulation of stock brokers, sub-brokers, registrar to all issue, merchant bankers, underwriters, portfolio managers and such other intermediaries who are associated with securities market.
- (c) Registration and regulation of the working of collective investment schemes including mutual funds.
- (d) Prohibition of fraudulent and unfair trade practices relating to securities market.
- (e) Prohibition of insider trading in securities.
- (f) Regulating substantial acquisitions of shares and take over of companies.

2. Developmental Functions:

- (a) Promoting investor's education.
- (b) Training of intermediaries.
- (c) Conducting research and published information useful to all market participants.
- (d) Promotion of fair practices. Code of conduct for self-regulatory organizations.
- (e) Promoting self-regulatory organizations.

4. Define Capital Market

Ans :

The capital market is a vital of the financial system. Capital market provides the support of capitalism to the country. The wave of economic reforms initiated by the government has influenced the functioning and governance of the capital market. The Indian capital market is also undergoing structural transformation since liberalization. The chief aim of the reforms exercise is to improve market efficiency, make stock market transactions more transparent, curb unfair trade practices and to bring our financial markets up to international standards. Further, the consistent reforms in Indian capital market, especially in the secondary market resulting in modern technology and online trading have revolutionized the stock exchange.

5. Primary Market.**Ans :**

The primary market is the part of the capital market that deals with issuing of new securities. Primary markets create long term instruments through which corporate entities raise funds from the capital market.

In a primary market, companies, governments or public sector institutions can raise funds through bond issues and corporations can raise capital through the sale of new stock through an initial public offering (IPO).

The process of selling new shares to investors is called underwriting.

Features of Primary Market :

- This is the market for new long term equity capital. The primary market is the market where the securities are sold for the first time. Therefore, it is also called the new issue market (NIM).
- In a primary issue, the securities are issued by the company directly to investors.
- The company receives the money and issues new security certificates to the investors.
- Primary issues are used by companies for the purpose of setting up new business or for expanding or modernizing the existing business.
- The primary market performs the crucial function of facilitating capital formation in the economy.

6. Rights Issue.**Ans :**

Rights issue is a method of raising funds in the market by an existing company.

A right means an option to buy certain securities at a certain privileged price within a certain specified period. Shares, so offered to the existing shareholders are called rights shares.

Rights shares are offered to the existing shareholders in a particular proportion to their existing share ownership. The ratio in which the new

shares or debentures are offered to the existing share capital would depend upon the requirement of capital. The rights themselves are transferable and saleable in the market.

Section 81 of the Companies Act deals with rights issue. According to this section, where a company increases its subscribed capital by the issue of new shares either after two years of its formation or after one year of its first issue of share whichever is earlier, these have to be first offered to the existing shareholders with the right to reserve them in favour of a nominee.

Advantages

- The cost of issue is minimum. There is no underwriting, brokerage, advertising and printing of prospectus expenses.
- It ensures equitable distribution of shares to all existing shareholders and so control of company remains undisturbed as proportionate ownership in the company remains the same.
- It prevents the directors from issuing new shares in their own name or to their relatives at a lower price and get controlling right.

7. Characteristics of a Stock Exchange?**Ans :**

The following are the characteristics of Stock Exchange

- It is an organized capital market.
- It may be incorporated or non-incorporated body (association or body of individuals).
- It is an open market for the purchase and sale of securities.
- Only listed securities can be dealt on a stock exchange.
- It works under established rules and regulations.
- The securities are bought and sold either for investment or for speculative purpose.

8. Who are Speculators?

Ans :

The speculators are not genuine investors. They buy securities with a hope to sell them in future at a profit. They are not interested in holding the securities for longer period. Hence, their very object of buying the securities is to sell them and not to retain them. They are interested only in price differentials.

In reality, there is not a hundred percent speculator or an investor. Each investor is to a certain extent a speculator. Similarly, every speculator to a certain extent is an investor. Thus, the difference between the two is a matter of degree only.

9. Explain the different types of Speculators

Ans :

(i) Bull

A bull is an optimistic speculator. He expects a rise in the price of the securities in which he deals. Therefore, he enters into purchase transactions with a view to sell them at a profit in the future. If his expectation becomes a reality, he shall get the price difference without actually taking delivery of the securities.

(ii) Bear

A bear is a pessimistic speculator who expects a sharp fall in the prices of certain securities. He enters into selling contracts in certain securities on a future date. If the price of the security falls as he expects he shall get the price difference.

In simple words a bear is a mandiwala speculator expects prices to fall in future and sells securities at present with a view to purchase them at lower prices in future.

A bear does not take delivery of securities but takes the difference if prices fall down. In case prices rise then he will have to pay the difference between the prices at which he purchased the securities and the prevailing price on the date of delivery.

(iii) Stag

A stag is considered as a cautious investor when compared to the bulls or bears. He is a speculator who simply applies for fresh shares in new companies with the sole object of selling them at a premium or profit as soon as he gets the shares allotted.

10. Powers of SEBI.

Ans :

- Power to call periodical returns from recognized stock exchanges.
- Power to call any information or explanation from recognized stock exchanges or their members.
- Power to direct enquiries to be made in relation to affairs of stock exchanges or their members.
- Power to grant approval to bye-laws of recognized stock exchanges.
- Power to make or amend bye-laws of recognized stock exchanges.
- Power to compel listing of securities by public companies.
- Power to control and regulate stock exchanges.
- Power to grant registration to market intermediaries.

9. Power to levy fees or other charges for carrying out the purpose of regulation.
10. Power to declare applicability of Section 17 of the Securities Contract (Regulation) Act in any state or area to grant licences to dealers in securities.

11. Security Market Indices.

Ans :

A securities market index represents the performance of the market and ascertains the mean (average) value of a several securities which are selected as a sample which represents the behaviour of general market. Indexes are mainly developed to provide the indepth, independent and impartial and constant barometers of a board market.

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(ii) Standard and Poor's 500 Index

The famous standard and Poor's (S&P) 500 Index highlights the fluctuation of prices of 500 stocks of well established, large organizations. It comprises the stocks of 400 industrial firms, 40 financial institutions, 40 public utilities and 20 transportation companies. The index is greatly influenced by the companies who hold the highest market value.

Choose the Correct Answers

1. Market where firms go to the public for the first time through [a]
(a) IPO (b) SEO
(c) Both (a) & (b) (d) None
2. _____ refers to the work of investigation, analysis and processing of new project proposals. [b]
(a) Underwriting (b) Origination
(c) Distribution (d) None of the above
3. _____ is the function of sale of securities to ultimate investors. [a]
(a) Distribution (b) Origination
(c) Underwriting (d) None of the above
4. The method of offer of sale consists in out right sale of securities through the intermediary of issue flouses or share brokers [a]
(a) Offer of sale (b) Placement
(c) Right issue (d) None of the above
5. _____ are an important category of intermediaries who undertake all activities connected with new issue managemet [b]
(a) Merchant bankers (b) Registrars
(c) Printers (d) None of the above
6. The market where existing securities are traded is referred to as _____ [a]
(a) Secondary market (b) Primary market
(c) Both (a) or (b) (d) None of the above
7. _____ means that the securities are admitted for trading on a recognised stock exchange. [a]
(a) Listing procedure (b) Listing of securities
(c) Both (a) or (b) (d) None of the above
8. _____ was established in April 1988 by passing the securities and exchange Act. [b]
(a) NSCCL (b) SEBI
(c) ALBM (d) None of the above
9. _____ of the stock exchanges were reconstituted according to the NSE's directives [a]
(a) Governing board (b) Infrastructure
(c) Delisting (d) None of the above
10. _____ Licensing of merchant bankers or authorization by SEBI was the frist step undertaken to regulate the intermediaries [a]
(a) Market intermediaries (b) Allocation of shares
(c) Entry norms (d) Disclosure

11. A person appointed by a stock broker to assist him in the business of securities trading is called: [c]
- (a) Sub-broker (b) Commission broker
(c) Authorised Clerk (d) Tarawaniwala.
12. An order for the purchase of securities at a fixed price is known as: [a]
- (a) Limit order (b) Open order
(c) Discretionary order (d) Stop loss order.
13. Speculators who neither buy nor sell securities in the market, but still trade on them are called: [b]
- (a) Wolves (b) Stags
(c) Lame Ducks (d) Bears.
14. The process of holding the entire supply of a particular security with a view to dictating terms is called: [d]
- (a) Wash sales (b) Arbitrage
(c) Rigging the market (d) Cornering.
15. Under depository system, the allotment and credit of shares to the beneficiary amount should be completed within how many days from the date of closure of an issue? [c]
- (a) 15 days (b) 7 days
(c) 21 days (d) 30 days.

Fill in the blanks

1. _____ helps in mobilisation of savings of individuals. Bankers, stock brokers and merchant bankers operate for the success of the issue.
2. Stock exchange is called _____ market.
3. Abbreviation of SEBI _____ .
4. Abbreviation of IPO _____ .
5. _____ refers to the work of investigation analysis and processing of new project proposals.
6. The capital market is a vital of the _____ system.
7. To improve the functioning of intermediaries in the capital market, strick control is being exercised on them by _____ .
8. _____ consists in outright sale of securities through the intermediary of issue flouses or share brokers.
9. UTI stands for _____ .
10. ASBA stands for _____ .
11. _____ is a process of admitting securities for trading on a recognised stock exchange.
12. The number of shares which are less than the market lot are called.
13. _____ is a professional independentbroker who deals in securities on his own behalf.
14. The facility to carry forward a transaction from one settlement period to another is known as _____ transaction.
15. The device adopted to make profit out of the differences in prices of a security in two different markets is called _____ .
16. New Issue Market deals with _____ securities.
17. Public issues involves no _____ .
18. Rights shares are offered to _____ shareholders.
19. To be appointed as Registrar, registration with _____ is essential.
20. _____ is the suitable method where small companies issue shares.

ANSWERS

1. Primary market
2. Secondary
3. Security exchange board of India
4. Initial public offer
5. Origination
6. Financial
7. SEBI
8. Offer of sale
9. Unit Trust of India
10. Applications supported by Blocked Amount
11. Listing
12. Odd lots
13. Jobber
14. Badla
15. Arbitrage
16. New
17. Intermediaries
18. Existing
19. SEBI
20. Placement

UNIT III

Risk and Return Analysis :

Return : Meaning - Holding Period Return - Equivalent Annual Return - Expected Value of Return-Measuring Returns from Historical Data-Measuring Average Returns over Multiple Period - Arithmetic Average - Geometric Average-Rupee Weighted Average Return (including Problems).
Risk : Meaning -Sources of Risk -Market Risk - Interest Risk - Interest Rate Risk - Purchasing Power Risk- Business Risk - Financial Risk - Types of Risk - Systematic Risk - Unsystematic Risk - Risk a version and Risk Premium - Measurement of Risk-Range as a Measure of Risk - standard Deviation as a Measure of Risk - β as a Measure of Risk - β as a Measure of Risk (including Problems).

3.1 RETURN

Q1. What is Return ? State the Components of Return.

Ans : (May-19, Imp.)

Investors wish to earn a return on their money. In investments it is critical to distinguish between an expected return (the anticipated return for some future period) and a realized return (the actual return over some past period). Investors invest for the future for the returns they expect to earn but when the investing period is over, they are left with their realized returns. Investors may earn more or less than what they expected to earn when they initiated the investment. Investors must always consider the risk involved in investing.

Return can be defined as the actual income from a project as well as appreciation in the value of capital. Thus there are two components in return the basic component or the periodic cash flows from the investment, either in the form of interest or dividends; and the change in the price of the asset, commonly called as the capital gain or loss.

The term yield is often used in connection to return, which refers to the income component in relation to some price for the asset. The total return of an asset for the holding period relates to all the cash flows received by an investor during any designated time period to the amount of money invested in the asset.

All investments are characterized by the expectation of a return. In fact, investments are made with the primary objective of deriving a return. The return may be received in the form of yield plus capital appreciation. The difference between

the sale price and the purchase price is capital appreciation. The dividend or interest received from the investment is the yield. Different types of investment promise different rates of return. The return from an investment depends upon the nature of the investment, the maturity period and a host of other factor.

Components of Return

The return of an investment consists of two components :

(a) Current Return

The first component that often comes to mind when one is thinking about return is the periodic cash flow (income), such as dividend or interest, generated by the investment. Current return is measured as the periodic income in relation to the beginning price of the investment.

(b) Capital Return

The second component of return is reflected in the price change called the capital return - it is simply the price appreciation (or depreciation) divided by the beginning price of the asset. For assets like equity stocks, the capital return predominates.

Thus, the total return for any security (or for that matter any asset) is defined as:

$$\text{Total return} = \text{Current return} + \text{Capital return}$$

The current return can be zero or positive, whereas the capital return can be negative, zero, or positive.

3.1.1 Holding Period Return**Q2. What do you meant by Holding Period Return?***Ans :***(May-19, May-17, May-15, Imp.)**

The Holding Period Return (HPR) is the total return on an asset or investment portfolio over the period for which the asset or portfolio has been held. The holding period return can be realized if the asset or portfolio has been held, or expected if an investor only anticipates the purchase of the asset.



The holding period return is a fundamental metric in investment management. The measure provides a comprehensive view of the financial performance of an asset or investment because it considers the appreciation of the investment, as well as the income distributions related to the asset (e.g., dividends paid).

The HPR can be used to compare the performance of different investments or assets. In addition, this metric is used to identify the appropriate tax rate.

Holding period return (also called holding period yield) is the total return earned on an investment over its whole holding period expressed as a percentage of the initial value of the investment. It is calculated as the sum capital gain and income divided by the opening value of investment.

There are two sources of return for any investment in bond, stock, real estate, etc.:

(a) capital gain and (b) income. The capital gain or loss results from the movement in value of investment from the date of purchase to the date on which the holding period return is calculated. The income results from coupon payments, dividends, rents, etc.

Holding period return is not a standardized measure of return. A given holding period return might be for a single day or a 5-year period and we will not know. Comparison between holding period return on different investments directly is not appropriate.

Formula for Calculating the Return

The general formula for calculating the HPR is:

This return is calculated as follows :

$$\text{Holding period return} = \frac{\text{Price gain (or) loss during the holding period} + \text{Coupon interest rate, if any}}{\text{Price at the beginning of the holding period}}$$

The holding period rate of return is also called the one-period rate of return. This return can be calculated daily, monthly or annually. If the fall in the bond price is greater than the coupon payment., the holding period return will be negative.

PROBLEMS

1. Three years ago, Fred invested 10,000 in the shares of ABC Corp. Each year, the company distributed dividends to its shareholders. Each year, Fred received 100 in dividends. Note that since Fred received 100 in dividends each year, his total income is 300. Today, Fred sold his shares for 12,000, and he wants to determine the HPR of his investment.

Sol :

Using the HPR formula,

$$\text{Holding period return} = \frac{\text{Price gain (or) loss during the holding period} + \text{Coupon interest rate, if any}}{\text{Price at the beginning of the holding period}}$$

$$\text{Holding Period Return} = \frac{2000 + 300}{10,000} = 0.23 \text{ (or) } 23\%$$

2. What is the HPR for an investor, who bought a stock a year ago at ₹ 50 and received ₹ 5 in dividends over the year, if the stock is now trading at ₹ 60 ?

Sol :

$$\text{Holding period return} = \frac{\text{Price gain or loss during the holding period} + \text{Coupon interest rate, if any}}{\text{Price at the beginning of the holding period}}$$

$$\text{HPR} = \frac{10 + 5}{50} = 0.3 \text{ (or) } 30\%$$

3. Which investment performed better : Mutual Fund X, which was held for three years and appreciated from ₹ 100 to ₹ 150, providing ₹ 5 in distributions, or Mutual Fund B, which went from ₹ 200 to ₹ 320 and generated ₹ 10 in distributions over four years?

Sol :

$$\text{HPR for Fund X} = \frac{\text{Price gain (or) loss during the holding period} + \text{Coupon interest rate, if any}}{\text{Price at the beginning of the holding period}}$$

$$\frac{50 + 5}{100} = 55\%$$

$$\text{HPR for Fund B} = \frac{\text{Price gain (or) loss during the holding period} + \text{Coupon interest rate, if any}}{\text{Price at the beginning of the holding period}}$$

$$\frac{120 + 10}{200} = 65\%$$

4. (a) An investor purchases a bond at ₹ 900 with ₹ 100 as coupon payment sells it at ₹ 1,000. What is his holding period return?
- (b) If the bond is sold for ₹ 750 after receiving ₹ 100 as coupon payment, what is the holding period return?

Sol :

$$(a) \text{ Holding period return} = \frac{\text{Price gain} + \text{Coupon payment}}{\text{Purchase price}}$$

$$= \frac{100 + 100}{900} = \frac{200}{900} = 0.2222$$

$$\text{Holding period return} = 22.22\%$$

$$(b) \text{ Holding period return} = \frac{\text{Gain (or) loss} + \text{Coupon payment}}{\text{Purchase price}}$$

$$= \frac{-150 + 100}{900} = \frac{-50}{900} = -0.0555$$

$$\text{Holding period return} = -5.5\%$$

3.1.2 Equivalent Annual Return

Q3. What is Equivalent Annual Return

Ans : (May-19, May-17)

The Equivalent Annual Return is simply the Net Present Value (NPV) converted to an annual value paid at the end of each year or period for the life of the investment. It is calculated at the appropriate discount rate using this formula:

$$\text{EAE} = \text{NPV} [(i(1 + i)^n) / [(1 + i)^n - 1]]$$

Where:

i = interest rate

n = number of periods (years) - this is an exponent in the formula

3.1.3 Expected Value Return

Q4. Write a notes on Expected Value Return

Ans : (Dec.-20, May-17)

The expected return on an investment is the expected value of the probability distribution of possible returns it can provide to investors. The return on the investment is an unknown variable that has different values associated with different probabilities. Expected return is calculated by multiplying potential outcomes (returns) by the chances of each outcome occurring, and then calculating the sum of those results.

Expected Return



$$= R_1P_1 + R_2P_2 + \dots + R_nP_n$$

Where :

R = Return expectation in a given scenario

P = Probability of the return being achieved in the scenario

n = Scenario number

3.1.4 Measuring Returns from Historical Data**Q5. What is measuring returns from Historical Data****Ans :****(Dec.-20)**

Historical returns are often associated with the past performance of a security or index. Analysts review historical return data when trying to predict future returns or to estimate how a security might react to a particular situation, such as a drop in consumer demand. Historical returns can also be useful when estimating where future points of data may fall in terms of standard deviations.

The total return on an investment for a given period is:

Total return = Cash payment received during the period + Price change over the period / Price of the investment at the beginning

All items are measured in rupees. The rupee cash payment received during the period may be positive or zero. The rupee price change over the period is simply the difference between the ending price and the beginning price. This can be positive (ending price exceeds the beginning price) or zero (ending price equals the beginning price) or negative (ending price is less the beginning price)

$$R = C + (PE - PB) / PB$$

Where R = total return over the period

C = Cash payment received during the period

PE = Ending price of the investment

PB = Beginning price of the investment.

Example :

The following information for an equity stock:

- 1) Price at the beginning of the year : Rs 60.00
- 2) Dividend paid at the end of the year: Rs 2.40
- 3) Price at the end of the year: Rs 69.00

Sol :

The total return on this stock is calculated as follows:

$$2.40 + (69.00 - 60.00) / 60.00 = 0.19 \text{ p (or) 19 percent}$$

Current return Capital return

The total return of 19 percent in our example may be broken down as follows:

$$2.40 / 60.00 + 69.00 - 60.00 / 60.00$$

$$= 4 \text{ percent / Current return} + 5 \text{ percent / capital return}$$

Thus, the total return concept is all inclusive (as it includes the current yield as well as the price change) and measures the total return per rupee of original investment. Hence it can be used for comparing investment returns over a specified period.

3.1.5 Measuring Average Return over Multiple Period**Q6. Write a notes on Average return over multiple period***Ans :***Measuring Average Return over Multiple Period**

In principle, a return over a long holding period (a year, for instance) can be calculated in the same manner as that for a shorter holding period (such as a month) using beginning and ending market values, if there are no external cash flows within the period. It is common, however, to calculate returns over short holding periods and then to combine or link returns over multiple periods. Such a procedure is necessary when external cash flows exist, as we explain in Section 4. Storing return (or return relative) data allows users the flexibility of calculating returns over arbitrary holding periods.

3.1.6 Arithmetic Average**Q7. What do you meant by Arithmetic Average***Ans :*

Arithmetic average return is the return on investment calculated by simply adding the returns for all sub-periods and then dividing it by total number of periods. It overstates the true return and is only appropriate for shorter time periods.

The arithmetic average return is always higher than the other average return measure called the geometric average return. The arithmetic return ignores the compounding effect and order of returns and it is misleading when the investment returns are volatile.

Formula

Arithmetic average return can be calculated using the following formula :

$$\text{Arithmetic Average Return} = \frac{R_1 + R_2 + \dots + R_n}{n}$$

3.1.7 Geometric Average, Rupee Weighted Average Return**Q8. What is Geometric Average and Rupee (Money) Weighted Average Return***Ans :***A) Geometric Average**

Geometric Average Return is the average rate of return on an investment which is held for multiple periods such that any income is compounded. In other words, the geometric average return incorporates the compounding nature of an investment.

Geometric average return is a better measure of average return than the arithmetic average return because it accounts for the order of return and the associated compounding effect. Arithmetic average return overstates an investment's performance where the returns are volatile. When we need to compare returns over an extended period, geometric average return is the preferred measure.

Geometric Average Return Formula

$$\text{GAR} = \sqrt[n]{(1+r_1) \times (1+r_2) \times \dots (1+r_n)} - 1$$

Formula :**Geometric Average Return**

$$= ((1+R_1) \times (1+R_2) \times \dots \times (1+R_n))^{(1/n)} - 1$$

Where,

R_1, R_2 and R_n are sub - period returns for period 1,2 and n, respectively, and

N is the total number of sub-periods for which return is available.

B) Rupee (Money) Weighted Average Return

Money-weighted return is the internal rate of return of an investment. It is the rate of return that equates the initial value of an investment with future cash flows such as dividends and sale proceeds. Over multiple periods, it inherently over weights and under weights individual period returns with high and low starting investment value.

PROBLEMS

5. Jennifer has invested 5,000 into a money market that earns 10% in year one, 6% in year two, and 2% in year three.

If you were to calculate this using the arithmetic mean return, you would add the rates together and divide them by three, giving you an average of 6% year for three years would be 955.08.

Sol :

Let's take a look at the geometric average return formula and see how it compares :

$$= ((1 + R_1) \times (1 + R_2) \times \dots \times (1 + R_n))^{(1/n)} - 1$$

$$\text{GAR} = ((1 + 0.10) \times (1 + 0.06) \times \dots (1 + 0.02))^{1/3} - 1$$

$$\text{GAR} = 1.18923^{1/3} - 1 = 0.05949662$$

$$0.05949662 \times 100 = 5.95$$

Using the geometric average return formula, the rate is actually 5.95% and not 6% as stated by the arithmetic mean return method. The total return using the more accurate method would be 5,946.66, which is a difference of 8.42.

3.2 Risk

3.2.1 Meaning

Q9. What is Risk?

Ans :

(May-14, Imp.)

Risk is uncertainty that a future event with a favourable outcome will occur. In other words, risk is the probability that an investment will not perform as expected and the investor will lose the money invested in the project. All business decisions and opportunities are based on this concept that future performance and returns are uncertain and rely on many uncontrollable variables.

Risk is inherent in any investment. Risk may relate to loss of capital, delay in repayment of capital, non-payment of return or variability of returns. The risk of an investment is determined by the investments, maturity period, repayment capacity, nature of return commitment and so on.

Risk implies future uncertainty about deviation from expected earnings or expected outcome. Risk measures the uncertainty that an investor is willing to take to realize a gain from an investment.

Definitions of Risk

- (a) **According to Emmett J. Vaughan** "Risk is condition in which there is a possibility of an adverse deviation from a desired outcome that is expected or hoped so far."
- (b) **According to Irving Fisher** "Risk may be defined as combinations of hazards measured by probability."

Risk is defined as the uncertainty about the actual return that will earn on an investment. When one invest, expects some particular return, but there is a risk that he ends up with a different return when he terminates the investment.

The more the difference between the expected and the actual the more is the risk. It is not sensible to talk about the investment returns with out talking about the risk, because the investment decision involves a trade-off between the two, return and risk.

$$\begin{aligned}
 \text{Total Risk} &= \text{General Risk} + \text{Specific Risk} \\
 &= \text{Market Risk} + \text{Issuer Risk} \\
 &= \text{Systematic Risk} + \text{Non Systematic Risk}
 \end{aligned}$$

Q10. What are the Causes of Risk.

Ans :

1. Natural Causes

Risks which arise due to the actions of Nature (and hence uncontrollable) are called natural

risks. For example, risk of rainfall not occurring on time or excessive rain-fall causing flood is a serious risk for farmers. Again, there may be risk of hail storm destroying crops in the field.

2. Political Causes

Risks due to political causes may arise, in the forms of :

- Price regulations, restricting profit margins for businessmen
- High rates of taxes, taking away a major part of business profits
- Un-favourable economic policies, discouraging some lines of business activities
- Strict legislations imposed on business enterprises etc.

3. Social Causes

Risks due to social causes are those which may arise from consumer behaviour or due to changes taking place in the social scenario.

Examples of social risks may be:

- Changes in fashions.
- Change in the tastes or preference of consumers
- Changes in the income of consumers
- Changing social values leading to a new pattern of social life etc.

4. Economic Causes

Some of the economic causes leading to business risks may be :

- Rising cost of raw-materials due to inflation or crop failure
- Economic recession in industry, leading to poor demand.
- Increase in the rate of interest, making borrowings costlier
- Pessimistic capital market conditions, discouraging people to invest in companies etc.

5. Managerial Causes

Risks due to managerial causes may be (a few examples only):

- Wrong estimation of demand by management.
- Poor labour-management relations.
- Inefficient operational life of the business enterprise due to incompetent or untrained managerial staff.

6. Competitive Causes

Competitive causes may cause business risks e.g. in the form of the following :

- Entry of an unduly large number of persons in the same line of business activity.
- Entry of multinational companies threatening the very survival of domestic companies.

7. Technological Causes

In the present-day times, technology is changing at a very fast pace; so much so that business experts call this phase of changes as a 'technological revolution'. Appearance of new technology renders the old technology as obsolete (i.e. out of use); causing severe financial losses to firms operating with old technology. They are virtually compelled to install new technology to ensure their survival amidst intensely competitive conditions.

8. Miscellaneous Causes

Some miscellaneous causes of business risks may be :

- Insolvency of a customer.
- Workers' strike.
- Sudden power failure.
- Premature death of an expert employee or manager.
- Speculative losses.

3.2.2 Sources of Risk**Q11. What are the sources of Risk.**

Ans :

(a) Interest Rate Risk

The variability in a security return resulting from changes in the level of interest rates is referred to as interest rate risk. Such changes generally affect securities inversely, that is other things being equal, security price move inversely to interest rate.

(b) Market Risk

The variability in returns resulting from fluctuations in overall market that is, the aggregate stock market is referred to as market risk. Market risk includes a wide range of factors exogenous to securities themselves, like recession, wars, structural changes in the economy, and changes in consumer preference. The risk of going down with the market movement is known as market risk.

(c) Purchasing Power Risk (or) Inflation Risk

Inflation in the economy also influences the risk inherent in investment. It may also result in the return from investment not matching the rate of increase in general price level (inflation). The change in the inflation rate also changes the consumption pattern and hence investment return carries an additional risk. This risk is related to interest rate risk, since interest rate generally rises as inflation increases, because lenders demand additional inflation premium to compensate for the loss of purchasing power.

(d) Regulatory Risk

Regulatory risk is the risk that regulations affecting financial conditions will be introduced or that existing regulations will be enforced more severely than in the past.

(e) Business Risk

The changes that take place in an industry and the environment causes risk for the company in earning the operational revenue creates business risk.

(f) Internal Business Risk

Internal business risk is associated with the operational efficiency of the firm. The operational efficiency differs from company to company.

(g) Political Risk

Political risk also referred, as country risk is the risk caused due to change in government policies that affects business prospects there by return to the investors. Policy changes in the tax structure, concession and levy of duty to products, relaxation or tightening of foreign trade relations etc. carry a risk component that changes the return pattern of the business.

(h) Financial Risk

The use of debt financing by the company to finance a larger proportion of assets causes larger variability in returns to the investors in the faces of different business situation. During prosperity the investors get higher return than the average return the company earns, but during distress investors faces possibility of vary low return or in the worst case erosion of capital which causes the financial risk. The larger the proportion of assets finance by debt (as opposed to equity) the larger the variability of returns thus lager the financial risk.

(i) Liquidity Risk

An investment that can be bought or sold quickly without significant price concession is considered to be liquid. The more uncertainty about the time element and the price concession the greater the liquidity risk. The liquidity risk is the risk associated with the particular secondary market in which a security trades.

(j) Exchange Rate Risk

The change in the exchange rate causes a change in the value of foreign holdings, foreign trade, and the profitability of the firms, there by returns to the investors. The

exchange rate risk is applicable mainly to the companies who operate overseas. The exchange rate risk is nothing but the variability in the return on security caused by currencies fluctuation.

(k) Credit Risk

Credit risk is the possibility that customers who have been granted credit will either fail to pay when payment is due, or will delay payment and take longer credit than agreed.

3.3 TYPES OF RISK**Q12. What are the different types of Risk (OR)**

Explain the various modes of risk

Ans : (May-17, May-16, May-14, May-12, May- 11, Imp.)

Types of risks are :

(a) Systematic Risk

(b) Unsystematic Risk

(a) Systematic Risk

Systematic risk is the risk that affects a security or portfolio due to its relationship with the market. Systematic risk is also called market risk, aggregate risk, or un-diversifiable risk.

Systematic risk can't be reduced through portfolio diversification. Since this risk is associated with overall market sentiment rather than performance of few stocks. Systematic risk results from forces which can't be controlled by a firm. Systematic risk is measured with beta coefficient. It represents the security's volatility relative to that of an average security.

(b) Non - Systematic Risk

Variability in a security total return not related to overall market variability is called unsystematic (non - market) risk. This risk is unique to a particular security and is associated with such factors as business, and financial risk, as well as liquidity risk. Although all securities tend to have some non-systematic risk, it is generally connected with common stocks.

3.3.1 Systematic Risk

3.3.1.1 Market risk, Interest rate risk, Purchasing power risk

Q13. What are the different types of Systematic Risk

Ans : (Imp.)

Variability in a security's total returns that is directly associated with overall movements in the general market or economy is called systematic risk. Virtually all securities have some systematic risk because systematic risk directly encompasses interest rate, market, and inflation risks. Systematic risk is attributable to broad macro factors affecting all securities. Different types of systematic risk are explained as under:

1. Market Risk

Market risk is referred to as stock variability due to changes in investor's attitudes and expectations. The investor's reaction towards tangible and intangible events is the chief cause affecting 'market risk'. The first set, that is, the tangible events has a 'real' basis but the intangible events are based on a 'psychological' basis or reaction to expectations or realities.

Market risk triggers off through real events comprising political, social and economic reasons. The initial decline or 'rise' in market price will create an emotional instability of investors and cause a fear of loss or create an undue confidence, relating possibility of profit. The reaction to loss will culminate in excessive selling and pushing prices down and the reaction to gain will bring in the activity of active buying of securities. However, investors are more reactive towards decline in prices rather than increase in prices.

Market risks cannot be eliminated while financial risks can be reduced. Through diversification also, market risk can be reduced but not eliminated because prices of all stocks move together and any equity stock investor will be faced by the risk of a downwards market and decline in security prices.

2. Interest Rate Risk

There are four types of movements in prices of stocks in the market. These may be termed as

- (a) long-term,
- (b) cyclical (bull and bear markets),
- (c) intermediate or within the cycle, and
- (d) short-term.

The prices of securities will rise or fall, depending on the change in interest rates. The longer the maturity period of a security the higher the yield on an investment and lower the fluctuations in prices. Shorter-term interest rates fluctuate at a great speed and are now more volatile than long-term securities but their changes have a similar effect, price. Traditionally, investors could attempt to forecast cyclical swings in interest rates and prices merely by forecasting ups and downs in general business activity. However, in India a combination of factors have produced a situation where it is difficult to accurately find out the changes in interest rates. Some of the factors that are responsible for complicated analysis are the differences between actual and expected inflation, monetary policies and industrial recessions in the economy. If interest rates could be calculated and forecasted accurately, investors would buy and sell securities with confidence.

Interest rates continuously change for bonds, preferred stock and equity stock. Interest rate risk can be reduced by diversifying in various kinds of securities and also buying securities of different maturity dates.

Interest rate risk can also be reduced by analyzing the different kinds of securities available for investment. A government bond or a bond issued by the financial institution like IDBI is a risk-less bond. Even if government bonds give a slightly lower rate of interest, in the long run they are better for a conservative investor because he is assured of his return. Moreover, government bonds are made more attractive by additional advantages of tax benefits. Therefore, one way to avert interest rate risk would be to purchase government securities. Then the price of securities in the private corporate sector will fall and interest rates will increase. This process will create a chain reaction in the securities. This is rarely possible in the real world situation.

3. Purchasing Power Risk

Purchasing power risk is also known as inflation risk. This risk arises out of change in the prices of goods and services and technically it covers both inflation and deflation periods. During the last two decades, it has been seen that inflationary have been continuously affecting the Indian economy. Therefore, in India purchasing power risk is associated with inflation and rising prices in the economy.

Inflation in India has been either 'cost push' or 'demand pull'. This type of inflation has been seen when costs of production rise or when there is a demand for products but there is no smooth supply and consequently prices rise. In India, the cost push inflation has led to enormous problems as the rise in prices of raw materials has greatly increased costs of production. The increase in costs of production has shown a rising trend in 'wholesale price index' and 'consumer price index'. A rising trend in price index reflects a price spiral in the economy.

The consumers who wanted to forego their present consumption level to purchase commodities in future found that they could not adjust their budgets because they were faced with rising prices and shortage of funds for allocation according to their preferences.

3.3.2 Types of Unsystematic Risk

3.3.2.1 Business risk, Financial risk

Q14. Explain the different types of Unsystematic Risk

Ans : (Imp.)

1. Business Risk

Every corporate organization has its own objectives and goals and aims at a particular gross profit and operating income-had also expects to provide a certain level of dividend income to its shareholders. It also hopes to plough back some profits. Once it identifies its operating level of earnings, the degree of variation from this operating level would measure business risk. For example, if operating income is expected to be 15% in a year, business risk will be low if the operating income varies between 14 and 16%. If the operating income is as

low, as 10% or as high as 18% it would be said that the business risk is high.

Business risk is also associated with risks directly affecting the internal environment of the firm and those of circumstances beyond its control. The former is classified as internal business risk and the latter as external business risk. Within these two broad categories of risk, the firm operates.

Internal business risk may be represented by a firm's limiting environment within which it conducts its business. It is the framework within which the firm conducts its business drawing its efficiency largely from the constraints within which it functions. Internal business risk will be of differing degrees in each firm and the degree to which each firm achieves its goals and attainment level is reflected in its operating efficiency.

Each firm also has to deal with specific external factors. Many a times, these factors are beyond the control of a firm as they are responsive to specific operating environmental conditions. External risks of the business are due to many factors. Some of the factors that can be summarized are:

- **Business cycle:** Some industries move automatically with the business cycle, others move counter-cyclically;
- **Demographic factors:** Such as geographical distribution of population by age, group and race;
- **Political policies:** Change in decisions, toppling of State Governments to some extent affect the working of an industry;
- **Monetary policy:** Reserve Bank of India's policies with regard to monetary and fiscal policies may also affect revenues through an effect on cost as well as availability of funds. When the RBI controls its monetary policies in a way that money asset becomes expensive, people postpone their purchases and the impact of such factors can be seen in retailers' showrooms. As buying activity is restricted, sales slide down;
- **Environment:** The economic environment of the economy also influences the firm and costs and revenues.

2. Financial Risk

Financial risk in a company is associated with the method through which it plans its financial structure. If the capital structure of a company tends to make earnings unstable, the company may fail financially. How a company raises funds to finance its needs and growth will have an impact on its future earnings and consequently on the stability of earnings. Debt financing provides a low cost source of funds to a company, at the same time providing financial leverage for the common stock holders. As long as the earnings of the company are higher than the cost of borrowed funds, the earnings per share of common stock are increased. Unfortunately, large amounts of debt financing also increases the variability of the returns of the common stock holders and thus increases their risk. It is found that variation in returns for shareholders in levered firms (borrowed funds company) is higher than in unlevered firms. The variance in returns is the financial risk.

Financial risk and business risk are somewhat related. While business risk is concerned with an analysis of the income statement between revenues and earnings before interest and taxes (EBIT), financial risk can be stated as being between Earnings Before Interest and Taxes (EBIT) and Earnings Before Taxes (EBT). If the revenue, cost and EBIT of a firm is variable, it implies that there is business risk and in this situation borrowed funds can magnify risk especially in unprofitable years. Debt in modest amounts is desirable. Excessive debt is to be avoided as the long range profitability of the company can be depressed. The company should constantly test its debt to fixed assets, debts to net worth, debts to working capital and give coverage of interest charges and preferred dividends by net income after taxes. These methods will check imbalance in the firm's financing method and help to reduce risk.

3. Regulation Risk

Some investments can be relatively attractive to other investments because of certain regulations or tax laws that give them an advantage of some

kind. Municipal bonds, for example, pay interest that is exempt from local, state and federal taxation. As a result of that specific tax exemption, municipals can price bonds to yield a lower interest rate since the net after-tax yield may still make them attractive to investors.

4. Business Risk

The risk of doing business in a particular industry or environment is called business risk. For example, as one of the largest steel producers, U.S. Steel faces unique problems.

5. Bull-Bear Market Risk

This risk arises from the variability in the market returns resulting from alternating bull and bear market forces.

- When security index rises fairly consistently from a low point, this upward trend is called a bull market. The bull market ends when the market index reaches a peak and starts a downward trend.
- The period during which the market declines, this downward trend is called a bear market.

6. Management Risk

Management, all said and done, is made of people who are mortal, fallible and capable of making a mistake or a poor decision. Errors made by the management can harm those who invested in their firms.

7. Default Risk

It is that portion of an investment's total risk that results from changes in the financial integrity of the investment. For example, when a company that issues securities moves either further away from bankruptcy or closer to it, these changes in the firm's financial integrity will be reflected in the market price of its securities. The variability of return that investors experience, as a result of changes in the credit worthiness of a firm in which they invested, is their default risk.

8. International Risk

International risk can include country risk and exchange rate risk.

- i) **Exchange Rate Risk** : All investors who invest internationally in today's increasingly global investment arena face the prospect of uncertainty in the returns after they convert the foreign gains back to their own currency.
- ii) **Country Risk** : Country risk, also referred to as political risk, is an important risk for investors today. With more investors investing internationally, both directly and indirectly, the political and therefore economic stability and viability of a country's economy need to be considered.

9. Industry Risk

An industry may be viewed as group of companies that compete with each other to market a homogeneous product. Industry risk is that portion of an investment's total variability of return caused by events that affect the products and firms that make up an industry.

10. Liquidity Risk

Liquidity risk is the risk associated with the particular secondary market in which a security trades. An investment that can be bought or sold quickly and without significant price concession is considered liquid. The more uncertainty about the time element and the price concession, the greater the liquidity risk.

Q15. How Risk premium is Calculated ?

Ans :

Assigning Risks Premium

One way of quantifying the risks and incorporating it into the required rate of return is to express the required rate of risks less rate plus a premium for risks factors.

Therefore,

$$r = i + p + b + f + m + o$$

Where,

r = Rate of Return

i = Pure Interest Rate (Risks less Return)

p = Allowance for Purchasing Power Risk

b = Allowance for Business Risks

f = Allowance for Financial Risks

m = Market Risk Allowance

o = Allowance for other Risks

Q16. What are the differences between systematic and unsystematic risk

Ans :

(May-19), (Imp.)

S.No.	Basis of Comparison	Systematic Risk	Unsystematic Risk
1.	Meaning	Systematic risk refers to the possibility of loss associated with market as a whole.	Unsystematic risk refers to a risk associated with a specific industry or security.
2.	Nature	This type of risk is uncontrollable.	This type of risk is controllable.
3.	Other name	It is also known as non-diversifiable risk or market risk or general risk. non- market risk or specific risk.	It is also known as diversifiable risk,
4.	Influencing factors	It may arise due to macro-economic factors.	It may arise due to micro-economic factors.
5.	Ways to eliminate risk	This risk is eliminated through several ways such as diversification, hedging and asset allocation.	This risk is eliminated through portfolio diversification.
6.	Affects	If can affect a large number of securities in the market.	If affects securities of a particulars firm or company
7.	Types	It is sub-divided into three categories, ➤ Market risk ➤ Interest Rate risk ➤ Purchasing Power risk	It is also classified into three categories i.e., ➤ Financial ➤ Business risk ➤ Liquidity risk
8.	Focus of Investors	Investors usually don't try to work with this type of risk.	Investors try to minimize unsystematic risk by better managing their investment.
9.	Examples	➤ Economic and political instability adversely affects all industries and companies. ➤ Change in oil price or change in market interest rate. ➤ Unemployment rate.	➤ Raw material scarcity. ➤ Labour strike ➤ Management inefficiency ➤ Employee turnover ➤ Increase in business operational cost.

3.4 RISK AVERSION AND RISK PREMIUM

Q17. What is risk aversion and risk premium?

Ans :

1. Risk Premium

A risk premium is the minimum difference a person requires to be willing to take an uncertain bet, between the expected value of the bet and the certain value that he is indifferent to.

The certainty equivalent is the guaranteed payoff at which a person is "indifferent" between accepting the guaranteed payoff and a higher but uncertain payoff. (It is the amount of the higher payout minus the risk premium.)

The risk premium can be the expected rate of return above the risk-free interest rate. When measuring risk, a common sense approach is to compare the risk-free return on T-bills and the very risky return on other investments. The difference between these two returns can be interpreted as a measure of the excess return on the average risky asset. This excess return is known as the risk premium.

- **Debt** : In terms of bonds it usually refers to the credit spread (the difference between the bond interest rate and the risk-free rate).
- **Equity** : In the equity market it is the returns of a company stock, a group of company stock, or all stock market company stock, minus the risk-free rate. The return from equity is the dividend yield and capital gains. The risk premium for equities is also called the equity premium.

The difference between a rate of return and the risk free rate of return is a risk premium. Risk premiums may be calculated for a particular security, a class of securities, or a market.

Market risk premiums in general are important, as they are used by securities valuation models such as CAPM. The equity risk premium is particularly important.

The risk premium of a share is usually considered implicitly rather than explicitly. The term $(\beta \times (r_m - r_f))$ used in the CAPM is the equity risk

premium of the security being valued. Similarly, it is usually easier to think in terms of sector beta compared to the market. Sector and security risk premiums are more likely to be explicitly calculated for debt instruments.

2. Risk Aversion

Risk aversion is a concept in economics, finance, and psychology related to the behaviour of consumers and investors under uncertainty. Risk aversion is the reluctance of a person to accept a bargain with an uncertain payoff rather than another bargain with a more certain, but possibly lower, expected payoff. For example, a risk-averse investor might choose to put his or her money into a bank account with a low but guaranteed interest rate, rather than into a stock that is likely to have high returns, but also has a chance of becoming worthless.

The inverse of a person's risk aversion is sometimes called their risk tolerance

Example

A person is given the choice between two scenarios, one with a guaranteed payoff and one without. In the guaranteed scenario, the person receives ₹50. In the uncertain scenario, a coin is flipped to decide whether the person receives ₹100 or nothing. The expected payoff for both scenarios is ₹50, meaning that an individual who was insensitive to risk would not care whether they took the guaranteed payment or the gamble. However, individuals may have different risk attitudes. A person is:

- **risk-averse** if he or she would accept a payoff of less than ₹50 (for example, ₹40), with no uncertainty, rather than taking the gamble and possibly receiving nothing.
- **risk neutral** if he or she is indifferent between the bet and a certain ₹50 payment.
- **risk-seeking (or risk-loving)** if the guaranteed payment must be more than ₹50 (for example, ₹60) to induce him or her to take the guaranteed option, rather than taking the gamble and possibly winning ₹100.

The average payoff of the gamble, known as its expected value, is ₹50. The dollar amount that the individual would accept instead of the bet is called the certainty equivalent, and the difference between the certainty equivalent and the expected value is called the risk premium.

Q18. What are the different types of Risk Premium?

Ans :

Types of Risk Premium

➤ **Liquidity Risk Premium**

This is the premium that investors request in exchange for being given a security that is illiquid that is, it can't be easily converted into cash at its market value

➤ **Default Risk Premium**

This is the amount that a borrower has to pay to a lender to compensate them for assuming the risk of the borrower defaulting on their debts. Typically, the U.S. government is exempt from this premium.

➤ **Country Risk Premium**

The additional risk that an investor assumes by investing in international companies instead of the domestic market. There are a lot of other factors that come into play when dealing with international investments, including political instability, changing exchange rates and more.

➤ **Market Risk Premium**

The difference between the expected return on a stock portfolio and the return on a risk-free option, like government treasury bonds. It's calculated by looking at the slope of the security market line, which is a graph of the capital asset pricing model.

➤ **Equity Risk Premium**

This is the excess return that an investor can hope to get from investing in the stock market over low-risk options like government treasury bonds. It can only be estimated, since no one can entirely predict exactly how well a stock will fare.

3.5 MEASUREMENT OF RISK

Q19. Explain the concept of measurement of risk through systematic and unsystematic risk. Also discuss risk reduction by diversification.

Ans :

According to portfolio theory, the total risk (variance) is not the relevant risk in the portfolio context because the riskiness of a security when held in isolation is not same as the riskiness of a portfolio of securities.

The risk or variability in the profits of a firm is caused by factors to an industry (business risk) as well as by factors those are specific to a firm (firm specific risk) in that industry.

However, business and firm specific risk is to be viewed in terms of unsystematic and systematic risks.

Unsystematic risk is the extent of variability in the securities return on account of the firm specific risk factors.

This is diversifiable or avoidable because it is possible to eliminate or diversify away this component of risk to a considerable extent by investing in a large portfolio of securities.

The unsystematic risk stems from managerial inefficiency, technological change in the production processes, labour problems etc., the nature and magnitude of those factors differ from one company to another.

Systematic risk affects the entire market. It arises from the factors which are beyond the control of the corporate and the investor. They cannot be entirely avoided by the investor and so can also be termed as non-diversifiable risk.

For example, a steep increase in the international crude oil prices is almost certain to affect the entire market adversely.

Hence, no amount of diversification can make a portfolio totally free from such risk.

Therefore, this level of systematic risk below which riskiness of a portfolio cannot be reduced is also called as unavoidable risk.

3.5.1 Range, standard deviation, as measure of risk, β as a Measure of Risk

Q20. How risk is measured through range, standard deviation and co-efficient of variation?

(or)

Explain the applications of standard deviation and beta coefficient in measuring the risk.

Ans :

(Imp.)

The risk of portfolio can be measured through the following concepts or techniques,

1. Range

It is one of the easiest and simplest methods of studying dispersion. Range is defined as the difference between the value of the largest item and the smallest item of the distribution.

$$\text{Range} = L - S$$

Where,

L = Largest item in the distribution

S = Smallest item in the distribution.

$$\text{Co-efficient of Range} = \frac{L - S}{L + S}$$

2. Standard Deviation

Karl Pearson introduced the concept of standard deviation in the year 1823. It is widely used as a method of dispersion and satisfies most of the properties which helps in measuring dispersion. It is also called "root mean square deviation". It is represented by small Greek letter ' σ '. It is useful in measuring the absolute dispersion and judging the representativeness of the mean.

The Standard Deviation (SD) is also considered as variance or with symbol σ . It is calculated by following formulae,

Portfolio Risk,

$$\sigma_p = \sqrt{W_x^2 \sigma_x^2 + W_y^2 \sigma_y^2 + 2W_x W_y \cdot \rho_{xy} \sigma_x \sigma_y}$$

3. Co-efficient of Variation

When Standard Deviation (SD) (σ) is divided by expected returns (i.e., Mean or Expected Return (ER)) Co-efficient of Variation (COV) is obtained. Co-efficient of variation is useful for comparing risks of two projects or securities with different sizes. Less amount of Co-efficient of variation is considered as good one. The formula to calculate Co-efficient of

$$\text{variation is, COV} = \frac{\sigma}{ER}$$

4. Beta (β)

It is frequently referred to as the measure of a security's systematic risk or market risk, since it indicates the manner in which a security's returns changes systematically with the changes in the market returns. The higher the value of the β , the higher the riskiness of a security.

A $\beta 2$ implies that, if the market return increases or decreases by 1% over a period, the security return increases or decreases respectively by 2%.

The beta of a portfolio can be estimated as a weighted average of the betas of the individual securities in the portfolio.

$$\beta = \sum_{i=1}^n \beta_i W_i$$

The ex-post beta is calculated using historical data by the following equation,

$$\beta = \frac{\left(N \sum_i r_i r_m \right) - \left(\sum_i r_m \right) \left(\sum_i r_i \right)}{\left(N \sum_i r_m^2 \right) - \left(\sum_i r_m \right)^2} \quad \text{or} \quad \frac{\text{Cov}_{im}}{\sigma_m^2}$$

Where,

$$\text{Cov}_{im} = \frac{\sum_{i=1}^n (r_{it} - \bar{r}_i)(r_{mt} - \bar{r}_m)}{n}$$

The security return on any day is defined as today's return.

$$h_i = \frac{\text{Today's price} - \text{Yesterday's index}}{\text{Yesterday's price}}$$

Similarly, the market return on any day is defined as, today market return.

$$r_m = \frac{\text{Today's index} - \text{Yesterday's index}}{\text{Yesterday's index}}$$

Like daily returns, weekly or monthly returns can also be calculated. The characteristic regression line or CRL is a simple linear regression model estimated for a particular stock against the market index return to measure diversifiable risk and undiversifiable risk.

PROBLEMS

6. From the following information state which security is preferable based on Return and risk.

Year	Security-I	Security-II
1	20%	30%
2	12%	12%
3	14%	18%
4	3%	0%
5	1%	- 10%

Sol :

(Imp.)

Year	Security-I (R_1)	Security-II (R_2)	$(R_1 - \bar{R}_1)$	$(R_2 - \bar{R}_2)$	$(R_1 - \bar{R}_1)^2$	$(R_2 - \bar{R}_2)^2$
1	20	30	10	20	100	400
2	12	12	2	2	4	4
3	14	18	4	8	8	64
4	3	0	- 7	- 10	49	100
5	1	- 10	- 9	- 20	81	400
	50	50			242	968

$$\bar{R}_1 = \frac{50}{5} = 10$$

$$\sigma_1 = \sqrt{\frac{\sum(R_1 - \bar{R}_1)^2}{n}}$$

$$\bar{R}_2 = \frac{50}{5} = 10$$

$$\sigma_1 = \sqrt{\frac{242}{5}} = 6.96$$

$$\sigma_2 = \sqrt{\frac{\sum(R_2 - \bar{R}_2)^2}{n}} = \sqrt{\frac{968}{5}} = 13.93$$

Security-I is preferable as its risk is less than security II.

7. Calculate Beta and Alpha from the following information :

Events	$R_{A(s)}$	R_m
1	20%	25%
2	27%	8%
3	7%	11%
4	114%	28%
5	33%	17%
6	4%	-2%

Sol :

Calculating Beta

Events	X	Y	xy	x^2
1	25	20	500	625
2	8	27	216	64
3	11	7	77	121
4	28	14	392	784
5	17	33	561	289
6	-2	-4	8	4

$$\beta = \frac{N \cdot \sum xy - \sum x \cdot \sum y}{N \cdot \sum x^2 - (\sum x)^2}$$

$$\beta = \frac{6 \cdot 1754 - (87)(97)}{6(1887) - (87)^2}$$

$$\beta = \frac{10524 - 8439}{6(1887) - (87)^2}$$

$$\beta = \frac{10524 - 8439}{11322 - 7569} = \frac{2085}{3753}$$

$$\beta = 0.56$$

8. Given below are return on XEROX company and Return on BSE Index for 5 years. Calculate Beta.

Years	Return on XEROX	Return on BSE
1	0.2	0.1
2	0.4	0.3
3	0.6	0.4
4	0.8	0.5
5	1.0	0.2

Sol :

(Imp.)

X (Rm)	Y (R _i)	xy	x ²
0.1	0.2	0.02	0.01
0.3	0.4	0.12	0.09
0.4	0.6	0.24	0.16
0.5	0.8	0.40	0.25
0.2	1	0.20	0.04
Σx = 1.5	Σy = 3	Σxy = 0.98	Σx ² = 0.55

$$\beta = \frac{N \cdot \Sigma xy - \Sigma x \cdot \Sigma y}{N \cdot \Sigma x^2 - (\Sigma x)^2}$$

$$\beta = \frac{5(0.98) - 1.5 \times 3}{5(0.55) - (1.5)^2} = \frac{4.9 - 4.5}{2.75 - 2.25} = \frac{0.4}{0.5}$$

$$\beta = 0.8$$

9. A company manages a stock fund consisting of fund with the following market values and betas.

Stock	Market Value	Beta
P	1,00,000	1.10
Q	50,000	1.20
R	75,000	0.75
S	1,25,000	0.80
T	1,50,000	1.40
	5,00,000	

Calculate beta of the portfolio

Sol :

(Imp.)

Determination of Beta of the Portfolio

Stock	Market Value (₹)	Weight (w_i)	r_i (%)	$w_i \times r_i (\beta_i)$
P	1,00,000	$\frac{1,00,000}{5,00,000} = 0.20$	1.10	0.2200
Q	50,000	$\frac{50,000}{5,00,000} = 0.10$	1.20	0.1200
R	75,000	$\frac{75,000}{5,00,000} = 0.15$	0.75	0.1125
S	1,25,000	$\frac{1,25,000}{5,00,000} = 0.25$	0.80	0.2000
T	1,50,000	$\frac{1,50,000}{5,00,000} = 0.30$	1.40	0.4200
	5,00,000			1.0725

$$\begin{aligned} \therefore \beta_p &= \sum_{i=1}^N N_i \beta_i \\ &= 1.0725 \times 5 \\ &= 5.3625 \end{aligned}$$

10. The annual rates of return for the XYZ Corporation and the market are given below.

Year	Return of XYZ	Return on Market
19×1	-5%	-6%
19×2	14	16
19×3	10	12
19×4	12	14
19×5	17	20

Determine the beta coefficient for XYZ Corporation

Sol :

Year	r_j	r_m	r_m^2	$r_j r_m$
19×1	-5	-6	36	30
19×2	14	16	256	224
19×3	10	12	144	120
19×4	12	14	196	168
19×5	17	20	400	340
	48	56	1032	882

$$\beta = \frac{N \cdot \Sigma xy - \Sigma x \cdot \Sigma y}{N \cdot \Sigma x^2 - (\Sigma x)^2}$$

$$= \frac{[(5)(882)] - [(56)(48)]}{[(5)(1032)] - [(56)^2]}$$

$$= \frac{4410 - 2688}{5160 - 3136} = \frac{1722}{2024}$$

$$= 0.85$$

∴ The beta coefficient for XYZ corporation is 0.85

- 11. Calculate the Beta of securities P and Q from the following information (returns as Percentages).**

Year	Return on S and P 500	Return on P	Return on Q
1	25	30	35
2	10	32	30
3	11	10	20
4	8	6	15
5	5	8	20

Sol :

Year	Return on S and P 500	Return on P	Return on Q
1	25	30	35
2	10	32	30
3	11	10	20
4	8	6	15
5	5	8	20

Determination of Beta (β) for Security P

Year	r_j	r_m	r_m^2	$r_j r_m$
1	30	25	625	750
2	32	10	100	320
3	10	11	121	110
4	6	8	64	48
5	8	5	25	40
	$\Sigma r_j = 86$	$\Sigma r_m = 59$	$\Sigma r_m^2 = 935$	$\Sigma r_j r_m = 1,268$

$$\beta = \frac{N \cdot \Sigma xy - \Sigma x \cdot \Sigma y}{N \cdot \Sigma x^2 - (\Sigma x)^2} = \frac{[(5)(1,268)] - [59 \times 86]}{[(5)(935)] - [(59)^2]}$$

$$= \frac{6340 - 5074}{4675 - 3481} = \frac{1266}{1194}$$

$$\beta_p = 1.06$$

∴ The beta value for security P is, 1.06

Determination of Beta (β) for Security Q

Year	r_j	r_m	r_m^2	$r_j r_m$
1	35	25	625	875
2	30	10	100	300
3	20	11	121	220
4	15	8	64	120
5	20	5	25	100
	$\Sigma r_j = 120$	$\Sigma r_m = 59$	$\Sigma r_m^2 = 935$	$\Sigma r_j r_m = 1,615$

$$\beta = \frac{N \cdot \Sigma xy - \Sigma x \cdot \Sigma y}{N \cdot \Sigma x^2 - (\Sigma x)^2}$$

$$= \frac{[(5)(1,615)] - [59 \times 120]}{[(5)(935)] - [(59)^2]}$$

$$= \frac{(8,075) - (7,080)}{4675 - 3481}$$

$$= \frac{995}{1194} = 0.83$$

∴ The beta value for security Q = 0.83

12. Determine beta of Bajaj Auto from the following data

Date	Bajaj Auto	NSE Index
November 1	597.50	904.95
November 6	570.80	845.75
November 8	582.95	874.25
November 9	559.60	849.10
November 12	545.10	835.80
November 13	519.15	816.75
November 14	860.70	843.55
November 15	560.95	835.55
November 16	597.40	839.50

Also compute alpha of the security.

Sol :

FormulaThe calculation of r_m and r_i ,

$$\frac{\text{Current price} - \text{Previous price}}{\text{Previous price}} \times 100$$

Determination of Beta and Alpha of Bajaj Auto

Date	$r_i(\%)$	$r_m(\%)$	r_m^2	$r_i r_m$
	-	-	-	-
November 1	-	-	-	-
November 6	- 4.47	- 6.54	42.77	29.23
November 8	2.13	3.37	11.36	7.18
November 9	- 4.01	- 2.88	8.29	11.55
November 12	- 2.59	- 1.57	2.46	4.07
November 13	- 4.76	- 2.25	5.20	10.85
November 14	8.00	3.28	10.76	26.24
November 15	0.04	- 0.95	0.90	- 0.04
November 16	6.50	0.47	0.22	3.06
	$\Sigma r_i = 0.84$	$\Sigma r_m = -7.1$	$\Sigma r_m^2 = 81.96$	$\Sigma r_i r_m = 92.14$

$$\bar{r}_i = \frac{0.84}{9} = 0.09$$

$$\bar{r}_m = \frac{-7.1}{9} = -0.79$$

$$\beta = \frac{N \cdot \Sigma xy - \Sigma x \cdot \Sigma y}{N \cdot \Sigma x^2 - (\Sigma x)^2}$$

$$\beta = \frac{9(92.14) - (-7.1)(0.84)}{9(81.96) - (-7.1)^2}$$

$$\beta = \frac{9(92.14) - (-5.964)}{737.64 - 50.41}$$

$$\beta = \frac{829.26 - (-5.964)}{737.64 - 50.41}$$

$$= \frac{835.22}{687.23}$$

$$\therefore \beta = 1.22$$

$$\begin{aligned} \alpha &= \bar{r}_i - \beta \bar{r}_m \\ &= 0.09 - [1.22(-0.79)] \end{aligned}$$

$$= 0.09 + 0.9638$$

$$\therefore \alpha = 1.05$$

13. Following data gives the return on market index and individual scrip's return for a particular period.

Year	Market Return	Scrip's Return
1	0.60	0.50
2	0.80	0.60
3	0.50	0.30
4	0.40	0.70
5	0.30	0.40

- (i) What is the Beta value of the individual scrip ?
 (ii) If Market Return is 0.04, what would be the scrip return ?

Sol :

Formula

The calculation of r_m & r_p

$$\frac{\text{Current price} - \text{Previous price}}{\text{Previous price}} \times 100$$

r_i	r_m	r_m^2	$r_i r_m$
20	33.33	1110.8889	666.6
50	-37.5	1406.25	+ 1875
7.14	-20	400	- 1142.8
42.85	-25	625	1071.25
5.71	-49.17	3542.134	324.55

$$\bar{r}_i = \frac{-15.71}{5} = -3.142$$

$$\bar{r}_m = \frac{-49.17}{5} = -9.834$$

$$\text{Beta } (\beta) = \frac{[N\sum r_i r_m] - [\sum r_m][\sum r_i]}{[N\sum r_m^2] - [\sum r_m]^2} = \frac{5(324.55) - (-15.71)(-49.17)}{5(3542.139) - (-49.17)^2}$$

$$= \frac{1622.75 - 772.46}{17.710.69 - 2417.68}$$

$$= \frac{850.29}{15293.01}$$

$$= 0.05$$

14. A stock costing Rs 50, pays no dividend. The possible prices of the stock at the end of year and their probabilities are given below.

End of year price	Probability
60	0.1
65	0.2
70	0.4
75	0.2
80	0.1

- (a) Find out the expected return.
 (b) Find out the standard deviation of the expectation returns

Sol : (Imp.)

r_i	P	Expected Return	$(r_i - \Sigma r_i)^2$	$P(r_i - \Sigma r_i)^2$
(60 – 50) 10	0.1	1	100	10
(65 – 50) 15	0.2	3	25	5
(70 – 50) 20	0.4	8	0	0
(75 – 50) 25	0.2	5	25	5
(80 – 50) 30	0.1	3	100	10
		$\Sigma r_i = 20$		30

$$\sigma = P(r_i - \Sigma r_i)^2 = 30 = 5.48$$

- (a) Expected Return = Rs 20
 (b) $\sigma = 5.48$.

15. A stock costing Rs. 100 pays no dividend. The possible prices that the stock might sell for at the end of the year and the probability of each are:

End of year price (Rs.) :	90	95	100	110	115
Probability :	0.1	0.2	0.4	0.2	0.1

- (a) What is expected return
 (b) What is the standard deviation of the expected return

Sol :

(May-19)

r_i	P	Expected Return	$(r_i - \Sigma r_i)^2$	$P(r_i - \Sigma r_i)^2$
$(90 - 100) - 10$	0.1	-1	132.25	13.23
$(95 - 100) - 5$	0.2	-1	42.25	8.45
$(100 - 100) 0$	0.4	0	2.25	0.9
$(110 - 100) 10$	0.2	2	72.25	14.45
$(115 - 100) 15$	0.1	1.5	182.25	18.23
		$\Sigma r_i = 1.5$		55.26

$$\sigma = \sqrt{P(r_i - \Sigma r_i)^2} = \sqrt{55.26} = 7.43$$

(a) Expected Return = Rs 1.5

(b) $\sigma = 7.43$

Exercises Problems

1. Following data give the market return and the Sun company scrips return for a particular period.

Index return (r_m)	0.5	0.6	0.5	0.6	0.8	0.5	0.8	0.4	0.7
Script return (r_i)	0.3	0.6	0.4	0.5	0.6	0.3	0.7	0.5	0.6

What are the beta values of the Sun company scrip ?

[Ans : $\beta = 0.75$]

2. Stocks L and M have yielded the following returns for the past two years.

Years	Return (%)	
	L	M
1995	12	14
1996	18	12

- (a) What is the expected return on portfolio made upto 60% of L and 40% of M ?
 (b) Find out the standard deviation of each stock
 (c) What is the covariance and coefficient of correlation between stock L and M ?
 (d) What is the portfolio risk?

[Ans : (a) = 14.2%

(b) = 1

(c) = (-3), (-1)

(d) = 1.4]

3. A portfolio consists of securities X, Y and Z. The following information is available,

Return (%)

$$r_x = 15, r_y = 17, r_z = 20$$

Risk (%)

$$\sigma_x = 18, \sigma_y = 20, \sigma_z = 25$$

Correlations :

$$\rho_{xy} = 0.5, \rho_{yz} = 0.2, \rho_{xz} = -0.5$$

Investment proportion : EQUAL

Calculate portfolio return and risk

[Ans : Portfolio Return = 17.34%

Portfolio Risk = 12.60%]

4. Mr.X has a portfolio of four common stocks with the following market values and returns.

Stock	Market values (₹)	Returns (%)
P	10,000	10
Q	20,000	14
R	30,000	16
S	40,000	15
	1,00,000	

Calculate return of the portfolio

[Ans : 14.60%]

5. Mr.X has a portfolio of four common stocks with the following market values and returns.

Year	k_j	k_m	P
1	20	10	0.10
2	50	30	0.10
3	-50	-30	0.10
4	10	-10	0.10
5	90	10	0.10
6	20	10	0.10
7	-10	10	0.10
8	20	10	0.10
9	20	-10	0.10
10	50	30	0.10

What is the significance of β value

[Ans : $\beta = 1.31$]

Short Question and Answers

1. Interest Rate Risk .

Ans :

There are four types of movements in prices of stocks in the market. These may be termed as

- (a) long-term,
- (b) cyclical (bull and bear markets),
- (c) intermediate or within the cycle, and
- (d) short-term.

The prices of securities will rise or fall, depending on the change in interest rates. The longer the maturity period of a security the higher the yield on an investment and lower the fluctuations in prices. Shorter-term interest rates fluctuate at a great speed and are now more volatile than long-term securities but their changes have a similar effect, price. Traditionally, investors could attempt to forecast cyclical swings in interest rates and prices merely by forecasting ups and downs in general business activity. However, in India a combination of factors have produced a situation where it is difficult to accurately find out the changes in interest rates. Some of the factors that are responsible for complicated analysis are the differences between actual and expected inflation, monetary policies and industrial recessions in the economy. If interest rates could be calculated and forecasted accurately, investors would buy and sell securities with confidence.

Interest rates continuously change for bonds, preferred stock and equity stock. Interest rate risk can be reduced by diversifying in various kinds of securities and also buying securities of different maturity dates.

Interest rate risk can also be reduced by analyzing the different kinds of securities available for investment. A government bond or a bond issued by the financial institution like IDBI is a risk-less bond. Even if government bonds give a slightly lower rate of interest, in the long run they are better for a conservative investor because he is assured of his return. Moreover, government bonds are made more attractive by additional advantages of tax benefits. Therefore, one way to avert interest rate risk would be to purchase government securities. Then the price of securities in the private corporate sector will fall and interest rates will increase. This process will create a chain reaction in the securities. This is rarely possible in the real world situation.

2. Systematic Risk.

Ans :

Systematic risk is the risk that affects a security or portfolio due to its relationship with the market. Systematic risk is also called market risk, aggregate risk, or un-diversifiable risk.

Systematic risk can't be reduced through portfolio diversification. Since this risk is associated with overall market sentiment rather than performance of few stocks. Systematic risk results from forces which can't be controlled by a firm. Systematic risk is measured with beta coefficient. It represents the security's volatility relative to that of an average security.

3. Holding Period Return*Ans :*

The Holding Period Return (HPR) is the total return on an asset or investment portfolio over the period for which the asset or portfolio has been held. The holding period return can be realized if the asset or portfolio has been held, or expected if an investor only anticipates the purchase of the asset.



The holding period return is a fundamental metric in investment management. The measure provides a comprehensive view of the financial performance of an asset or investment because it considers the appreciation of the investment, as well as the income distributions related to the asset (e.g., dividends paid). The HPR can be used to compare the performance of different investments or assets. In addition, this metric is used to identify the appropriate tax rate.

Holding period return (also called holding period yield) is the total return earned on an investment over its whole holding period expressed as a percentage of the initial value of the investment. It is calculated as the sum capital gain and income divided by the opening value of investment.

There are two sources of return for any investment in bond, stock, real estate, etc.:

(a) capital gain and (b) income. The capital gain or loss results from the movement in value of investment from the date of purchase to the date on which the holding period return is calculated. The income results from coupon payments, dividends, rents, etc.

Holding period return is not a standardized measure of return. A given holding period return might be for a single day or a 5-year period and we will not know. Comparison between holding period return on different investments directly is not appropriate.

4. Non - Systematic Risk .*Ans :*

Variability in a security total return not related to overall market variability is called unsystematic (non - market) risk. This risk is unique to a particular security and is associated with such factors as business, and financial risk, as well as liquidity risk. Although all securities tend to have some non-systematic risk, it is generally connected with common stocks.

5. What is Return ?*Ans :*

Investors wish to earn a return on their money. In investments it is critical to distinguish between an expected return (the anticipated return for some future period) and a realized return (the actual return over some past period). Investors invest for the future for the returns they expect to earn but when the investing period is over, they are left with their realized returns. Investors may earn more or less than what

they expected to earn when they initiated the investment. Investors must always consider the risk involved in investing.

Return can be defined as the actual income from a project as well as appreciation in the value of capital. Thus there are two components in return the basic component or the periodic cash flows from the investment, either in the form of interest or dividends; and the change in the price of the asset, commonly called as the capital gain or loss.

The term yield is often used in connection to return, which refers to the income component in relation to some price for the asset. The total return of an asset for the holding period relates to all the cash flows received by an investor during any designated time period to the amount of money invested in the asset.

6. Components of Return.

Ans :

The return of an investment consists of two components :

(a) Current Return

The first component that often comes to mind when one is thinking about return is the periodic cash flow (income), such as dividend or interest, generated by the investment. Current return is measured as the periodic income in relation to the beginning price of the investment.

(b) Capital Return

The second component of return is reflected in the price change called the capital return - it is simply the price appreciation (or depreciation) divided by the beginning price of the asset. For assets like equity stocks, the capital return predominates.

Thus, the total return for any security (or for that matter any asset) is defined as:

$$\text{Total return} = \text{Current return} + \text{Capital return}$$

The current return can be zero or positive, whereas the capital return can be negative, zero, or positive.

7. Arithmetic Average

Ans :

Arithmetic average return is the return on investment calculated by simply adding the returns for all sub-periods and then dividing it by total number of periods. It overstates the true return and is only appropriate for shorter time periods.

The arithmetic average return is always higher than the other average return measure called the geometric average return. The arithmetic return ignores the compounding effect and order of returns and it is misleading when the investment returns are volatile.

Formula

Arithmetic average return can be calculated using the following formula :

$$\text{Arithmetic Average Return} = \frac{R_1 + R_2 + \dots + R_n}{n}$$

8. What is Geometric Average and Rupee (Money) Weighted Average Return.

Ans :

A) Geometric Average

Geometric Average Return is the average rate of return on an investment which is held for multiple periods such that any income is compounded. In other words, the geometric average return incorporates the compounding nature of an investment.

Geometric average return is a better measure of average return than the arithmetic average return because it accounts for the order of return and the associated compounding effect. Arithmetic average return overstates an investment's performance where the returns are volatile. When we need to compare returns over an extended period, geometric average return is the preferred measure.

Geometric Average Return Formula

$$\text{GAR} = \sqrt[n]{(1+r_1) \times (1+r_2) \times \dots \times (1+r_n)} - 1$$

Formula :**Geometric Average Return**

$$= ((1 + R_1) \times (1 + R_2) \times \dots \times (1 + R_n))^{(1/n)} - 1$$

Where,

R_1 , R_2 and R_n are sub - period returns for period 1, 2 and n , respectively, and

N is the total number of sub-periods for which return is available.

B) Rupee (Money) Weighted Average Return

Money-weighted return is the internal rate of return of an investment. It is the rate of return that equates the initial value of an investment with future cash flows such as dividends and sale proceeds. Over multiple periods, it inherently over weights and under weights individual period returns with high and low starting investment value.

9. What is Risk?

Ans :

Risk is uncertainty that a future event with a favourable outcome will occur. In other words, risk is the probability that an investment will not perform as expected and the investor will lose the money invested in the project. All business decisions and opportunities are based on this concept that future performance and returns are uncertain and rely on many uncontrollable variables.

Risk is inherent in any investment. Risk may relate to loss of capital, delay in repayment of capital, non-payment of return or variability of returns. The risk of an investment is determined by the investments, maturity period, repayment capacity, nature of return commitment and so on.

Risk implies future uncertainty about deviation from expected earnings or expected outcome. Risk measures the uncertainty that an investor is willing to take to realize a gain from an investment.

Definitions of Risk

- (a) According to Emmett J. Vaughan** "Risk is condition in which there is a possibility of an adverse deviation from a desired outcome that is expected or hoped so far."

- (b) According to Irving Fisher** "Risk may be defined as combinations of hazards measured by probability."

Risk is defined as the uncertainty about the actual return that will earn on an investment. When one invest, expects some particular return, but there is a risk that he ends up with a different return when he terminates the investment.

The more the difference between the expected and the actual the more is the risk. It is not sensible to talk about the investment returns without talking about the risk, because the investment decision involves a trade-off between the two, return and risk.

$$\begin{aligned} \text{Total Risk} &= \text{General Risk} + \text{Specific Risk} \\ &= \text{Market Risk} + \text{Issuer Risk} \\ &= \text{Systematic Risk} + \text{Non Systematic Risk} \end{aligned}$$

10. Sources of Risk.

Ans :

(a) Interest Rate Risk

The variability in a security return resulting from changes in the level of interest rates is referred to as interest rate risk. Such changes generally affect securities inversely, that is other things being equal, security price move inversely to interest rate.

(b) Market Risk

The variability in returns resulting from fluctuations in overall market that is, the aggregate stock market is referred to as market risk. Market risk includes a wide range of factors exogenous to securities themselves, like recession, wars, structural changes in the economy, and changes in consumer preference. The risk of going down with the market movement is known as market risk.

(c) Purchasing Power Risk (or) Inflation Risk

Inflation in the economy also influences the risk inherent in investment. It may also result in the return from investment not matching

the rate of increase in general price level (inflation). The change in the inflation rate also changes the consumption pattern and hence investment return carries an additional risk. This risk is related to interest rate risk, since interest rate generally rises as inflation increases, because lenders demand additional inflation premium to compensate for the loss of purchasing power.

11. Purchasing Power Risk.

Ans :

Purchasing power risk is also known as inflation risk. This risk arises out of change in the prices of goods and services and technically it covers both inflation and deflation periods. During the last two decades, it has been seen that inflationary have been continuously affecting the Indian economy. Therefore, in India purchasing power risk is associated with inflation and rising prices in the economy.

Inflation in India has been either 'cost push' or 'demand pull'. This type of inflation has been seen when costs of production rise or when there is a demand for products but there is no smooth supply and consequently prices rise. In India, the cost push inflation has led to enormous problems as the rise in prices of raw materials has greatly increased costs of production. The increase in costs of production has shown a rising trend in 'wholesale price index' and 'consumer price index'. A rising trend in price index reflects a price spiral in the economy.

The consumers who wanted to forego their present consumption level to purchase commodities in future found that they could not adjust their budgets because they were faced with rising prices and shortage of funds for allocation according to their preferences.

12. Business Risk.

Ans :

Every corporate organization has its own objectives and goals and aims at a particular gross profit and operating income-had also expects to provide a certain level of dividend income to its shareholders. It also hopes to plough back some

profits. Once it identifies its operating level of earnings, the degree of variation from this operating level would measure business risk. For example, if operating income is expected to be 15% in a year, business risk will be low if the operating income varies between 14 and 16%. If the operating income is as low, as 10% or as high as 18% it would be said that the business risk is high.

Business risk is also associated with risks directly affecting the internal environment of the firm and those of circumstances beyond its control. The former is classified as internal business risk and the latter as external business risk. Within these two broad categories of risk, the firm operates.

Internal business risk may be represented by a firm's limiting environment within which it conducts its business. It is the framework within which the firm conducts its business drawing its efficiency largely from the constraints within which it functions. Internal business risk will be of differing degrees in each firm and the degree to which each firm achieves its goals and attainment level is reflected in its operating efficiency.

Each firm also has to deal with specific external factors. Many a times, these factors are beyond the control of a firm as they are responsive to specific operating environmental conditions. External risks of the business are due to many factors. Some of the factors that can be summarized are:

- **Business cycle**
Some industries move automatically with the business cycle, others move counter-cyclically;
- **Demographic factors**
Such as geographical distribution of population by age, group and race;
- **Political policies**
Change in decisions, toppling of State Governments to some extent affect the working of an industry;

13. Financial Risk.

Ans :

Financial risk in a company is associated with the method through which it plans its financial structure. If the capital structure of a company tends

to make earnings unstable, the company may fail financially. How a company raises funds to finance its needs and growth will have an impact on its future earnings and consequently on the stability of earnings. Debt financing provides a low cost source of funds to a company, at the same time providing financial leverage for the common stock holders. As long as the earnings of the company are higher than the cost of borrowed funds, the earnings per share of common stock are increased. Unfortunately, large amounts of debt financing also increases the variability of the returns of the common stock holders and thus increases their risk. It is found that variation in returns for shareholders in levered firms (borrowed funds company) is higher than in unlevered firms. The variance in returns is the financial risk.

Financial risk and business risk are somewhat related. While business risk is concerned with an analysis of the income statement between revenues and earnings before interest and taxes (EBIT), financial risk can be stated as being between Earnings Before Interest and Taxes (EBIT) and Earnings Before Taxes (EBT). If the revenue, cost and EBIT of a firm is variable, it implies that there is business risk and in this situation borrowed funds can magnify risk especially in unprofitable years. Debt in modest amounts is desirable. Excessive debt is to be avoided as the long range profitability of the company can be depressed. The company should constantly test its debt to fixed assets, debts to net worth, debts to working capital and give coverage of interest charges and preferred dividends by net income after taxes. These methods will check imbalance in the firm's financing method and help to reduce risk.

14. Risk Premium.

Ans :

A risk premium is the minimum difference a person requires to be willing to take an uncertain bet, between the expected value of the bet and the certain value that he is indifferent to.

The certainty equivalent is the guaranteed payoff at which a person is "indifferent" between accepting the guaranteed payoff and a higher but uncertain payoff. (It is the amount of the higher payout minus the risk premium.)

The risk premium can be the expected rate of return above the risk-free interest rate. When measuring risk, a common sense approach is to compare the risk-free return on T-bills and the very risky return on other investments. The difference between these two returns can be interpreted as a measure of the excess return on the average risky asset. This excess return is known as the risk premium.

➤ Debt

In terms of bonds it usually refers to the credit spread (the difference between the bond interest rate and the risk-free rate).

➤ Equity

In the equity market it is the returns of a company stock, a group of company stock, or all stock market company stock, minus the risk-free rate. The return from equity is the dividend yield and capital gains. The risk premium for equities is also called the equity premium.

15. Risk Aversion

Ans :

Risk aversion is a concept in economics, finance, and psychology related to the behaviour of consumers and investors under uncertainty. Risk aversion is the reluctance of a person to accept a bargain with an uncertain payoff rather than another bargain with a more certain, but possibly lower, expected payoff. For example, a risk-averse investor might choose to put his or her money into a bank account with a low but guaranteed interest rate, rather than into a stock that is likely to have high returns, but also has a chance of becoming worthless.

The inverse of a person's risk aversion is sometimes called their risk tolerance.

Choose the Correct Answer

1. The approach which completely depends on emotions or mood of the investor rather than the reason behind investment in stock is [b]
(a) Fundamental approach (b) Psychological approach
(c) Academic approach (d) None of the above
2. The changes that are brought in the returns of securities due to variability in the interest rates is, [a]
(a) Interest rate risk (b) Market risk
(c) Inflation risk (d) Business risk
3. Systematic risk is also referred as, [c]
(a) Market risk (b) Non-diversifiable
(c) Both (a) or (b) (d) Specific risk
4. An extra return over the risk free rate expected by investors to repay them for holding an asset with a certain degree of change is, [b]
(a) Risk aversion (b) Risk premium
(c) Risk return trade off (d) None of the above
5. The industries which are move volatile and do well when economy prospers and during depression they suffer a set back are considered as, [b]
(a) Growth (b) Cyclical
(c) Defensive (d) Vertical
6. _____ may be described as the range of movement from the expected level of return [a]
(a) Volatility (b) Standard deviation
(c) Beta (d) None of the above
7. _____ is the risk associated with the particular secondary market in which a security trades. [d]
(a) Industry risk (b) Country risk
(c) Exchange rate risk (d) Liquidity risk
8. The variability in a security's return resulting from changes in the level of interest rates is referred to as [a]
(a) Interest rate risk (b) Market rate
(c) Purchasing power risk (d) None of the above

9. The _____ is used to measure average returns [a]
- (a) Arithmetic mean (b) Harmonic mean
- (c) Geometric mean (d) None
10. Estimated yield = _____ [d]
- (a) $\frac{\text{Expected cash dividend}}{\text{Current share price}}$ (b) $\frac{\text{Dividend received}}{\text{Price of share in the beginning period}}$
- (c) $\frac{\text{Avg annual return}}{\text{Avg investment}}$ (d) None

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Fill in the blanks

1. The measurement of returns from the historical data are referred as _____.
2. _____ is the ratio of per share expected dividends, to the current market price of the share.
3. _____ measures the total from an investment during a given time period in which the asset is held by the investor.
4. _____ is the actual amount of return earned on a security investment over a period of time.
5. _____ is needed to describe accurately the 'true' average rate of return, over multiple periods.
6. Variability in a security's total returns that is directly associated with overall movements in the general market or economy is called _____.
7. The variability in a security's returns resulting from fluctuation in the aggregate market is known as _____.
8. _____ is a concept in economics, finance, and psychology related to the behaviour of consumers and investors under uncertainty.
9. Systematic risk is also known as _____.
10. The risk of doing business in a particular industry or environment is called _____.
11. _____ can be defined as the actual income from a project as well as appreciation in the value of capital.
12. Total return = Current return + _____.
13. Holding period return = _____.
14. _____ is uncertainty that a future event with a favourable outcome will occur.
15. The variability in returns resulting from fluctuations in overall market that is, the aggregate stock market is referred to as _____ risk.
16. International risk can include _____ and _____.
17. _____ is defined as the difference between the value of the largest item and the smallest item of the distribution.

ANSWERS

1. Ex-post return
2. Dividend yield
3. Holding period return
4. Realized return
5. Geometric mean

6. Systematic risk
7. Market risk
8. Risk Aversion
9. Beta
10. Business risk
11. Return
12. Capital return
13.
$$\frac{\text{Price gain (or) loss during the holding period} + \text{Coupon interest rate, if any}}{\text{Price at the beginning of the holding period}}$$
14. Risk
15. market
16. country risk, exchange rate risk
17. Range

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UNIT IV

PORTFOLIO ANALYSIS

Portfolio Analysis: Meaning – Traditional Vs Modern Portfolio Analysis – Return on Portfolio – Risk on Portfolio – Diversification of Investments – Reduction of Portfolio Risk through Diversification – Security Returns Perfectly Positively Correlated – Security Returns Perfectly Negatively Correlated – Security Returns Uncorrelated (Including Problems)

Markowitz Model: Assumptions – Parameters – Effect of Combining Two Securities – Interactive Risk Through Covariance – Coefficient of Correlation – Change in Portfolio Proportions – Concept of Dominance – Limitations of Markowitz Model (Including Problems).

4.1 PORTFOLIO ANALYSIS

4.1.1 Meaning

Q1. What do you mean by Portfolio?
(OR)

Define portfolio.

Ans : (Dec.-20)

Portfolio is a set of financial assets owned by an investor that may include bonds, stocks, currencies, cash and cash equivalents, and commodities. Further, it refers to a group of investments that an investor uses in order to earn a profit while making sure that capital or assets are preserved.

A portfolio is a grouping of financial assets such as stocks, bonds, commodities, currencies and cash equivalents, as well as their fund counterparts, including mutual, exchange-traded and closed funds. A portfolio can also consist of non-publicly tradable securities, like real estate, art, and private investments. Money market accounts make full use of this concept to function properly.

Portfolios are held directly by investors and/or managed by financial professionals and money managers. Investors should construct an investment portfolio in accordance with their risk tolerance and investing objectives. Investors can also have multiple portfolios for various purposes. It all depends on one's objectives as an investor.

The portfolio is a collection of investment instruments like shares, mutual funds, bonds, FDs and other cash equivalents, etc. Portfolio management is the art of selecting the right investment tools in the right proportion to generate optimum returns with a balance of risk from the investment made.

In other words, a portfolio is a group of assets. The portfolio gives an opportunity to diversify risk. Diversification of risk does not mean that there will be an elimination of risk. With every asset, there is an attachment of two types of risk; diversifiable/unique/unexplained/unsystematic risk and undiversifiable/market risk/explained/systematic risk. Even an optimum portfolio cannot eliminate market risk, but can only reduce or eliminate the diversifiable risk. As soon as risk reduces, the variability of return reduces.

A portfolio can be defined as different investments tools namely stocks, shares, mutual funds, bonds, cash all combined together depending specifically on the investor's income, budget, risk appetite and the holding period. It is formed in such a way that it stabilizes the risk of non-performance of different pools of investments.

Q2. What are the components of a portfolio?

Ans :

The assets that are included in a portfolio are called asset classes. The investor or financial advisor needs to make sure that there is a good mix of assets in order that balance is maintained, which helps foster capital growth with limited or controlled risk. A portfolio may contain the following:

1. Stocks

Stocks are the most common component of an investment portfolio. They refer to a portion or share of a company. It means that the owner of the stocks is a part owner of the company. The size of the ownership stake depends on the number of shares he owns.

Stocks are a source of income because as a company makes profits, it shares a portion of the profits through dividends to its stockholders. Also, as shares are bought, they can also be sold at a higher price, depending on the performance of the company.

2. Bonds

When an investor buys bonds, he is loaning money to the bond issuer, such as the government, a company, or an agency. A bond comes with a maturity date, which means the date the principal amount used to buy the bond is to be returned with interest. Compared to stocks, bonds don't pose as much risk, but offer lower potential rewards.

3. Alternative Investments

Alternative investments can also be included in an investment portfolio. They may be assets whose value can grow and multiply, such as gold, oil, and real estate. Alternative investments are commonly less widely traded than traditional investments such as stocks and bonds.

Q3. What are the different types of portfolios?

Ans :

Portfolios come in various types, according to their strategies for investment.

1. Growth portfolio

From the name itself, a growth portfolio's aim is to promote growth by taking greater risks, including investing in growing industries. Portfolios focused on growth investments typically offer both higher potential rewards and concurrent higher potential risk. Growth investing often involves investments in younger companies that have more potential for growth as compared to larger, well-established firms.

2. Income portfolio

Generally speaking, an income portfolio is more focused on securing regular income

from investments as opposed to focusing on potential capital gains. An example is buying stocks based on the stock's dividends rather than on a history of share price appreciation.

3. Value portfolio

For value portfolios, an investor takes advantage of buying cheap assets by valuation. They are especially useful during difficult economic times when many businesses and investments struggle to survive and stay afloat. Investors, then, search for companies with profit potential but that are currently priced below what analysis deems their fair market value to be. In short, value investing focuses on finding bargains in the market.

Q4. What are the steps involved in building of an investment?

(OR)

What are the steps are there in construction of investment portfolio?

Ans :

To create a good investment portfolio, an investor or financial manager should take note of the following steps.

1. Determine the objective of the portfolio

Investors should answer the question of what the portfolio is for to get direction on what investments are to be taken.

2. Minimize investment turnover

Some investors like to be continually buying and then selling stocks within a very short period of time. They need to remember that this increases transaction costs. Also, some investments simply take time before they finally pay off.

3. Don't spend too much on an asset

The higher the price for acquiring an asset, the higher the break-even point to meet. So, the lower the price of the asset, the higher the possible profits.

4. Never rely on a single investment

As the old adage goes, "Don't put all your eggs in one basket." The key to a successful portfolio is diversifying investments. When some investments are in decline, others may be on the rise. Holding a broad range of investments helps to lower the overall risk for an investor.

Q5. What is portfolio Management?

Ans :

Portfolio is a collection of different securities and assets. Portfolio is a basket of investments held by an individual investor, foreign institutional investor/or a corporate body. Portfolio management involves a proper investment decision with regard to what to buy and sell. It involves proper money management. Portfolio management reduces risk and increases return. Portfolio management renders the services to satisfy the asset preference of investors.

Professional portfolio manager is a highly talented, skilled research staff member. After the success of mutual funds in portfolio management, a number of brokers and investment consultants who are professionally qualified have become portfolio managers. Portfolio manager is an important person, who holds the financial future dreams of millions of investors.

Portfolio management is a process encompassing many activities of investment in assets and securities. Portfolio management is a dynamic and flexible concept. The individual securities have their own risk and return characteristics.

Q6. What are the objectives of Portfolio Management?

Ans :

The objective of portfolio management is to maximize the return and minimize the risk. These objectives are categorized into :

- (a) Basic Objectives
- (b) Subsidiary Objectives

(a) Basic Objectives

The basic objectives of portfolio management are :

- i) Maximize Yield
- ii) Minimize Risk

The aim of the portfolio management is to enhance the return for the level of risk to the portfolio owner. A desired return for a given risk level is being stated. The level of risk of a portfolio depends upon many factors. The investor who invests the savings in the financial asset requires a regular return and capital appreciation.

(b) Subsidiary Objectives

The subsidiary objectives of investment is expecting a reasonable income, appreciation of capital at the time of disposal, safety of the investment and liquidity etc. the objective of investor is to get a reasonable return on his investment without any risk. Regularity of income at a consistent rate is desired by any investor. It may not always be possible to get such income. Every investor has to dispose his holding after a stipulated period of time for a capital appreciation. Capital appreciation of a financial asset is highly influenced by a strong brand image, market leadership, guaranteed sales, financial strength, and large pool of reserves, retained earnings and accumulated profits of the company. The idea of growth stock is the right issue in the right industry, bought at the right time. The safety of the investment is desired by a portfolio management. The portfolio objective is to take the precautionary measures about the safety of the principal even by diversification.

Q7. Explain the scope of Portfolio Management.

Ans :

Portfolio management is a continuous process. It is a dynamic activity. The following are the basic

Operations of a Portfolio Management

- Monitoring the performance of portfolio by incorporating the latest market conditions.
- Identification of the investor's objectives, constraints and preferences.
- Making an evaluation of portfolio income.
- Making revision in the portfolio.
- Implementation of the strategies in tune with investment objectives.

Q8. Explain the nature and objectives of Portfolio Management.

Ans :

Nature of Portfolio Management

Portfolio management is a dynamic concept. A portfolio is not merely a collection of unrelated assets. Portfolio management involves a regular, scientific analysis, right judgement and timely action. The main objective of portfolio management is to help the investors with the better professional services as :

- Portfolio should be constructed according to the investor's objectives.
- Constructed portfolio shall be reviewed from time to time in view of latest market developments.
- The portfolio evaluation should be done according to risk and return.

Objectives of Portfolio Management

- It is aptly put as the customization of the investment needs catered by the portfolio managers as per the defined requirements.
- Portfolio management helps in providing the best options for investments to individuals as per the defined criteria of their income, budget, age, holding period and risk taking capacity.
- This is mainly done by the Portfolio managers who understand the investors' financial needs and accordingly suggest the investment policy that would have maximum returns with minimum risks involved. Aptly put, it is risk reduction through diversification.

- This is the method preferred by those who believe in having liquidity in investments so that one can get the money back when needed.
- Some of the portfolio management schemes are also done for tax saving purposes.
- It helps the investors maintain the purchasing power.

Q9. What is portfolio analysis?

Ans :

Portfolio analysis deals with the determination of future risk and return in holding various combinations of individual securities. The portfolio expected returns the weighted average of the expected returns, from each of the individual securities, with weights representing the proportionate share of the security in the total investment.

The portfolio expected variance, in contrast, can be something less than a weighted average of security variances. Therefore, an investor can sometimes reduce risk by adding another security with greater individual risk compared to any other individual security in the portfolio.

Q10. What are the significance of Portfolio Analysis?

Ans :

(May-15)

The following are the significance of Portfolio Analysis :

1. Stable Current Return

Once investment safety is guaranteed, the portfolio should yield a steady current income. The current returns should at least match the opportunity cost of the funds of the investor. What we are referring to here current income by way of interest of dividends, not capital gains.

2. Marketability

A good portfolio consists of investment, which can be marketed without difficulty. If there are too many unlisted or inactive shares in your portfolio, you will face problems in encasing them, and switching from one

investment to another. It is desirable to invest in companies listed on major stock exchanges, which are actively traded.

3. Tax Planning

Since taxation is an important variable in total planning, a good portfolio should enable its owner to enjoy a favorable tax shelter. The portfolio should be developed considering not only income tax, but capital gains tax, and gift tax, as well. What a good portfolio aims at is tax planning, not tax evasion or tax avoidance.

4. Appreciation in the value of capital

A good portfolio should appreciate in value in order to protect the investor from any erosion in purchasing power due to inflation. In other words, a balanced portfolio must consist of certain investments, which tend to appreciate in real value after adjusting for inflation.

5. Liquidity

The portfolio should ensure that there are enough funds available at short notice to take care of the investor's liquidity requirements. It is desirable to keep a line of credit from a bank for use in case it becomes necessary to participate in right issues, or for any other personal needs.

6. Safety of the investment

The first important objective of a portfolio, no matter who owns it, is to ensure that the investment is absolutely safe. Other considerations like income, growth, etc., only come into the picture after the safety of your investment is ensured.

4.2 TRADITIONAL Vs MODERN PORTFOLIO ANALYSIS

Q11. What are the differences between Traditional and Modern Portfolio Analysis?

(OR)

Distinguish between traditional and Modern Portfolio Analysis.

Ans :

(Dec.-20, May-17)

- Traditional portfolio analysis has been of a very subjective nature but it has provided success to some persons who have financed their investments by making analysis of individual securities through evaluation of return and risk conditions in each security.
- In fact, the investor has been able to get the maximum return at the minimum risk or achieve his return position at that indifferent curve which states his risk condition.
- The normal method of calculating the return on an individual security was by finding out the amount of dividends that have been given by the company, the price earning ratios, the common holding period and by an estimation of the market value of the shares.
- The modern portfolio theory believes in the maximization of return through a combination of securities.
- The modern portfolio theory discusses the relationship between different securities and then draws inter-relationships of risks between them. It is not necessary to achieve success only by trying to get all securities of minimum risk.
- The theory states that by combining a security of low risk with another security of high risk, success can be achieved by an investor in making a choice of investment outlets.
- Traditional theory was based on the fact that risk could be measured on each individual security through the process of finding out the standard deviation and that security should be chosen where the deviation was the lowest.
- Greater variability and higher deviations showed more risk than those securities which had lower variation. The modern theory is of the view that by diversification risk can be reduced.
- Diversification can be made by the investor either by having a large number of shares of companies in different regions, in different industries, or those producing different types of product lines.

- Diversification is important but the modern theory states that there cannot be only diversification to achieve the maximum return.
- The securities have to be evaluated and thus diversified to some limited extent within which the maximum achievement can be sought by the investor.
- The theory of diversification was based on the research work by Harry Markowitz. Markowitz is of the view that a portfolio should be analyzed depending upon.
 - (a) The attitude of the investor towards risk and return; and
 - (b) The quantification of risk.
- Thus, traditional theory and modern theory are both framed under the constraints of risk and return, the former analyzing individual securities and the latter believing in the perspective of combination of securities.

Q12. Explain the significance aspects in Traditional and Modern Portfolio.

Ans : (May-16)

Traditional portfolio analysis has been of a very subjective nature but it has provided success to some persons who have made their investments by making analysis of individual securities through evaluation of return and risk conditions in each security.

In fact, the investor has been able to get the maximum return at the minimum risk or achieve his return position at that indifferent curve which states his risk condition. The normal method of calculating the return on an individual security was by finding out the amount of dividends that have been given by the company, the price earnings ratios, the common holding period and by an estimation of the market value of the shares.

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4.3 RETURN ON PORTFOLIO

Q13. What is Portfolio Return?

(OR)

**What do you mean by Portfolio Return
Explain with example?**

Ans :

Each security in a portfolio contributes returns in the proportion of its investment in security. The expected return of a portfolio should depend on the expected return of each of the security contained in the portfolio. It is also important that amounts invested in each security should be logically decided.

Example

Assume that the investor puts his funds in five securities, the holding period return of the portfolio is described in the table given below :

Security	Proportion of funds invested in each security	Expected Return of Holding Period	Contribution of Each Security to Return
A	20	10%	2.00
B	25	20%	5.00
C	20	10%	2.00
D	15	15%	2.25
E	20	15%	3.00
Weights	100	Weighted Return	14.25%

The above table describes the simple calculation of the weighted average return of a portfolio for the holding period.

4.4 RISK ON PORTFOLIO

Q14. What is Risk on Portfolio?

Ans :

Risk on a portfolio is not the same as risk on individual securities. The risk on the portfolio is reflected in the variability of returns from zero to infinity. The expected return from portfolio depends on the probability of the returns and their weighted contribution to the risk of the portfolio.

Portfolio risk is a chance that the combination of assets or units, within the investments that you own, fail to meet financial objectives. Each investment within a portfolio carries its own risk, with higher potential return typically meaning higher risk.

The variance of return and standard deviation of return are alternative statistical measures that are used for measuring risk in investment. These statistics measure the extent to which returns are expected to vary around an average over time. The variance or standard deviation of an individual security measures the riskiness of a security in absolute sense. For calculating the risk of a portfolio of securities, the riskiness of each security within the context of the overall portfolio has to be considered. This depends on their interactive risk, i.e how the returns of a security move with the returns of other securities in the portfolio and contribute to the overall risk of the portfolio. Covariance is the statistical measure that indicates the interactive risk of a security relative to others in a portfolio of securities. The way security returns vary with each other affects the overall risk of the portfolio.

The covariance between two securities X and Y may be calculated as under:

$$\text{Cov}_{xy} = \frac{\sum_{i=1}^N [R_x - \bar{R}_x][R_y - \bar{R}_y]}{N}$$

Where

Cov_{xy} = Covariance between x and y.

R_y = Return of security y.

$\bar{R}_y$ = Expected or mean return of security y.

R_x = Return of security x.

$\bar{R}_x$ = Expected or mean return of security x.

N = Number of observations.

Example

Year	1	2	3	4
R _x	10	12	16	18
R _y	17	13	10	8

Sol:**Calculation of Covariance**

Year	R _x	Deviation	R _y	Deviation	Product of deviations
		$R_x - \bar{R}_x$		$R_y - \bar{R}_y$	$(R_x - \bar{R}_x)(R_y - \bar{R}_y)$
1	10	-4	17	5	-20
2	12	-2	13	1	-2
3	16	2	10	-2	-4
4	18	4	8	-4	-16
	$\bar{R}_x = \frac{56}{4} = 14$		$\bar{R}_y = \frac{48}{4} = 12$		

$$\text{Cov}_{xy} = \frac{\sum_{i=1}^N [R_x - \bar{R}_x][R_y - \bar{R}_y]}{N} = \frac{-42}{4} = -10.5$$

The variance (or risk) of a portfolio is not simply a weighted average of the variances of the individual securities in the portfolio. The relationship between each security in the portfolio with every other security as measured by the covariance of return has also to be considered. The variance of a portfolio with only two securities in it may be calculated as under:

$$\sigma_p^2 = x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + 2x_1 x_2 (r_{12} \sigma_1 \sigma_2)$$

Where

 σ_p^2 = Portfolio variance. x_1 = Proportion of funds invested in the first security. x_2 = Proportion of funds invested in the second security. σ_1^2 = Variance of first security. σ_2^2 = Variance of second security. σ_1 = Standard deviation of first security. σ_2 = Standard deviation of second security. γ_{12} = Correlation coefficient between the returns of first and second security.

4.5 DIVERSIFICATION OF INVESTMENTS**Q15. What do you mean by Diversification of Investment?**

Ans :

(May-17, May-16, Imp.)

Efforts to spread and minimize risk take the form of diversification. The more traditional forms of diversification have concentrated upon holding a large number of security types (stock, bonds) across industry lines (utility, mining, manufacturing groups). The reasons are related to inherent differences in bond and equity contracts, coupled with the notion that an investment in firms in dissimilar industries would most likely do better than in firms within the same industry. Holding one stock each from mining, utility, and manufacturing groups is superior to holding three mining stocks. Carried to its extreme, this approach leads to the conclusion that the best diversification comes through holding large number of securities across industries.

Most people would agree that a portfolio consisting of two stocks is probably less risky than one holding either stock alone. However, experts disagree with regard to the right kind of diversification and the right reason.

According to Harry Markowitz, investor attitudes toward portfolios depends exclusively upon Expected return and risk, and Quantification of risk.

According to Harry Markowitz, investor attitudes toward portfolios depends exclusively upon :

- Expected Return on Portfolio
- Expected Risk on Portfolio
- Reduction of portfolio Risk through diversification
- Security returns perfectly positively correlated
- Security returns perfectly negatively correlated
- Security returns uncorrelated

4.5.1 Diversification of Risk**Q16. What is diversification of Risk?**

Ans :

Risk in a portfolio can be reduced by a proper diversification into a number of scrips. The efforts to spread and minimize portfolio risk take the form of diversification. Most investors prefer to held several assets rather than putting all their eggs into one basket, with the hope that if one goes bad, the other will provide some protection from extreme loss.

Traditional belief is that diversification means "Not putting all eggs in one basket." Diversification helps in the reduction of unsystematic risk and promotes the optimization of returns for a given level of risks in portfolio management.

Diversification of one's holding is intended to reduce risk in an economy in which every asset's returns are subject to some degree of uncertainty. Most investors hope that if they hold several assets, even if one goes bad, the others will provide some protection from an extreme loss. Efforts to spread and minimize risk take the form of different types of securities across industry lines.



Fig.: Diversification - "Not putting all eggs in one basket."

The companies chosen should not be too many or too few but of an optimum size as to be efficiently manageable. The economics of scale in management apply to this analysis. Higher the risk, higher is the return in normal process.

Q17. What are the methods of diversification of portfolio?

Ans :

Methods of Diversification

Different methods of diversification are :

- (a) Random Diversification
- (b) Optimum Number of Companies
- (c) Adequate Diversification
- (d) Markowitz Diversification

(a) Random Diversification

Randomness is a statistical technique which involves placing of companies in any order and picking them in random manner. The probability of choosing wrong companies will come down due to randomness and the probability of reducing risk will be more. However, diversification at random does not bring the expected return results.

(b) Optimum Number of Companies

The investor should try to find the optimum number of companies in which to invest the money. If the number of companies is too small, risk cannot be reduced adequately and if the number of companies is too large, there will be diseconomies of scale. More supervision and monitoring will be required and analysis will be more difficult, which will increase the risk again.

(c) Adequate Diversification

An intelligent investor has to choose not only the optimum number of securities but the right kind of securities also. Even if there is a large number of a company, the risk may not be reduced adequately if the companies are positively correlated with each other and the market.

(d) Markowitz Diversification

Markowitz theory is also based on diversification. According to this theory, the effect of one security purchase over the effects of the other security purchase is taken into consideration and then the results are evaluated.

Q18. What are the reasons for portfolio diversification?

Ans : (May-15, Imp.)

1. Reducing risk

One of the key reasons for expanding your investment portfolio is to reduce your financial risk. As mentioned earlier, if you have only one investment, you can fall into serious trouble if the asset faces any kind of slowdown or roadblock. While one may argue there are several government schemes that have no risks attached – PPF, NSCs, RBI bonds – the interest earned on these assets are significantly low and thus affect your overall returns. Investors should also increase their appetite for risk gradually if they want to clock more returns on investments. For those who think that they can increase their wealth significantly through safe investments, it is nothing more than a myth as the real challenge in increasing your wealth is to manage your risks strategically.

2. Gaining Experience

Once you start expanding your portfolio, you are initially faced with many hurdles but once you start exploring, you start learning about the various assets. For instance, the stock market has a lot to offer but you need to learn the basics or take a professional's help to identify ideal investment opportunities. The real challenge here is not to select the strongest performing stock but one which is growing. But you usually get a hang of these points once you start exploring more about such assets. Likewise, in any other form of investment, you need to expand your knowledge and with time, you will be able to find the perfect mix of investments to meet your financial goals.

3. Make More Money

With a diversified portfolio, individuals can expect their earnings to shoot up as all the assets fall under different categories and it is almost impossible for all of them to perform badly at one time. Hence, you can be rest assured that if one of your asset slumps, another one will help you maintain the balance. If you have a large set of investments, there are chances that one weak asset will not even impact your total investment growth. Therefore, it can be concluded that more investments will, on most occasions, generate more wealth.

Discipline

Once you get a hang of managing all your investments, you develop of a sense of discipline and duty. With all the investments in mind, individuals tend to start saving more instead of spending it. It is a common practice among all able investors to follow a strict guideline and make it a practice to keep investing small amounts in buzzing stocks or any kind of scheme with lucrative rewards.

4.5.2 Reduction of Portfolio Risk through Diversification**Q19. What do you mean by Reduction of portfolio Risk through diversification?**

Ans :

The process of combining securities in a portfolio is known as diversification. The aim of diversification is to reduce total risk without sacrificing portfolio return.

Diversification is the practice of spreading the investments around so that the exposure to any one type of asset is limited. This practice is designed to help reduce the volatility of the portfolio over time.

One way to balance risk and reward in the investment portfolio is to diversify the assets. This strategy has much complex iteration, but at its root is the simple idea of spreading the portfolio across several asset classes. Diversification can help mitigate the risk and volatility in the portfolio, potentially reducing the number and severity of stomach-churning ups and downs. Remember, diversification does not ensure a profit or guarantee against loss.

4.6 SECURITY RETURNS PERFECTLY POSITIVELY CORRELATED

Q20. Write a notes on Security Returns Perfectly Positively Correlated.

Ans : (Imp.)

Security' returns perfectly positively correlated

When security returns are perfectly positively correlated the correlation coefficient between the two securities will be +1. The returns of the two securities then move up or down together.

The portfolio variance is calculated as under

$$\sigma_p^2 = x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + 2x_1 x_2 (r_{12} \sigma_1 \sigma_2)$$

Since $r_{12} = 1$, this variance may be rewritten as:

$$\sigma_p^2 = x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + 2x_1 x_2 (r_{12} \sigma_1 \sigma_2)$$

The right hand side of the equation has the same form as the expansion of the identity $(a + b)^2$. namely $a^2 + 2ab + b^2$. Hence, it may be reduced as

The standard deviation then becomes

$$\sigma_p = (x_1 \sigma_1 + x_2 \sigma_2)^2$$

This is simply the weighted average of the standard deviations of the individual securities.

Taking the same example that we considered earlier for calculating portfolio variance, we shall calculate the portfolio standard deviation when correlation coefficients is +1.

Standard deviation of security P = 50

Standard deviation of security Q = 30

Proportion of investment in P = 0.4

Proportion of investment in Q = 0.6

Correlation coefficient = +1.0

Portfolio standard deviation may be calculated as:

$$\begin{aligned} \sigma_p &= (x_1 \sigma_1 + x_2 \sigma_2)^2 \\ &= (0.4) (50) + (0.6) (30) \\ &= 38 \end{aligned}$$

Being the weighted average of the standard deviations of individual securities, the portfolio standard deviation will lie between the standard deviations of the two individual securities. It will vary between 50 and 30 as the proportion of investment in each security changes.

Example

If the proportion of investment in P and Q are 0.75 and 0.25 respectively, portfolio standard deviation becomes:

$$\sigma_p = (0.75) (50) + (0.25) (30) = 45$$

Thus, when the security returns are perfectly positively correlated, diversification provides only risk averaging and no risk reduction because the portfolio risk cannot be reduced below the individual security risk. Hence, diversification is not a productive activity when security returns are perfectly positively correlated.

4.7 SECURITY RETURNS PERFECTLY NEGATIVELY CORRELATED

Q21. Write a note on Security Returns Perfectly Negatively Correlated.

Ans :

Security returns perfectly negatively correlated

When security returns are perfectly negatively correlated, the correlation coefficient between them becomes -1. The two returns always move in exactly opposite directions.

The portfolio variance may be calculated as:

$$\sigma_p^2 = x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + 2x_1 x_2 r_{12} \sigma_1 \sigma_2$$

Since $r_{12} = -1$ this may be rewritten as:

$$\sigma_p^2 = x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 - 2x_1 x_2 r_{12} \sigma_1 \sigma_2$$

The right hand side of the equation has the same form as the expansion of the identity $(a - b)^2$, namely $a^2 - 2ab + b^2$. Hence, it may be reduced as:

$$\sigma_p = (x_1\sigma_2 - x_2\sigma_1)^2$$

The standard deviation then becomes:

$$\sigma_p = x_1\sigma_2 - x_2\sigma_1$$

For the illustrative portfolio considered above, we can calculate the portfolio standard deviation when the correlation coefficient is -1.

$$\sigma_p = (0.4)(50) - (0.6)(30) = 2$$

The portfolio risk is very low. It may even be reduced to zero.

$$\sigma_p = (0.375)(50) - (0.625)(30) = 0$$

Example

If the proportion of investment in P and Q are 0.375 and 0.625 respectively, portfolio standard deviation becomes:

Here, although the portfolio contains two risky assets, the portfolio has no risk at all. Thus, the portfolio may become entirely riskfree when security returns are perfectly negatively correlated. Hence, diversification becomes a highly productive activity when securities are perfectly negatively correlated, because portfolio risk can be considerably reduced and sometimes even eliminated. But, in reality, it is rare to find securities that are perfectly negatively correlated.

4.8 SECURITY RETURNS UNCORRELATED

Q22. What is Security Returns Uncorrelated?

Ans :

Security Returns Uncorrelated

When the returns of two securities are entirely uncorrelated, the correlation coefficient would be zero.

The formula for portfolio variance is:

$$\sigma_p^2 = x_1^2\sigma_1^2 + x_2^2\sigma_2^2 - 2x_1x_2r_{12}\sigma_1\sigma_2$$

Since $r_{12} = 0$, the last term in the equation becomes zero; the formula may be rewritten as:

$$\sigma_p = x_1^2\sigma_1^2 + x_2^2\sigma_2^2$$

The standard deviation then becomes :

$$\sigma_p \sqrt{= x_1^2\sigma_1^2 + x_2^2\sigma_2^2}$$

For the illustrative portfolio considered above the standard deviation can be calculated when the correlation coefficient is zero.

$$\begin{aligned}\sigma_p &= (0.4)^2(50)^2 + (0.6)^2(30)^2 \\ &= \sqrt{400 + 325} \\ &= 26.91\end{aligned}$$

The portfolio standard deviation is less than the standard deviations of individual securities in the portfolio. Thus, when security returns are uncorrelated, diversification reduces risk and is a productive activity.

We may now tabulate the portfolio standard deviations of our illustrative portfolio having two securities P and Q. For different values of correlation of coefficients between them. The proportion of investments in P and Q are 0.4 and 0.6 respectively. The individual standard deviations of P and Q are 50 and 30 respectively.

Portfolio Standard Deviations

Correlation coefficients	Portfolio standard deviations
1.0	38.00
0.6	34.00
0.0	26.91
-0.6	17.09
-1.0	2.00

From the above analysis we may conclude that diversification reduces risk in all cases except when the security returns are perfectly positively correlated. As correlation coefficient declines from +1 to -1, the portfolio standard deviation also declines. But the risk reduction is greater when the security returns are negatively correlated.

4.8.1 Concepts Portfolios with more than two Securities

Q23. Explain the concepts Portfolios with more than two securities.

Ans :

The benefits from diversification increase as more and more securities with less than perfectly positively correlated returns are included in the portfolio. As the number of securities added to a portfolio increases, the standard deviation of the portfolio becomes smaller and smaller. Hence, an investor can make the portfolio risk arbitrarily small by including a large number of securities with negative or zero correlation in the portfolio. But, in reality, no securities show negative or even zero correlation. Typically, securities show some positive correlation, that is above zero but less than the perfectly positive value (+1).

As a result, diversification results in some reduction in total portfolio risk but not in complete elimination of risk. Moreover, the effects of diversification are exhausted fairly rapidly i.e. most of the reduction in portfolio standard deviation occurs by the time the portfolio size increases to 25 or 30 securities. Adding securities beyond this size brings about only marginal reduction in portfolio standard deviation. Adding securities to a portfolio reduces risk because securities are not perfectly positively correlated.

But the effects of diversification are exhausted rapidly because the securities are still positively correlated to each other though not perfectly correlated. Had they been negatively correlated, the portfolio risk would have continued to decline as portfolio size increased. Thus, in practice, the benefits of diversification are limited.

The total risk of an individual security comprises two components; the market related risk called systematic risk and the unique risk of that particular security called unsystematic risk. By combining securities into a portfolio the unsystematic risk specific to different securities is cancelled out. Consequently, the risk of the portfolio as a whole is reduced as the size of the portfolio increases.

Ultimately when the size of the portfolio reaches a certain limit, it will contain only the systematic risk of securities included in the portfolio. The systematic risk, however, cannot be eliminated. Thus, a fairly large portfolio has only systematic risk and has relatively little unsystematic risk. That is why there is no gain in adding securities to a portfolio beyond a certain portfolio size.

4.8.2 Risk-return Calculations Of Portfolios With More Than Two Securities

Q24. How Risk – Return is calculated with more than two securities?

Ans :

The expected return of a portfolio is the weighted average of the returns of individual securities in the portfolio, the weights being the proportion of investment in each security. The formula for calculation of expected portfolio return is the same for a portfolio with two securities and for portfolios with more than two securities. The formula is:

$$\bar{r}_p = \sum_{i=1}^n x_i \bar{r}_i$$

Where

$\bar{r}_p$ = Expected return of portfolio

$\bar{r}_i$ = Expected return of each security

x_i = Proportion of funds invested in each security

n = Number of securities in the portfolio

Example

Security	Returns (per cent)	Proportion of investment
A	12	0.2
B	17	0.3
C	23	0.1
D	20	0.4

The expected return of this portfolio may be calculated using the formula:

$$\bar{r}_p = \sum_{i=1}^n x_i \bar{r}_i$$

$$\begin{aligned} \bar{r}_p &= (0.2)(12) + (0.3)(17) + (0.1)(23) \\ &\quad + (0.4)(20) \\ &= 2.4 + 5.1 + 2.3 + 8 \\ &= 17.8 \text{ per cent} \end{aligned}$$

Q25. How variance of a portfolio with more than two Securities are calculated?**Ans :**

The formula for portfolio variance of a portfolio with more than two securities is as follows:

$$\sigma_p^2 = \sum_{i=1}^n \sum_{j=1}^n x_i x_j \sigma_{ij}$$

Where

σ_p^2 = Portfolio variance.

x_i = Proportion of funds invested in security i (the first of a pair of securities)

x_j = Proportion of funds invested in security j (the second of a pair of securities).

σ_{ij} = The covariance between the pair of securities i and j.

n = Total number of securities in the portfolio.

The double summation $\sum_{i=1}^n \sum_{j=1}^n$ indicates that n^2 number of values are to be summed up. These values are obtained by substituting the values of x_i , x_j and σ_{ij} for each possible pair of securities.

Q26. What are the Models of Portfolio Selections?**Ans :**

Determination and selection of a multi security portfolio is very complicated job because there are infinite number of combinations of various securities that can enter a portfolio. The securities available to an investor can be combined in any proportion and hence any number of portfolios can be built.

The identification and selection of an efficient portfolio is a complicated job. An investor must select a portfolio which will best suit his requirements, out of all those available to him.

Following two popular methods are used for portfolio selection.

- Markowitz Model
- Capital Asset Pricing Model

4.9 MARKOWITZ MODEL**Q27. What is markowitz portfolio model?****Ans :** (May-19, Imp.)

Dr. Harry M. Markowitz was the person who developed the first modern portfolio analysis model. Markowitz used mathematical programming and statistical analysis in order to arrange for the optimum allocation of assets within portfolio. He infused a high degree of sophistication into portfolio construction by developing a mean-variance model for the selection of portfolio.

Markowitz approach determines for the investors the efficient set of portfolio through three important variables. They are :

- Return
- Standard Deviation
- Coefficient of Correlation

According to Markowitz, the portfolio theory establishes a relationship between a portfolio's expected return and its level of risk as the criterion for selecting the optimum portfolio.

Thus two measures were suggested for evaluating the merits of a portfolio. They are :

- Expected return from the portfolio
- Level of risk exposure associated with the portfolio

The risk is the statistical notion of variation or standard deviation of return. The Markowitz theory is also based on diversification. It believes in asset correlation and in combining assets the risk can be lowered.

Markowitz model is called the "Full Covariance Model". Through this method the investor can find out the efficient set of portfolio by finding out the trade off between risk and return, between the limits of zero and infinity.

4.9.1 Assumptions**Q28. What are the assumptions of Markowitz model?****Ans :** (Imp.)

Markowitz theory of portfolio management is based on the following assumptions :

- (a) The markets are efficient and absorb all the information quickly and perfectly. So an investor can earn superior returns either by technical analysis or fundamental analysis. All the investors are in equal category in this regard.
- (b) Investors are risk averse. Before making any investments, all of them, have a common goal-avoidance of risk.
- (c) Investors are rational. They would like to earn the maximum rate of return with a given level of income or money.
- (d) Investors base their decisions solely on expected return and variance (or standard deviation) of returns only.
- (e) For a given risk level, investors prefer high returns to lower returns. Similarly, for a given level of expected return, they prefer less risk to more risk.
- (f) The investor can reduce the risk if he adds investments to his portfolio.
- (g) Investors consider each investment alternative as being represented by a probability distribution of expected returns over some holding period.

Q29. Explain the significance of Markowitz theory.

Ans : (May-19)

The significance of Markowitz portfolio theory can be understood from the following points,

1. In the world of uncertainties, the investors will not always get profit by possessing a single stock portfolio with an intention to earn good returns. Markowitz portfolio theory basically emphasizes upon the need for maximising the returns through a combination of either two or more securities, whose total variability is lower.
2. This theory primarily focuses upon the efficient portfolios selection, which are expected to yield the highest return for a given level of risk or lowest risk for a given level of return.
3. This model acts as a theoretical framework for analysing the risk and return and their relationships using various statistical tools.

4. Markowitz theory takes into account the variability of each security and covariance for their returns shows/ highlighted through their interrelationship.

4.9.2 Parameters

Q30. What are the parameters of Markowitz Diversification?

Ans :

Based on thorough and scientific research, Markowitz has set down his own guidelines for diversification. They are :

- (a) The investments have different types of risk characteristics. Some are systematic or market related risks and the others are unsystematic or company related risks.
- (b) His diversification involves a proper number of securities not too less nor too many.
- (c) The securities have no correlation or negative correlation.
- (d) Proper choice of the companies, securities or assets whose returns are not related and whose risks are mutually off setting to reduce the overall risk.

4.9.3 Effect of Combining two Securities

Q31. What are the effect of combining two securities explain with example?

Ans :

It is believed that holding two securities is less risky than having only one investment in a person's portfolio. When two stocks are taken on a portfolio and if they have negative correlation, then risk can be completely reduced, because the gain on one can offset the loss on the other. The effect of two securities can also be studied when one security is more risky when compared to the other security. The following example shows a return of 13%. A combination of A and E will produce superior results to an investor rather than if he was to purchase only Stock-A. If an investor constructs his portfolio in such a way that two-thirds of his stock consists of Stock-A and one-third of stock consists of Stock-B, the average return of the portfolio is the weighted average return of each security in the portfolio.

Example

Markowitz Two Security Analysis:

Particulars	Stock - A	Stock - B
Return %	7 or 11	13 or 5
Probability average	.4 each return	.4 each return
Expected Return %	7.2	7.20
Variance	4	16
Standard Deviation	2	4

Sol :

$$\text{Expected Return} = .4 \times 7 + .4 \times 11 = 7.2$$

$$\text{Expected} = .4 \times 13 + .4 \times 5 = 7.2$$

$$\text{Rate of Return on Portfolio} = 9$$

Formula

$$R_p = \sum_{i=1}^N X_i R_i$$

R_p = The expected return to portfolio

X_i = Proportion of total portfolio invested in security i

R_i = Expected return to security i

N = Total number of securities in portfolio

Therefore,

$$R_p = (2/3) (7.2) + (1/3) (7.2) = 7.2$$

The range of fluctuations in a portfolio will be calculated in the following manner, in the following situation:

- (a) When Stock 'A' in a given investment is taken at 2/3 proportion during prosperity,

$$R_p = (2/3) \times (7) + (1/3) \times (5) = 9.0.$$

- (b) When Stock 'A' in a given investment is taken at 2/3 proportion during depression,

$$R_p = (2/3) \times (7) + (1/3) \times (13) = 9.0. \text{ (Higher return than expected)}$$

Thus, by putting some part of the amount in stock which is riskier stock, i.e. 'B' the risk can be reduced rather than if the investor was to purchase only Stock 'A'. If an investor was to purchase only Stock 'A', his return would be according to his expectation an average of 7.2%, which becomes as low as 7% in depression periods and rises to 11% in boom periods. The standard deviation of this stock is as low as 2%. The investor will make a return of higher than 7.2% by combining two-thirds of Stock 'A' and one-third of Stock 'B'. Thus, the investor is able to achieve a return of 9% and bring the risk to the minimum level. Thus, the effect of holding two securities in a portfolio does reduce risk but research studies have shown that it is important to know what proportion of the stock should be brought by the investor in order to get a minimum risk, the portfolio returns can be achieved at the higher point by setting of one variation against another. The investor should be able to find out two investments in such a way that one

investment is giving a higher return whereas the other investment is not performing well even though one of the securities is more risky, and it will lead to a good combination. This is a difficult task because the investor will have to continue to find out two securities which are related to each other inversely like the example given for Stocks 'A' and 'B' But securities should also be correlated to each other in such a way that maximum returns can be achieved.

4.9.4 Interactive Risk Through Covariance

Q32. How to measure interactive risk through covariance?

Ans :

Apart from the measurement of securities through standard deviation and co-efficient of variation when two securities are combined, the investor should find out the co-variance of each security. Co-variance of the securities will help in finding out the inter-active risk. When the co-variance will be positive, then the rates of return of securities move together either upwards or downwards. Alternatively it can also be said that the interactive risk is positive. Secondly, co-variance will be zero on two investments if the rates of return are independent. Therefore, when two stocks are inversely related to each other, the co-variance will become negative. The following formula is given calculating co-variance.

$$\text{where, } \text{Cov}_{xy} = \frac{1}{N} R_x - \bar{R}_x, R_y - \bar{R}_y$$

Cov_{xy} = covariance between two securities x and y.

R_x = return on security 'x'

R_y = return on security 'y'

$\bar{R}_x$ = expected return on security 'x'

$\bar{R}_y$ = expected return on security 'y'

N = number of observations

Example

Calculate Co-variance

	Range of Return	Expected Return of Portfolio	Deviations
Stock 'A'	7	9.0	-.2
Stock 'B'	13	9.0	+ 4
Stock 'A'	11	9.0	+ 2
Stock 'B'	5	9.0	-4

$$\text{Sol : Cov} = \frac{1}{2} (7 - 9) (13 - 9) + (11 - 9) (5 - 9)$$

$$= \frac{1}{2} (-2) (4) + (2) (-4)$$

$$= \frac{1}{2} (-8) + (-8)$$

$$= \frac{1}{2} \times -16 = -8$$

$$= \frac{1}{2} (-2) (4) + (2) (-4)$$

In this example, the investment of stock A and B are taken at the same point of time to determine the variation of each stock from its expected value and the deviations are multiplied together. If each deviation is negative, their products will become positive. The co-variance will be an average of the positive values and the total values will be added. Alternatively, it can be said that when values of one variable will be higher and the value of the other variable will be small, then the resulting deviations will also show one positive and other negative. The co-variance will now turn to be negative. This is depicted in the above example.

4.9.5 Coefficient of Correlation

Q33. What is co-efficient of correlation?

Ans :

Coefficient of Correlation The coefficient of correlation is also designed to measure the relationship between two securities. It gives an indication of the variables being positively or negatively related to each other. This is represented by the following formula:

$$\rho_{xy} = \frac{\text{Cov}_{xy}}{\sigma_x \sigma_y}$$

ρ_{xy} = coefficient of correlation of x and y

Cov_{xy} = covariance between x and y

σ_x = standard deviation of x

σ_y = standard deviation of y

The coefficient of correlation indicates, as discussed above, the relationship between two securities and also determines the variation of security x and security y which helps in finding out the kind of proportion which can be combined and measured. It is measured by the standard deviation of two securities, namely x and y. The coefficient of correlation between the two securities is shown when it is + 1.0, which means that there is perfect positive correlation and if it shows – 1.0, it means that there is perfect negative correlation. If the coefficient correlation is zero, then it means that the return on securities is independent of one another. When the correlation is zero, an investor can expect deduction of risk by diversifying between two assets. When correlation coefficient is -1, the portfolio risk will be the minimum.

Markowitz has shown the effect of diversification by reading the risk of securities. According to him, the security with co-variance which is either negative or low amongst them, is the best manner to reduce risk. Markowitz has been able to show that securities which have less than positive correlation will reduce risk without, in any way, bringing the return down. According to his research study a low correlation level between securities in the portfolio will show less risk. According to him, investing in a large number of securities is not the right method of investment. It is the right kind of security which brings the maximum results. The following formula has been given by Harry Markowitz for a two security portfolio. The formula includes the standard deviation. It also includes variance and co-variance:

$$\sigma_p = \sqrt{X_i^2 \theta_i^2 + X_j^2 \theta_j^2 + 2X_i X_j (r_{xy} \theta_i \theta_j)}$$

θ_p^2 = variance of the portfolio

X_i and X_j = weights of securities i and j

r_{xy} = co-efficient of correlation i and j

$\theta_i \theta_j$ = standard deviation of times the security i and j

Example

The risk of portfolio is measured and when coefficient correlation are $-1, 1.5, 0, +1$ when $x = 1$, the risk is the lowest, risk would be nil if the proportion of investment in security X_i and X_j are changed so that standard becomes 0 and $x = -1$.

$$\begin{aligned}\text{When, } \theta_i &= 4 \\ \theta_j &= 7 \\ X_i &= 0.5 \\ X_j &= 0.5\end{aligned}$$

Sol :

$$\sigma_p = \sqrt{X_i^2 \theta_i^2 + X_j^2 \theta_j^2 + 2X_i X_j (r_x \theta_i \theta_j)}$$

1. When $r_x = -1$

$$\theta_p = \sqrt{(0.5)^2 (4)^2 + (0.5)^2 (7)^2 + (2)(0.5)(0.5)(-1)(4)(7)}$$

$$\theta_p = 1.5$$

2. When $r_x = -0.5$

$$\theta_p = \sqrt{(0.5)^2 (4)^2 + (0.5)^2 (7)^2 + (2)(0.5)(0.5)(-0.5)(4)(7)}$$

$$\theta_p = 3.041381$$

3. When $r_x = -0.0$

Then

$$\theta_p = \sqrt{(0.5)^2 (4)^2 + (0.5)^2 (7)^2 + (2)(0.5)(0.5)(-1)(4)(7)}$$

$$\theta_p = 4.03$$

4. When $r_x = +1.0$

Then

$$\theta_p = \sqrt{(0.5)^2 (4)^2 + (0.5)^2 (7)^2 + (2)(0.5)(0.5)(1)(4)(7)}$$

$$\theta_p = 5.5.$$

Q34. How to calculate risk return on Third Securities?

Ans :

Risk Return in a Third Security

The portfolio effect of two securities is also applied to three securities to find out the effect on the portfolio. It is done through the method of standard deviation of returns, correlation coefficient and the proportion in which security which is invested. The following is the formula. It is similar to the two security formulae.

$$R_p = \sum_{i=1}^N X_i R_i$$

The standard deviation of the portfolio determines the deviation of the returns and the correlation coefficient of the proportion of securities that are invested.

e_p^2 = portfolio variance (expected) $\sqrt{\frac{e^2}{p}}$ = portfolio standard deviation

X_i = proportion of portfolio which is invested in security i

X_j = proportion of portfolio which is invested in security j

r_{ij} = coefficient of correlation between i and j

i = standard deviation of i, N = Total number of securities

j = standard deviation of j.

4.9.6 Changes in Portfolio Proportions

Q35. What do you mean by change in portfolio proportions?

(OR)

How change in portfolio proportion will be happened?

Ans :

If the amount of proportion of funds, invested in different stocks is changed it will change the portfolio risk also. Thus, by changing the investment proportions in different securities, the portfolio risk can be brought down to zero. If advantages of diversification are to be availed of coefficient of correlation has to be taken into consideration.

The following points are to be considered:

1. The average risk of portfolio can be reduced if coefficients of correlation of the returns of stocks are less than 1.
2. If the coefficient is +1, the return moves along the straight line.
3. If the coefficient is -1, then, risk can be reduced to zero because the risk of one can be offset by that on the other.

4.10 CONCEPT OF DOMINANCE

Q36. Explain the concept of Dominance.

Ans :

(Imp.)

The concept of dominance explains the selection of a portfolio with least risk with returns being given :

- (i) If there are two or more companies with the same risk, then the investor should choose the one with the higher return.
- (ii) If there are two or more companies who enjoy the same return then the investor should choose the one with lower risk.
- (iii) The investor can minimise the risk by distributing his funds in different types of companies with varying risks and returns and having no correlation.

Thus, the investor has not only to make proper investment decision of what to buy and when to buy but has to have a proper investment policy through diversification and choice of a proper beta for the stocks selected so that the total risk of portfolio is minimised.

The Portfolio Manager has the opportunity to include risk-free assets in his Portfolio like a government bond or bank deposit. If he includes such risk free asset, he lowers the risk of the total Portfolio and moves from point V to point P by lowering the risk from 20% to 15% but by corresponding lowering of the expected return also.

4.11 LIMITATIONS OF MARKOWITZ MODEL

Q37. What are the limitations of Markowitz Model?

(OR)

What are the disadvantages of Markowitz Model?

(OR)

What are the drawbacks of Markowitz Model?

Ans : (Imp.)

- 1. Large number of input data required for calculations:** An investor must obtain estimates of return and variance of returns for all securities as also covariances of returns for each pair of securities included in the portfolio. If there are N securities in the portfolio, he would need N return estimates, N variance estimates and $N(N-1)/2$ covariance estimates, resulting in a total of $2N + [N(N-1)/2]$ estimates. For example, analysing a set of 200 securities would require 200 return estimates, 200 variance estimates and 19,900 covariance estimates, adding upto a total of 20,300 estimates. For a set of 500 securities, the estimates would be 1,25,750. Thus, the number of estimates required becomes large because covariances between each pair of securities have to be estimated.
- 2. Complexity of computations required:** The computations required are numerous and complex in nature. With a given set of securities infinite number of portfolios can be constructed. The expected returns and variances of returns for each possible portfolio have to be computed. The identification of

efficient portfolios requires the use of quadratic programming which is a complex procedure.

Because of the difficulties associated with the Markowitz model, it has found little use in practical applications of portfolio analysis. Much simplification is needed before the theory can be used for practical applications. Simplification is needed in the amount and type of input data required to perform portfolio analysis; simplification is also needed in the computational procedure used to select optimal portfolios.

The simplification is achieved through index models. There are essentially two types of index models:

➤ **Single index model :** The single index model is the simplest and the most widely used simplification and may be regarded as being at one extreme point of a continuum, with the Markowitz model at the other extreme point. The single index model provides a simplified method of representing the covariance relationships among the securities. This simplification has resulted in a substantial reduction in inputs required for portfolio analysis.

Using the expected portfolio returns and portfolio variances calculated with the single index model, the set of efficient portfolios is generated by means of the same quadratic programming routine as used in the Markowitz model

➤ **Multi-index model:** Multi-index models may be placed at the mid region of this continuum of portfolio analysis techniques. The single index model is in fact an oversimplification. It assumes that stocks move together only because of a common co-movement with the market. Many researchers have found that there are influences other than the market that cause stocks to move together.

Multi-index models attempt to identify and incorporate these non-market or extra-market factors that cause securities to move together also into the model. These extra-

market factors are a set of economic factors that account for common movement in stock prices beyond that accounted for by the market index itself. Fundamental economic variables such as inflation, real economic growth, interest rates, exchange rates etc. would have a significant impact in determining security returns and hence, their co-movement.

A multi-index model augments the single index model by incorporating these extra market factors as additional independent variables.

A multi-index model is an alternative to the single index model. However, it is more complex and requires more data estimates for its application. Both the single index model and the multi-index model have helped to make portfolio analysis more practical.

PROBLEMS

1. Two securities P and Q generate the following sets of expected returns, standard deviations and correlation coefficient :

P	Q
$\bar{r} = 15$ per cent	20 per cent
$\sigma = 50$ per cent	30 per cent

$$r_{pq} = 0.60$$

A portfolio is constructed with 40 per cent of funds invested in P and the remaining 60 per cent of funds in Q.

Sol :

The expected return of the portfolio is given by :

$$\begin{aligned}\bar{r}_p &= \sum_{i=1}^n x_i \bar{r}_i \\ &= (0.40 \times 15) + (0.60 \times 20) = 18 \text{ per cent}\end{aligned}$$

The variance of the portfolio is given by

$$\begin{aligned}\sigma_p^2 &= x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + 2x_1 x_2 (r_{12} \sigma_1 \sigma_2) \\ &= (0.40)^2 (50)^2 + (0.60)^2 (30)^2 + 2(0.40)(0.60)(-0.60)(50)(30) \\ &= 400 + 324 - 432 = 292\end{aligned}$$

The standard deviation of the portfolio is :

$$\sigma_2 = \sqrt{292} = 17.09 \text{ per cent.}$$

2. The data are as follows :

Year	Stock	Return
1	R	10
1	S	12
2	R	16
2	S	18

- (a) What is Expected Return on a portfolio made up of 40% R and 60% S?
 (b) What is the standard deviation of each stock?
 (c) What is the covariance? of R and S?
 (d) Determine coefficient of correlation of Stocks R and S.
 (e) What is the portfolio risk made up of 40% R and 60% S ?

Sol :

- (a) To find out Expected Return

$$40/100 \left(\frac{10+16}{2} \right) + 60/100 \left(\frac{12+18}{2} \right)$$

$$(0.4) (13) + (.6) (15)$$

$$5.2 + 9 = 14.2$$

(b) $x = \frac{26}{2} = 13$

$$\sqrt{\frac{\sum x^2}{n}} = \sqrt{\frac{(13)^2}{2}} = 9.1$$

$$R = 3$$

$$x = \frac{30}{2}$$

$$= 15$$

$$\sqrt{\frac{15^2}{2}} = \sqrt{\frac{225}{2}}$$

$$= 10.6$$

- (c) Covariance

	Return	Expected Return	Difference	Product
Stock R	10	14.2	- 4.2	9.24
Stock S	12	14.2	- 2.2	
Stock R	16	14.2	+ 1.8	6.84
Stock S	18	14.2	+ 3.8	

$$\text{Co - variance} = \frac{1}{2} (10 - 14.2) (12 - 14.2) + \frac{1}{2} (16 - 14.2) (18 - 14.2)$$

$$= \frac{1}{2} (-4.2) (- 2.2) + \frac{1}{2} (1.8) (3.8)$$

$$= \frac{1}{2} (9.24) + \frac{1}{2} (6.84)$$

$$= 4.62 + 3.42$$

$$= + 8.04$$

(d) Correlation

$$\begin{aligned}
 r_{xy} &= + 8.04 (3)(3) \\
 &= 8.04/9 \\
 &= 8.93.
 \end{aligned}$$

(e) Correlation co-efficient is positive to a high degree. The risk in such a portfolio is very high.

3. (a) What is the expected Return to a Portfolio composed of the following securities ?

Security	Expected Return %	Proportion %
1	10	20
2	15	20
3	20	60

(b) What would be the expected return if the proportion of each security in the portfolio were 25, 25, 50% respectively ?

Sol :

$$\begin{aligned}
 \text{(a)} \quad R &= R_1 X_1 + R_2 X_2 + R_3 X_3 \\
 &= 10(.20) + 15(.20) + 20(.60) \\
 &= 2.00 + 3.00 + 12.00 = 17\%
 \end{aligned}$$

$$\begin{aligned}
 \text{(b)} \quad R &= R_1 X_1 + R_2 X_2 + R_3 X_3 \\
 &= 10(.25) + 15(.25) + 20(.50) \\
 &= 2.50 + 3.75 + 10.00 \\
 &= 16.25\%.
 \end{aligned}$$

4. Stocks L and M have yielded the following returns for the past two years.

	Years	Return %
	L	M
1995	12	14
1996	18	12

- What is the expected return on portfolio made up of 60 per cent of L and 40 per cent of M ?
- Find out the standard deviation of each stock.
- What is the covariance and co-efficient of correlation between stock L and M ?
- What is the portfolio risk of a portfolio made up of 60 per cent of L and 40 per cent of M ?

Sol :

(Imp.)

a) Expected rate of return

$$= \frac{\sum R}{n}$$

$\sum R$ is the total of return n - number of observations

$$\text{Returns of stock (L)} = \frac{12+18}{2} = \frac{30}{2} = 15$$

$$\text{Stock M} = \frac{14+12}{2} = \frac{26}{2} = 13$$

$$\text{Portfolio return} = \sum_{i=1}^N X_i R_i$$

X_i being the proportion held by each security which includes 60% of L and 40% of M

$$= (0.6 \times 15) + (0.4 \times 13) = 9 + 5.2 = 14.2\%$$

b) Standard deviation of each stock

$$\begin{aligned}\sigma_L &= \sqrt{\frac{\sum (R_L - \bar{R}_L)^2}{N}} \\ &= \sqrt{\frac{(12-15)^2 + (18-15)^2}{2}} \\ &= \sqrt{\frac{(-3)^2 + (3)^2}{2}} \\ &= \sqrt{\frac{9+9}{2}} = \sqrt{\frac{18}{2}} = \sqrt{9} = 3.\end{aligned}$$

$$\sigma_L = 3$$

$$\begin{aligned}\sigma_m &= \sqrt{\frac{\sum (R_m - \bar{R}_m)^2}{N}} \\ &= \sqrt{\frac{(14-13)^2 + (12-13)^2}{2}} \\ &= \sqrt{\frac{(1)^2 + (-1)^2}{2}} = \sqrt{\frac{2}{2}} = \sqrt{1} = 1\end{aligned}$$

c) The co-variance between stock L and M

$$\begin{aligned}\text{Cov}_{LM} &= \frac{\sum (R_L - \bar{R}_L)(R_m - \bar{R}_m)}{N} \\ &= \frac{(-3) + (-3)}{2} = \frac{-6}{2} = -3\end{aligned}$$

Correlation co-efficient is

$$\begin{aligned}r &= \frac{\text{Covariance (L, M)}}{\sigma_L \sigma_m} \\ &= \frac{-3}{3 \times 1} = -1\end{aligned}$$

d) Portfolio risk

$$\begin{aligned}\sigma_p &= \sqrt{(X_1)^2(\sigma_1)^2 + (X_2)^2(\sigma_2)^2 + 2X_1X_2(r_{12}\sigma_1\sigma_2)} \\ \sigma_p &= \sqrt{\sigma_p^2} \\ \sigma_p &= \sqrt{(.6)^2 \times 9 + (.4)^2 \times 1 + 2 \times .6 \times .4 \times (3 \times 1 \times -1)} \\ &= \sqrt{3.24 + 0.16 + (-1.44)} = \sqrt{\sigma_p^2} = \sqrt{1.96} = 1.4.\end{aligned}$$

5. The following parameters apply to stocks Y and Z.

	Stock Y	Stock Z
Expected return	20	30
Expected variance	16	25
Covariance YZ	20	

Is there any advantage to holding a combination of Y and Z?

Sol :

There is no advantage to holding a combination Y and Z, as risk cannot be reduced because they are perfectly positively correlated.

$$\begin{aligned}r &= \frac{\text{Covariance}_{yz}}{\sigma_y \sigma_z} \\ \sigma_y &= \sqrt{\text{Variance (y)}} = \sqrt{16} = 4 \\ \sigma_z &= \sqrt{\text{Variance (z)}} = \sqrt{25} = 5 \\ r &= \frac{20}{4 \times 5} = \frac{20}{20} = 1\end{aligned}$$

6. The expected rates of return and the possibilities of their occurrence for Alpha company and Beta company scrips are given below.

Probability of Occurrence	Return on Alpha's Scrip	Return on Beta's Scrip
0.05	- 2.0	- 3.0
0.20	9.0	6.0
0.50	12.0	11.0
0.20	15.0	14.0
0.05	26.0	19.0

- (a) Find out the expected rates of return for Alpha and Beta scrips.
 (b) If an investor invests equally in both the scrips what would be the return.
 (c) If the proportion is changed to 25% and 75% and then to 75% and 25%, what would be the expected rates of return.

Sol :

(a) $\bar{R} = \sum_{i=1}^N R_i P_i$

Return on Alpha's scrip

$$\begin{aligned}
 &= R_1 (P_1) + R_2 (P_2) + R_3 (P_3) + R_4 (P_4) + R_5 (P_5) \\
 &= - 2.0 (0.05) + 9.0 (0.20) + 12 (0.50) + 15 (0.2) + 26 (0.05) \\
 &= - 0.1 + 1.8 + 6 + 3 + 1.3 = 12\%
 \end{aligned}$$

Return on Beta's scrip

$$\begin{aligned}
 &= - 3.0 (0.05) + 6 (0.2) + 11 (0.5) + 14 (0.2) + 19 (0.05) \\
 &= - 0.15 + 1.2 + 5.5 + 2.8 + 0.95 = 10.3\%
 \end{aligned}$$

- (b) If an investor invests equally, then

$$\bar{R}_p = \sum_{i=1}^N R_i P_i$$

$$R_p = 0.5 \times 12 + 0.5 \times 10.3 \Rightarrow R_p = 6 + 5.15 = 11.15$$

- (c) If 75% is put into Alpha and 25% into Beta,

$$\begin{aligned}
 R_p &= 0.75 \times 12 + 0.25 \times 10.3 \\
 &= 9 + 2.575 \\
 &= 11.575
 \end{aligned}$$

If 25% goes into the Alpha security and 75% into Beta,

$$\begin{aligned}
 R_p &= 0.25 \times 12 + 0.75 \times 10.3 \\
 &= 3 + 7.725 \\
 &= 10.725
 \end{aligned}$$

7. Two assets A and B, have the following risk and return characteristics:

$$R_a = 22 \quad R_b = 20$$

$$\sigma_a = 15 \quad \sigma_b = 18$$

$$r_{ab} = -1$$

Determine the minimum risk portfolio for A and B.

Sol :

$$X_a = \frac{\sigma_b}{\sigma_a + \sigma_b} = \frac{18}{15 + 18} = \frac{18}{33}$$

$$= 0.545 = 54.5\%$$

$$X_b = 1 - X_a$$

$$X_b = 1 - 0.545 = 0.455 = 45.5\%.$$

8. (a) Calculate risk from the coefficient of correlation given below with proportion of .50 and .50 for XY.

(b) What would be the least risky combination if the correlation of the returns of the two securities is

i) -1.0

ii) 0,

iii) 0.8,

iv) 1.0

Security Nos.	Expected Return (%)	Standard deviation
1	5	2
2	15	8

Sol :

(a) Calculating correlation of proportion 50% of X and 50% of Y

$$5(.50) + 15(.50)$$

$$2.50 + 7.50 = 10.00 \quad (\text{or}) \quad \text{Return} = 10\%$$

(b) Calculation of correlation

(i) When $r = -1$

$$\sigma_p = \sqrt{(X_1)^2(\sigma_1)^2 + (X_2)^2(\sigma_2)^2 + 2X_1X_2(r_{12}\sigma_1\sigma_2)}$$

$$\sigma_p = \sqrt{(0.5)^2(2)^2 + (0.5)^2(8)^2 + (2)(0.5)(0.5)(-1)(2)(8)}$$

$$= \sqrt{(.25)(4) + (.25)(64) + (2)(.25)(-16)}$$

$$= \sqrt{10 + 16.0 - 8} = \sqrt{1.0 + 16 - 8} = \sqrt{17 - 8} = \sqrt{9}$$

$$\sigma_p = 3.$$

(ii) When $r = 0$

$$\sigma_p = \sqrt{(X_1)^2(\sigma_1)^2 + (X_2)^2(\sigma_2)^2 + 2X_1X_2(r_{12}\sigma_1\sigma_2)}$$

$$\sigma_p = \sqrt{(0.5)^2(2)^2 + (0.5)^2(8)^2 + (2)(0.5)(0.5)(.0)(2)(8)}$$

$$= \sqrt{(.25)(4) + (0.25)(64)}$$

$$= \sqrt{1 + 16} = \sqrt{17}$$

$$\sigma_p = 4.2$$

(iii) When $r = 0.8$

$$\sigma_p = \sqrt{(X_1)^2(\sigma_1)^2 + (X_2)^2(\sigma_2)^2 + 2X_1X_2(r_{12}\sigma_1\sigma_2)}$$

$$\sigma_p = \sqrt{(0.5)^2(2)^2 + (0.5)^2(8)^2 + (2)(0.5)(0.5)(.8)(2)(8)}$$

$$= \sqrt{1 + 16 + 6.4} = \sqrt{23.4}$$

$$\sigma_p = 4.8$$

(iv) When $r = 1.0$

$$\sigma_p = \sqrt{(X_1)^2(\sigma_1)^2 + (X_2)^2(\sigma_2)^2 + 2X_1X_2(r_{12}\sigma_1\sigma_2)}$$

$$\sigma_p = \sqrt{(0.5)^2(2)^2 + (0.5)^2(8)^2 + (2)(.5)(.5)(1)(2)(8)}$$

$$= \sqrt{1 + 16 + 8} = \sqrt{25}$$

$$\sigma_p = 5$$

The least risky portfolio combination is when correlation is -1

9. Stock Y and Z display the following parameters :

Particulars	Stock Y	Stock Z
Expected Return	15	20
Expected Variance	9	16

Covariance YZ = 8

Is there any advantage of holding some of Y and some of Z ? Why ?

Sol :

$$r_{yz} = \text{Covariance} / \sigma_y \sigma_z$$

Variance of y = 9

Variance of z = 16

Standard deviation y = $\sqrt{9} = 3$

Standard deviation y = $\sqrt{16} = 4$

Coefficient of correlation = $8/(3)(4) = 8/12$

$$r_{yz} = .66$$

Correlation is positive and very high. There is high degree of risk in combining the two securities.

10. Stocks Y and Z have the following parameters

Particulars	Stock Y	Stock Z
Expected return	20	30
Expected variance	16	25
Covariance YZ	20	

Is there any advantage of holding a combination of Y and Z ?

Sol :

There is no advantage of holding a combination Y and Z, as risk cannot be reduced because they are perfectly positively correlated.

$$r = \frac{\text{Covariance}_{yz}}{\sigma_y \sigma_z}$$

$$\sigma_y = \sqrt{\text{Variance y}} = \sqrt{16} = 4$$

$$\sigma_z = \sqrt{\text{Variance z}} = \sqrt{25} = 5$$

$$r = \frac{20}{4 \times 5} = +1.$$

11. Anand is considering the purchase of three securities A, B and C for the next year. The returns of the securities depend on next year's state of the stock market. The estimated rates of return are shown in the table.

State of Market	Probability of occurrence	Rates of Return of securities		
		A	B	C
Recession	0.25	10%	9%	14%
Average	0.50	14%	13%	12%
Boom	0.25	16%	18%	10%

- Find each stock's expected rate of return standard deviation, and co-efficient of variation
- Apply mean, variance criterion to the alternative investments.
- If Anand invest one third on each security what would be his portfolio return?

Sol/ :

a) Expected return = $\sum_{i=1}^N P_i R_i$

P_i = Probability of occurrence; R_i = return.

For security A = $0.25 \times 10 + 0.50 \times 14 + 0.25 \times 18$
 $= 2.5 + 7 + 4 = 13.5$

For security B = $0.25 \times 9 + 0.50 \times 13 + 0.25 \times 18$
 $= 2.25 + 6.5 + 4.5 = 13.25$

For security C = $0.25 \times 14 + 0.50 \times 12 + 0.25 \times 10$
 $= 3.5 + 6 + 2.5 = 12$

b) Variance = $\sigma^2 = \sum_{i=1}^N P_i (R_i - \bar{R})^2 = \sigma^2 = \sum_{i=1}^N P_i (R_i - \bar{R})^2$

For security A = $0.25 (10-13.5)^2 + 0.5 (14-13.5)^2 + 0.25 (16-13.5)^2$
 $= 3.0625 + .125 + 1.5625 = 4.75$

For security B = $0.25 (9-13.25)^2 + 0.5 (13-13.25)^2 + 0.25 (18-13.25)^2 = 10.19$

For security C = $0.25 (14-12)^2 + 0.5 (12-12)^2 + 0.25 (10-12)^2 = 2.0$

If we consider the return factor, security A gives more return. When the variance factor is considered, security C is more consistent than the other securities.

c) Portfolio return $R_p = \sum_{i=1}^N X_i R_i$
 $= 1/3 \times 13.5 + 1/3 \times 13.25 + 1/3 \times 12$
 $= 4.5 + 4.42 + 4 = 12.92$

12. The X and Y Corporations have the following expected risk and return inputs for the following year.

$$R_x = 15\% \quad \sigma_x^2 = 16\%$$

$$R_y = 18\% \quad \sigma_y^2 = 25\%$$

$$r_{xy} = .6$$

The portfolio risk (standard deviation) for a portfolio of 50 per cent in each asset is 4.03. Determine the correlation coefficient that will be necessary to reduce the level of portfolio risk by 75 per cent? What is the expected return of the equally weighted portfolio?

Sol :

A 75% reduction in risk is (.75) (4.03) = 3.02%. Therefore, the new level of risk will be 4.03 - 3.02 = 1.01 which is taken as a round number 1.

$$\sigma_p = \sqrt{X_x^2 \sigma_x^2 + X_y^2 \sigma_y^2 + 2X_x X_y (r_{xy} \sigma_x \sigma_y)}$$

$$1 = \sqrt{(.5)^2 16 + (.5)^2 (25) + 2 \times .5 \times .5 (r_{12} 4 \times 5)}$$

$$(1)^2 = 4 + 6.25 + (.5 \times 20 r)$$

$$(1)^2 = 10.25 + 10 r$$

$$1 = 10.25 + 10 r$$

$$\frac{-9.25}{10} = r$$

$$-.925 = r$$

$$R_p = R_x X_1 + R_y X_2$$

$$= 15 \times .5 + 18 \times .5$$

$$= 7.5 + 9$$

$$R_p = 16.5\%$$

13. Two assets A and B, have the following risk and return characteristics :

$$R_a = 22 \quad R_b = 20$$

$$\sigma_a = 15 \quad \sigma_b = 18$$

$$r_{ab} = -1$$

Determine the minimum risk portfolio for A and B.

Sol :

$$X_a = \frac{\sigma_b}{\sigma_a + \sigma_b} = \frac{18}{15 + 18} = \frac{18}{33}$$

$$X_a = .545$$

$$= 54.5\%$$

$$= 1 - X_a$$

$$X_b = 1 - .545$$

$$= .455$$

$$= 45.5\%$$

14. The SAL and GAL Corporations have the following risk and return status

$$R_s = 15\% \quad R_G = 15\%$$

$$\sigma_s = 30\% \quad \sigma_G = 25\%$$

$$r_{SG} = .5$$

Determine the minimum risk portfolio.

Sol :

$$X_s = \frac{\sigma_G^2 - r_{SG} \sigma_s \sigma_G}{\sigma_s^2 \sigma_G^2 + 2r_{SG} \sigma_s \sigma_G}$$

$$X_s = \frac{(25)^2 - .5 \times 30 \times 25}{(25)^2 + (30)^2 - 2 \times .5 \times 30 \times 25}$$

$$= \frac{625 - 375}{625 + 900 - 750} = \frac{250}{775}$$

$$X_s = .3226 = 32.26\%$$

$$X_G = 1 - .3226 = .6774$$

$$= 67.74\%$$

15. X Y is a portfolio with two assets – one with short and another with long positions. Then the portfolio rate of return is as follows : Proportion is – 0.50 & + 1.50 respectively and return stock on x is 20% and on stock y is 25%. Find out the expected return (R_p).

Sol :

Let weightages

$$X = -0.50$$

$$Y = + 1.50$$

Expected Rates of Return

$$X = 20\%$$

$$Y = 25\%$$

$$R_r = W.R + W.R$$

$$R_p = (-0.50 \times 0.20) + (1.50 \times 0.25)$$

$$= -0.1 + 0.375$$

$$= 0.275 \text{ or } 27.5\%.$$

16. Following information provided to you. Compute the portfolio return

Year	Stock W	Stock Z
2002	40%	28%
2003	- 10%	20%
2004	35%	41%
2005	- 5%	- 7%
2006	15%	3%
Average	15%	15%
Standard Deviation	22.6%	22.6%

Sol :

(Imp.)

Year	Stock W	Stock Z	Stock Z	Portfolio WZ
2002	40%	28%	$R_p = (0.5 \times 40)$ 20	$+ (0.50 \times 28)$ 14 = 34%
2003	-10%	20%	$R_p = (0.5 \times -10)$ - 5	$+ (0.5 \times 20)$ 10 = 5%
2004	35%	41%	$R_p = (0.5 \times 35)$ 17.5	$+ (0.5 \times 41)$ 20.5 = 38%
2005	-5%	17%	$R_p = (0.5 \times -05)$ - 2.5	$+ (0.5 \times 17)$ 8.5 = -11%
2006	15%	3%	$R_p = (0.5 \times 15)$ 7.5	$+ (0.5 \times 03)$ 1.5 = 9%
Average	15%	15%	15%	= 15%
S.D.	22.6%	22.6%	22.6%	= 22.6%

17. RKV owned five securities at the beginning of the year in the following amounts and with the following current and expected end-of-year prices :

Security	Share Amount	Current Price	Expected Year-End Price
KRBL	100	50	65
SBI	150	30	40
INX	75	20	25
RNL	100	25	32
I-Gate	125	40	47

What is the expected return on RKV's portfolio for the year ?

Sol :

The initial value of RKV's portfolio is :

$$= (\text{Rs. } 50 \times 100) + (\text{Rs. } 30 \times 150) + (\text{Rs. } 20 \times 75) + (\text{Rs. } 25 \times 100) + (\text{Rs. } 40 \times 125) \\ = \text{Rs. } 5,000 + \text{Rs. } 4,500 + \text{Rs. } 1,500 + \text{Rs. } 2,500 + \text{Rs. } 5,000 = \text{Rs. } 18,500$$

The proportion that each security constitutes of RKV's initial portfolio is :

$$X_A = (\text{Rs. } 50 \times 100) / (\text{Rs. } 18,500) = 0.27$$

$$X_B = (\text{Rs. } 30 \times 150) / (\text{Rs. } 18,500) = 0.24$$

$$X_C = (\text{Rs. } 20 \times 75) / (\text{Rs. } 18,500) = 0.08$$

$$X_D = (\text{Rs. } 25 \times 100) / (\text{Rs. } 18,500) = 0.14$$

$$X_E = (\text{Rs. } 40 \times 125) / (\text{Rs. } 18,500) = 0.27$$

The expected returns on the portfolio securities are :

$$\sim R_A = (\text{Rs. } 65 - \text{Rs. } 50) / \text{Rs. } 50 = \frac{15}{50} \times 100 = 30\%$$

$$\sim R_B = (\text{Rs. } 40 - \text{Rs. } 30) / \text{Rs. } 30 = \frac{10}{30} \times 100 = 33.3\%$$

$$\sim R_C = (\text{Rs. } 25 - \text{Rs. } 20) / \text{Rs. } 20 = \frac{5}{20} \times 100 = 25\%$$

$$\sim R_D = (\text{Rs. } 32 - \text{Rs. } 25) / \text{Rs. } 25 = \frac{7}{25} \times 100 = 28\%$$

$$\sim R_E = (\text{Rs. } 47 - \text{Rs. } 40) / \text{Rs. } 40 = \frac{7}{40} \times 100 = 17.5\%$$

The expected return on a portfolio is given by :

$$\tilde{R}_P = \sum_{i=1}^N (X_i \times R_i)$$

In the case of RKV's portfolios

$$\tilde{R}_P = (0.27 \times 30.0) + (0.24 \times 33.3) + (0.08 \times 25.0) + (0.14 \times 28.0) + (0.27 \times 17.5) \\ = (8.1) + (7.992) + (2.0) + (3.92) + (4.725) \\ = 26.737\%$$

18. Ms. Sushma owns a portfolio composed of four securities with the following characteristics :

Security	Beta	Standard Deviation Random Error Term	Projection
ACC	1.05	12	.30
ABB	0.90	10	.30
ITC	1.20	15	.25
LRBL	1.00	11	.15

If the standard deviation of the market index is 20%, what is total risk of Ms. Sushma's portfolio ?

Sol :

$$\beta_p \sum_{i=1}^4 x_i \beta_i$$

$$= (0.30 \times 1.05) + (0.30 \times 0.90) + (0.25 \times 1.20) + (0.15 \times 1.0)$$

$$= (0.315 + 0.27 + 0.3 + 0.15) = 1.035$$

The standard deviation of the portfolio is :

$$\sigma = \sqrt{[(1.035)^2 (20)^2 + (0.30)^2 (12)^2 + (0.30)^2 (10)^2 + (0.25)^2 (15)^2 + (0.15)^2 (11)^2]}$$

$$= \sqrt{[428.49 + 12.96 + 9 + 14.0625 + 2.7225]} = \sqrt{467.235}$$

$$\sigma = 21.62\%.$$

19. Following data relates to two securities i and j.

Security	Expected return (%)	Risk in (%)
i	9%	7.56
j	8%	3.75

If $r(i, j)$ is - 0.5 and the proportion of investment 28% and 72% in i and j securities find out

(a) Return on port folio

(b) Risk on port folio

Sol :

Given

$$\bar{R}_i = 9\% \quad S_i = 7.56$$

$$\bar{R}_j = 8\% \quad S_j = 3.75$$

$$r(i, j) = -0.5$$

$$W_i = 28\% \text{ or } .028$$

$$W_j = 72\% \text{ or } 0.72$$

(a) Calculating Return Portfolio

$$\bar{R}_p = 9 (0.28) + 8 (0.72)$$

$$= 2.52 + 5.76$$

$$\bar{R}_p = 8.28\%$$

(b) Calculating Risk on Portfolio when coefficient of correlation is given

$$\sigma_p = \sqrt{\sigma_i^2 w_i^2 + \sigma_j^2 w_j^2 + 2\rho(i, j) \sigma_i \sigma_j w_i w_j}$$

$$\sigma_p = \sqrt{(7.56)^2 (0.28)^2 + (3.75)^2 (0.72)^2 + 2(-0.50) (7.56 \times 3.75) (0.28 \times 0.72)}$$

$$\sigma_p = \sqrt{(57.1536) (0.0784) + (14.0625) (0.5184) + 2(-0.50) (28.35) (0.2016)}$$

$$\sigma_p = \sqrt{4.48 + 7.29 + (-1) (5.72)}$$

$$\sigma_p = \sqrt{4.48 + 7.29 - 5.72}$$

$$\sigma_p = \sqrt{11.77 - 5.72}$$

$$\sigma_p = \sqrt{6.05}$$

$$\sigma_p = 2.46\%$$

20. Compute Risk on port folio from the following information

Securities	Standard deviation	Proportion
A	0.2	20%
B	0.3	20%
C	0.5	60%

Co-Variance

$$\text{Cov (AB)} = 0.03$$

$$\text{Cov (AC)} = 0.01$$

$$\text{Cov (BC)} = -0.045$$

*Sol :*Calculating Risk on Portfolio (σ_p). Co-variance is given

$$\sigma_p = \sqrt{\sigma_A^2 w_A^2 + \sigma_B^2 w_B^2 + \sigma_C^2 w_C^2 + 2\text{Cov}(A, B) w_A w_B + 2\text{Cov}(B, C) w_B w_C + 2\text{Cov}(A, C) w_A w_C}$$

$$\sigma_p = \sqrt{(0.2)^2 (0.2)^2 + (0.3)^2 (0.2)^2 + (0.5)^2 (0.6)^2 + 2(0.03 \times 0.2 \times 0.2) + 2(0.01 \times 0.2 \times 0.6) + 2(-0.045 \times 0.2 \times 0.6)}$$

$$\sigma_p = \sqrt{0.04 \times 0.04 + 0.09 \times 0.04 + 0.25 \times 0.36 + 2(0.0012) + 2(0.0012) + 2(-0.0054)}$$

$$\sigma_p = \sqrt{0.0016 + 0.0036 + 0.09 + 0.0024 + 0.0024 - 0.0108}$$

$$\sigma_p = \sqrt{0.1 - 0.0108}$$

$$\sigma_p = \sqrt{0.0892}$$

$$\sigma_p = 0.2987 \text{ (or) } 29.87\%$$

21. There are two securities A and B

Particulars	Security A	Security B
Expected Return	15%	20
Standard deviation	20%	40%
Investment	40%	60%

(A) Return on port folio

(B) Calculate Risk on port folio in the following situation

(i) If ρ_{AB} 0.36

(ii) If ρ_{AB} - 0.8

(iii) If ρ_{AB} 0.8

Sol :

(A) Calculating return on portfolio ($\bar{R}_p$)

$$\bar{R}_p = \bar{R}_A W_A + \bar{R}_B W_B$$

$$\bar{R}_A = 15\% \quad \bar{R}_B = 20\%$$

$$W_A = 0.40 \quad W_B = 0.60$$

$$\bar{R}_p = 15 \times 0.40 + 20 \times 0.60$$

$$\bar{R}_p = 6 + 12$$

$$= 18\%$$

(B) Risk on portfolio

(i) Calculating risk on portfolio if coefficient of covariances is $\rho_{AB} = 0.36$

$$\rho_{AB} = 0.36$$

$$\sigma_p = \sqrt{\sigma_A^2 W_A^2 + \sigma_B^2 W_B^2 + 2\rho_{AB}(\sigma_A \sigma_B)(W_A)(W_B)}$$

$$\sigma_p = \sqrt{(0.2)^2(0.4)^2 + (0.4)^2(0.6)^2 + 2(0.36)(0.2 \times 0.4)(0.4 \times 0.6)}$$

$$\sigma_p = \sqrt{0.04 \times 0.16 + 0.16 \times 0.36 + 2(0.36)(0.08)(0.24)}$$

$$\sigma_p = \sqrt{0.0061 + 0.0576 + 0.013824}$$

$$\sigma_p = \sqrt{0.077824}$$

$$\sigma_p = 27.896\%$$

(ii) Calculating Risk on Portfolio if coefficient of co-variance is $\rho_{AB} = 0.8$

$$\sigma_p = \sqrt{\sigma_A^2 W_A^2 + \sigma_B^2 W_B^2 + 2\rho_{AB}(\sigma_A \sigma_B)(W_A)(W_B)}$$

$$\sigma_p = \sqrt{(0.2)^2(0.4)^2 + (0.4)^2(0.6)^2 + 2(-0.8)(0.2 \times 0.4)(0.4 \times 0.6)}$$

$$\sigma_p = \sqrt{0.04 \times 0.16 + 0.16 \times 0.36 + 2(-0.8)(0.0192)}$$

$$\sigma_p = \sqrt{0.0064 + 0.0576 + 0.03072}$$

$$\sigma_p = \sqrt{0.064 + 0.03072}$$

$$\sigma_p = \sqrt{0.03328}$$

$$\sigma_p = 0.1824 \text{ (or) } 18.24\%$$

(iii) Calculating Risk on Portfolio if coefficient of co-variance is $\rho_{AB} = 0.8$

$$\sigma_p = \sqrt{\sigma_A^2 W_A^2 + \sigma_B^2 W_B^2 + 2\rho_{AB}(\sigma_A \sigma_B)(W_A)(W_B)}$$

$$\sigma_p = \sqrt{(0.2)^2(0.4)^2 + (0.4)^2(0.6)^2 + 2(0.8)(0.2 \times 0.4)(0.4 \times 0.6)}$$

$$\sigma_p = \sqrt{0.04 \times 0.16 + 0.16 \times 0.36 + 2(0.8)(0.0192)}$$

$$\sigma_p = \sqrt{0.0064 + 0.0576 + 0.03072}$$

$$\sigma_p = \sqrt{0.064 + 0.03072}$$

$$\sigma_p = \sqrt{0.09472}$$

$$\sigma_p = 0.3078 \text{ (or) } 30.78\%.$$

22. The following table provides information regarding the portfolio return and risk

Portfolio	Expected Return E(R)	σ
1	10	4
2	12	7
3	13	5
4	16	12
5	20	14

- (a) The treasury bill rate is 5 percent. Which portfolio is the best ?
- (b) Would it be possible to earn 12 percent return with σ of 4 percent ?
- (c) If it is 12 percent what would be the expected return ?

Sol :

Information given is only the R_f , $E(R)$ and σ . With this, the return to risk ratios can be found out and the return to risk ratio can be selected as the best portfolio.

Portfolio	$[E(R) - R_f]/\sigma$
1	$(9 - 5)/4 = 1$
2	$(12 - 5)/7 = 1.0$
3	$(13 - 5)/5 = 1.6$
4	$(16 - 5)/12 = 0.92$
5	$(20 - 5)/14 = 1.07$

The third portfolio yields the highest return for a unit of risk.

If $\sigma = 4$, then the best portfolio will yield :

$$= 5 + 4 (1.6)$$

$$E(R) = 11.4\%$$

It may not be possible to get 12 percent return

If $\sigma = 12$

$$E(R) = 5 + 12(1.6) = 24.2\%$$

23. Dalip Sen owns three securities and has estimated the following joint probability distribution of returns :

Outcome	Security X	Security Y	Security Z	Probability
1	15	-12	0	.15
2	12	-2	10	.20
3	5	0	12	.30
4	-3	4	15	.20
5	-8	10	7	.15

Calculate the portfolio's expected return and standard deviation if Sen invests 40% in security X, 25% in security Y and 35% in security Z. Assume that each security's return is completely uncorrelated with the returns of the other securities.

Sol :

The expected returns on the five securities in Sen's portfolio are :

$$\begin{aligned}\tilde{R}_X &= (.15 \times 15) + (.20 \times 12) + (.30 \times 5) + (.20 \times -3) + (.15 \times -8) \\ &= 2.25 + 2.40 + 1.50 + (-.6) + -1.20 \\ &= 4.35\end{aligned}$$

$$\tilde{R}_Y = (.15 \times -12) + (.20 \times -2) + (.30 \times 0) + (.20 \times 4) + (.15 \times 10)$$

$$= (-1.8) + (-.40) + (0) + (.80) + (1.5)$$

$$= 0.10$$

$$\tilde{R}_Z = (.15 \times 10) + (.20 \times 10) + (.30 \times 12) + (.20 \times 15) + (.15 \times 7)$$

$$= (0) + (2) + (3.6) + (3.0) + (1.05)$$

$$= 9.65$$

The expected return on Sen's portfolio is therefore :

$$\tilde{R}_p = (.40 \times 4.35\%) + (.25 \times .10\%) + (.35 \times 9.65\%)$$

$$= 1.74 + .025 + 3.3775$$

$$= 5.1425\%$$

The standard deviations of the portfolio's three securities are :

$$\sigma_X = \{[.15 \times (15 - 4.35)^2] + [.20 \times (12 - 4.35)^2] + [.30 \times (5 - 4.35)^2]$$

$$+ [.20 \times (-3 - 4.35)^2] + [.15 \times (-8 - 4.35)^2]\}^{1/2}$$

$$= [(17.0134) + (11.7045) + (0.1268) + (10.8045) + (22.8784)]^{1/2}$$

$$= [62.5276]^{1/2}$$

$$= 7.91$$

$$\sigma_Y = \{[.15 \times (-12 - .10)^2] + [.20 \times (-2 - .10)^2] + (.30 \times (0 - .10)^2]$$

$$+ [.20 \times (4 - .10)^2] + [.15 \times (10 - .10)^2]\}^{1/2}$$

$$= [(21.9615) + (0.882) + (0) + (3.362) + (15.3015)]^{1/2}$$

$$= [41.507]^{1/2}$$

$$= 6.44$$

$$\sigma_Z = \{[.15 \times (0 - 9.65)^2] + [.20 \times (10 - 9.65)^2] + [.30 \times (12 - 9.65)^2]$$

$$+ [.20 \times (15 - 9.65)^2] + [.15 \times (7 - 9.65)^2]\}^{1/2}$$

$$= [(0) + (0.0245) + (1.65675) + (5.7245) + 1.0534]^{1/2}$$

$$= [8.4591]^{1/2}$$

$$= 2.91$$

The fact that the three securities are each uncorrelated with each other simplifies the calculation of the portfolio's standard deviation. Specifically :

$$\sigma_p = [(.40)^2 \times (7.91)^2 + (.25)^2 \times (6.44)^2 + (.35)^2 \times (2.91)^2]^{1/2}$$

$$= [(10.0109) + (2.5921) + (1.0373)]^{1/2}$$

$$= [13.640342]^{1/2}$$

$$= 3.69\%$$

Exercise Problems

1. Consider two asset portfolio A and B

$$\sigma_A = 14\%$$

$$\sigma_B = 16\%$$

Correlation between A and B is +1, 0, -1.

Determine minimum risk portfolio for A and B.

[Ans: If $\rho_{AB} = +1$: $X_A = 8$, $X_B = 7\%$, If $\rho_{AB} = 0$: $X_A = 0.57$, $X_B = 0.43$, If $\rho_{AB} = -1$: $X_A = 0.53$, $X_B = 0.47$].

2. The SAL and GAL corporation have the following risk and return status,

$$r_s = 15\%, r_G = 17\%, \sigma_s = 30\%, \sigma_G = 25\%, \sigma_{SG} = 0.5.$$

Determine the minimum risk portfolio.

[Ans: 67.74%].

3. Assume that the risk-free rate is 10%, expected return on the market is 16% and the return on stock c is 18%.

(a) Determine the implicit beta for stock c.

(b) What is stock c's return if its beta is 0.75?

[Ans: (a) $\beta_c = 1.33$, (b) $\bar{r}_c = 14.5\%$].

Short Question and Answers

1. Diversification of Investment

Ans :

Efforts to spread and minimize risk take the form of diversification. The more traditional forms of diversification have concentrated upon holding a large number of security types (stock, bonds) across industry lines (utility, mining, manufacturing groups). The reasons are related to inherent differences in bond and equity contracts, coupled with the notion that an investment in firms in dissimilar industries would most likely do better than in firms within the same industry. Holding one stock each from mining, utility, and manufacturing groups is superior to holding three mining stocks. Carried to its extreme, this approach leads to the conclusion that the best diversification comes through holding large number of securities across industries.

Most people would agree that a portfolio consisting of two stocks is probably less risky than one holding either stock alone. However, experts disagree with regard to the right kind of diversification and the right reason.

According to Harry Markowitz, investor attitudes toward portfolios depends exclusively upon Expected return and risk, and Quantification of risk.

According to Harry Markowitz, investor attitudes toward portfolios depends exclusively upon :

- Expected Return on Portfolio
- Expected Risk on Portfolio
- Reduction of portfolio Risk through diversification
- Security returns perfectly positively correlated
- Security returns perfectly negatively correlated
- Security returns uncorrelated

2. Diversification of Risk

Ans :

Risk in a portfolio can be reduced by a proper diversification into a number of scrips. The efforts to spread and minimize portfolio risk take the form of diversification. Most investors prefer to held several assets rather than putting all their eggs into one basket, with the hope that if one goes bad, the other will provide some protection from extreme loss.

Traditional belief is that diversification means "Not putting all eggs in one basket." Diversification helps in the reduction of unsystematic risk and promotes the optimization of returns for a given level of risks in portfolio management.

Diversification of one's holding is intended to reduce risk in an economy in which every asset's returns are subject to some degree of uncertainty. Most investors hope that if they hold several assets, even if one goes bad, the others will provide some protection from an extreme loss. Efforts to spread and minimize risk take the form of different types of securities across industry lines.

3. Reasons for Portfolio Diversification

Ans :

(i) Reducing risk

One of the key reasons for expanding your investment portfolio is to reduce your financial risk. As mentioned earlier, if you have only one investment, you can fall into serious trouble if the asset faces any kind of slowdown or roadblock. While one may argue there are several government schemes that have no risks attached – PPF, NSCs, RBI bonds – the interest earned on these assets are significantly low and thus affect your overall returns. Investors should also increase their appetite for risk gradually if they want to clock more returns on investments. For those who think that they can increase their wealth significantly through safe investments, it is nothing more

than a myth as the real challenge in increasing your wealth is to manage your risks strategically.

(ii) Gaining Experience

Once you start expanding your portfolio, you are initially faced with many hurdles but once you start exploring, you start learning about the various assets. For instance, the stock market has a lot to offer but you need to learn the basics or take a professional's help to identify ideal investment opportunities. The real challenge here is not to select the strongest performing stock but one which is growing. But you usually get a hang of these points once you start exploring more about such assets. Likewise, in any other form of investment, you need to expand your knowledge and with time, you will be able to find the perfect mix of investments to meet your financial goals.

(iii) Make More Money

With a diversified portfolio, individuals can expect their earnings to shoot up as all the assets fall under different categories and it is almost impossible for all of them to perform badly at one time. Hence, you can be rest assured that if one of your asset slumps, another one will help you maintain the balance. If you have a large set of investments, there are chances that one weak asset will not even impact your total investment growth. Therefore, it can be concluded that more investments will, on most occasions, generate more wealth.

4. Define portfolio.

Ans :

Portfolio is a set of financial assets owned by an investor that may include bonds, stocks, currencies, cash and cash equivalents, and commodities. Further, it refers to a group of investments that an investor uses in order to earn a profit while making sure that capital or assets are preserved.

A portfolio is a grouping of financial assets such as stocks, bonds, commodities, currencies and cash equivalents, as well as their fund counterparts, including mutual, exchange-traded and closed

funds. A portfolio can also consist of non-publicly tradable securities, like real estate, art, and private investments. Money market accounts make full use of this concept to function properly.

Portfolios are held directly by investors and/or managed by financial professionals and money managers. Investors should construct an investment portfolio in accordance with their risk tolerance and investing objectives. Investors can also have multiple portfolios for various purposes. It all depends on one's objectives as an investor.

The portfolio is a collection of investment instruments like shares, mutual funds, bonds, FDs and other cash equivalents, etc. Portfolio management is the art of selecting the right investment tools in the right proportion to generate optimum returns with a balance of risk from the investment made.

In other words, a portfolio is a group of assets. The portfolio gives an opportunity to diversify risk. Diversification of risk does not mean that there will be an elimination of risk. With every asset, there is an attachment of two types of risk; diversifiable/unique/unexplained/unsystematic risk and undiversifiable/market risk / explained/systematic risk. Even an optimum portfolio cannot eliminate market risk, but can only reduce or eliminate the diversifiable risk. As soon as risk reduces, the variability of return reduces.

5. Different types of portfolios

Ans :

(i) Growth portfolio

From the name itself, a growth portfolio's aim is to promote growth by taking greater risks, including investing in growing industries. Portfolios focused on growth investments typically offer both higher potential rewards and concurrent higher potential risk. Growth investing often involves investments in younger companies that have more potential for growth as compared to larger, well-established firms.

(ii) Income portfolio

Generally speaking, an income portfolio is more focused on securing regular income from investments as opposed to focusing on potential capital gains. An example is buying

stocks based on the stock's dividends rather than on a history of share price appreciation.

(iii) Value portfolio

For value portfolios, an investor takes advantage of buying cheap assets by valuation. They are especially useful during difficult economic times when many businesses and investments struggle to survive and stay afloat. Investors, then, search for companies with profit potential but that are currently priced below what analysis deems their fair market value to be. In short, value investing focuses on finding bargains in the market.

6. What is markowitz portfolio model?

Ans :

Dr. Harry M. Markowitz was the person who developed the first modern portfolio analysis model. Markowitz used mathematical programming and statistical analysis in order to arrange for the optimum allocation of assets within portfolio. He infused a high degree of sophistication into portfolio construction by developing a mean-variance model for the selection of portfolio.

Markowitz approach determines for the investors the efficient set of portfolio through three important variables. They are :

- (i) Return
- (ii) Standard Deviation
- (iii) Coefficient of Correlation

According to Markowitz, the portfolio theory establishes a relationship between a portfolio's expected return and its level of risk as the criterion for selecting the optimum portfolio.

Thus two measures were suggested for evaluating the merits of a portfolio. They are :

- (i) Expected return from the portfolio
- (ii) Level of risk exposure associated with the portfolio

7. Assumptions of Markowitz model

Ans :

- (a) The markets are efficient and absorb all the information quickly and perfectly. So an investor can earn superior returns either by

technical analysis or fundamental analysis. All the investors are in equal category in this regard.

- (b) Investors are risk averse. Before making any investments, all of them, have a common goal-avoidance of risk.
- (c) Investors are rational. They would like to earn the maximum rate of return with a given level of income or money.
- (d) Investors base their decisions solely on expected return and variance (or standard deviation) of returns only.
- (e) For a given risk level, investors prefer high returns to lower returns. Similarly, for a given level of expected return, they prefer less risk to more risk.

8. Dominance

Ans :

The concept of dominance explains the selection of a portfolio with least risk with returns being given :

- (i) If there are two or more companies with the same risk, then the investor should choose the one with the higher return.
- (ii) If there are two or more companies who enjoy the same return then the investor should choose the one with lower risk.
- (iii) The investor can minimise the risk by distributing his funds in different types of companies with varying risks and returns and having no correlation.

Thus, the investor has not only to make proper investment decision of what to buy and when to buy but has to have a proper investment policy through diversification and choice of a proper beta for the stocks selected so that the total risk of portfolio is minimised.

9. Limitations of Markowitz Model

Ans :

Complexity of computations required:

The computations required are numerous and complex in nature. With a given set of securities infinite number of portfolios can be constructed. The expected returns and variances of returns for each possible portfolio have to be computed. The

identification of efficient portfolios requires the use of quadratic programming which is a complex procedure.

Because of the difficulties associated with the Markowitz model, it has found little use in practical applications of portfolio analysis. Much simplification is needed before the theory can be used for practical applications. Simplification is needed in the amount and type of input data required to perform portfolio analysis; simplification is also needed in the computational procedure used to select optimal portfolios.

The simplification is achieved through index models. There are essentially two types of index models:

- **Single index model :** The single index model is the simplest and the most widely used simplification and may be regarded as being at one extreme point of a continuum, with the Markowitz model at the other extreme point. The single index model provides a simplified method of representing the covariance relationships among the securities. This simplification has resulted in a substantial reduction in inputs required for portfolio analysis.

Using the expected portfolio returns and portfolio variances calculated with the single index model, the set of efficient portfolios is generated by means of the same quadratic programming routine as used in the Markowitz model

- **Multi-index model:** Multi-index models may be placed at the mid region of this continuum of portfolio analysis techniques. The single index model is in fact an oversimplification. It assumes that stocks move together only because of a common co-movement with the market. Many researchers have found that there are influences other than the market that cause stocks to move together.

Multi-index models attempt to identify and incorporate these non-market or extra-market factors that cause securities to move together also into the model. These extra-market factors are a set of economic factors

that account for common movement in stock prices beyond that accounted for by the market index itself. Fundamental economic variables such as inflation, real economic growth, interest rates, exchange rates etc. would have a significant impact in determining security returns and hence, their co-movement.

10. Components of a portfolio

Ans :

The assets that are included in a portfolio are called asset classes. The investor or financial advisor needs to make sure that there is a good mix of assets in order that balance is maintained, which helps foster capital growth with limited or controlled risk. A portfolio may contain the following:

(i) Stocks

Stocks are the most common component of an investment portfolio. They refer to a portion or share of a company. It means that the owner of the stocks is a part owner of the company. The size of the ownership stake depends on the number of shares he owns.

Stocks are a source of income because as a company makes profits, it shares a portion of the profits through dividends to its stockholders. Also, as shares are bought, they can also be sold at a higher price, depending on the performance of the company.

(ii) Bonds

When an investor buys bonds, he is loaning money to the bond issuer, such as the government, a company, or an agency. A bond comes with a maturity date, which means the date the principal amount used to buy the bond is to be returned with interest. Compared to stocks, bonds don't pose as much risk, but offer lower potential rewards.

(iii) Alternative Investments

Alternative investments can also be included in an investment portfolio. They may be assets whose value can grow and multiply, such as gold, oil, and real estate. Alternative investments are commonly less widely traded than traditional investments such as stocks and bonds.

Choose the Correct Answer

1. The theory which provides conceptual frame work to the portfolio management process is [a]
 (a) Modern portfolio theory (b) Arbitrage pricing theory
 (c) Capital market theory (d) None of the above
2. The excess return to beta ratio = [c]
 (a) $\frac{\beta_i}{r_i - r_f}$ (b) $\beta_i(r_i - r_f)$
 (c) $\frac{r_i - r_f}{\beta_i}$ (d) $\beta_i + r_i - r_f$
3. The model which considers multifactor to measure performance of portfolio is known as, [b]
 (a) Single index model (b) Multi index model
 (c) Single factor portfolio (d) Multiple factor port folio
4. A portfolio against whcih the investment performance of an investor can be compared for the purpose of identifying investment skill is [a]
 (a) Benchmark portfolio (b) Arbitrage portfolio
 (c) Optional portfolio (d) None of the above
5. An additional return obtained by a portfolio manager for his superior stock selection ability is [a]
 (a) Net selectivity (b) Total selectivity
 (c) Marginal selectivity (d) None of above
6. Negative correlation between two securities help in [b]
 (a) Full covariance (b) Reducing risk
 (c) Efficient set of portfolios (d) None
7. In reward to variability, $S_p =$ [a]
 (a) $\frac{\text{Risk premium}}{\text{Total risk}}$ (b) Risk premium + Risk
 (c) Premium $\times$ Risk (d) $\frac{\text{Trade risk}}{\text{Principal}}$
8. A process of holding a well diversified portfolio for a long term with the buy and hold approach is, [b]
 (a) Active portfolio strategy (b) Passive portfolio strategy
 (c) Modevate portfolio strategy (d) Normal portfolio strategy
9. Markowitz theory is called _____ model. [a]
 (a) Full covariance (b) Reducing risk
 (c) Efficient set of portfolios (d) None
10. Sharpe's model is known as _____. [c]
 (a) Single model (b) Multiple model
 (c) Index model (d) None

Fill in the blanks

1. _____ is a theoretical frame work for analysis of risk and return and their relation ships.
2. A professional who manages investment portfolios with the objectives of profitability, growth and risk minization is _____.
3. _____ states that two identical goods should be sold at the same price.
4. An asset which have certain expected return and variance of return is zero is _____.
5. A process of holding a well diversified portfolio for a long term with the buy and hold approach is _____.
6. By skillful balancing of the investment proportions in different scurries, the port folio is termed as _____.
7. _____ is used to reflect the risk factors and factor sensitivities can also taken into account to arrive at the expected return.
8. A _____ is a collection of securities.
9. The analysis of _____ has considered the choice of one investment out of two or more options.
10. _____ helps in reducing the risk of investing.

ANSWERS

1. Markowitz model
2. Portfolio manager
3. Law of one price
4. Risk free asset
5. Passive portfolio strategy
6. Minimum variance portfolio
7. Beta coefficient
8. Portfolio
9. Risk and return
10. Diversification

UNIT V

Portfolio Selection

Portfolio Selection: Meaning – Feasible Set of Portfolios – Efficient Set of Portfolios Selection of Optimal Portfolios (Including problems).

Sharpe Single Index Model: Measuring Security Return and Risk – Measuring Portfolio Return and Risk – Multi Index Model (Including Problems).

5.1 PORTFOLIO SELECTION

5.1.1 Meaning

Q1. What is Portfolio Selection?

Ans : (Dec.-20, May-14, May-17)

A portfolio is a basket of assets that can include stocks, bonds, commodities, currencies, cash equivalents, as well as their fund counterparts. An ideal portfolio contains a varied assortment of investments. This can range from government bonds to small-cap stocks to forex currency. But it's important to manage your portfolio well. Otherwise, you could end up with lower returns.

Portfolio selection is the unifying process in Modern Portfolio Theory, but the best way to select portfolios is a matter of intense debate.

The process by which one chooses the securities, derivatives, and other assets to include in a portfolio. In making securities selections, one considers the risk, the return, the ethical implications, and other factors affecting both of the individual securities and the portfolio as a whole.

The objective of every rational investor is to maximize his returns and minimize the risk. Diversification is the method adopted for reducing risk. It essentially results in the construction of portfolios. The proper goal of portfolio construction would be to generate a portfolio that provides the highest return and the lowest risk. Such a portfolio would be known as the optimal portfolio. The process of finding the optimal portfolio is described

as portfolio selection. The conceptual framework and analytical tools for determining the optimal portfolio in disciplined and objective manner have been provided by Harry Markowitz in his pioneering work on portfolio analysis described in 1952 Journal of Finance article and subsequent book in 1959. His method of portfolio selection has come to be known as the Markowitz model. In fact, Markowitz's work marks the beginning of what is known today as modern portfolio theory.

All investors prefer those securities which have a high return but at the same time the risk attached to it is low. At the time of combining the securities and constructing a portfolio of different combinations of securities, an investor is faced with the same question of risk and return. There are three kinds of investors. An investor who wishes to take more return and least risk, more return with comparatively higher risk and high return with a high risk. These are depicted as desirable conditions for an investor through the use of utility curves called indifference curves. Indifference curves are usually parallel and linear.

When it is drawn on a graph, it shows that the higher the investor goes on the growth, the greater is his satisfaction. In Illustration 1, these utility graphs are drawn. These are positively sloped for a hypothetical investor 'X' and the indifference curves are from 1 to 6. The investor 'X' is faced with the problem of finding out the indifference curves or portfolio tangent which will give him the highest return.

5.2 FEASIBLE SET OF PORTFOLIO

Q2. What is feasible set of portfolio?

Ans : (May-19)

With a limited number of securities an investor can create a very large number of portfolios by combining these securities in different proportions. These constitute the feasible set of portfolios in which the investor can possibly invest. This is also known as the portfolio opportunity set. Each portfolio in the opportunity set is characterized by an expected return and a measure of risk, viz., variance or standard deviation of returns. Not every portfolio in the portfolio opportunity set is of interest to an investor. In the opportunity set some portfolios will obviously be dominated by others. A portfolio will dominate another if it has either a lower standard deviation and the same expected return as the other, or a higher expected return and the same standard deviation as the other. Portfolios that are dominated by other portfolios are known as inefficient portfolios. An investor would not be interested in all the portfolios in the opportunity set. He would be interested only in the efficient portfolios.

A feasible portfolio is a group of investments picked from the available alternatives within an investor's capital resources limits, investment goals, and tolerance for risk. Put simply, it is a portfolio an investor can build up, given the assets he or she has available.

Each feasible portfolio is not always an efficient portfolio and has its own risk and reward profile. Investors have the option to choose between ranges of feasible portfolios.

Managing a portfolio is about strengths, weaknesses, and opportunities, so there are downsides in no matter what type of portfolio investors decide to manage. It all comes down to risk balancing and allocation.

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in the portfolio opportunity set is of interest to an investor.

In the opportunity set some portfolios will obviously be dominated by others. A portfolio will dominate another if it has either a lower standard deviation and the same expected return as the other, or a higher expected return and the same standard deviation as the other. Portfolios that are dominated by other portfolios are known as inefficient portfolios. An investor would not be interested in all the portfolios in the opportunity set. He would be interested only in the efficient portfolios.

5.3 EFFICIENT SET OF PORTFOLIOS SELECTION OF OPTIMAL PORTFOLIOS

Q3. Efficient set of portfolios selection of optimal portfolios.

(OR)

What is Efficient Set of Portfolio Selection of Optimal Portfolio?

(OR)

How to determine optimal Portfolio?

Ans : (Dec.-20, May-16)

The risk of these portfolios may be estimated by measuring the standard deviation of portfolio returns. The table below shows illustrative figures for the expected returns and standard deviations of some portfolios.

Example

Portfolio Number	Expected Return (per cent)	Standard deviation (risk)
1	5.6	4.5
2	7.8	5.8
3	9.2	7.6
4	10.5	8.1
5	11.7	8.1
6	12.4	9.3
7	13.5	9.5
8	13.5	11.3
9	15.7	12.7
10	16.8	12.9

If we compute portfolio nos. 4 and 5, for the same standard deviation of 8.1 portfolio no. 5 gives a higher expected return of 11.7, making it more efficient than portfolio no. 4. Again, if we compare portfolio nos. 7 and 8, for the same expected return of 13.5 per cent, the standard deviation is lower for portfolio no. 7, making it more efficient than portfolio no. 8. Thus, the selection of portfolio by the investor will be guided by two criteria:

- Given two portfolios with the same expected return, the investor would prefer the one with the lower risk.
- Given two portfolios with the same risk, the investor would prefer the one with the higher expected return.

As each possible portfolio in the opportunity set or feasible set of portfolios has an expected return and standard deviation associated with it, each portfolio would be represented by a single point in the risk-return space enclosed within the two axes of the graph. The shaded area in the graph represents the set of all possible portfolios that can be constructed from a given set of securities. This opportunity set of portfolios takes a concave shape because it consists of portfolios containing securities that are less than perfectly correlated with each other.

Consider portfolios F and E. Both the portfolios have the same expected return but portfolio E has less risk. Hence, portfolio E would be preferred to portfolio F. Now consider portfolios C and E. Both have the same risk, but portfolio E offers more return for the same risk. Hence, portfolio E would be preferred to portfolio C. Thus, for any point of risk-return space, an investor would like to move as far as possible in the direction of increasing returns and also as far as possible in the direction of decreasing risk. Effectively, he would be moving towards the left in search of decreasing risk and upwards in search of increasing returns.

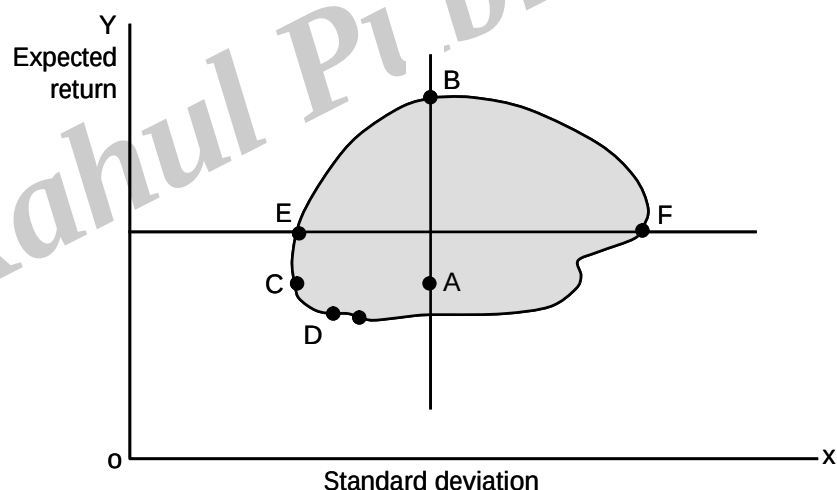
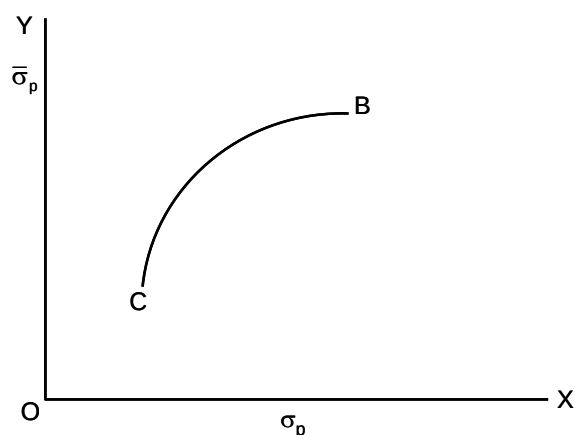


Fig.: Feasible set of portfolios

Let us consider portfolios C and A. Portfolio C would be preferred to portfolio A because it offers less risk for the same level of return. In the opportunity set of portfolios represented in the diagram, portfolio C has the lowest risk compared to all other portfolios. Here portfolio C in this diagram represents the global minimum variance portfolio.

Comparing portfolios A and B, we find that portfolio B is preferable to portfolio A because it offers higher return for the same level of risk. In this diagram, point B represents the portfolio with the highest expected return among all the portfolios in the feasible set.

Thus, we find that portfolios lying in the north-west boundary of the shaded area are more efficient than all the portfolios in the interior of the shaded area. This boundary of the shaded area is called the efficient frontier because it contains all the efficient portfolios in the opportunity set. The set of portfolios lying between the global minimum variance portfolio and the maximum return portfolio on the efficient frontier represents the efficient set of portfolios. The efficient frontier is shown separately in the following figure:



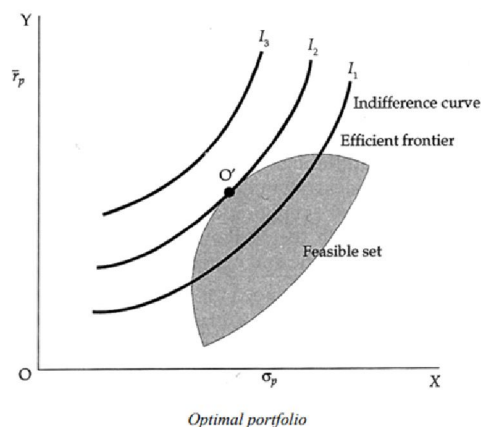
Selection of Optimal Portfolio

The portfolio selection problem is really the process of delineating the efficient portfolios and then selecting the best portfolio from the set. Rational investors will obviously prefer to invest in the efficient portfolios. The particular portfolio that an individual investor will select from the efficient frontier will depend on that investor's degree of aversion to risk. A highly risk averse investor will hold a portfolio on the lower left hand segment of the efficient frontier, while an investor who is not too risk averse will hold one on the upper portion of the efficient frontier.

The selection of the optimal portfolio thus depends on the investor's risk aversion, or conversely on his risk tolerance. This can be graphically represented through a series of risk return utility curves or indifference curves. The indifference curves of an investor are shown in the figure below. Each curve represents different combinations of risk and return all of which are equally satisfactory to the concerned investor.

The investor is indifferent between the successive points in the curve. Each successive curve

moving upwards to the left represents a higher level of satisfaction or utility. The investor's goal would be to maximise his utility by moving upto the higher utility curve. The optimal portfolio for an investor would be the one at the point of tangency between the efficient frontier and the risk-return utility or indifference curve. This is shown in the following figure. The point O represents the optimal portfolio.



Markowitz used the technique of quadratic programming to identify the efficient portfolios. Using the expected return and risk of each security under consideration and the covariance estimates for each pair of securities, he calculated risk and return for all possible portfolios. Then, for any specific value of expected portfolio return, he determined the least risk portfolio using quadratic programming. With another value of expected portfolio return, a similar procedure again gives the minimum risk portfolio. The process is repeated with different values of expected return, the resulting minimum risk portfolios constitute the set of efficient portfolios.

5.4 SHARPE SINGLE INDEX MODEL

Q4. Write a note on Sharpe Single Index Model.

(OR)

What is Sharpe Single Index Model ?

Ans : (May-19, May-15)

Markowitz Model had serious practical limitations due to the rigours involved in compiling the expected returns, standard deviation, variance, covariance of each security to every other security

in the portfolio. Sharpe Model has simplified this process by relating the return in a security to a single Market index. Firstly, this will theoretically reflect all well traded securities in the market. Secondly, it will reduce and simplify the work involved in compiling elaborate matrices of variances as between individual securities.

William Sharpe has developed a simplified variant of Markowitz model that reduces substantially its data and computational requirements. It is known as Single index model or One- factor analysis.

Single Index Model

This model assumes that co-movement between stocks is due to change or movement in the market index. Casual observation of the stock prices over a period of time reveals that most of the stock prices move with the market index. When the Sensex increases, stock prices also tend to increase and vice-versa. This indicates that some underlying factors affect the market index as well as the stock prices. Stock prices are related to the market index and this relationship could be used to estimate the return on stock. Towards this purpose, the following equation can be used:

$$R_i = \alpha_i + \beta_i R_m + e_i$$

Where,

R_i = expected return on security i

α_i = intercept of the straight line or alpha co-efficient.

β_i = slope of straight line or beta co-efficient

R_m = the rate of return on market index.

e_i = error term.

According to the equation, the return of a stock can be divided into two components, the return due to the market and the return independent of the market. β_i indicates the sensitiveness of the stock return to the changes in the market return. For example, β_i of 1.5 means that the stock return is expected to increase by 1.5 % when the market index return increases by 1 % and vice-versa. Likewise, β_i of 0.5 expresses that the individual stock return would change by 0.5

per cent when there is a change of 1 per cent in the market return. β_i of 1 indicates that the market return and the security return are moving in tandem. The estimates of β_i and α_i are obtained from regression analysis.

The single index model is based on the assumption that stocks vary together because of the common movement in the stock market and there are no effects beyond the market (i.e. any fundamental factor effects) that account the stocks co-movement. The expected return, standard deviation and co-variance of the single index model represent the joint movement of securities. The mean return is:

$$R_i = \alpha_i + \beta_i R_m + e_i$$

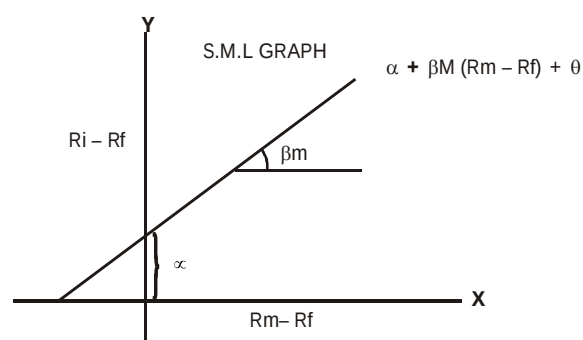
The variance of security's return:

$$\sigma^2 = \beta^2 \sigma^2_m + \sigma^2 e_i$$

The covariance of returns between securities i and j is:

$$\sigma_{ij} = \beta_i \beta_j \sigma_m^2$$

The variance of the security has two components namely, systematic risk or market risk and unsystematic risk or unique risk. The variance explained by the index is referred to systematic risk. The unexplained variance is called residual variance or unsystematic risk.



$R_i - R_f$ =
Excess Return
on portfolio

$\frac{\alpha p + c p}{\text{unsystematic}} \rightarrow$
Component of
p's excess Return

$\frac{+ \beta p m (R_m - R_f)}{\text{Market (Systematic)}} \rightarrow$
Component of
p's excess Return

Assumptions

Sharpe's portfolio theory is based on the following assumptions,

1. The securities returns are related to each other.
2. The expected return and variance of indices are the same.
3. The return on individual securities is determined by unpredictable factors.

Optimal Portfolio of Sharpe Model

This optimal portfolio of Sharpe is called the Single Index Model. The optimal portfolio is directly related to the Beta. If R_i is expected return on stock i and R_f is Risk free Rate, then the excess return = $R_i - R_f$. This has to be adjusted to β_i namely,

$R_i - R_f/\beta_i$ which is the equation for ranking Stocks in the order of their return adjusted for risk.

The method involves selecting a cut-off rate for inclusion of securities in a portfolio. For this purpose, excess return to Beta ratio given above has to be calculated for each stock and rank them from highest to lowest. Then only those securities which have $R_i - R_f/\beta_i$ greater than cut-off point, fixed in advance can be selected.

The basis for finding the cut-off Rate C_i is as follows:

Basis for Cut-off Rate

For a portfolio of i stocks, C_i is given by cut-off rate:

$$\text{Cut-off Rate } C_i = \frac{\sigma_m^2 \sum_{t=1}^j \frac{(R_i - R_f)\beta_i}{\sigma_{ei}}}{1 + \sigma_m^2 \sum_{t=1}^j \frac{\beta_i^2}{\sigma_{ei}^2}}$$

σ_m^2 = variance in the market Index

σ_{ei}^2 = variance in the Stock movement in unsystematic Risk.

R_i, R_f, β_i have the same meanings as referred to above.

Q5. What is Return and Risk of a Portfolio using Sharpe Index Model ?

The expected return of the portfolio under Single Index Model can be calculated as follows:

$$R_p = \alpha_p + \beta_p R_m + e_i \quad \dots (1)$$

where, R_p = Return of the portfolio

α_p = Weighted average of α of individual securities

β_p = Weighted average of β of individual securities

e_i = Residual Error

In equation, portfolio α is the weighted average of the α of specific securities, as given in equation.

$$\alpha_p = \sum_{i=1}^n \omega_i \alpha_i$$

Similarly, β_p is the weighted average of the β of the securities, as given in equation.

$$\beta_p = \sum_{i=1}^n \omega_i \beta_i$$

So, the expected return of the portfolio is the sum of the weighted average of the non-market returns of individual securities and the weighted average of the market related returns of individual securities. For this purpose, the α and β of different securities are required to be calculated.

In the Single Index Model, the risk of a portfolio is defined as :

$$\sigma_p^2 = \beta_p^2 \sigma_m^2 + \sum_{i=1}^n \omega_i^2 \sigma_{ei}^2$$

Total Portfolio Risk = Portfolio Market Risk + Portfolio Residual Risk
= Systematic Risk + Unsystematic Risk

So, the risk of the portfolio is the weighted average of the market related risk of the individual securities in the portfolio plus the portfolio residual variance.

The systematic risk component of the portfolio variances is $\beta_p^2 \sigma_m^2$ and it depends on the β factor of individual components. This part of the risk depends on the portfolio β and σ_m^2 and will remain there regardless of the extent of portfolio diversification. Irrespective of the number of securities in the portfolio, its exposure to the market will be reflected in the systematic risk of the portfolio.

On the other hand, the second element of the portfolio risk is the unsystematic risk and is attributable to the firm specific components ' e_i ' which are all independent and have zero expected value. The law of averages applies to ' e_i ' and as more and more elements are added to the portfolio, these firm specific components tend to cancel out each other resulting in reducing non-market risk. So, this risk is diversifiable.

Thus, as diversification increases, the unsystematic risk gets smaller and the portfolio risk approaches the systematic risk, defined as $\beta_p^2 \sigma_m^2$. Which shows that diversification reduces firm-specific risk only. Even for a highly diversified portfolio, systematic risk remains there because of exposure of all elements to the common/market factor. The systematic risk, therefore, is non-diversifiable.

The Single Index Model is convenient and easy to apply. It relates security return to a market index. Moreover, it is evident that Single Index Model requires lesser estimations- than HM Model. The HM Model requires, for a n -security portfolio, $n(n + 3)/2$ estimates. On the other hand, Single Index Model requires only $3n + 2$ estimates. As noted earlier, for a 100 security portfolio, HM Model requires 5150 estimates while the Single Index Model requires only 302 estimates.

Q6. What are the differences between sharp Index model and markowitz model ?

Ans :

S.No.	Sharpe Index Model	S.No.	Markowitz Model
1.	Sharpe Index model was developed by william sharpe.	1.	Markowitz model was developed by Harry M. Markowitz.
2.	It is known as single index model.	2.	It is also known as mean-variance model.
3.	The formula for calculating sharpe ratio is $S_p = \frac{\text{Risk Premium}}{\text{Total risk}} = \frac{\bar{r}_p - r_f}{\sigma_p}$	3.	The formula for calculating optimum portfolio of two securities is $P = \sqrt{\sigma_A^2 R_A^2 + \sigma_B^2 R_B^2 + 2R_A R_B (\gamma_{AB} \sigma_A \cdot \sigma_B)}$
4.	It depicts the relationship between each returns to market index returns	4.	It depicts the relationship between risk and return.
5.	One of the assumption of this model is that the portfolio under consideration is the whole or substainally the whole of the investors total portfolio.	5.	One of the assumption of this model is that all investors have the same expected single period investment horizon.

Q7. Explain the assumptions and limitations of sharpe's single index model.

Ans :

(May-16)

Assumptions

1. A uniform holding period is used in estimating risk and return for each security.
2. The price movements of a security in relation to another do not depend primarily upon the nature of those two securities alone. They could reflect a greater influence that might have cropped up as a result of general business and economic conditions.
3. The relation between securities occurs only through their individual influences along with some indices of business and economic activities.
4. The indices, to which the returns of each security are correlated, are likely to be some securities' market proxy.
5. The random disturbance terms (e_j) has an expected value zero (0) and a finite variance. It is not correlated with the return on market portfolio (R_m) as well as with the error term (e_j) for any other securities.

Limitations

1. The calculation of Sharpe ratio pivots on the assumption that returns are normally distributed, but in real market scenarios, the distribution might suffer from kurtosis and fatter tails, which decreases the relevance of its use.
2. Sharpe ratio cannot differentiate between intermittent and consecutive losses as the risk measure is independent of the order of various data points. Thus, while it is good for long term analysis, it might be counterproductive if we decide on a portfolio which has a significant share of stocks which are losing value in the past few trading periods.
3. Another notable drawback of Sharpe ratio is that it cannot distinguish between upside and downside and focuses on volatility but not its direction. The ratio would penalize a system which exhibited sporadic sharp increases in equity, even if equity retracements were small.
4. As with most parameters, Sharpe ratios is backwards-looking and accounts for historical returns and volatility. The decisions based on the ratio assume future performance will be similar to the past.
5. It can be manipulated by individuals to present their best side. If the three-year Sharpe ratio of a portfolio does not present an interesting proposition, the fund manager could, in theory, calculate a 5 year time period knowing that the portfolio had performed well before.

5.5 SECURITY RETURN AND RISK

Q8. How measuring security return and risk under Single Index Model.

Ans :

Measuring Portfolio Return and Risk under Single Index Model:

Portfolio analysis and selection require as inputs the expected portfolio return and risk for all possible portfolios that can be constructed with a given set of securities. The return and risk of portfolios can be calculated using the single index model.

The expected return of a portfolio may be taken as portfolio alpha plus portfolio beta times expected market return. Thus,

$$\bar{R}_p = \alpha_p + \beta_p \bar{R}_m$$

The portfolio alpha is the weighted average of the specific returns (alphas) of the individual securities. Thus,

$$\alpha_p = \sum_{i=1}^n \omega_i \alpha_i$$

Where

ω_i = Proportion of investment in an individual security,

α_i = Specific return of an individual security.

The portfolio beta is the weighted average of the Beta coefficients of the individual securities. Thus,

$$\beta_p = \sum_{i=1}^n \omega_i \beta_i$$

Where

ω_i = Proportion of investment in an individual security.

β_i = Beta coefficient of an individual security.

The expected return of the portfolio is the sum of the weighted average of the specific returns and the weighted average of the market related returns of individual securities.

The risk of a portfolio is measured as the variance of the portfolio returns.

The risk of a portfolio is simply a weighted average of the market related risks of individual securities plus a weighted average of the specific risks of individual securities in the portfolio. The portfolio risk may be expressed as:

$$\sigma_p^2 = \beta_p^2 \sigma_m^2 + \sum_{i=1}^n \omega_i^2 \sigma_{ei}^2$$

The first term constitutes the variance of the market index multiplied by the square of portfolio beta and represents the market related risk (or systematic risk) of the portfolio. The second term is the weighted average of the variances of residual returns of individual securities and represents the specific risk or unsystematic risk of the portfolio.

As more and more securities are added to the portfolio, the unsystematic risk of the portfolio becomes smaller and is negligible for a moderately sized portfolio. Thus, for a large portfolio, the residual risk or unsystematic risk approaches zero and the portfolio risk becomes equal to $\beta_p^2 \sigma_m^2$. Hence, the effective measure of portfolio risk is β_p .

Let us consider a hypothetical portfolio of four securities. The table below, shows the basic input data such as weightage, alphas, betas and residual variances of the individual securities required for calculating portfolio return and variance.

Input Data

Security	Weightage (ω_i)	Alpha(α_i)	Beta (β_i)	Residual variance σ_{ei}^2
A	0.2	2.0	1.7	370
B	0.1	3.5	0.5	240
C	0.4	1.5	0.7	410
D	0.3	0.75	1.3	285
Portfolio value	1.0	1.575	1.06	108.45

The values of portfolio alpha, portfolio beta, and portfolio residual variance can be calculated as the

$$\sigma_p = \sum_{i=1}^n \omega_i \alpha_i$$

$$\begin{aligned}
 &= (0.2) (2) + (0.1) (3.5) + (0.4) (1.5) + (0.3) (0.75) \\
 &= 0.4 + 0.35 + 0.6 + 0.225 \\
 &= 1.575
 \end{aligned}$$

$$\begin{aligned}
 \beta_p &= \sum_{i=1}^n \omega_i \beta_i \\
 &= (0.2) (1.7) + (0.1) (0.5) + (0.4) (0.7) + (0.3) (1.3) \\
 &= 0.34 + 0.05 + 0.28 + 0.39 \\
 &= 1.06
 \end{aligned}$$

Portfolio residual variance

$$\begin{aligned}
 &= \sigma_p^2 = \sum_{i=1}^n \omega_i^2 \sigma_{et}^2 \\
 &= (0.2)^2 (370) + (0.1)^2 (240) + (0.4)^2 (410) + (0.3)^2 (285) \\
 &= 0.04(370) + 0.01(240) + 0.16(410) + 0.09(285) \\
 &= 14.8 + 2.4 + 65.6 + 25.65 = 108.45
 \end{aligned}$$

These values are noted in the last row of the table. Using these values, we can calculate the expected portfolio return for any value of projected market return. For a market return of 15 per cent, the expected portfolio return would be:

$$\begin{aligned}
 \bar{R}_p &= \alpha_p + \beta_p \bar{R}_m \\
 &= 1.575 + (1.06) (15) \\
 &= 1.575 + 15.9 \\
 &= 17.475
 \end{aligned}$$

For calculating the portfolio variance we need the variance of the market returns. Assuming a market return variance of 320, the portfolio variance can be calculated as:

$$\begin{aligned}
 \sigma_p^2 &= \beta_p^2 \sigma_m^2 + \sum_{i=1}^n \omega_i^2 \sigma_{et}^2 \\
 &= (1.06)^2 (320) + 108.45 \\
 &= 468.002
 \end{aligned}$$

The single index model provides a simplified method of representing the covariance relationships among the securities. This simplification has resulted in a substantial reduction in inputs required for portfolio analysis. In the single index model only three estimates are needed for each security in the portfolio, namely specific return α_1 , measure of systematic risk β_1 , and variance of the residual return, σ_{et}^2 . In addition to these, two estimates of the market index, namely the market return $\bar{R}_m$ and the variance of the market return σ_m^2 are also needed. Thus, for N securities, the number of estimates required would be $3N+2$.

For example, for a portfolio of 100 securities, the estimates required would be 302. In contrast to this, for the Markowitz model, a portfolio with 100 securities would require 5150 estimates of input data (i.e. $2N + [N(N-1)/2]$ estimates).

Using the expected portfolio returns and portfolio variances calculated with the single index model, the set of efficient portfolios is generated by means of the same quadratic programming routine as used in the Markowitz model.

5.6 MEASUREMENT OF PORTFOLIO RETURN AND PORTFOLIO RISK

Q9. What do you mean by Portfolio Return? How it is measure.

Ans :

The portfolio return is the return obtained from the gain or loss realized by the investment portfolio which is a composite of several types of investments. Portfolios aim is to deliver a return on the basis of pre-specified investment strategy to meet the investment objective, as well as the risk tolerance of the type of investors targeted by the portfolio. Portfolio return refers to the gain or loss realized by an investment portfolio containing several types of investments. Portfolios aim to deliver returns based on the stated objectives of the investment strategy, as well as the risk tolerance of the type of investors targeted by the portfolio.

As a first step in portfolio analysis, an investor needs to specify the list of securities eligible for selection or inclusion in the portfolio. Next he has to generate the risk-return expectations for these securities namely, the expected rate of return (mean) and the variance or standard deviation of the return. The expected return of a portfolio of assets is the weighted average of the return of the individual securities held in the portfolio. The weight applied to each return is the fraction of the portfolio invested in that security.

Example

Let us consider a portfolio of two equity shares P and Q with expected returns of 15 per cent and 20 per cent respectively.

If 40 per cent of the total funds are invested in share P and the remaining 60 per cent, in share Q, then the expected portfolio return will be:

$$(0.40 \times 15) + (0.60 \times 20) = 18 \text{ per cent}$$

Thus, expected portfolio return may be expressed as under:

$$\bar{r}_p = \sum_{i=1}^n x_i \bar{r}_i$$

Where,

$\bar{r}_p$ = Expected return of the portfolio.

x_i = Proportion of funds invested in security i.

$\bar{r}_i$ = Expected return of security i.

n = Number of securities in the portfolio.

5.7 PORTFOLIO RISK

Q10. What do you mean by Portfolio Risk? How it is measure?

Ans :

Investors all face a trade-off between risk and return. Investors are rewarded with returns for taking on risk – but that risk must be managed. For any portfolio, the appropriate level of risk must first be determined. And then the portfolio risk needs to be calculated to make sure it lies within that level of risk.

Portfolio risk reflects the overall risk for a portfolio of investments. It is the combined risk of each individual investment within a portfolio. The different components of a portfolio and their weightings contribute to the extent to which the portfolio is exposed to various risks.

The major risks a portfolio will face are market and other systemic risks. These risks need to be managed to ensure a portfolio meets its objectives. You can only manage this risk if you can first quantify it.

The variance of return and standard deviation of return are alternative statistical measures that are used for measuring risk in investment. These statistics measure the extent to which returns are expected to vary around an average over time. The variance or standard deviation of an individual security measures the riskiness of a security in absolute sense. For calculating the risk of a portfolio of securities, the riskiness of each security within the context of the overall portfolio has to be considered. This

depends on their interactive risk, i.e. how the returns of a security move with the returns of other securities in the portfolio and contribute to the overall risk of the portfolio. Covariance is the statistical measure that indicates the interactive risk of a security relative to others in a portfolio of securities. The way security returns vary with each other affects the overall risk of the portfolio.

Example

Two securities P and Q generate the following sets of expected returns, standard deviations and correlation coefficient:

$$\bar{r} = 15 \text{ per cent} \quad 20 \text{ per cent}$$

$$\sigma = 50 \text{ per cent} \quad 30 \text{ per cent}$$

$$r_{pq} = 0.60$$

A portfolio is constructed with 40 per cent of funds invested in P and the remaining 60 per cent of funds in Q.

The expected return of the portfolio is given by:

$$\begin{aligned}\bar{r}_p &= \sum_{i=1}^n x_i \bar{r}_i \\ &= (0.40 \times 15) + (0.60 \times 20) \\ &= 18 \text{ per cent}\end{aligned}$$

The variance of the portfolio is given by:

$$\begin{aligned}\sigma_p^2 &= x_1^2 \sigma_1^2 + x_2^2 \sigma_2^2 + 2x_1 x_2 (r_{12} \sigma_1 \sigma_2) \\ &= (0.40)^2 (50)^2 + (0.60)^2 (30)^2 + 2 (0.40) (0.60) (-0.60) (50) (30) \\ &= 400 + 324 - 432 = 292\end{aligned}$$

The standard deviation $\sqrt{292} = 17.09$

The first set of factors is parametric to the investor i.e. he has no control over the returns, risks and covariance of individual securities. The second set of factors are choice variables i.e., the investor can choose the proportions of each security in the portfolio.

Q11. What are the types of Portfolio Risk?

Ans :

Types of Portfolio Risk

There are lots of types of investment risks, both at the portfolio level and the individual security level. Firstly, the following are examples of risks that are specific to individual securities. These risks can easily be managed through diversification:

- Liquidity risk
- Default risk
- Regulatory risk and political risk
- Duration risk
- Style risk

Managing these risks requires more creative diversification and other strategies. The following are the main portfolio level risks.

The greatest risk facing any portfolio is market risk. This is also known as systematic risk. Most assets correlate to some extent. The result is that a stock market crash will result in most stocks falling. In fact, most financial assets will lose value during a bear market.

At the other end of the risk spectrum is inflation risk. This is the risk that a portfolio's buying power will not keep up with inflation. Thus, the reason a portfolio needs to include "risky assets" and risk needs to be managed. Over the long term, owning risky assets allows you to outperform inflation.

Reinvestment risk can affect the entire bond portion of a portfolio. If bonds are purchased when yields are high, the holder earns those high yields even if interest rates fall. However, if yields are low when the bond matures, the principal cannot be reinvested at a high yield.

Concentration risk concerns the correlation of assets within a portfolio. Having too much exposure to specific sectors, assets, regions can create systemic risks for that portion of the portfolio. Hidden risk can occur when assets do not seem correlated but are affected by the same economic forces. For example, Chinese equities, commodities and emerging market currencies would all be affected by a downturn in the Chinese economy.

Interest rate risk and currency risk both affect any portfolio. All assets in a portfolio should be analyzed to determine their exposure to interest rates and currencies.

5.8 MULTIPLE INDEX MODEL

Q12. What is Multiple Index Model? Explain in brief.

Ans :

The single index model is in fact an oversimplification. It assumes that stocks move together only because of a common co-movement with the market. Many researchers have found that there are influences other than the market that cause stocks to move together. Multi-index models attempt to identify and incorporate these non-market or extra-market factors that cause securities to move together also into the model. These extra-market factors are a set of economic factors that account for common movement in stock prices beyond that accounted for by the market index itself. Fundamental economic variables such as inflation, real economic growth, interest rates, exchange rates etc. would have a significant impact in determining security returns and hence, their co-movement.

A multi-index model augments the single index model by incorporating these extra market factors as additional independent variables. For example, a multi-index model incorporating the market effect and three extra-market effects takes the following form:

$$\bar{R}_i = \alpha_i + \beta_m R_m + \beta_1 R_1 + \beta_2 R_2 + \beta_3 R_3 + e_i$$

The model says that the return of an individual security is a function of four factors - the general market factor R_m and three extra-market factors R_1 , R_2 and R_3 . The beta coefficients attached to the four factors have the same meaning as in the single index model. They measure the sensitivity of the stock return to these factors. The alpha parameter α_i and the residual term e_i also have the same meaning as in the single index model.

Calculation of return and risk of individual securities as well as portfolio return and variance follows the same pattern as in the single index model. These values can then be used as inputs for portfolio analysis and selection.

A multi-index model is an alternative to the single index model. However, it is more complex and requires more data estimates for its application. Both the single index model and the multi-index model have helped to make portfolio analysis more practical.

PROBLEMS

1. Following information is available in respect of Securities A and B :

	Security A	Security B
Beta	.7	1.2
ρ-Square	.20	.12
σ_M	20%	

Find out standard deviation of each security. Security. Segregate the variance of each security into systematic and firm specific component. Also find out covariance and correlation coefficient between the returns of A and B.

Sol :

As per equation,

$$\sigma_s^2 = \frac{\beta_s^2 \sigma_M^2}{\rho_{sM}^2}$$

So, $\sigma_A^2 = \frac{\beta_A^2 \sigma_M^2}{\rho_{AM}^2} = \frac{(.7)^2 (20)^2}{.20} = 980$

$$\sigma_A = 31.30\%$$

and, $\sigma_B^2 = \frac{\sigma_B^2 \sigma_M^2}{\rho_{MB}^2} = \frac{(1.2)^2 (20)^2}{.12} = 4,800$

$$\sigma_B = 69.28$$

Systematic Risk for Security

$$A = \beta_A^2 \sigma_M^2 = (.7)^2 (20)^2 = 196$$

Unsystematic Risk for Security A = Total Variance – Systematic Risk
= 980 – 196 = 784

Systematic risk for Security B = $\beta_A^2 \sigma_M^2$
= $(1.2)^2 (20)^2 = 576$

Unsystematic Risk for Security B = Total Variance – Systematic Risk
= 4,800 – 576 = 4,224

Covariance between two Securities = $\beta_A \beta_B \sigma_M^2$
= $(.7) (1.2) (20)^2$
= 336

Correlation Coefficient = $\text{Cov}_{AB} / \sigma_A \sigma_B$
= $336 / (31.30 \times 69.28)$
= .155

2. Mr. X has a portfolio which has α of 2.9% and β of 0.9. Expected return of the market portfolio is 18%. Find out the expected return of the portfolio.

Sol :

Expected return of the portfolio can be states as :

$$\begin{aligned} R_p &= \alpha_p + \beta_p R_M = 2.9 + .9(18) \\ &= 2.9 + 17.2 = 20.1\% \end{aligned}$$

3. Market index return for period.

$t = 15\%$, $a_1 = 4\%$, $\beta = 1.4$

Calculate return for stock using single index model.

Sol :

(Imp.)

Single index model is,

$$\begin{aligned} R_i &= a_i + \beta_i R_m + e_i \\ &= 4\% + (1.4)(15\%) \\ &= 4\% + 21\% \\ &= 25\% \end{aligned}$$

$\therefore$ Expected return for stock i = 25%

If suppose, the actual return on stock i = 22%

Then the error term = Actual return – Expected return

$$= 22\% - 25\%$$

$$= -3\%$$

The term beta (β) plays a pivotal role in knowing to what extent, a particular stock is sensitive when it is compared with market.

4. Bollywood Ltd. has invested ₹ 50,000 in a portfolio of shares. It has invested 30% in shares of A Ltd. and balance in shares of B Ltd. The expected returns from these two companies are 15% and 12% respectively. Find out the expected return in percentage and in absolute amount.

Sol :

The % expected return may be found as under :

Security	Weight	Return	W × R	Amount	Return
A Ltd.	.30	.15	.0450	₹ 15,000	₹ 2,250
B Ltd.	.70	.12	0.840	35,000	4,200
	1.00		.1290	50,000	6,450

$$\text{Absolute Return} = ₹ 6,450$$

$$= (6,450/50,000) = 12.90\%$$

$$\% \text{ Return} = .1290 \text{ or } 12.90\%$$

Portfolio return can also be found as :

$$\begin{aligned} r_p &= \sum_{i=1}^n \omega_i r_i \\ &= (.3 \times .15) + (.7 \times .12) = .129 \text{ or } 12.9\% \end{aligned}$$

5. Famac Ltd. is constructing a portfolio of risky and risk-free investments by investing 30% and 70% of its funds in them respectively. The expected return on risky investments is 15% and on risk-free investments is 7%. the standard deviation (risk) of the risky investments is 8%. Find out the expected return and the risk of the portfolio.

Sol :

The expected returns, $\bar{r}_p$, of the portfolio and the risk of the portfolio can be calculated as follows:

$$\bar{r}_p = (.15 \times .30) + (.07 \times .70)$$

$$= .045 + .049$$

$$= .094 \text{ or } 9.4\%$$

$$= .094 \text{ or } 9.4\%$$

$$\sigma_p = (.30 \times .08) = .0240 \text{ or } 2.4\%$$

It may be noted that the risk of the portfolio depends upon the risk of the risky.

6. The risk and return characteristics of the two projects are shown below :

	X	Y
Expected return	12%	20%
Risk	3%	7%

An investor plans to invest 80% of its available funds in Project X and 20% in Y. The correlation coefficient between the returns of the projects is +1.0.

Find out the risk and return of the portfolio of X and Y.

Sol :

the expected return of the portfolio is :

Investment	Expected Return	Proportion	Weighted Return
X	12%	.8	9.6
Y	20%	.2	4.0
			13.6

The risk of the portfolio is :

$$\begin{aligned}\sigma_p^2 &= \sqrt{\sigma_x^2 \omega_x^2 + \sigma_y^2 \omega_y^2 + 2\omega_x \omega_y \sigma_x \sigma_y \rho_{xy}} \\ &= \sqrt{(3^2 \times .8^2) + (.2^2 \times 7^2) + 2 \times 3 \times 7 \times .8 \times .2 \times 1} \\ &= \sqrt{14.44} \\ \sigma_p &= 3.8\end{aligned}$$

So, the risk and return of the portfolio are 3.8 and 13.6% respectively.

7. The following information is available in respect of three securities:

Security	Exp. Return, $\bar{r}$	Risk (σ)
I	18%	20%
II	10%	12%
III	10%	15%

If a portfolio is to be constructed, would any security dominate other? If yes, why? Find out the coefficient of variation of securities I and III.

Sol :

(Imp.)

Out of the three securities, the security II would dominate over security III because security II has the same return of 10% as security III, but the security II has lower risk, σ , of 12% as compared to 15% of security III. So, security II would dominate over security III.

Coefficient of variation of Security,

$$I = \frac{\sigma}{\bar{r}} = \frac{.20}{.18} = 1.11$$

$$II = \frac{12}{10} = 1.2$$

$$III = \frac{\sigma}{\bar{r}} = \frac{.15}{.10} = 1.50$$

8. RST Ltd. has a portfolio of assets which has a risk (σ) of 39. The market portfolio has a return of 14% and the standard deviation of 28. Given the risk-free rate of return of 9%, find out the expected return on the portfolio. Apply Single Index Model.

Sol :

As per Single Index Model,

$$\begin{aligned}\bar{r} &= I_{RF} + (R_M - I_{RF}) \frac{\sigma_P}{\sigma_M} \\ &= .09 + (.14 - .09) \frac{39}{28} \\ &= 15.96\%\end{aligned}$$

9. Two investor want to crate a portfolio of 25 securities and 60 securities respectively. How many inputs are required if they select Markowitz Model or Sharpe Index Model.

Sol :

Inputs required under different Models are

No. of Securities			Markowitz Model	Sharpe Index Model
Investor	I	25	$N(N + 3) / 2$	$3N + 2$
			$25(25 + 3) / 2 = 350$	$3 \times 25 + 2 = 77$
	II	60	$60(60 + 3) / 2 = 1,890$	$3 \times 60 + 2 = 182$

10. An investor has constructed a portfolio with the following features:

Security	Weight	Total Variance	Expected Return	Beta
A	.25	.07	.40	0.50
B	.25	.05	.25	0.50
C	.50	.07	.21	1.00

Variance of the market return is 0.06. Find out

- Expected Return of the portfolio.
- Beta of the portfolio.
- Residual Variance of each of the security.

Sol :

(Imp.)

(i) Expected Return of the Portfolio

$$\begin{aligned}
 R_p &= \sum_{i=1}^n \omega_i r_i \\
 &= (.25 \times .40) + (.25 \times .25) + (.50 \times .21) \\
 &= 0.1 + 0.0625 + 0.105 = 0.2675 \\
 &= 26.75\%
 \end{aligned}$$

(ii) Beta of the Portfolio

$$\begin{aligned}
 \beta_p &= \sum_{i=1}^n \omega_i \beta_i \\
 &= (.25 \times .50) + (.25 \times .50) + (.50 \times 1) \\
 &= 0.125 + 0.125 + 0.50 \\
 &= 0.75 = 75\%
 \end{aligned}$$

(iii) Residual Variance of each of Securities

$$\begin{aligned}
 \sigma_i^2 &= \beta_i^2 \alpha_{m2}^2 + \sigma_e^2 \\
 \sigma_e^2 &= \sigma_i^2 - \beta_i^2 \sigma_M^2 \\
 \alpha_{e2}^2 &= .07 - (.50)^2 (.06) = 0.055 \\
 \alpha_{eB}^2 &= .07 - (.50)^2 (.06) = .035 \\
 \sigma_{ee}^2 &= .07 - (.1)^2 (.06) = .066
 \end{aligned}$$

11. Two securities, X and Y, have betas of 1.2 and 0.8 respectively. The standard deviations of their random error term are 6.06 and 4.75. Standard deviation of the market is 8.

A portfolio of equal proportion of these two securities is constructed.

- Find out the variance of these securities.
- Find out the Beta,
- Variance of the portfolio random error and
- Variance of the portfolio.

Sol :

(i) Variance of the Securities

$$\begin{aligned}\sigma_A^2 &= \beta_a^2 \sigma_M^2 + \sigma_{eA}^2 = (1.2)^2 (8)^2 + (6.06)^2 \\ &= 1.44(64) + 36.72 \\ &= 92.16 + 36.72 \\ &= 128.88 \\ \sigma_B^2 &= (.8)^2 (8)^2 + (4.76)^2 \\ &= 0.64(64) + 22.65 \\ &= 63.62\end{aligned}$$

(ii) Beta of the Portfolio

$$\begin{aligned}\beta_p &= \sum_{i=1}^n \omega_i \beta_i \\ &= (.05 \times 1.2) + (.05 \times .8) = 1.00\end{aligned}$$

(iii) Variance of the Portfolio Random Error

$$\begin{aligned}\sigma_{eP}^2 &= \sum_{i=1}^n \omega_i^2 \sigma_{ei}^2 \\ &= (.5)^2 (6.06)^2 + (.5)^2 (4.76)^2 = 14.84\end{aligned}$$

(iv) Variance of the Portfolio

$$\begin{aligned}\sigma_P^2 &= \beta_P^2 \sigma_M^2 + \sum_{i=1}^n \omega_i^2 \sigma_{ei}^2 \\ &= (1) (8)^2 + 14.84 \\ &= (1) (64) + 14.84 \\ &= 78.64\end{aligned}$$

12. Mr. X has observed that the return and risk (a) of the market portfolio are 14% and 40%. The return on the zero-P portfolio is 8%. Given that risk-free lending and borrowing are allowed, complete the following table :

Asset	Expected Return (R)	Risk (σ) Variance	β	Residual
I	20%	—	—	4.75
II	26%	—	—	6.50

Sol :

Calculation of β

$$R_S = I_{RF} + (R_M - I_{RF}) \beta$$

$$\beta = \frac{R_S - I_{RF}}{R_M - I_{RF}}$$

$$\text{Now, } \beta_I = \frac{.20 - .08}{.14 - .08} = 2$$

$$\beta_{II} = \frac{.26 - .08}{.14 - .08} = 3$$

As per Single Index Model

$$\begin{aligned} \sigma_I^2 &= \beta_I^2 \sigma_M^2 + e_I^2 \\ &= (2)^2 (40)^2 + 4.75 \\ &= 6404.75 \end{aligned}$$

$$\sigma_I = 80.03$$

$$\begin{aligned} \sigma_{II}^2 &= (3)^2 (40)^2 + 6.50 \\ &= 14406.50 \end{aligned}$$

$$\sigma_{II} = 120.03$$

- 13. Following is the information available about three securities which also constitute the market.**

Security	Beta	Expected	Return Standard Deviation
X	0.2	10%	30
Y	1.0	18%	40
Z	1.7	25%	50

Standard deviation of the market index is 25. Given the Single Index Model, find out:

- Covariance between Security X and the Market Index.
- Segregate the variance of Security X into Systematic and Firm-specific components.

Sol :

Covariance between Security X and Market Index

$$\begin{aligned}\text{Cov}_{(X, M)} &= \beta_X \sigma_M^2 \\ &= .2(25)^2 \\ &= 125\end{aligned}$$

Total Variance of Security P

$$\sigma_X^2 = \beta_X^2 \sigma_M^2 + e_X^2$$

$$\text{Now, } \sigma_X^2 = (30)^2 = 900$$

$$\beta_X^2 \sigma_M^2 = (.2)^2 (25)^2 = 25$$

$$\begin{aligned}\text{So, } e_X^2 &= \sigma_X^2 - \beta_X^2 \sigma_M^2 \\ &= 900 - 25 \\ &= 875\end{aligned}$$

So, the total risk of security X is 900 which is comprising of systematic risk of 25 and firm-specific risk of 875.

14. Calculate expected Returns on Portfolio

Security	Expected Return	Proposition of Investment
ITC	12%	30%
MRF	15%	30%
SJS	20%	40%

Sol :

$$\begin{aligned}\bar{R}_p &= \bar{R}_1 \omega_1 + \bar{R}_m \omega_m + \bar{R}_s \omega_s \\ &= 12(0.3) + 15(0.3) + 20(0.4)\end{aligned}$$

$$\bar{R}_p = 3.6 + 4.5 + 8 = 16.1\%$$

15. There are three securities in a portfolio find out Return on portfolio.

Expected Return on "E" security = 15%

Expected Return on "F" security = 18%

Expected Return on "G" security = 12%

Proportion of Investment in "E" security = 35%

Proportion of Investment in "F" security = 30%

Balance in "G" security = 35%

Sol :

$$\bar{R}_p = \bar{R}_E \omega_E + \bar{R}_F \omega_F + \bar{R}_G \omega_G$$

$$\bar{R}_p = 15(0.35) + 18(0.30) + 12(0.35)$$

$$\bar{R}_p = 5.25 + 5.4 + 4.2$$

$$\bar{R}_p = 14.85\%.$$

16. Investors Assessment of Return on the share of "Evergreen" corporation and "Green King" corporation is as follows :

Events	Ever Green Corp	Green King Corp
1	35%	22%
2	28%	16%
3	10%	14%

With a proportion of total investment in shares of Ever Green Corporation is 40%. And Green King Corporation 60%. What is the return on portfolio.

Sol :

Calculation of Expected Return

$$\bar{R}_E = \frac{35 + 28 + 10}{3} = \frac{73}{3} = 24.33$$

$$\bar{R}_G = \frac{22 + 16 + 14}{3} = \frac{52}{3} = 17.33$$

$$\bar{R}_p = \bar{R}_E \omega_E + \bar{R}_G \omega_G$$

$$\bar{R}_p = 24.33 \times 0.4 + 17.33 \times 0.6$$

$$\bar{R}_p = 9.732 + 10.398$$

$$\bar{R}_p = 20.13\%.$$

17. You are Evaluating an investment in two companies whose past year returns are as follows :

Events	Probability	X Corp.	Y Corp
1	0.3	36%	22%
2	0.2	26%	16%
3	0.3	12%	14%
4	0.2	15%	18%

Assume the proportion investment in both securities is equal. Calculate Return on portfolio

Sol :

Calculation of Expected Return

$$\bar{R}_x = 36(0.3) + 26(0.2) + 12(0.3) + (0.2)15$$

$$= 10.8 + 5.2 + 3.6 + 3$$

$$\bar{R}_x = 22.6$$

$$\bar{R}_y = 22(0.3) + 16(0.2) + 14(0.3) + 18(0.2)$$

$$\bar{R}_y = 6.6 + 3.2 + 4.2 + 3.6$$

$$\bar{R}_y = 17.6$$

$$\bar{R}_p = 22.6(0.5) + 17.6(0.5)$$

$$= 11.3 + 8.8$$

$$\bar{R}_p = 20.1$$

18. Coefficient of Correlation is 1

Proportion of investment in security 1 is 60% and in security II is 40%. These security have the following Returns :

Events	Prob	Security-I	Security -II
A	0.3	10%	8%
B	0.2	6%	14%
C	0.2	8%	16%
D	0.3	12%	20%

Find out expected Returns on each security, Expected Returns on portfolio, Standard Deviation of each security (σ_1 and σ_2).

Sol :

Calculation of Expected Return on Each Security**Security - I**

$$\begin{aligned}\bar{R}_I &= (0.3 \times 10) + (0.2 \times 6) + (0.2 \times 8) + (0.3 \times 12) \\ &= 3 + 1.2 + 1.6 + 3.6 = 9.4\end{aligned}$$

Security - II

$$\begin{aligned}\bar{R}_{II} &= (0.3 \times 8) + (0.2 \times 14) + (0.2 \times 16) + (0.3 \times 20) \\ &= 2.4 + 2.8 + 3.2 + 6 = 14.4\end{aligned}$$

Calculation of Standard Deviation**Security - I**

Events	Returns	$(R - \bar{R}_I)$	$(R - \bar{R}_I)^2$	Prob	$\text{Prob}(R - \bar{R}_I)^2$
A	10	0.6	0.36	0.3	0.1080
B	6	- 3.4	11.56	0.2	2.3120
C	8	- 1.4	1.96	0.2	0.3920
D	12	2.6	6.76	0.3	2.028
					4.84

$$\sigma = \sqrt{\text{Prob}(R - \bar{R}_I)^2} = \sqrt{4.84}$$

$$\therefore \sigma = 2.2$$

Security - II

Events	Returns	$(R - \bar{R}_{II})$	$(R - \bar{R}_{II})^2$	Prob	$\text{Prob}(R - \bar{R}_{II})^2$
A	8	- 6.4	40.96	0.3	12.288
B	14	- 0.4	0.16	0.2	0.032
C	16	1.6	2.56	0.2	0.512
D	20	5.6	31.36	0.3	9.408
					22.24

$$\sigma = \sqrt{\text{Prob}(R - \bar{R}_{II})^2}$$

$$\begin{aligned}\sigma &= \sqrt{22.24} \\ &= 4.71\end{aligned}$$

19. Calculate Beta and Alpha from the following information :

Events	$R_{A(s)}$	R_m
1	20%	25%
2	27%	8%
3	7%	11%
4	14%	28%
5	33%	17%
6	- 4%	- 2%

Sol :

Calculating Beta

Events	X	Y	xy	x ²
1	25	20	500	625
2	8	27	216	64
3	11	7	77	121
4	28	14	392	784
5	17	33	561	289
6	-2	-4	8	4
	87	97	1754	1887

$$\beta = \frac{N \cdot \sum xy - \sum x \cdot \sum y}{N \cdot \sum x^2 - (\sum x)^2}$$

$$\beta = \frac{6 \cdot 1754 - (87)(97)}{6(1887) - (87)^2}$$

$$\beta = \frac{10524 - 8439}{11322 - 7569} = \frac{2085}{3753}$$

$$\beta = 0.56$$

Calculation of Alpha

$$\alpha = \bar{y} - \beta \cdot \bar{X}$$

Calculating $\bar{X} = \frac{\sum x}{N} \Rightarrow \frac{87}{6} = 14.5$

Calculating $\bar{Y} = \frac{\sum y}{N} \Rightarrow \frac{97}{6} = 16.17$

$$\alpha = 16.17 - 0.56 (14.5)$$

$$\alpha = 16.17 - 8.12$$

$$\alpha = 8.05$$

20. Mr. X Portfolio has 5 securities with the following information

Security	Value	Beta
A	100	1.1
B	50	1.2
C	75	0.75
D	125	0.8
E	150	1.4

Calculate Beta on portfolio

Sol :

$$\beta_p = \sum p \cdot \beta$$

P = Proportion of Investment (or) $\beta_p = \sum w \cdot \beta$

Security	Value	β	w (Proportion)	w β
A	100	1.1	$\frac{100}{500} = 0.2$	0.22
B	50	1.2	$\frac{50}{500} = 0.1$	0.12
C	75	0.75	$\frac{75}{500} = 0.15$	0.1125
D	125	0.80	$\frac{125}{500} = 0.25$	0.2
E	150	1.40	$\frac{150}{500} = 0.3$	0.42
	500			1.0725

Return on Portfolio = 1.0725

21. Calculate from the following particulars expected return on portfolio and beta on portfolio.

Security	Returns	Value	Rate
A	12%	Rs.100	1.1
B	10%	Rs.90	1.25
C	12%	Rs.100	1.1
D	14%	Rs.120	1.3
E	10%	Rs.100	1

Sol :

Security	Value	Returns	β	(w)	w β
A	100	12%	1.1	0.20	0.220
B	90	10%	1.25	0.18	0.225
C	100	12%	1.1	0.20	0.220
D	120	14%	1.3	0.24	0.312
E	100	10%	1	0.20	0.200
	510				1.18

Calculation of Return on Portfolio

$$\bar{R}_p = \bar{R}_A \omega_A + \bar{R}_B \omega_B + \bar{R}_C \omega_C + \bar{R}_D \omega_D + \bar{R}_E \omega_E$$

$$\bar{R}_p = 12(0.20) + 10(0.18) + 12(0.20) + 14(0.24) + 10(0.20)$$

$$\bar{R}_p = 2.4 + 1.8 + 2.4 + 3.36 + 2$$

$$\bar{R}_p = 11.96\%$$

Rahul Publications

Exercise Problems

1. The x on y companies have the following expected risk and return inputs for the following year.

$$R_x = 15\%, \quad \frac{2}{x} = 16\%$$

$$R_y = 18\%, \quad \frac{2}{y} = 20\%$$

$$xy = 0.75$$

The proposition of amount investment equally in cash security. Calculate portfolio return & risk.

[Ans : $r_p = 0.165$ or 16.5% $\beta = 0.0559$ $\sigma_x = 0.0307$ or 3.07% $\sigma_y = 0.01377$ or 1.377%]

2. Find out the risk and return of the portfolio consisting of following securities:

Security	Weight	α	β	σ^2
A	0.10	- 0.80	1.6	270
B	0.20	2.00	1.2	320
C	0.30	1.70	0.8	450
D	0.40	1.20	1.3	180

Return of the market portfolio is given as 19% and the risk of the market index is 12%.

[Ans : $R_p = 23.35\%$, $\sigma_p = 16.69$]

3. The data for four stocks are given. The data are the result of correlating returns on these stocks with the returns on the market index.

Stock	α_i	β_i	Residual variance (%) σ^2
A	- 1.50	1.25	24
B	2.15	1.47	47
C	1.70	0.69	36
D	0.83	0.88	30

The market index is expected to have a return of 17.5% and a variance of return of 28%
Calculate the portfolio return and risk according to Sharpe's single index model.

[Ans : $R_m = 17.5\%$ $\sigma_m = 28$, $\sigma_p = 28$]

Short Question and Answers

1. Portfolio Selection.

Ans :

A portfolio is a basket of assets that can include stocks, bonds, commodities, currencies, cash equivalents, as well as their fund counterparts. An ideal portfolio contains a varied assortment of investments. This can range from government bonds to small-cap stocks to forex currency. But it's important to manage your portfolio well. Otherwise, you could end up with lower returns.

Portfolio selection is the unifying process in Modern Portfolio Theory, but the best way to select portfolios is a matter of intense debate.

The process by which one chooses the securities, derivatives, and other assets to include in a portfolio. In making securities selections, one considers the risk, the return, the ethical implications, and other factors affecting both of the individual securities and the portfolio as a whole.

2. Feasible set of portfolio.

Ans :

With a limited number of securities an investor can create a very large number of portfolios by combining these securities in different proportions. These constitute the feasible set of portfolios in which the investor can possibly invest. This is also known as the portfolio opportunity set. Each portfolio in the opportunity set is characterised by an expected return and a measure of risk, viz., variance or standard deviation of returns. Not every portfolio in the portfolio opportunity set is of interest to an investor. In the opportunity set some portfolios will obviously be dominated by others. A portfolio will dominate another if it has either a lower standard deviation and the same expected return as the other, or a higher expected return and the same standard deviation as the other. Portfolios that are dominated by other portfolios are known as inefficient

portfolios. An investor would not be interested in all the portfolios in the opportunity set. He would be interested only in the efficient portfolios.

A feasible portfolio is a group of investments picked from the available alternatives within an investor's capital resources limits, investment goals, and tolerance for risk. Put simply, it is a portfolio an investor can build up, given the assets he or she has available.

Each feasible portfolio is not always an efficient portfolio and has its own risk and reward profile. Investors have the option to choose between ranges of feasible portfolios.

3. Sharpe Single Index Model.

Ans :

This model assumes that co-movement between stocks is due to change or movement in the market index. Casual observation of the stock prices over a period of time reveals that most of the stock prices move with the market index. When the Sensex increases, stock prices also tend to increase and vice-versa. This indicates that some underlying factors affect the market index as well as the stock prices. Stock prices are related to the market index and this relationship could be used to estimate the return on stock. Towards this purpose, the following equation can be used:

$$R_i = \alpha_i + \beta_i R_m + e_i$$

Where,

R_i = expected return on security i

α_i = intercept of the straight line or alpha co-efficient

β_i = slope of straight line or beta co-efficient

R_m = the rate of return on market index

e_i = error term

4. What are the differences between sharp Index model and markowitz model ?*Ans :*

S.No.	Sharpe Index Model	S.No.	Markowitz Model
1.	Sharpe Index model was developed by william sharpe.	1.	Markowitz model was developed by Harry M. Markowitz.
2.	It is known as single index model.	2.	It is also known as mean-variance model.
3.	The formula for caculating sharpe ratio is $S_p = \frac{\text{Risk Premium}}{\text{Total risk}} = \frac{\bar{r}_p - r_f}{\sigma_p}$	3.	The formula for calculating optimum portfolio of two securities is $P = \sqrt{\sigma_A^2 R_A^2 + \sigma_B^2 R_B^2 + 2R_A R_B (\gamma_{AB} \sigma_A \cdot \sigma_B)}$
4.	It depicts the relationship between each returns to market index returns	4.	It depicts the relationship between risk and return.
5.	One of the assumption of this model is that the portfolio under consideration is the whole or substainally the whole of the investors total portfolio.	5.	One of the assumpttion of this model is that all investors have the same expected single period investment horizon.

5. Portfolio Return.*Ans :*

The portfolio return is the return obtained from the gain or loss realized by the investment portfolio which is a composite of several types of investments. Portfolios aim is to deliver a return on the basis of pre-specified investment strategy to meet the investment objective, as well as the risk tolerance of the type of investors targeted by the portfolio. Portfolio return refers to the gain or loss realized by an investment portfolio containing several types of investments. Portfolios aim to deliver returns based on the stated objectives of the investment strategy, as well as the risk tolerance of the type of investors targeted by the portfolio.

As a first step in portfolio analysis, an investor needs to specify the list of securities eligible for selection or inclusion in the portfolio. Next he has to generate the risk-return expectations for these securities namely, the expected rate of return (mean) and the variance or standard deviation of the return. The expected return of a portfolio of assets is the weighted average of the return of the individual securities held in the portfolio. The weight applied to each return is the fraction of the portfolio invested in that security.

6. What is Multiple Index Model?*Ans :*

The single index model is in fact an overs implification. It assumes that stocks move together only because of a common co-movement with the market. Many researchers have found that there are influences

other than the market that cause stocks to move together. Multi-index models attempt to identify and incorporate these non-market or extra-market factors that cause securities to move together also into the model. These extra-market factors are a set of economic factors that account for common movement in stock prices beyond that accounted for by the market index itself. Fundamental economic variables such as inflation, real economic growth, interest rates, exchange rates etc. would have a significant impact in determining security returns and hence, their co-movement.

A multi-index model augments the single index model by incorporating these extra market factors as additional independent variables. For example, a multi-index model incorporating the market effect and three extra-market effects takes the following form:

$$\bar{R}_i = \alpha_i + \beta_m R_m + \beta_1 R_1 + \beta_2 R_2 + \beta_3 R_3 + e_i$$

The model says that the return of an individual security is a function of four factors - the general market factor R_m and three extra-market factors R_1 , R_2 and R_3 . The beta coefficients attached to the four factors have the same meaning as in the single index model. They measure the sensitivity of the stock return to these factors. The alpha parameter α_i and the residual term e_i also have the same meaning as in the single index model.

Calculation of return and risk of individual securities as well as portfolio return and variance follows the same pattern as in the single index model. These values can then be used as inputs for portfolio analysis and selection.

A multi-index model is an alternative to the single index model. However, it is more complex and requires more data estimates for its application. Both the single index model and the multi-index model have helped to make portfolio analysis more practical.

7. Assumptions of single index model

Ans :

- (i) A uniform holding period is used in estimating risk and return for each security.
- (ii) The price movements of a security in relation to another do not depend primarily upon the nature of those two securities alone. They could reflect a greater influence that might have cropped up as a result of general business and economic conditions.
- (iii) The relation between securities occurs only through their individual influences along with some indices of business and economic activities.
- (iv) The indices, to which the returns of each security are correlated, are likely to be some securities' market proxy.
- (v) The random disturbance terms (e_i) has an expected value zero (0) and a finite variance. It is not correlated with the return on market portfolio (R_m) as well as with the error term (e_j) for any other securities.

8. Limitations of sharpe's single index model.

Ans :

- (i) The calculation of Sharpe ratio pivots on the assumption that returns are normally distributed, but in real market scenarios, the distribution might suffer from kurtosis and fatter tails, which decreases the relevance of its use.

- (ii) Sharpe ratio cannot differentiate between intermittent and consecutive losses as the risk measure is independent of the order of various data points. Thus, while it is good for long term analysis, it might be counterproductive if we decide on a portfolio which has a significant share of stocks which are losing value in the past few trading periods.
- (iii) Another notable drawback of Sharpe ratio is that it cannot distinguish between upside and downside and focuses on volatility but not its direction. The ratio would penalize a system which exhibited sporadic sharp increases in equity, even if equity retracements were small.
- (iv) As with most parameters, Sharpe ratios is backwards-looking and accounts for historical returns and volatility. The decisions based on the ratio assume future performance will be similar to the past.
- (v) It can be manipulated by individuals to present their best side. If the three-year Sharpe ratio of a portfolio does not present an interesting proposition, the fund manager could, in theory, calculate a 5 year time period knowing that the portfolio had performed well before.

9. Measuring Portfolio Return and Risk under Single Index Model

Ans :

Portfolio analysis and selection require as inputs the expected portfolio return and risk for all possible portfolios that can be constructed with a given set of securities. The return and risk of portfolios can be calculated using the single index model.

The expected return of a portfolio may be taken as portfolio alpha plus portfolio beta times expected market return. Thus,

$$\bar{R}_p = \alpha_p + \beta_p \bar{R}_m$$

The portfolio alpha is the weighted average of the specific returns (alphas) of the individual securities. Thus,

$$\alpha_p = \sum_{i=1}^n \omega_i \alpha_i$$

Where

ω_i = Proportion of investment in an individual security,

α_i = Specific return of an individual security.

Choose the Correct Answer

1. An additional return obtained by a portfolio manager for his superior stock selection ability is [a]
(a) Net selectivity (b) Total selectivity
(c) Marginal selectivity (d) None
2. The line connecting the intercept and the market portfolio is, [b]
(a) Capital market line (b) Security market line
(c) Efficient frontier (d) Portfolio line
3. Funds established for those who are willing to accept significant risks in the hope of very high returns are _____. [a]
(a) Stock funds (b) Bond funds
(c) Leveraged funds (d) Special funds
4. A change in portfolio profile buying and selling shares in response to new information is _____. [a]
(a) Portfolio upgrading (b) Portfolio balancing
(c) Portfolio retention (d) Portfolio revision
5. According to Markowitz, rational investors will seek efficient portfolios because these portfolios are optimal based on: [c]
(a) expected return (b) risk
(c) expected return and risk. (d) transactions costs.
6. Under the Markowitz model, investors. [b]
(a) are assumed to be risk-seekers
(b) are not allowed to use leverage
(c) are assumed to be institutional investors
(d) all of the above
7. Which of the following is not one of the assumptions of portfolio theory? [d]
(a) Liquidity of positions
(b) Investor preferences are based only on expected return and risk.
(c) Low transactions costs.
(d) A single investment period

8. The Markowitz model assumes most investors are: [a]
(a) risk averse (b) risk neutral
(c) risk seekers (d) risk moderators
9. For any or lower degree of risk, the highest or any expected return are the concepts use in [d]
(a) riskier portfolios (b) behavior portfolios
(c) inefficient portfolios (d) efficient portfolios
10. The first step in determining an efficient portfolio is to consider [a]
(a) set of attainable portfolios (b) set of unattainable portfolios
(c) set of attributable portfolios (d) set of attributable portfolios
11. The second step in determining efficient portfolios is to consider efficient subset from the set of [a]
(a) attainable portfolios (b) unattainable portfolios
(c) attributable portfolios (d) non-attributable portfolio
12. The negative minimum risk portfolio of any security shows that market security sold [a]
(a) less than original price (b) greater than original price
(c) equal to original price (d) equal to sum of stocks
13. The positive minimum risk portfolio of any security shows that market security sold [d]
(a) equal to original price (b) equal to sum of stocks
(c) less than original price (d) greater than original price

Fill in the blanks

1. The process of finding the optimal portfolio is described as _____ .
2. Portfolios that are dominated by other portfolios are known as _____ .
3. The selection of the optimal portfolio thus depends on the investor's _____ aversion.
4. This optimal portfolio of Sharpe is called the _____ .
5. $R_p = \alpha_p + \beta_p R_m + e_i$ stands for _____ .
6. The risk of a portfolio is measured as the variance of the _____ returns.
7. Markowitz model is also known as _____ .
8. _____ risk reflects the overall risk for a portfolio of investments.
9. _____ risk can affect the entire bond portion of a portfolio.
10. The greatest risk facing any portfolio is _____ risk

ANSWERS

1. Portfolio selection
2. Inefficient portfolios
3. Risk
4. Single Index Model
5. Return of the portfolio
6. Portfolio
7. Mean - Variance model
8. Portfolio
9. Reinvestment
10. Market

FACULTY OF COMMERCE
M.Com II-Semester(CBCS) (New) Examination
December - 2020
INVESTMENT MANAGEMENT

Time : 2 Hours]

[Max. Marks : 80

PART - A (4 × 5 = 20 Marks)

ANSWERS

Note: Answer any **Four** questions.

- | | |
|------------------------------|--------------------|
| 1. Principles of Investment | (Unit-I, Q.No.15) |
| 2. Delisting of Securities | (Unit-II, SQA-2) |
| 3. Systematic Risk | (Unit-III, SQA-2) |
| 4. Modern Portfolio Analysis | (Unit-IV, Q.No.11) |
| 5. Optimal Portfolio | (Unit-V, Q.No.3) |

PART - B (4 × 15 = 60 Marks)

Note: Answer any **Four** questions.

- | | |
|---|-----------------------|
| 6. What are the characteristics of Investment? Explain the investment objectives. | (Unit-I, Q.No.4,7) |
| 7. What is Financial Asset ? Discuss the properties of Financial Assets. | (Unit-I, Q.No.21,22) |
| 8. What is the role of New issue market in the Capital Market? Explain the different methods of issues in the Primary Market. | (Unit-II, Q.No.13,14) |
| 9. Explain the functions and role of SEBI in the Secondary Market. | (Unit-II, Q.No.41,44) |
| 10. What is expected value of returns ? How do you calculate expected returns? | (Unit-III, Q.No.4,5) |
| 11. Find the Variance and Standard Deviation from the following information. | |

Return	24%	5%	12%	15%
Probability	20%	30%	30%	20%

Ans :

r_j Returns(%)	P_j	$\bar{r} = r_j P_j$	$(r_j - \bar{r})^2$	$P_j(r_j - \bar{r})^2$
- 24	0.2	- 4.8	745.29	149.058
5	0.3	1.5	2.89	0.867
12	0.3	3.6	75.69	22.707
15	0.2	3	136.89	27.378
	1.00	3.3		200.01

$$\text{Return } (\bar{r}) = 3.3\% \left[\frac{\sum r_j P_j}{\sum P_j} \right]$$

$$\text{Risk (or) Standard deviation to} = \sqrt{\frac{\sum P_j (r_j - \bar{r})^2}{\sum P_j}} = \sqrt{\frac{200.01}{1}}$$

$$\sigma = 14.14$$

$$\text{Variance } (\sigma^2) = \sigma \times \sigma = 14.14 \times 14.14 = 199.93$$

$$\text{Variance } (\sigma^2) = \frac{\sum P_j (r_j - \bar{r})^2}{\sum P_j} = 200.01$$

12. Define the concept of Portfolio. Explain the Portfolio Selection Process. (Unit-IV, Q.No.1)
13. Mr. N owns a portfolio of two securities with the following expected returns, Standard Deviation and Weights.

Security	Expected Return	Standard Deviation	Weightage
X	12%	15%	0.40
Y	15%	20%	0.80

- (i) Calculate the Return on Portfolio
- (ii) Calculate the portfolio Risk i/r_{xy} is 4.

Ans :

Given that

Expected return (r_x) = 12%

Expected return (r_y) = 15%

Standard deviation (σ_x) = 15%

Standard deviation (σ_y) = 20%

Weight (w_x) = 0.40; w_y = 0.60

Correction coefficient for r_{xy} = 0.4

(i) Portfolio Return ($\bar{r}_p$) = $r_x w_x + r_y w_y$
 $12(0.4) + 15(0.60) = 4.84 + 9 = 13.8\%$

(ii) Portfolio Risk S.D (σ_p) = $\sqrt{w_x^2 \sigma_x^2 + w_y^2 \sigma_y^2 + 2\rho_{xy} w_x w_y \sigma_x \sigma_y}$

$$\sqrt{0.4^2(15^2) + 0.62(20^2) + 2(0.4)(0.4)(0.60)(15) \times (20)} = 15.414\%$$

Conclusion

$$\text{Portfolio Return } (\bar{r}_p) = 13.8\%$$

$$\text{Portfolio Risk } (\sigma_p) = 15.414$$

14. What is Efficient Frontiers? How can you select the Optimal Portfolio ? (Unit-V, Q.No.3)
15. Explain the assumptions and limitations of sharpe's single index model. (Unit-V, Q.No.7)

FACULTY OF COMMERCE
M.Com II - Semester (CBCS) Examination
Model Paper - I
INVESTMENT MANAGEMENT

Time : 3 Hours]

[Max. Marks : 80

Note: Answer all the questions from Part - A and Part - B
Each question carries 4 marks in Part - A and 12 marks in Part - B

PART - A (5 × 4 = 20 Marks)
[Short Answer Type]

ANSWERS

- | | | |
|----|-------------------------------|---------------------|
| 1. | Investment Media | (Unit-I, SQA - 5) |
| 2. | Powers of SEBI | (Unit-II, SQA - 10) |
| 3. | Holding Period Return | (Unit-III, SQA - 3) |
| 4. | Different types of portfolios | (Unit-IV, SQA - 5) |
| 5. | Feasible set of portfolio | (Unit-V, SQA - 2) |

PART - B (5 × 12 = 60 Marks)
[Essay Answer Type]

- | | | |
|----|---|-------------------------|
| 6. | (a) Define investment. What are the objectives of investment? | (Unit-I, Q.No. 1, 7) |
| | (OR) | |
| | (b) What are Financial Assets? Explain the different types of innovative financial assets. | (Unit-I, Q.No. 43) |
| 7. | (a) What is SEBI? Explain the Role of SEBI in Secondary Market. | (Unit-II, Q.No. 40, 45) |
| | (OR) | |
| | (b) A market-capitalization weighted equity index consists of 5 securities whose prices and number of shares outstanding are given below: | |

Securities	Price at the end of 2008	Price at the end of 2009	Shares Outstanding
A	30	34	4,000
B	22	28	6,000
C	35	31	2,000
D	50	54	2,500
E	48	44	3,000

- | | | |
|------|---|--------------------|
| i) | Calculate the weight of each security in the index at the beginning of 2009. | |
| ii) | Calculate the value of the divisor that gives an index value of 1,000 at the beginning of 2009. | |
| iii) | Calculate the price return of the index for 2009. | (Unit-II, Prob. 4) |

8. (a) (i) What is the HPR for an investor, who bought a stock a year ago at ₹ 50 and received ₹ 5 in dividends over the year, if the stock is now trading at ₹ 60 ? **(Unit-III, Prob. 2)**
- (ii) Write a notes on Expected Value Return **(Unit-III, Q.No. 4)**

(OR)

- (b) Define risk. What are the different types of Risk **(Unit-III, Q.No. 9, 12)**
9. (a) Write a notes on Security Returns Perfectly Positively Correlated. **(Unit-IV, Q.No. 20)**

(OR)

- (b) Anand is considering the purchase of three securities A, B and C for the next year. The returns of the securities depend on next year's state of the stock market. The estimated rates of return are shown in the table.

State of Market	Probability of occurrence	Rates of Return of securities		
		A	B	C
Recession	0.25	10%	9%	14%
Average	0.50	14%	13%	12%
Boom	0.25	16%	18%	10%

- (i) Find each stock's expected rate of return standard deviation, and co-efficient of variation
- (ii) Apply mean, variance criterion to the alternative investments.
- (iii) If Anand invest one third on each security what would be his portfolio return?
- (Unit-IV, Prob. 11)**
10. (a) What is Efficient Set of Portfolio Selection of Optimal Portfolio? **(Unit-V, Q.No. 3)**
- (OR)**
- (b) Describe briefly about Sharpe single index model. **(Unit-V, Q.No. 4)**

FACULTY OF COMMERCE
M.Com II - Semester (CBCS) Examination
Model Paper - II
INVESTMENT MANAGEMENT

Time : 3 Hours]

[Max. Marks : 80

Note: Answer all the questions from Part - A and Part - B
Each question carries 4 marks in Part - A and 12 marks in Part - B

PART - A (5 × 4 = 20 Marks)
[Short Answer Type]

ANSWERS

- | | |
|--|---------------------|
| 1. Explain investment process. | (Unit-I, SQA - 2) |
| 2. What is Listing of Securities? | (Unit-II, SQA - 1) |
| 3. Components of Return | (Unit-III, SQA - 6) |
| 4. Reasons for Portfolio Diversification | (Unit-IV, SQA - 3) |
| 5. Sharpe Single Index Model | (Unit-V, SQA - 3) |

PART - B (5 × 12 = 60 Marks)
[Essay Answer Type]

- | | |
|--|-------------------------|
| 6. (a) Define gambling. Distinguish between investment and Gambling. | (Unit-I, Q.No. 18, 19) |
| (OR) | |
| (b) Explain the important investment avenues available to savers in India. | (Unit-I, Q.No. 10) |
| 7. (a) What is stock exchange. Discuss the trading procedure at stock exchange. | (Unit-II, Q.No. 19, 31) |
| (OR) | |
| (b) "Stock market indices are the barometers of the stock market". Discuss. | (Unit-II, Q.No. 46) |
| 8. (a) A stock costing Rs 50, pays no dividend. The possible prices of the stock at the end of year and their probabilities are given below. | |

End of year price	Probability
60	0.1
65	0.2
70	0.4
75	0.2
80	0.1

- (i) Find out the expected return.
(ii) Find out the standard deviation of the expectation returns **(Unit-III, Prob. 14)**

(OR)

- (b) Explain the different types of Unsystematic Risk **(Unit-III, Q.No. 14)**
9. (a) What is markowitz portfolio model? State the assumptions of markowitz model. **(Unit-IV, Q.No. 27, 28)**

(OR)

- (b) Following data relates to two securities i and j.

Security	Expected return (%)	Risk in (%)
i	9%	7.56
j	8%	3.75

If $r(i, j)$ is -0.5 and the proportion of investment 28% and 72% in i and j securities find out

- (i) Return on port folio
(ii) Risk on port folio **(Unit-IV, Prob. 19)**
10. (a) Explain the assumptions and limitations of sharpe's single index model. **(Unit-V, Q.No. 7)**

(OR)

- (b) What is Multiple Index Model? Explain in brief. **(Unit-V, Q.No. 12)**

FACULTY OF COMMERCE
M.Com II - Semester (CBCS) Examination
Model Paper - III
INVESTMENT MANAGEMENT

Time : 3 Hours]

[Max. Marks : 80

Note: Answer all the questions from Part - A and Part - B
Each question carries 4 marks in Part - A and 12 marks in Part - B

PART - A (5 × 4 = 20 Marks)
[Short Answer Type]

ANSWERS

- | | | |
|----|-------------------------------------|----------------------|
| 1. | Different types of shares. | (Unit-I, SQA - 8) |
| 2. | Characteristics of a Stock Exchange | (Unit-II, SQA - 7) |
| 3. | Risk Aversion | (Unit-III, SQA - 15) |
| 4. | Limitations of Markowitz Model | (Unit-IV, SQA - 9) |
| 5. | Portfolio Selection. | (Unit-V, SQA - 1) |

PART - B (5 × 12 = 60 Marks)
[Essay Answer Type]

- | | | |
|----|---|-------------------------|
| 6. | (a) What are the steps involve in investment process? | (Unit-I, Q.No. 20) |
| | (OR) | |
| | (b) What are the differences between equity share capital and preference share capital? | (Unit-I, Q.No. 33) |
| 7. | (a) Define listing of securities. What are the requirements of Listing? | (Unit-II, Q.No. 25, 28) |
| | (OR) | |
| | (b) A price-weighted equity index consists of one share each of 5 securities. The prices of these securities at the end of 2008 and 2009 are given below: | |

Securities	Price at the end of 2008	Price at the end of 2009
A	30	34
B	22	28
C	35	31
D	50	54
E	4S	44

- | | | |
|------|--|--------------------|
| i) | Calculate the value of the index at the beginning of 2009. | |
| ii) | Calculate the weights of each security at the beginning of 2009. | |
| iii) | Calculate the price return of the index for 2009. | (Unit-II, Prob. 2) |

8. (a) Explain the applications of standard deviation and beta coefficient in measuring the risk.

(Unit-III, Q.No. 20)

(OR)

- (b) Following data gives the return on market index and individual scrip's return for a particular period.

Year	Market Return	Scrip's Return
1	0.60	0.50
2	0.80	0.60
3	0.50	0.30
4	0.40	0.70
5	0.30	0.40

- (i) What is the Beta value of the individual scrip ?
 (ii) If Market Return is 0.04, what would be the scrip return ?

(Unit-III, Prob. 13)

9. (a) Distinguish between traditional and Modern Portfolio Analysis.

(Unit-IV, Q.No. 11)

(OR)

- (b) Stocks L and M have yielded the following returns for the past two years.

	Years	Return %
	L	M
1995	12	14
1996	18	12

- (a) What is the expected return on portfolio made up of 60 per cent of L and 40 per cent of M?
 (b) Find out the standard deviation of each stock.
 (c) What is the covariance and co-efficient of correlation between stock L and M ?
 (d) What is the portfolio risk of a portfolio made up of 60 per cent of L and 40 per cent of M?

(Unit-IV, Prob. 4)

10. (a) Market index return for period.

$$t = 15\%, a_1 = 4\%, \beta = 1.4$$

Calculate return for stock using single index model.

(Unit-V, Prob. 3)

(OR)

- (b) What are the differences between sharp Index model and markowitz model ?

(Unit-V, Q.No. 6)