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Certified Investment and Financial Analysts

CIFA

EXAMINATION SYLLABUS

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SUMMARY OF THE CERTIFIED INVESTMENT AND FINANCIAL ANALYSTS (CIFA) EXAMINATION REVISED SYLLABUS

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PART I

SECTION 1

PAPER NO. 1 FINANCIAL MATHEMATICS

GENERAL OBJECTIVE

To provide the candidate with knowledge and skills in financial mathematics applicable in decision making.

1.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Compute present and future values of cash flows
- Apply statistical tools in finance
- Apply financial forecasting techniques in business
- Apply mathematical functions in finance
- Compute and interpret index numbers.

CONTENT

1.1 Introduction to financial mathematics

- Nature and scope of finance; financing, investment, management of working capital and profit sharing (dividend policy) decisions
- Relationship between finance and other disciplines; finance and economics, finance and accounting, finance and mathematics
- Purpose of financial modeling

1.2 Financial algebra

- Simultaneous and quadratic equations
- Developing finance functions
- Interactive graphs; graphing financial functions
- Overview of calculator operations: Turning on and off the calculator, selecting second functions, setting calculator formulae, clearing calculator memory, mathematical operations, memory operations, using worksheets

1.3 Time value of money and interest rate mathematics

- Concept of interest rates and inflation
- Simple interest
- Compound interest
- Continuously compounded interest
- Present values
- Basics of capital budgeting
- Loan amortisation
- Time value of money and amortisation worksheets, entering variables in amortisation worksheets, entering cash inflows and outflows, generating amortisation schedules
- Cash flow worksheets; calculator worksheet variables for both even and uneven and grouped cash flow, entering, deleting, inserting and computing results
- Bond worksheets: Bond worksheets variables and terminology, entering bond data and computing results

- Depreciation worksheets; depreciation worksheet variables, entering data and computing results
- Other worksheets: Percentage change/ compound interest worksheets, interest conversion worksheets, profit margin worksheets, break-even worksheets, memory worksheets

1.4 **Financial forecasting**

- Need for financial forecasting
- Techniques of forecasting: Statistical and non-statistical methods
- Time-series components and analysis
- Share valuation
- Fixed income models for bonds and construction of yield curves
- Regression and correlation
- Use of financial calculators in regression and correlation models, entering data, computing the results and interpretation

1.5 **Financial calculus**

- Introduction to calculus
- Differentiation; ordinary and partial derivatives
- Integration
- Application of calculus to solve financial problems relating to maximisation of returns and minimisation of costs

1.6 **Descriptive statistics**

- Measures of central tendency; mean, mode, median
- Measures of relative standing; quartiles, deciles, percentiles
- Measures of dispersion; range, mean deviation, variance, standard deviation, coefficient of variation
- Statistical worksheets; statistical worksheet variables, computing statistical results and interpretation

1.7 **Probability theory**

- Relevance of probability theory
- Events and probabilities
- Probability rules
- Random variables and probability distributions
- Binomial random variables
- Expected value
- Variance and standard deviation
- Probability density function
- Normal probability distribution
- Stochastic functions
- Application of probability to solve business problems

1.8 **Index numbers**

- Purpose of index numbers
- Construction of index numbers
- Simple index numbers; fixed base method and chain base method
- Weighted index numbers; Laspeyre's, Paasche's, Fisher's ideal and Marshall-Edgeworth's methods
- Limitations of index numbers

PAPER NO.2 FINANCIAL INSTITUTIONS AND MARKETS

GENERAL OBJECTIVE

To enable the candidate appreciate the role and operations of financial institutions and markets in an economy.

2.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Explain how funds flow in a financial market
- Describe important characteristics of the markets under which securities are traded
- Describe how financial assets are traded in the financial markets
- Describe various types of financial institutions and services they provide
- Compute and interpret stock market indices
- Discuss the objectives of market regulation.

CONTENT

2.1 Market organisation and structure

- Functions of financial system
- Classifications of assets and markets
- Structure of financial markets
- Major types, subtype and characteristics of securities traded in organised market: currencies, contracts, commodities, and real assets
- Flow of funds and financial system
- Financial intermediation and disintermediation
- Challenges of financial intermediation and irregularities of markets
- Characteristics of a well functioning financial system
- Organic theory of financial markets
- Definitive approaches to financial markets
- Automation of security exchanges: Automated trading systems (ATS) Central Depository System (CDS)
- Internationalisation of financial markets

2.2 Marketing financial services

- Challenges of marketing financial services
- The consumer decision process in financial services
- Categories of financial products and services
- Pricing financial services
- Advertisings financial services
- Distribution of financial services; traditional channels of distribution; technology driven delivery channels
- New product introduction in financial services markets
- Segmenting financial services markets
- Customer satisfaction with financial services; building financial consumers relationship; consumer retention and loyalty

2.3 Financial markets

- Money Markets: purpose, participants, trading; money market instruments(Treasury bills, commercial papers, negotiable certificates of deposit)
- Bond Markets: purpose, participants; bond market instruments(Treasury bonds, municipal bonds, corporate bonds, structured notes, Exchange-Traded Notes)
- Equity Markets: purpose, participants, Initial Public Offering(IPO),share offering and repurchases, market orders
- Mortgage Markets: purpose, participants ,classification, types of residential mortgages ,participants; mortgage market instruments
- Foreign exchange markets: purpose ,participants; forex market currency pairs
- Derivatives securities markets: financial futures markets, purpose of trading financial futures, structure of the futures market ,trading futures

2.4 Security market indices

- Security market index
- Calculation and interpretation of an index value, price return, and total return
- Choices and issues in index construction and management: different weighting methods used in index construction
- Index rebalancing and reconstitution
- uses of security market indices
- Types of equity indices: price weighted index, value weighted index ,global equity index
- Types of fixed-income indices
- Indices representing alternative investments
- Comparison of indices over time

2.5 Market efficiency

- The concept of market efficiency: definition and assumptions; importance of market efficiency to investment participants
- Market value and intrinsic value
- Factors affecting a market's efficiency
- Forms of market efficiency: weak form, semi-strong form and strong form; implications of each form of market efficiency for fundamental analysis, technical analysis, and the choice between active and passive portfolio management;
- Random walk theory and efficient markets
- Tests of market efficiency
- Market anomalies :size effect, P/E ratio effect, day of the week effect (Monday effect), year-end or January effect, return patterns (value line enigma, quarterly earnings surprises), Fama-French value/market value

2.6 Financial Intermediaries

- Commercial banks: Islamic banking, internet banking, Agency banking international banking.
- Savings and loans associations and co-operative societies
- Foreign exchange bureaus
- Unit trusts and mutual funds
- Insurance companies and pension firms
- Insurance agency and brokerage firms

- Investment companies
- Investment banks and stock brokerage firms
- Micro-finance institutions and Small and Medium Enterprises(SMEs)
- Syndication by commercial banks on the operations of the capital markets
- Private equity firms
- Hedge funds
- Funds of funds
- Financial advisory firms

2.7 **Financial markets regulation**

- Asymmetric information and financial regulation: government safety net, restrictions on asset holdings, capital requirements.
- Financial supervision: chartering and examination, assessment of risk
- Management, disclosure requirements, restrictions on competition
- Financial liberalisation, stratification and rationalisation
- Financial deepening
- Banks runs and panics
- The Liquidity crisis

2.8 **Informal Finance**

- Introduction to informal finance
- Sources of informal finance
- Features of informal finance
- Informal investment organisations
- Challenges of informal finance

PAPER NO.3 ENTREPRENEURSHIP AND COMMUNICATION

GENERAL OBJECTIVE

To provide the candidate with knowledge and skills on entrepreneurship and business communication.

3.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Explain the concept and importance of entrepreneurship
- Describe the process of identifying and screening viable business opportunities
- Develop a business plan
- Demonstrate entrepreneurial orientation
- Communicate effectively in a business environment
- Apply entrepreneurial competencies in response to the emerging trends in the business environment.

CONTENT

3.1 Introduction to entrepreneurship

- Definition of entrepreneurship
- Rationale for entrepreneurship
- Entrepreneurial decision process
- Entrepreneurial development
- Contribution to economic development

3.2 Entrepreneurship orientation

- Independence and need for achievement
- Individual characteristics of entrepreneurs
- Creativity and innovation
- Decision making
- Risk management
- Time management
- Coping with competition

3.3 Entrepreneurial opportunity and development

- Methods of generating ideas
- Qualities of good business opportunities
- Evaluating business opportunities
- Feasibility analysis
- Business incubation
- Intellectual properties, copyrights trademarks and patents

3.4 Business plan

- Purpose
- Format
- Description of the business
- The market and marketing plan
- Operations and production plan
- The human resources plan
- The financial plan
- Launching the new venture

3.5 **Strategies for enterprise growth**

- Penetration strategy
- Market development strategy
- Product development strategy
- Franchising
- Joint ventures
- Mergers and acquisitions
- Going public

3.6 **Entrepreneurship and technology**

- Internet and e-commerce
- The enterprise website
- Globalisation
- Business outsourcing
- Techpreneurs
- Electronic and mobile money transfers
- Business networking
- Crowd funding and crowd sourcing

3.7 **Nature of business communication**

- Meaning of communication
- Purposes of business communication
- Internal and external communication
- The communication process
- Methods of communication
- Communication systems and networks
- Principles of effective communication
- Barriers to effective communication

3.8 **Written communication**

- Rules of effective writing
- Business correspondence
- Reports
- Memorandum
- Proposal writing
- Forms and questionnaire design
- Circulars and newsletters
- Notices and advertisements
- Publicity materials
- Press releases
- Graphic communication

3.9 **Oral and non-verbal communication**

- Oral communication in business
- Effective listening
- Interviews
- Non-verbal communication
- Interpersonal relationships
- Presentations skills

3.10 **Meetings**

- Notice
- Agenda

- Role of the chairperson
- Role of the secretary
- Conduct of meetings
- Minutes

3.11 **Information technology and communication**

- The internet
- Teleconferencing
- Wireless technologies
- Electronic postal services

3.12 **Ethics and integrity in business communication**

- Concept of ethics and integrity
- Significance of ethical communication
- Factors influencing ethical communication
- Ethical dilemmas in communication
- Guidelines to handle communication ethics dilemmas
- Business ethics in communication

SECTION 2

PAPER NO.4 ECONOMICS

GENERAL OBJECTIVE

To equip the candidate with knowledge on fundamental principles of economics.

4.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Explain the principles of micro and macro-economics
- Apply basic mathematical and graphical techniques to analyse economic relationships and interpret the results
- Apply the knowledge of economics in decision making
- Analyse economic problems and suggest possible policy related recommendations
- Apply knowledge of economics in international trade and finance
- Apply economic principles in the development and implementation of policies in agriculture and industry
- Demonstrate an understanding of emerging economic issues.

CONTENT

4.1 Microeconomics

4.1.1 Introduction to economics

- Definition of economics
- Micro and macro economics
- The methodology of economics and its basic concepts
- Economic descriptions and analysis
- Scarcity, choice, opportunity cost and production possibility frontiers and curves
- Economic systems: free economy, planned economy and mixed economy
- Specialisation and exchange

4.1.2 Demand, supply and determination of equilibrium

4.1.2.1 Demand analysis

- Definition
- Individual demand versus market demand
- Factors influencing demand
- Exceptional demand curves
- Types of demand
- Movement along and shifts of demand curves
- Elasticity of demand
- Types of elasticity: price, income and cross elasticity
- Measurement of elasticity; point and arc elasticity
- Factors influencing elasticity of demand
- Application of elasticity of demand in management and economic policy decision making

4.1.2.2 **Supply analysis**

- Definition
- Individual versus market supply
- Factors influencing supply
- Movements along and shifts of supply curves
- Definition of elasticity of supply
- Price elasticity of supply
- Factors influencing elasticity of supply
- Application of elasticity of supply in management and economic policy decision making

4.1.2.3 **Determination of equilibrium**

- Interaction of supply and demand, equilibrium price and quantity
- Mathematical approach to equilibrium analysis
- Stable versus unstable equilibrium
- Effects of shifts in demand and supply on market equilibrium
- Price controls
- Reasons for price fluctuations in agriculture

4.1.3 **The theory of consumer behaviour**

- Approaches to the theory of the consumer- cardinal versus ordinal approach
- Utility analysis, marginal utility (MU), law of diminishing marginal utility (DMU)
- Limitations of cardinal approach
- Indifference curve analysis
- Budget line
- Consumer equilibrium; effects of changes in prices and incomes on consumer equilibrium
- Derivation of a demand curve
- Applications of indifference curve analysis: substitution effect and income effect for a normal good, inferior good and a giffen good; derivation of the Engels curve
- Consumer surplus

4.1.4 **The theory of a firm**

4.1.4.1 **The theory of production**

- Factors of production
- Mobility of factors of production
- Production function analysis
- Short run analysis
- Total product, average and marginal products
- Stages in production and the law of variable proportions/ the law of diminishing returns
- Long run analysis
- Isoquant and isocost lines
- The concept of producer equilibrium and firm's expansion curve
- Law of returns to scale
- Demand and supply of factors of production
- Wage determination theories
- Trade unions: functions and challenges
- Producer surplus/economic rent

4.1.4.2 **The theory of costs**

- Short run costs analysis and size of the firm's total cost, fixed cost, average cost, variable costs and marginal cost
- Long run costs analysis
- Optimal size of a firm
- Economies and diseconomies of scale

4.1.5 **Market structures**

- Definition of a market
- Necessary and sufficient conditions for profit maximisation
- Mathematical approach to profit maximisation
- Output, prices and efficiency of: perfect competition, monopoly, monopolistic competition, oligopolistic competition

4.2 **Macroeconomics**

4.2.1 **National income**

- Definition of national income
- Circular flow of income
- Approaches to measuring national income
- Concepts of national income: gross domestic product (GDP), gross national product (GNP) and net national product (NNP), net national income (NNI) at market price and factor cost, disposable income
- Problems of measurement; uses of national income statistics and their limitations
- Analysis of consumption, saving and investment and their interaction in a simple economic model
- Determination of equilibrium national income
- Inflationary and deflationary gaps
- The multiplier and accelerator concepts
- Business cycles/ cyclical fluctuations

4.2.2 **Economic growth, economic development and economic planning**

- The differences between economic growth and economic development
- Actual and potential growth
- The benefits and costs of economic growth
- Determinants of economic development
- Common characteristics of developing countries
- Role of agriculture and industry in economic development
- Obstacles to economic development
- The need for development planning
- Short term, medium term and long term planning tools
- Limitation of planning in developing countries

4.2.3 **Money and banking**

4.2.3.1 **Money**

- The nature and functions of money
- Demand and supply of money
- Theories of demand for money: The quantity theory, the Keynesian liquidity preference theory

4.2.3.2 **The banking system**

- Definition of commercial banks
- The role of commercial banks and non-banking financial institutions in the economy
- Credit creation
- Definition of central bank
- The role of the central bank; traditional and changing role in a liberalised economy, such as financial sector reform, exchange rate reform
- Monetary policy, definition, objectives, instruments and limitations
- Determination of interest rates and their effects on the level of investment, output, inflation and employment
- Harmonisation of fiscal and monetary policies
- Simple IS –LM Model
- Partial equilibrium and general equilibrium

4.2.4 **Inflation and unemployment**

4.2.4.1 **Inflation**

- Definition and types of inflation
- Causes of inflation: cost push and demand pull
- Effects of inflation
- Measures to control inflation

4.2.4.2 **Unemployment**

- Definition of unemployment
- Types and causes of unemployment
- Control measures of unemployment
- Relationship between unemployment and inflation: the Phillips curve

4.2.5 **International trade and finance**

- Definition of International trade
- Theory of absolute advantage and comparative advantage
- World trade organisation (WTO) and concerns of developing countries
- Protection in international trade
- Regional integration organisations, commodity agreements and the relevance to less developed countries (LDCs)
- Terms of trade, balance of trade, balance of payments (causes and methods of correcting deficits in balance of payments), exchange rates, types of foreign exchange regimes, factors influencing exchange rates, foreign exchange reserves
- International financial institutions: International Monetary Fund (IMF) and World Bank
- National debt management: causes and interventions
- Structural Adjustment Programmes (SAPs) and their impacts on the LDCs

4.2.6 **Current trends**

- Factors affecting economic development: Informal credit markets, poverty measurement, corruption and financial scams, growth of market structures, voting behaviour, technology transfer, democracy and development, patent law, environmental concerns

PAPER NO. 5 PRINCIPLES OF ACCOUNTING

GENERAL OBJECTIVE

To equip the candidate with knowledge and skills on the basic concepts in accounting, regulation, book keeping and preparation of financial statements for entities in the private and public sectors.

5.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Explain the nature and purpose of accounting
- Write up books of original entry and prepare basic ledger accounts under double entry system
- Prepare basic financial statements of sole traders, partnerships, companies and manufacturing entities
- Explain the regulatory framework of accounting
- Account for assets and liabilities
- Analyse financial statements by use of ratios
- Explain the regulatory, oversight and other features of public sector accounting.

CONTENT

5.1 Introduction to Accounting

- The nature and purpose of accounting
- Objectives of accounting
- Users of accounting information and their respective needs
- The accounting equation
- Qualities of useful accounting information
- Regulatory framework of accounting (regulatory bodies such as ICPAK, IFAC, IASB, Accounting standards (IAS/IFRS), their importance and limitations and professional ethics)
- Accounting concepts/principles

5.2 Recording transactions

- Source documents (quotations, purchases order, statement of account, remittance advice, receipts, petty cash vouchers, sales and purchase invoices, credit notes and debit notes, bank statements)
- Books of original entry; sales journal, purchases journal, returns inward, returns outward journal, cashbook, petty cashbook and general journal
- Double entry and the ledger; general ledger, sales ledger, purchases ledger
- The trial balance
- Computerised accounting systems- Role of computers, application and accounting softwares in the accounting process, benefits and challenges of operating computerised accounting systems

5.3 Accounting for assets and liabilities

5.3.1 Assets

- Property, plant and equipment – recognition, capital and revenue expenditure, measurement (depreciation and revaluation), disposal and disclosures – property, plant and equipment schedule

- Intangible assets – recognition, measurement (amortisation, impairment and revaluation), disposals and disclosures.
- Inventory – recognition, measurement and valuation using specific cost method (FIFO and weighted average cost)
- Trade receivables – bad debts and allowance for doubtful debts and receivables control accounts
- Accrued income and prepaid expenses
- Cash at bank – cashbook and bank reconciliation statement
- Cash in hand – cash book and petty cash book

5.3.2 **Liabilities**

- Bank overdraft – cash book and bank reconciliation
- Trade payables – payables control accounts
- Loans – accounting treatment of repayment of principal and interest
- Prepaid income and accrued expenses

5.4 **Correction of errors and suspense account**

5.5 **Financial statements of a sole trader**

- Income statement
- Statement of financial position

5.6 **Financial statements of a partnership**

- Partnership agreement
- Distinction between current and fixed capital
- Income statement
- Statement of financial position

5.7 **Financial statements of a company**

- Types of share capital – ordinary shares and preference shares
- Issue of shares (exclude issue by instalment and forfeiture)
- Types of reserves – share premium, revaluation reserve, general reserves and retained profits
- Income tax -Accounting treatment and presentation (exclude computation)
- Financial statements – Income statement and statement of financial position
- Published financial statements –description of a complete set of published financial statements only

5.8 **Financial statements of a manufacturing entity**

- Features of a manufacturing entity
- Classification and apportioning costs between manufacturing and selling and administration
- Financial statements – manufacturing account, income statement and statement of financial position

5.9 **Financial statements of a not- for- profit organisation**

- Features
- Types of funds and their accounting treatment
- Income and expenditure account
- Statement of financial position

5.10 **Group accounts**

- Consolidated income statement and consolidated statement of financial position (simple group structures comprising a holding company and one subsidiary company and/or one associate company)
- Consolidated statement of cash flow

5.11 **Analysing financial statements**

- Statement of cash flows (categories of cash, methods of preparing statement of cash flows and the importance)
- Financial ratios – definition, categories, analysis and interpretation, application and limitations

5.12 **Financial statements of public sector entities**

- Features of public sector entities (as compared to private sector)
- Structure of the public sector (National and county governments, state corporations and other agencies)
- Regulatory structures and oversight [IPSASB, PSASB (establishment, mandate and functions), Director of Accounting Services, National Treasury, Parliamentary Committees, Accounting Officers at national and county levels)
- Objectives of public sector financial statements
- Objectives of IPSAS
- Accounting techniques in public sector (budgeting, cash, accrual, commitment and fund)

  (Preparation of financial statements should be excluded)

PAPER NO.6: PUBLIC FINANCE AND TAXATION

GENERAL OBJECTIVE

To equip the candidate with knowledge on the principles of public finance and the computation of tax for various entities.

6.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Describe the nature and operations of public financial management (PFM)
- Explain budgeting, raising of public revenue and public expenditure in relation to National and County governments
- Identify various types of public funds
- Describe the process of supply chain management in the public sector and applicable legislation
- Explain the general principles underlying the process of taxation
- Compute tax and file returns for individuals, unincorporated and incorporated entities
- Apply the written tax law in addressing tax issues
- Explain how taxation is administered under various Tax Acts.

CONTENT

6.1 Introduction to Public Financial Management Legal Framework

- General overview of Public Financial Management as envisaged by the Constitution
- Overview of the Public Financial Management Act
- Financial regulations
- Treasury Circulars; meaning and application
- Process of developing county government finance bills

6.2 The operations of the national and county governments on management and control of public finance

- Establishment of National and County Treasuries
- Responsibility of National and County Treasuries with respect to public funds
- Establishment, purpose and composition of intergovernmental budget and economic council
- The Process of sharing revenue
- The role of the Commission on Revenue on Allocation (COR)
- The role of the Council of Governors in County financial management

6.3 Establishment of public funds in the public sector

- Provision of establishing public funds
- Rationale of creation of public funds
- The Consolidated Fund
- The establishment and administration of contingency funds
- The establishment and administration of equalization funds

6.4 **Supply chain management in public entities**

- Definitions and terminologies
- General overview of Public Procurement and Disposal (PPD) Act
- Procurement guidelines as envisaged by PPD Act
- Committees responsible for procurement
- Procurement process by National, County and other Public entities
- Tendering process and selection of Suppliers in public sector
- Concept of E-procurement

6.5 **Oversight function in public finance management**

- The role of National Assembly
- The role of Senate
- The role of County Assembly
- The role of Auditor General
- The role of Internal Audit
- Role of Controller of Budget in relation to disbursement of public Funds as envisaged by the Constitution and PFM Act, 2012

6.6 **Introduction to taxation**

- History and purposes of taxation
- Principles of an optimal tax system
- Single versus multiple tax systems
- Classification of taxes and tax rates
- Impact incidence and tax shifting, tax shifting theories
- Taxable capacity
- Budgetary and fiscal policy tools: General definition of budgets terms ,Budget surplus and deficits
- Role of budget officers in budget preparation and execution
- Responsibilities of the national and county treasury in relation to budget preparation
- Budget process for both national, county and Public entities
- Revenue Authority – History, structure and mandate

6.7 **Taxation of income of persons**

- Taxable and non taxable persons
- Sources of taxable incomes
- Employment income:
    - Taxable and non taxable benefits
    - Allowable and non allowable deductions
    - Tax credits (Withholding tax, personal and insurance relief etc)
    - Pension Income
- Business income:
    - Sole proprietorship
    - Partnerships (excluding conversions)
    - Incorporated entities (excluding specialised institutions)

- Turnover tax

- Income from use of property- rent and royalties
- Farming income
- Investment income
- Capital gains tax

6.8 **Capital deductions**

- Rationale for capital deductions
- Investment deductions: ordinary manufacturers
- Industrial building deductions
- Wear and tear allowances
- Farm works deductions
- Other deductions

6.9 **Administration of income tax**

- Overview of the income tax act
- Identification of new tax payers
- Assessments and returns
- Operations of PAYE systems: Preparation of PAYE returns, categories of employees
- Notices, objections, appeals and relief of mistake
- Appellant bodies
- Collection, recovery and refund of taxes
- Offences, fines, penalties and interest
- Application of ICT in taxation: iTax, Simba system

6.10 **Administration of value added tax**

- Introduction and development of VAT
- Registration and deregistration of businesses for VAT
- Taxable and non taxable supplies
- Privileged persons and institutions
- VAT rates
- VAT records
- Value for VAT, tax point
- Accounting for VAT
- VAT returns
- Remission, rebate and refund of VAT
- Rights and obligations of VAT registered person
- Offences fines, penalties and interest
- Enforcement
- Objection and appeals: Requirements and procedure

6.11 **Customs taxes and excise taxes**

- Customs procedure
- Import and export duties
- Prohibitions and restriction measures
- Transit goods and bond securities
- Excisable goods and services
- Purposes of customs and excise duties

PART II

SECTION 3

PAPER NO.7 REGULATION OF FINANCIAL MARKETS

GENERAL OBJECTIVE

To equip the candidate with knowledge of the legal and regulatory framework governing financial markets locally and internationally.

7.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Discuss the law of contract and agency
- Discuss the role of the capital markets authority
- Discuss the legal provisions relating to securities exchanges
- Explain the types and characteristics of securities available in the investment market.
- Evaluate the licencing regulations of the securities exchange
- Describe the establishment, operation and regulation of the central depository system
- Discuss the offences and penalties relating to trading in securities
- Demonstrate an understanding of the processes of anti money laundering.

CONTENT

7.1 Law of contract

- Definition and nature of a contract
- Classification of contracts
- Formation of a contract
- Terms of a contract
- Vitiating factors
- Illegal contracts
- Discharge of contract
- Remedies for breach of contract
- Limitations of actions

7.2 Law of agency

- Nature of agency

- Formation of agency
- Special classes of agents: factors, banks, brokers
- Authority of the agent
- Duties and rights of the principal and agent
- Personal liability of the agent
- Termination of agency

7.3 **Regulation of financial services**

- Historical development of the law and regulations governing financial markets
- Need for regulation
- Regulatory strategies in financial services
- Financial regulators
- Central Bank of Kenya
- Capital Markets Authority
- Deposit Protection Fund
- Insurance Regulatory Authority
- Retirement Benefits Authority
- Sacco Societies Regulatory Authority
- Professional bodies in financial services
- Regulations in the international financial markets
- The International Organization of Securities Commissions principles for self regulation

7.4 **Regulations of capital markets**

- Capital Markets Authority
- Investor Compensation Fund Board
- The Capital Markets Tribunal
- The International Organization of Securities Commissions principles relating to the regulator

7.5 **Raising capital in the securities market**

- Private offers
- Public offers
- Introduction
- Tender
- Prospectus and information memorandum
- The International Organization of Securities Commissions principles for issuers

7.6 **Central depository system**

- The Central Depository Settlement Corporation
- Establishment of the central depository
- Duties of a central depository
- Central depository agents
- Rules and regulations of the central depository
- Duty to maintain secrecy
- Security measures

- Disclosure of information by central depository agents
- Central Depository Guarantee Fund

7.7 **Immobilisation and Dematerialisation**

- Meaning
- Prescription of securities for immobilization
- Transfer to a central depository or nominee company
- Operation of securities account
- Restriction of trade in eligible securities

7.8 **Regulation of financial market intermediaries**

- Stockbrokers
- Stock dealers
- Investment banks
- Investment advisers
- Fund managers
- Credit rating agencies
- Collective investments schemes
- Custodians
- Venture capital funds
- Savings and Credit Co-operative Societies
- Micro Finance Institutions
- The International Organization of Securities Commissions principles for credit rating agencies, collective investment schemes and market intermediaries

7.9 **Securities exchange**

- Establishment
- Membership
- Rules
- Listing and post requirements
- Self Listing of the exchange
- Insider trading
- Cross border listing

7.10 **Securities transactions**

- Book entry of transactions and prohibition
- Records of depositors
- Suspended securities
- Suspension and delisting of securities
- Charging or mortgaging of securities
- Bonus and rights issue
- Prohibition of dealings in book entry securities
- The International Organization of Securities Commissions principles for enforcement of securities regulation

7.11 **Securities registers, accounts and records**

- Definition of interests in securities

- Restrictions in securities transactions
- Register of interests in securities
- Types of securities accounts
- Maintenance of records
- Accounts statements
- Record of depositors
- Audit of accounts, records and registers

7.12 **Corporate governance**
- Meaning of corporate governance
- Application of corporate governance principles in financial markets
- The International Organization of Securities Commissions principles for cooperation in regulation

7.13 **Prevention of money laundering**
- Meaning of money laundering
- Processes of money laundering
- Anti money laundering legislation
- Anti Money Laundering Advisory Board
- The Assets Recovery Agency
- Criminal Assets Recovery Fund
- Prevention of terrorism regulations
- Counter Financing of Terrorism Inter-Ministerial Committee: objectives, functions and powers
- The Financial Reporting Centre: objectives, functions and powers
- Due diligence requirements
- Wire transfers

PAPER NO. 8 CORPORATE FINANCE

GENERAL OBJECTIVE:

To equip the candidate with knowledge and skills in corporate finance.

8.0 LEARNING OUTCOMES

On successful completion of this paper, the candidate should be able to:

- Evaluate and analyse the capital budgeting decisions of a corporation.
- Discuss the measures of cost of capital and determine the use in capital structure decisions.
- Evaluate a company's management of inventory, cash, accounts receivable and accounts payable over time and compare to peer companies.
- Define and explain effect of leverage on a company's income and return on equity.
- Undertake corporate financial decisions relating to mergers and acquisitions.

CONTENT

8.1 Overview of corporate finance

- Nature and scope of corporate finance
- Financial decision making process
- Role of a finance manager
- Finance functions
- Goals of the firm
- Agency theory concept, conflicts and resolutions
- Measuring managerial performance, compensation and incentives

8.2 Cost of capital

- The concept and significance of cost of capital
- Components of cost of capital
- Weighted average cost of capital (WACC) of a company
- Marginal cost of capital(MCC) of a company
- Use of marginal cost of capital and the investment opportunity schedule in determination of the optimal capital budget.
- Cost of debt capital using the yield-to-maturity approach and the debt-rating approach
- Computation of the cost of non-callable and nonconvertible preferred stock
- Computation of the cost of equity capital using the capital asset pricing model approach, the dividend discount model approach, and the bond-yield-plus risk-premium approach
- Computation of the beta and cost of capital for a project
- Uses of country risk premiums in estimating the cost of equity
- Treatment of floatation costs

8.3 Capital structure

- Sources of capital
- Factors to consider when selecting source of funds
- Capital structure of a firm
- Factors influencing capital structure

- Capital structure theories: traditional theories; net income (NI) approach; net operating income (NOI) approach; Franco Modigliani and Merton Miller (MM) propositions- MM without taxes, MM with corporate taxes, MM with corporate and personal taxes, and MM with taxes and financial distress costs.
- Target capital structure; reasons why a company's actual capital structure may fluctuate around its target
- Measures of leverage: Overview of leverage; importance of business risk, sales risk, operating risk, and financial risk in leverage; classification of a risk; degree of operating leverage, the degree of financial leverage, and the degree of total leverage; effect of financial leverage on a company's net income and return on equity; breakeven quantity of sales and determination of the company's net income at various sales levels; computation of the operating breakeven quantity of sales
- Role of debt ratings in capital structure policy
- Evaluating the effect of capital structure policy on valuation: factors to consider
- International differences in the use of financial leverage, factors that explain these differences, and implications of these differences for investment analysis

8.4 **Capital investment decisions under certainty**

- Nature of capital investment decisions
- Classification of capital budgeting decisions
- Categories of capital projects
- Basic principles of capital budgeting; evaluation and selection of capital projects: mutually exclusive projects, project sequencing, and capital rationing.
- Capital budgeting techniques
- Estimating project cash flows

8.5 **Capital investment decisions under uncertainty**

- Nature and measurement of risk and uncertainty
- Investment decision under capital rationing :multi period; investment decision under inflation ,investment decision under uncertainty/risk
- Techniques of handling risk: sensitivity analysis; scenario analysis; simulation analysis; decision theory models; certainty equivalent; risk adjusted discount rates; utility curves
- Special cases in investment decision: projects with unequal lives; replacement analysis; abandonment decision
- Real options in investment decisions: types of real options ;evaluation of a capital project using real options
- Common capital budgeting pitfalls
- Computation of accounting income and economic income in the context of capital budgeting
- Evaluation of a capital project using economic profit, residual income, and claims valuation models for capital budgeting.

8.6 **Management of working capital**

- Primary and secondary sources of liquidity; factors that influencing a company's liquidity position
- Company's liquidity measures in comparison to those of peer companies
- Evaluation of working capital effectiveness of a company based on its operating and cash conversion cycles; comparison of the company's effectiveness with that of peer companies

- Effect of different types of cash flows on a company's net daily cash position
- Computation of comparable yields on various securities; comparison of portfolio returns against a standard benchmark; evaluation of a company's short-term investment policy guidelines
- Company's management of accounts receivable, inventory, and accounts payable over time and compared to peer companies
- Evaluation of the choices of short-term funding available to a company

8.7 Mergers and acquisitions

- Classification of merger and acquisition (M & A) activities based on forms of integration and relatedness of business activities
- Common motivations behind M & A activity
- Bootstrapping of earnings per share (EPS) ; computation of a company's post-merger EPS
- The relation between merger motivations and types of mergers, based on industry life cycles
- Contrast merger transaction characteristics by form of acquisition, method of payment, and attitude of target management
- Pre-offer defence mechanisms and post-offer takeover defence mechanisms
- Computation of Herfindahl–Hirschman Index, and the likelihood of an antitrust challenge for a given business combination
- Discounted cash flow analysis, comparable company analyses, and comparable transaction analyses for valuing a target company, including the advantages and disadvantages of each
- Computation of free cash flows for a target company, and estimation of the company's intrinsic value based on discounted cash flow analysis
- Estimation of the value of a target company using comparable company and comparable transaction analyses
- Evaluation of a takeover bid; computation of the estimated post-acquisition value of an acquirer and the gains accrued to the target shareholders versus the acquirer shareholders
- Effect of price and payment method to the distribution of risks and benefits in M&A transactions
- Characteristics of M&A transactions that create value
- Equity carve-outs, spin-offs, split-offs, and liquidation

8.8 Analysis of corporate growth and restructuring

- Measurements of growth: methods of determining growth rates, sustainable versus non sustainable growth analysis of potential growth, franchise value and the growth process
- Return on assets (ROA) and return on capital (ROC)
- Common reasons for restructuring
- Relative company return analysis
- Valuation and analysis of corporate restructuring; leveraged buyouts (LBO); divestitures; strategic alliances; liquidation; recapitalization
- Financial distress, predicting organizational failure; solutions to financial distress

8.9 **Islamic finance**

- Justification for Islamic Finance; history of Islamic finance; capitalism; halal; haram; riba;gharar; usury
- Principles underlying Islamic finance : principle of not paying or charging interest, principle of not investing in forbidden items e.g. alcohol, pork, gambling or pornography; ethical investing; moral purchases
- The concept of interest (riba) and how returns are made by Islamic financial securities
- Sources of finance in Islamic financing: muhabaha, sukuk, musharaka, mudaraba
- Types of Islamic financial products: -sharia-compliant products: Islamic investment funds; takaful the Islamic version of insurance Islamic mortgage ,murabahah, ; Leasing- ijara; safekeeping-Wadiah; sukuk-islamic bonds and securitisation; sovereign sukuk; Islamic investment funds;Joint venture - Musharaka, Islamic banking, Islamic contracts, Islamic treasury products and hedging products, Islamic equity funds; Islamic derivatives
- International standardisation/regulations of Islamic Finance: Case for standardisation using religious and prudential guidance ,National regulators, Islamic Financial Services Board

PAPER NO.9 FINANCIAL STATEMENTS ANALYSIS

GENERAL OBJECTIVE

To develop a candidate's ability and competence to analyse and interpret company financial statements.

9.0 LEARNING OUTCOMES

On successful completion of this paper, the candidate should be able to:

- Describe the steps in the financial statement analysis framework
- Evaluate the various alternative sources of financial information
- Apply the various financial statement analytical tools and techniques in analysing financial statements
- Demonstrate an understanding of accounting measurements and recognition
- Compare the financial reporting and accounting treatments of assets and liabilities
- Demonstrate an understanding of IAS, IFRS and IPSAS
- Evaluate company financial information and other factors necessary for assessing a company's performance
- Describe accounting manipulation techniques and scandals.
- Discuss limitations of financial statements.

CONTENT

9.1 Overview of financial statement analysis

- Definition of financial statement analysis
- Different reporting environment frameworks
- Steps in analysing financial statements
- Importance and challenges of financial statements analysis
- Sources of information for analysis (Financial Statements, Auditors report, Management Commentary, Filing with regulatory authorities and press reports)
- Approaches to analysing financial statements (Macro, Industry and Firm – Either top down or bottom up)

9.2 Financial reporting on assets and liabilities

- Investment properties; presentation and disclosure
- Accounting policies, changes in accounting estimates and errors(prior period errors)
- Events after the reporting period
- Non recurrent items and non-operating items; Discontinued operations (Exclude disposal of subsidiaries), extraordinary items, unusual or infrequent items, changes in accounting policies.
- Financial Instruments (Presentation, Recognition, classes, measurement, de-recognition and disclosures and impairment)
- Non-current assets held for Sale.
- Intangible assets

- Leases (finance and operating, presentation, disclosure, recognition),off balance sheet leverage from operating leases.
- Income taxes: accounting profit and taxable income, deferred tax assets and liabilities, tax base of assets and liabilities, temporary and permanent differences, recognition and measurement of current and deferred tax, presentation and disclosure.
- Employee benefits (Post-employment benefits): types of post employment benefits; impact of the assumptions used such as discount rates, return on plan assets and salary growth on the defined benefit obligation and periodic expense; pension plan footnote disclosure, effect on underlying economic liability (asset) of a company's pension and other post employment benefits; Share based compensation.
- Multinational operations: foreign currency transactions; translation of foreign currency in the financial statements, effects of changing prices and inflation.

9.3 **Quality of earnings and earnings management**

- Categories of earnings: earnings before interest, tax depreciation and amortization (EBITDA), operating earnings, net income among others
- Measures of the accrual component of earnings and earning quality
- Earnings per Share (EPS); Basic EPS, diluted EPS, using EPS to value firms, criticism of EPS.
- Segment reporting; disclosure requirements, geographical segments ,segment ratios

9.4 **Other Inter-corporate Investments**

- Subsidiaries
- Associate companies
- Jointly controlled entities
- Evaluating the effect of inter-corporate investments on financial statements given the different accounting treatment.

9.5 **Analysing the financial statements**

- Income statement: Components and format of the income statement, revenue recognition and expenses recognition; Analysis of the income statement; common size analysis, ratio analysis
- Statement of financial position; components and format of statement of financial position (assets, liabilities and equity) ,off balance sheet items; Analysis of the statement of financial position; common size analysis, cross sectional analysis, ratio analysis
- Statement of changes in equity; components of equity, equity valuation ratios
- Cash flow statements; component and format of the cash flow statement, categories of cash flow items, direct and indirect methods for preparing cash flow statements; Cash flow statement analysis; evaluation and uses of cash, common size analysis, free cash flow to the firm and free cash flow to equity, cash flow ratios, quality of earnings.

9.6 **Financial statements analytical tools**

- Financial analysis techniques; financial analysis framework/process; computations and analysis.
- Profitability analysis: Desegregation and interpreting return on assets (ROA), return on capital employed (ROCE), relating ROA to ROCE, DuPont analysis.
- Analysis of growth and sustainable earning; growth analysis, analysis of changes in profitability and sustainable earnings, analysis of growth in shareholder's equity; growth, sustainable earnings and the evaluation of price to book-P/B ratios and price earnings-P/E ratios.
- Analytical tools and techniques; ratio analysis, common size analysis, graphs, regression analysis.
- Model building and forecasting; sensitivity analysis, scenario analysis, simulation.
- Application of ratio analysis – cross sectional analysis, trend analysis, forecast financial statements, credit analysis and rating.

9.7 **Qualitative and other current issues in the Analysis of financial statements**

- Qualities of useful financial statements
- Red flags and accounting warning signs that may indicate financial statements are of poor quality
- Accounting scandals
- Accounting shenanigans on the cash flow statement; creative accounting and manipulating financial statements
- Misrepresentation in the financial statements
- Adjustments that may be required to make financial statements comparable

SECTION 4

PAPER NO. 10 EQUITY INVESTMENT ANALYSIS

GENERAL OBJECTIVE

To equip the candidate with knowledge and skills in the valuation and analysis of equity investments.

10.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Describe characteristics of various types of equity securities
- Explain uses of industry analysis and the relation of industry analysis to company analysis.
- Determine the value of equity securities
- Describe major categories of equity valuation models
- Calculate and interpret equity valuation multiples.

CONTENT

10.1 Overview of equity markets and structure

- Structure of the equity market: Financial system and intermediaries types of orders
- Primary and secondary markets for securities
- Trading equity securities
- Types of equity securities; ordinary shares and preference shares, private versus public
- Investing in foreign equity securities
- Risk and return characteristics of different types of equity securities
- Market value and book value of equity securities
- Comparison of a company's cost of equity, accounting rate of return and investors' required rate of return
- Equity security and company value

10.2 Industry and company analysis

- Overview of industry analysis
- Uses of industry analysis and its relationship to company analysis
- Approaches to identifying similar companies: product / services supplied, business-cycle sensitivities, statistical similarities
- Industry classification systems(commercial and government industry classification system),constructing a peer group
- Factors that affect the sensitivity of a company to the business cycle
- Describing and analysing an industry: principles of strategic analysis(Michael Porters' competitive forces)
- Effects of barrier to entry, industry concentration, industry capacity, and market share stability on pricing power and return on capital

- Product and industry life cycle models; Classification of industry as to life cycle phases (embryonic, growth, shakeout, maturity and decline); limitations of life-cycle concept in forecasting industry performance.
- Demographic ,governmental, social and technological influences on industry growth, profitability ,and risk
- Company analysis: Elements that should be covered in a company analysis

10.3 **Fundamental and technical analysis in equity valuation**

- Fundamental analysis: definition, assumptions, advantages and disadvantages
- Top-down, bottom-up, and hybrid approaches for developing inputs to equity valuation models
- Forecasting the following cost: cost of goods sold, selling and administrative costs, financing costs, and income taxes
- Approaches to balance sheet modeling
- Growth companies and growth stocks; defensive company and stocks; cyclical companies and stocks speculative companies and stocks
- Comparing estimated values and market prices; information efficiency and efficient market hypothesis
- Technical analysis: definition, assumptions, advantages and challenges; Technical trading rules and indicators: contrary opinion rules, follow the smart rule, momentum indicators, pure price and volume techniques; relationships between market efficiency and technical analysis; application of behavioural finance in technical analysis
- Forecasting methodology: conditional forecasting, economic forecasting.
- Technical versus fundamental analysis

10.4 **The equity valuation processes**

- The scope of equity valuation: definitions of value, valuation and intrinsic value, sources of perceived mispricing
- Valuation and portfolio management
- Valuation concepts and models: Valuation of speculative stocks; capital asset pricing model, asset valuation, market capitalization, shareholder value
- Performing valuations: the financial analyst's role and responsibilities
- Alternative to traditional analysis techniques: Economic value added (EVA); market value added (MVA); cash flow return on investment (CFROI)
- Effects of inflation on the valuation process

10.5 **Discounted dividend valuation**

- Valuation model of common stock: dividend discount model (DDM)
- Gordon growth model; underlying assumptions; implied growth rate of dividends using growth model and current share price; calculation and interpretation of present value of growth opportunities ;strengths and weakness of Gordon model
- Valuation of non callable fixed rate perpetual preferred shares
- Zero-growth model
- Constant growth model
- Multiple growth model
- Multistage dividend discount models: valuing a non-dividend-paying company, first-stage dividend ,H-model, three-stage dividend discount models

- Finding rates of return for any dividend valuation model
- Terminal value in a dividend valuation model
- Determination of whether a stock is overvalued, fairly valued, or undervalued by the market based on a DDM estimate of value
- The financial determinants of growth rates: sustainable growth rate, dividend growth rate, retention rate, and return on equity (ROE) analysis
- Financial models and dividends
- Investment management and DDM

10.6 **Free cash flow valuation**

- Free cash flow to firm (FCFF) and free cash flow equity (FCFE) valuation approaches: defining free cash flow, present value of free cash flow, single-stage FCFF and FCFE growth models
- Appropriate adjustments to net income, earnings before interest and taxes(EBIT),earnings before interest, taxes, depreciation, and amortization (EBITDA) ,and cash flow from operations(CFO) to calculate FCFF and FCFE
- Forecasting free cash flow: computing FCFF from net income(NI), computing FCFF from the statement of cash flows, noncash charges
- Computing FCFE from FCFF, finding FCFF and FCFE from EBIT or EBITDA: Single –stage ,two-stage, and three stage FCFF models; calculating terminal value in a multistage valuation model

10.7 **Market- based valuation**: **Price multiples**

- Method of comparables and the method based on forecasted fundamentals as approaches to using price multiples in valuation; economic rationale for each approach
- Alternative price multiples and dividend yield in valuation; fundamental factors that influence alternative price multiples and dividend yield
- Normalised earnings per share(EPS) and its calculation
- Measures of relative value: Price-to-earnings (P/E) ratio, Price-to-book (P/B) ratio, Price-to-cash flow ratio and Price-to-sales (P/S) ratio
- Rationale for using price multiples to value equity

10.8 **Residual income valuation**

- Residual income; economic value added(EVA) and market value added(MVA)
- The Residual Income Valuation Model: uses of residual income models; fundamental determinants of residual income ;calculation of intrinsic value of common stock using the residual income model
- The General Residual Income Model: residual income valuation in relation to other approaches(single-stage residual income valuation, multistage residual income valuation)
- Comparison of residual income model to divided discount and free cash flow models
- Determination of whether a stock is overvalued, fairly valued, or undervalued by the market based on a residual income model

10.9 **Private company valuation**

- Public and private company valuation comparison
- Private business valuation: definition of value and how different definitions of value could lead to different estimates of value; income, market, and asset –based approaches to private companies valuation and factors relevant to the selection of each approach
- Cash flow related to private company valuation; valuation of a private company using free cash flow, capitalized cash flow and/or excess earnings methods
- Factors that require adjustment when estimating the discount rate for private companies
- Valuation of private company using capital asset pricing model (CAPM) , market approach methods and asset-based approach
- Role of valuation standards in valuing private companies

PAPER NO. 11 PORTFOLIO MANAGEMENT

GENERAL OBJECTIVE:

To equip the candidate with basic knowledge and application of investment tools in portfolio management.

11.0 LEARNING OUTCOMES

On successful completion of this paper, the candidate should be able to:

- Explain the concept of portfolio management
- Apply various investment strategies to manage a portfolio
- Demonstrate the knowledge of risk application when managing portfolios
- Construct and manage portfolios of both individual and institutional investors.

CONTENT

11.1 Overview of portfolio management

- Definition of portfolio management and strategies
- Portfolio perspective and its importance
- Steps of the portfolio management process and the components of those steps
- Types of investors, their distinctive characteristics and specific needs
- Pooled investment products (mutual funds, exchange traded funds, separately managed accounts, hedge funds, buyout funds/ private equity funds and venture capital funds)

11.2 Portfolio planning and construction

- Definition of portfolio planning
- The investment policy statement (IPS): Major components and its importance
- Capital market expectations
- Investment objectives: risk and return objectives for a client
- Investors financial risk tolerance: investors ability (capacity) to bear risk and willingness to take risk
- Investment constraints: liquidity, time horizon, tax issues, legal and regulatory factors, unique circumstances, and their effect to the choice of a portfolio
- Ethical responsibilities of a portfolio manager
- Introduction to asset allocation

11.3 Introduction to risk and return of a portfolio

- Measures of return, their calculation, interpretation, and uses: holding period return(HPR), average returns (arithmetic average return, geometric average), time-weighted return, money weighted return, gross return, pre-tax nominal return, after tax nominal return, real return, leveraged return.
- Characteristics of major asset classes used to construct portfolios
- Portfolio selection; concept of risk aversion; utility theory
- The effect of the number of assets in a multi asset portfolio on the diversification benefits

11.4 **Capital market theory**

- Introduction to modern portfolio theory
- Implications of combining a risk-free asset with a portfolio of risky assets
- Capital allocation line (CAL) and capital market line (CML)
- Systematic and non-systematic risk
- Return generating models and their uses
- Capital asset pricing model (CAPM): assumptions; applications; practical limitations; implications
- Security market line (SML) and its application, the beta coefficient, market risk premium
- Market model: predictions with respect to market returns, variances, and co-variances
- Adjusted beta and historical beta: their use as predictors of future betas
- Minimum variance frontier: importance and problems related to its instability.
- Arbitrage pricing theory (APT): underlying assumptions and its relation to multifactor models, estimation of expected return on an asset given its factor sensitivities and factor risk premiums, determination of existence of an arbitrage opportunity and how to utilise it
- Understanding and interpretation of active risk, tracking error, tracking risk, information ratio, factor portfolio and tracking portfolio

11.5 **Active portfolio management: Residual risk and return**

- Definition of active portfolio management
- Alpha and information ratio (IR): their definition in both post ante and ex ante
- Relationship between information ratio and alphas T-statistic
- The concept of the value added (VA) and the objective of active portfolio management in terms of value added
- The optimal level of residual risk to be assumed with respect to manager ability and investor risk aversion
- Relationship between the choice of a particular active strategy and investor risk aversion

11.6 **Fundamental law of active management**

- Information coefficient (IC) and breadth (BR) as used in determining information ratio
- The 'Fundamental law of active management': Definition; assumptions; relationship between the optimal level of residual risk, information coefficient, and breadth; relationship between the value added, information coefficient, and breadth
- Market timing versus security selection in relation to breadth and investment skill
- Effect of augmenting original investment strategy with other investment strategies or information changes

11.7 **Behavioural finance**

- Introduction to behavioural finance: Definition; traditional finance versus behavioural finance

- Expected utility versus prospect theories of investment decision
- Effect of cognitive limitations and bounded rationality on investment decision making
- Behavioural biases of individuals: cognitive errors versus emotional biases; commonly recognised behavioural biases for financial decision making and their implications; Individual investor's behavioural biases; The effects of behavioural biases on investment policy and asset allocation decisions, and how these effects could be mitigated
- Behavioural finance and investment process: Uses and effects of classifying investors in personality types; effects of behavioural factors on advisor client interactions; The influence of behavioural factors on portfolio construction; Application behavioural finance on portfolio construction process; Effects of behavioural factors on an investment analyst forecasts and investment committee decision making: mitigation of these effects

11.8 **Managing individual portfolios and institutional investors:**

- Individual investors: overview
- Investor characteristics: situational profiling (source of wealth, measure of wealth, stage of life); psychological profiling (traditional finance, behavioural finance, personality typing);
- Investment policy statement for an individual investor;
- Strategic asset allocation for an individual investor: Monte Carlo simulation in personal retirement planning
- Institutional investors: overview
- Pension funds: defined-benefit and defined-contribution plans; pension fund risk tolerance; defined benefit and defined contribution investment policy statement; risk management considerations; hybrid pension plans; employee share ownership plans;
- Other institutional investors :Foundations, endowments, Insurance industry (life and non-life insurance companies), banks, investment intermediaries and other institutional investors; their background and investment setting

11.9 **Risk management**

- Introduction to risk management
- The risk management process
- Types of risks affecting a portfolio: market risk; credit risk; liquidity risk; operational risk; model risk; settlement (Herstatt) risk; regulatory risk; legal/ contract risk; tax risk; accounting risk; sovereign risk and political risk; other risks
- Measuring risk: market risk; credit risk; liquidity risk; nonfinancial risks;
- Value at risk(VaR) as a measure of risk: advantages and limitations: extensions and supplements
- Managing risk in portfolio management context: managing market risk; managing credit risk

PAPER NO.12 QUANTITATIVE ANALYSIS

GENERAL OBJECTIVE

To equip the candidate with knowledge and competencies in application of quantitative analysis tools for use in business operations and decision making.

12.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Demonstrate the knowledge of mathematical techniques in solving business problems
- Demonstrate the application of set theory in business decision making
- Apply basic probability theory in decision making
- Compute expected value and variances relevant to decision making
- Apply hypothesis testing in business decision making
- Apply correlation and regression analysis in management
- Demonstrate the use of statistical tools in forecasting and decision making
- Illustrate the use of linear programming in resource allocations
- Apply game theory in business decision making
- Apply network analysis in project planning and management
- Apply queuing theory for optimisation of waiting lines
- Apply decision theory under conditions of risk and uncertainty
- Demonstrate the use of simulation techniques in analysing business situations.

CONTENT

12.1 Basic mathematical techniques

12.1.1 Functions

- Functions, equations and graphs: Linear, quadratic, cubic, exponential and logarithmic
- Application of mathematical functions in solving business problems

12.1.2 Matrix algebra

- Types and operations (addition, subtraction, multiplication, transposition, and inversion)
- Application of matrices: statistical modelling, Markov analysis, input-output analysis and general applications

12.1.3 Calculus

- **Differentiation**
  - Rules of differentiation (general rule, chain, product, quotient)
  - Differentiation of exponential and logarithmic functions
  - Higher order derivatives: Turning points (maxima and minima)
  - Ordinary derivatives and their applications
  - Partial derivatives and their applications

- **Integration**
  - Rules of integration
  - Applications of integration to business problems

12.2 Probability

12.2.1 Set theory

- Types of sets
- Set description: Enumeration and descriptive properties of sets
- Operations of sets: Union, intersection, complement and difference
- Venn diagrams

12.2.2 Probability theory and distribution

Probability theory

- Definitions: Event, outcome, experiment, sample space
- Types of events: Elementary, compound, dependent, independent, mutually exclusive, exhaustive, mutually inclusive
- Laws of probability: Additive and multiplicative rules
- Baye's Theorem
- Probability trees
- Expected value, variance, standard deviation and coefficient of variation using frequency and probability

Probability distributions

- Discrete and continuous probability distributions (uniform, normal, binomial, poisson and exponential)
- Application of probability to business problems

12.3 Hypothesis testing and estimation

- Hypothesis tests on the mean (when population standard deviation is unknown)
- Hypothesis tests on proportions
- Hypothesis tests on the difference between means (independent samples)
- Hypothesis tests on the difference between means (matched pairs)
- Hypothesis tests on the difference between two proportions

12.4 Correlation and regression analysis

Correlation analysis

- Scatter diagrams
- Measures of correlation –product moment and rank correlation coefficients (Pearson and Spearman)

Regression analysis

- Simple and multiple linear regression analysis
- Assumptions of linear regression analysis
- Coefficient of determination, standard error of the estimate, standard error of the slope, t and F statistics
- Computer output of linear regression
- T-ratios and confidence interval of the coefficients
- Analysis of Variances (ANOVA)

12.5 Time series

- Definition of time series
- Components of time series (circular, seasonal, cyclical, irregular/ random, trend)
- Application of time series

- Methods of fitting trend: free hand, semi-averages, moving averages, least squares methods
- Models- additive and multiplicative models
- Measurement of seasonal variation using additive and multiplicative models
- Forecasting time series value using moving averages, ordinary least squares method and exponential smoothing
- Comparison and application of forecasts for different techniques

12.6 **Linear programming**

- Definition of decision variables, objective function and constraints
- Assumptions of linear programming
- Solving linear programming using graphical method
- Solving linear programming using simplex method
- Sensitivity analysis and economic meaning of shadow prices in business situations
- Interpretation of computer assisted solutions
- Transportation and assignment problems

12.7 **Decision theory**

- Decision process
- Decision making environment – deterministic situation (certainty), analytical hierarchical approach (AHA), risk and uncertainty, stochastic situations (risk), situations of uncertainty
- Decision making under uncertainty - maximin, maximax, minimax regret, Hurwicz decision rule, Laplace decision rule
- Decision making under risk - expected monetary value, expected opportunity loss, minimising risk using coefficient of variation, expected value of perfect information
- Decision trees - sequential decision, expected value of sample information
- Limitations of expected monetary value criteria

12.8 **Game theory**

- Assumptions of game theory
- Zero sum games
- Pure strategy games (saddle point)
- Mixed strategy games (joint probability approach)
- Dominance, graphical reduction of a game
- Value of the game
- Non zero sum games
- Limitations of game theory

12.9 **Network planning and analysis**

- Basic concepts – network, activity, event
- Activity sequencing and network diagram
- Critical path analysis (CPA)
- Float and its importance
- Crashing of activity/project completion time
- Project evaluation and review technique (PERT)
- Resource scheduling (levelling) and Gantt charts
- Limitations and advantages of CPA and PERT

12.10 **Queuing theory**

- Components/elements of a queue: arrival rate, service rate, departure, customer behaviour, service discipline, finite and infinite queues, traffic intensity
- Elementary single server queuing systems
- Finite capacity queuing systems
- Multiple server queues

12.11 **Simulation**

- Types of simulation
- Variables in a simulation model
- Construction of a simulation model
- Monte Carlo simulation
- Random numbers selection
- Simple queuing simulation: Single server, single channel “first come first served” (FCFS) model
- Application of simulation models

12.12 **Current trends**

Role of advancement in information technology in solving quantitative analysis problems

PART III

SECTION 5

PAPER NO.13 STRATEGY, GOVERNANCE AND ETHICS

To equip the candidate with knowledge and competencies in strategy formulation and implementation, governance and appreciation of ethics.

13.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Illustrate an understanding of strategy and governance
- Analyse the environment and its impact on strategic decision
- Formulate and implement a strategic plan
- Explain and practice the tenets and principles of good governance
- Describe the role and functions of the board of directors
- Demonstrate an appreciation of ethics.

CONTENT

13.1 Overview of management

- Importance of management
- Principles of management
- Management as a science, an art or a profession
- Functions and roles of management
- Levels of management and managerial skills
- Management and administration

13.2 Development of management thought

- Pre-industrial revolution management theories
- Classical theories, neo-classical theories
- Contemporary theories

13.3 Management functions

- Planning
- Organising
- Staffing
- Directing
- Controlling

13.4 Overview of corporate strategy and governance

- Meaning of strategy, management and strategic management
- Scope of strategic management
- Levels of strategic management
- Benefits of strategic management
- Limitations of strategic management
- Strategic management process

- Meaning and importance of governance
- Principles of corporate governance
- Best practice in corporate governance
- Codes of corporate practices and conduct
- Corporate Governance theories

13.5 **Environmental analysis**

- Purpose of environmental analysis
- Internal environment analysis
- External environment analysis

13.6 **Strategy formulation**

- Organisational vision and mission
- Organisational goals and objectives
- Development of corporate strategy and business strategy
- Strategic options
- Strategy formulation constraints
- Competitive advantage

13.7 **Strategy implementation**

- Organisation structure
- Resource allocation
- Organisational culture
- Role of leadership on strategy implementation
- Innovation and knowledge management
- Constraints to strategy implementation

13.8 **Strategic monitoring and evaluation**

- Purpose and role of strategic monitoring and evaluation
- Process of strategic monitoring and evaluation
- Tools of strategic monitoring and evaluation
- Role of management information systems
- Performance measurement; balance scorecard and benchmarking
- Features of good strategic monitoring and evaluation systems
- Review and feedback
- Continuous improvement

13.9 **Management of Strategic change**

- Strategic leadership
- Implementing change
- Managing organisation power and politics
- Business excellence model
- Learning organisation
- Lean and quality management

13.10 **Promoting good corporate governance**

- Rights of shareholders and responsibilities to stakeholders
- The chairman, board of directors and management
- The secretary
- Duties and responsibilities of auditors
- Investor education
- Internal and external corporate governance controls

13.11 **Composition, appointment and duties of directors**

- Mix of skills and competencies of directors
- Executive and non-executive directors
- Qualification, appointment, removal, retirement and reappointment
- Director's remuneration
- Directors training and development
- Directors' liabilities and insurance indemnity
- Framework for performance evaluation of the board of directors
- Statutory and fiduciary duties of directors
- Directors as agents of shareholders
- Matters reserved to the board of directors
- Conflict of interest and disclosure
- Code of good boardroom practice

13.12 **Enterprise Risk Management (ERM)**

- The ERM Framework: Risk management philosophy, risk appetite, control
- Categories of risk
- Managing risk: financial and operational; risk management process
- Role of the Board in ERM
- Risk responses: avoidance, acceptance, reduction and sharing

13.13 **Professional values and ethical principles**

- Professional judgment
- Confidentiality
- Ethics: definition, theories and principles on ethics
- Ethical norms, morality and values
- Code of ethics
- Standards of conduct and personal integrity
- Ethics in business
- Corporate Social responsibility

13.14 **Conflict of interest and insider trading**

- Conflict of interest and market manipulation
- Disclosure of interest
- Communication of the conflict of interest
- Insider trading
- Whistle blowing
- Conflict of interest register
- Dispute resolution mechanism

13.15 **Case studies in strategy, governance and ethics**

PAPER NO.14 FIXED INCOME INVESTMENTS ANALYSIS

GENERAL OBJECTIVE

To enable the candidate apply the knowledge and skills in valuation and analysis of fixed income instruments.

14.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Explain various types of fixed income instruments
- Assess various types of risks associated with fixed income instruments
- Describe the term structure of interest rates and analyse interest rate volatility
- Discuss, value and analyse fixed income instruments
- Value bonds using interest rate models
- Determine the value of bonds using yield and spread analysis
- Assess credit models and apply the models to determine credit default rates.

CONTENT

14.1 Overview of fixed income securities

- Basic features of fixed income securities
- Types of fixed income securities
- Bond indenture; affirmative and negative covenants; effect of legal, regulatory, and tax considerations on the issuance and trading of fixed income securities
- Structure of cash flows of fixed income securities; contingency provisions affecting the timing and/or nature of cash flows of fixed income securities
- Risks associated with fixed income securities

14.2 Markets of fixed income securities: Issuance, trading, and funding

- Classifications of global fixed income markets
- Interbank offered rates as reference rates in floating-rate debt; mechanisms available for issuing bonds in primary markets; secondary markets for bonds; securities issued by sovereign governments, non-sovereign governments, government agencies, and supranational entities; debt securities issued by corporations; short-term funding alternatives available to banks; repurchase agreements (repos)

14.3 Fundamentals of fixed income valuation

- Determination of price of the bond given a market discount rate
- Relationships among a bond's price, coupon rate, maturity, and market discount rate (yield-to-maturity)
- Bonds price quotation: spot rates; flat price(clean price), accrued interest, and the full price of a bond(dirty price)
- Matrix pricing of a bond
- Yield measures for fixed-rate bonds, floating-rate notes, and money market instruments

- Term structure of interest rate: pure expectation theory, liquidity preference theory, market segmentation theory; implications of the yield curve for the yield-curve theories
- Spot curves, yield curve on coupon bonds, par curve, and forward curve
- Forward rates; determination of spot rates from forward rates, forward rates from spot rates, and the price of a bond using forward rates; yield spread measures
- Bond refinancing/refunding

14.4 **Fixed income risk and return**

- Return from investing in a fixed-rate bond
- Bond duration measures: Macaulay duration, modified duration, and effective durations, portfolio duration ; money duration of a bond and price value of a basis point (PVBP)
- Effective duration as a measure of interest rate risk for bonds with embedded options
- Key rate duration as a measure of sensitivity of bonds to changes in the shape of the benchmark yield curve
- Effect of a bond's maturity, coupon, embedded options, and yield level to its interest rate risk
- Bond convexity: approximate convexity; effective convexity; determination of percentage price change of a bond for a specified change in yield, given the bond's approximate duration and convexity
- Effect of term structure of yield volatility on the interest rate risk of a bond; relationships among a bond's holding period return, its duration, and the investment horizon
- Effect of changes in credit spread and liquidity on yield-to-maturity of a bond and how duration and convexity can be used to estimate the price effect of the changes

14.5 **Credit risk management**

- Credit risk and credit-related risks affecting corporate bonds; seniority rankings of corporate bonds; potential violation of the priority of claims in a bankruptcy proceeding; corporate issuer credit ratings; issue credit ratings ; rating agency practice of "notching"; risks in relying on ratings from credit rating agencies; components of traditional credit analysis
- Financial ratios used in credit analysis; credit quality of a corporate bond issuer given key financial ratios of the issuer and the industry
- Factors influencing the level and volatility of yield spreads; determination of return impact of spread changes; special considerations when evaluating the credit of high yield, sovereign, and municipal debt issuers and issues

14.6 **The term structure and interest rate dynamics**

- Relationships among spot rates, forward rates, yield to maturity, expected and realised returns on bonds, and the shape of the yield curve
- Forward pricing and forward rate models: determination of forward and spot prices and rates using those models
- Assumptions concerning the evolution of spot rates in relation to forward rates implicit in active bond portfolio management; the strategy of riding the yield curve
- Swap rate curve: its use in valuation by market participants; determination and interpretation of the swap spread for a default-free bond; the Z-spread; treasury

and Euro dollar(TED) spread and London interbank offer rate(LIBOR) – OIS spreads

- Review of traditional theories of the term structure of interest rates; the implications of each theory to forward rates and the shape of the yield curve
- Modern term structure models and their use; measuring the bond's exposure to each of the factors driving the yield curve and how these exposures can be used to manage yield curve risks; maturity structure of yield volatilities and their effect on price volatility.

14.7 The arbitrage-free valuation framework

- Overview of arbitrage-free valuation of a fixed-income instrument
- Computation of the arbitrage-free value of an option-free, fixed-rate coupon bond
- Binomial interest rate tree framework: the backward induction valuation methodology and computation of the value of a fixed-income instrument given its cash flow at each node; process of calibrating a binomial interest rate tree to match a specific term structure
- Pricing using the zero-coupon yield curve and pricing using an arbitrage-free binomial lattice; path wise valuation in a binomial interest rate framework and computation of the value of a fixed-income instrument given its cash flows along each path
- Monte Carlo forward-rate simulation and its application.

14.8 Valuation and analysis of bonds with embedded options

- Overview of fixed-income securities with embedded options
- Relationships between the values of a callable or putable bond, the underlying option-free (straight) bond, and the embedded option; Use of the arbitrage-free framework to value a bond with embedded options
- Effect of interest rate volatility on the value of a callable or putable bond
- Effect of changes in the level and shape of the yield curve on the value of a callable bond
- Determination of the value of a callable or putable bond from an interest rate tree; option-adjusted spreads (OAS); effect of interest rate volatility on option-adjusted spreads
- Effective duration of callable, putable, and straight bonds; use of one-sided durations and key rate durations to evaluate the interest rate sensitivity of bonds with embedded options
- Effective convexities of callable, putable, and straight bonds
- Determination of the value of a capped or floored floating-rate bond
- Defining features of a convertible bond; components of a convertible bond's value; valuation of convertible bond in an arbitrage-free framework; risk–return characteristics of a convertible bond, straight bond and underlying common stock.

14.9 Credit analysis models

- Overview of credit analysis models**;** probability of default, loss given default, expected loss, and present value of the expected loss and relative importance of each across the credit spectrum
- Credit scoring and credit ratings ; ordinal rankings
- Strengths and weaknesses of credit ratings
- Structural models of corporate credit risk: reasons for equity being viewed as a call option on the company's assets; reduced form models of corporate credit risk

- Reasons for debt being valued as the sum of expected discounted cash flows after adjusting for risk
- Assumptions, strengths, and weaknesses of both structural and reduced form models of corporate credit risk
- Determinants of the term structure of credit spreads; present value of the expected loss on a bond over a given time horizon
- Credit analysis required for asset-backed securities
- Credit analysis of corporate deb

PAPER NO.15 ALTERNATIVE INVESTMENTS ANALYSIS

GENERAL OBJECTIVE

To equip the candidate with knowledge and competencies in the valuation and analysis of alternative investments.

15.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Explain the common features of alternative investments and their markets
- Distinguish among the principal classes of alternative investments
- Identify various players in the alternative investment market and describe their roles
- Apply valuation techniques to price alternative investments
- Advise a client on how to incorporate alternative investment in his portfolio according to his or her investment objectives and risk tolerance
- Describe the various types of asset backed securities and mortgage backed securities as a form of alternative investment.

CONTENT

15.1 **Overview of alternative investments**

- Distinction between alternative investments from traditional investments
- Categories of alternative investment (real assets, hedge funds, commodities, private equity, and structured products)
- Types of alternative investment structures: regulatory, securities, trading, compensation, institutional
- Distinction of alternative and traditional investments based on return characteristics
- Distinction of alternative and traditional investments based on methods of analysis
- Goals of alternative investing

15.2 **The environment of alternative investments**

- Participants in the alternative investing environment: buy side participants (plan sponsors; foundations and endowments; private wealth institutions; hedge funds; funds of funds; private equity funds; commodity trading advisors; separately managed accounts) and their roles
- Sell side participants (large dealer banks, brokers) and their roles in the alternative investing environment
- Outside service providers (prime brokers, accountants and auditors, advocates, fund administrators, hedge fund infrastructure, consultants, depositories and custodians, commercial banks) and their roles in the alternative investing environment
- Role of financial markets in alternative investments: primary, secondary, third and forth markets
- Regulatory issues related to alternative investments
- Effect of taxation on alternative investments: income taxes(taxes on capital gains, dividends, interest), non-income tax conventions(real estate taxes, VAT), effect of variation in income tax conventions around the world on investments and investment decisions

15.3 **Real assets investments**

- Land as an alternative asset; timber and timberland as alternative assets; farmland as an alternative asset; infrastructure as an alternative asset; intellectual property as an alternative asset
- Effect of smoothing on the valuation and volatility of real assets investments: smoothing of prices and returns, smoothed returns with market returns
- Real estate investment trusts (REITs): types of REITs and the potential advantages they offer to investors, net asset value per share (NAVPS) in REIT valuation, estimating NAVPS based on forecasted cash net operating income, use of funds from operations (FFO) and adjusted funds from operations (AFFO) in REIT valuation, comparison of net asset value, relative value (price-to-FFO and price-to-AFFO) , and discounted cash flow approaches to REIT valuation; value of a REIT share using net asset value, price-to-FFO and price-to-AFFO, and discounted cash flow approaches
- Real Estate Equity Investments: Processes of developing real estate in the context of alternative investments, Valuing of real estate development as a string of real options, decision tree and backward induction to the valuation of a real estate development project, valuation and risks of real estate equity: direct capitalization and discounted cash flow approach (i.e., income approach) to valuing real estate, comparable sale prices for valuing real estate, cost approach, risks of real estate as an investment
- Alternative real estate investment vehicles: private equity real estate funds, commingled real estate funds, syndications, joint ventures, the concepts of gearing and loan-to-value(LTV) ratios; open-end real estate mutual funds; options and futures on real estate indices; exchange-traded funds based on real estate indices; closed-end real estate mutual funds; equity real estate investment trusts
- Depreciation of real estate: methods of depreciation of real estate (i.e., without income taxation, with depreciation disallowed for tax purposes, with economic depreciation allowed for tax purposes, with accelerated depreciation allowed for tax purposes, and with expensing of capital expenditures for tax purposes) in the analysis of returns
- Real estate equity risks and returns as represented by real estate indices: real estate indices based on appraisals; data smoothing, its explanations, and its major effects; real estate indices based on adjusted privately traded prices ; real estate indices based on market prices

15.4 **Hedge funds**

- Features of hedge funds; three primary elements of hedge funds; reasons for hedge fund industry growth and concentration
- Classification of hedge funds; single-manager hedge funds, funds of funds, and multi-strategy funds
- Hedge fund fees: the approach for determining total annual hedge fund fees; the effects of high water marks (HWM) and hurdle rates on hedge fund fees over time; effects of incentive fees on hedge fund manager behavior; annuity view of hedge funds fees; option view of incentive fees and its implications on manager behavior
- Hedge fund returns and asset allocation: effect of diversification on performance measures of hedge fund portfolios relative to individual funds, interpretation of the statistical moments of return distributions of hedge fund strategies(mean, variance, skewness, and kurtosis of the returns of hedge fund strategies)

- Hedge fund strategies: types of hedge fund strategies (Equity based strategies, arbitrage based strategies, opportunistic strategies, multiple strategies)
- Reasons for incorporating hedge funds into an investment program: return enhancement and diversification potential of hedge funds as additions to portfolios of traditional assets; characteristics and potential benefits of opportunistic hedge fund investing
- Hedge fund indices: asset-weighted hedge fund indices and equal-weighted hedge fund indices; concepts of representativeness and data biases (survivorship, selection, instant history, liquidation) and their effects on hedge fund returns reported by databases
- Determinants of investability of hedge fund indices

15.5 Private Equity

- Structure of private equity funds and investments
- Roles of various entities involved in private equity investments
- Major forms of private equity investments that involve direct ownership of equity: leveraged buyouts, management buyouts, venture capital, merchant banking, and their characteristics
- Major forms of private equity that involve direct ownership of debt securities: mezzanine debt, distressed debt securities, debt covenants, leverage loan securities, and factors contributing to their growth
- Trends and innovations in private equity markets: secondary markets in the context of private equity; private investment in public equity (PIPE) transactions; hedge fund participation in private equity, contrast between private equity funds and hedge funds
- Venture capital: role of venture capital and leverage buyouts as sources of funding for corporations through their life cycle, role of business plans and exit plans in venture capital investment, structure of venture capital funds, stages of the life cycle of venture capital funds and portfolio companies, compound option embedded in most venture capital investments, the concept of the J-curve in the context of a startup company; risk and return characteristics of venture capital investments, sources of return (risk premiums) to venture capital investments equities
- Leveraged buyout (LBO) transactions: structure of LBO funds and the role of various entities involved in LBO transactions; fees associated with investments in LBO funds; effects of leverage on the payoffs and returns of LBO transactions; exit strategies of LBOs; risk and return characteristics of LBOs
- Mezzanine debt: characteristics, typical exit strategy for mezzanine debt investors, how mezzanine debt affects company cost of capital, types of mezzanine debt investors and their motivations
- Distressed debt: characteristics, supply and demand of distressed debt, typical distressed debt investment strategies, types of corporate bankruptcy processes; risks associated with investments in distressed debt; role of business risk in distressed debt investing

15.6 Structured Products

15.6.1 Asset-backed securities

- Basic structural features of, and parties to a securitisation transaction; the roles they play, and the legal structures involved
- Prepayment tranching and credit tranching

- Payment structure and collateral structure of a securitisation backed by amortising assets and non-amortising assets
- Types of external and internal credit enhancements; cash flow and prepayment characteristics for securities backed by home equity loans, manufactured housing loans, automobile loans, student loans, and credit card receivables; financial ratios as used in analysis of commercial mortgages(Loan-to-Value, interest coverage ratio, and debt service coverage ratio); collateralised debt obligations (CDOs): cash and synthetic CDOs; primary motivations for creating a collateralised debt obligation (arbitrage and balance sheet transactions).
- Credit derivative markets: how a bank can use credit derivatives to transfer credit risk, classification of credit derivatives(single name versus multi-name, funded versus unfunded, sovereign versus non sovereign), four stages of credit derivative activity
- Credit default swaps: mechanics of credit default swaps, credit options and credit-linked notes, risks of credit derivatives
- Collateralized debt obligations (CDOs): general structure and life cycle of a CDO, balance sheet CDOs and arbitrage CDOs, cash-funded CDOs and synthetic CDOs, cash flow and market value CDOs, credit risk and enhancement of CDOs, new developments in CDOs(distressed debt CDOs, hedge fund CDOs, single-tranche CDOs)

15.6.2 **Mortgage-backed securities**

- Collateralized mortgage obligations (CMOs): characteristics, sequential-pay CMOs, other types of CMO structures and tranches (Planned Amortization Class, Targeted Amortization Class, Principal-only CMO, and Floating-rate)
- Mortgage loans: cash flow characteristics of a fixed-rate mortgage, level payment, and fully amortised mortgage
- Mortgage pass-through securities: investment characteristics, payment characteristics, and risks; repayment amount on a mortgage pass-through security for a month, given the single monthly mortality rate; conditional prepayment rate (CPR); Public Securities Association (PSA) prepayment benchmark
- Relevance of average life of a mortgage-backed with respect to the security's maturity; factors that affect prepayments and the types of prepayment risks;
- Collateralised mortgage obligation (CMO): creation of a collateralised mortgage obligation and its use in matching of assets and liabilities for institutional investors
- Mortgage tranches in a CMO: sequential pay tranche; the accrual tranche, the planned amortization class tranche, and the support tranche; risk characteristics and relative performance of each type of CMO tranche, given changes in the interest rate environment; investment characteristics of stripped mortgage-backed securities; agency and non-agency mortgage-backed securities; credit risk analysis of commercial and residential non-agency mortgage-backed securities; basic structure of a commercial mortgage-backed security (CMBS) ;ways in which a CMBS investor may realise call protection at the loan level and by means of the CMBS structure.

15.7 **Valuing mortgage-backed and asset-backed securities**

- Computation, use, and limitations of the cash flow yield, nominal spread, and zero-volatility spread for a mortgage-backed security and an asset-backed security
- Monte Carlo simulation model for valuing a mortgage-backed security
- Path dependency in pass-through securities and the implications for valuation models
- Calculation of option-adjusted spread using the Monte Carlo simulation model and its interpretation
- Evaluation of a mortgage-backed security using option-adjusted spread analysis
- Reasons for having different effective durations reported by various dealers and vendors**;** interest rate risk of a security, given the security's effective duration and effective convexity; cash flow, coupon curve, and empirical measures of duration, and limitations of each in relation to mortgage-backed securities
- Use of nominal spread, zero-volatility spread, or option-adjusted spread in evaluating a specific fixed income security

15.8 **Commodities**

- Types of market participants in commodity futures markets, ways of participating in commodity markets
- Overview of forward and futures contracts; marking-to-market of futures positions, initial margin to futures positions, maintenance margins to futures positions
- Return characteristics of commodity investments.
- Roll process of futures contracts: process of creating and maintaining long-term futures exposures through short-term futures positions; effects of rollover decisions on the returns of long-term futures exposures
- Term structure of forward prices and the pricing models of futures and forward prices: arbitrage-free pricing models and its application on pricing physical assets ,convenience yield
- The concepts of backwardation, normal backwardation, contango, and normal contango; relationships between forward prices and spot prices under normal backwardation and normal contango; expected returns to spot positions and forward positions (long and short) under normal backwardation and normal contango
- Potential diversification benefits offered by commodities; commodities in the context of equilibrium diversification; commodities as a diversifier of inflation risk; commodities as potential return enhancers;
- Insurance perspective, the hedging pressure hypothesis, and the theory of storage and their implications for futures prices and expected future spot prices.
- Investing in commodities without future(through related equity instruments, exchange-traded funds (ETFs), commodity linked notes)

SECTION 6

PAPER NO.16 ADVANCED PORTFOLIO MANAGEMENT

GENERAL OBJECTIVE

To equip the candidate with the ability and competence to effectively construct, manage, execute, monitor and measure performance of portfolios of different asset classes.

16.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Describe how to allocate different asset classes when a constructing portfolio
- Analyse different strategies used to manage a portfolio of different asset classes
- Explain and apply trade execution decisions and techniques
- Describe the portfolio monitoring and rebalancing processes
- Evaluate the performance of a portfolio.

CONTENT

16.1 Asset allocation

- Overview of asset allocation: role of asset allocation in portfolio management; strategic versus tactical asset allocation; Importance of asset allocation in portfolio performance; Steps involved in establishing an appropriate asset allocation
- Asset allocation and investors and return objectives: Dynamic versus static asset allocation; factors affecting asset allocation policy(loss aversion; mental accounting; fear of regret); Return and risk objectives in relation to asset allocation
- Selection of asset classes: criteria for specifying asset classes; inclusion of international asset assets (developed and emerging markets)
- Optimization approaches to asset allocation: mean-variance approach (Its application when adding an asset class in an existing portfolio); resampled efficient frontier; experience based approaches; asset only, asset/ liability management (ALM);); Black – Letterman; Monte-Carlo Simulation;
- Nondomestic equities and bonds: Their associated risks, costs and opportunities
- Conditional return correlations: their importance when evaluating the diversification effects of nondomestic investments
- Integrating a segmented market with a global market: expected effects on share prices expected returns, and return volatilities
- Formulation and justification of minimum-variance frontier given investment policy statement and capital market expectations

16.2 Fixed income portfolio management

- Use of liability as a benchmark and use of bond index as a benchmark with respect to investment objectives
- Managing funds against a bond market: Classification of strategies (Pure bond indexing/ full replication approach, enhanced indexing and active investing, full-

blown); selection of a benchmark bond index and factors to consider(market value risk, income risk, liability framework risk); Use of bond market indices

- Techniques used to align the risk exposures of the portfolio with those of the benchmark bond index: duration matching technique, key rate durations technique
- Assessment of the risk and return characteristics of a proposed trade: total return analysis, scenario analysis
- Bond immunisation strategy: its formulation and evaluation under various interest rate scenarios
- Spread duration and its importance
- Extension of classical immunisation theory: introduction of contingent immunisation
- Risks associated with managing a portfolio against a liability structure: interest rate risk, contingent claim risk, cap risk
- Immunisation strategies for single liability, multiple liabilities, and general cash flows: their advantages and disadvantages
- Immunised portfolios: risk immunisation and return maximisation
- Cash flow matching: its use in funding a fixed set of future liabilities; its advantages and disadvantages

16.3 **Relative value methodologies for global credit bond portfolio management**

- Classic relative value analysis based on top down and bottom up approaches to credit bond portfolio management
- Cyclical supply and demand changes: their implications in the primary bond markets; impact of secular changes in the markets dominant structures
- Investors short term and long term liquidity needs: their influence on portfolio management decisions
- Common rationale for secondary market trading
- Corporate bond portfolio strategies

16.4 **International and emerging market fixed-income portfolio management strategies**

- Effect of leverage on portfolio duration and investment returns
- Use of repurchase agreements (repos) to finance bond purchases: Factors affecting the repo rate
- Measures of fixed income portfolio risk: standard deviation, target semi variance, shortfall risk and value at risk (VaR)
- Use of futures instead of cash market instruments to alter portfolio risk
- Formulation and evaluation of an immunisation strategy based on interest rates
- Use of interest rate swaps and options to alter portfolio cash flows and exposure to interest rate risk; use of credit derivative instruments to address default risk, credit spread risk and downgrade risk in the context of fixed income portfolio
- Potential sources of excess return for an international bond portfolio
- Effect of change in value for a foreign bond when domestic interest rates change, and the bond's contribution to duration in domestic portfolio, given the duration of the foreign bond and the country beta
- Hedging currency risk in international bond markets; break even spread analysis in seeking yield advantages across international bond market; investing in emerging market debt:
- Criteria for selecting a fixed income manager

16.5 **Equity portfolio management**

- Role of the equity to in the overall portfolio
- Equity investment approaches: passive approach; active approach; semi-active (enhanced-index) approach; their relevance with respect to expected active return and tracking risk
- Weighting schemes used in the construction of major equity market indices and the biases associated with each
- Passive equity investing: alternative methods for establishing passive exposure to an equity market; indexed separate or pooled accounts, index mutual funds, exchange-traded funds, equity index futures, and equity total return swaps
- Approaches to constructing an indexed portfolio: full replication, stratified sampling, and optimisation
- Active equity investing: equity investment–styles classifications and risks associated with each; techniques for identifying investment styles; equity style indices; equity style box analysis and style drift; long–short and long-only investment strategies; 'equitised' market-neutral and short-extension portfolios; sell disciplines/ trading of active investors;
- Semi-active equity investing (enhanced-index): derivatives-based and stock-based enhanced indexing strategies
- Managing a portfolio of managers: core-satellite approach to portfolio construction; effect of adding a completeness fund to control overall risk exposures;
- Components of total active return ("true" active return and "misfit" active return) and their associated risk measures; alpha and beta separation as an approach to active management;
- Identifying, selecting, and contracting with equity managers
- Structuring equity research and security selection: top-down and bottom-up approaches to equity research.

16.6 **Alternative investments portfolio management**

- Introduction to alternative investments portfolio management
- Selection of active managers of alternative investment scheme
- Alternative investment benchmarks: construction and interpretation; benchmark bias
- Return enhancement and risk diversification effects of adding an alternative investment to a reference portfolio(for instance a portfolio of bonds and equity only)
- Venture capital: major issuers and suppliers; purpose of venture capital; buyout funds; use of convertible preferred stock in direct venture capital investment
- Private equity fund: typical structure and timelines; formulating private equity investment strategy
- Commodity investments: direct and indirect commodity investment; components of return for commodity futures contracts; role of commodities in a portfolio;
- Hedge funds: typical structure; high water- mark provisions; fund-of-funds; performance and evaluation
- Managed futures: trading strategies; role in a portfolio
- Distressed securities: risks associated with investing in distressed securities including event risk, market liquidity risk, 'J-factor' risk;

16.7 **Currency portfolio management**

- Effects of currency movements on portfolio risk and return
- Strategic choices in portfolio management

- Active currency trading strategies based on economic fundamentals, technical analysis, curry trade and volatility trading
- Adjusting the hedge ratio using forward contracts and foreign exchange (FX) swaps
- Trading strategies used to reduce hedging costs and modify the risk return characteristics of a foreign currency portfolio.
- Portfolios exposed to multiple foreign currencies: use of cross-hedges ratio, macro-hedges ratio, minimum-variance-hedge ratio
- Challenges for managing emerging market currency exposures

16.8 **Applications of derivatives in portfolio management**

- Risk management applications of forward and futures strategies: use of equity futures contracts to achieve a target beta for a stock portfolio; number of futures contracts required; construction of a synthetic stock index fund using cash and stock index futures (equalising cash); use of stock index futures in converting a long stock position into synthetic cash; use of equity and bond futures to adjust the allocation of a portfolio between equity and debt; use of futures to adjust the allocation of a portfolio across equity sectors and to gain exposure to an asset class in advance of actually committing funds to the asset class; exchange rate risk; use of forward contracts to reduce the risk associated with a future receipt or payment in a foreign currency; hedging the exchange rate risk of a foreign market portfolio; feasible strategies for managing the exchange rate risk of a foreign market portfolio.
- Risk management applications of option strategies: use of covered calls and protective puts to manage risk exposure to individual securities; the value at expiration, profit, maximum profit, maximum loss, breakeven underlying price at expiration, and general shape of the graph for bull spread, bear spread, butterfly spread, collar, straddle, box spread option strategies; the effective annual rate for a given interest rate outcome when a borrower (lender) manages the risk of an anticipated loan using an interest rate call (put) option; the payoffs for a series of interest rate outcomes when a floating rate loan is combined with an interest rate cap, an interest rate floor, an interest rate collar; reason for, and the method used, by a dealer delta to hedge an option position, reasons for changes in delta, and how the dealer adjusts to maintain the delta hedge; gamma of a delta-hedged portfolio and how it changes as in-the-money and out-of-the-money options move towards expiration;
- Risk management applications of swap strategies: Use of interest rate swap to convert a floating-rate (fixed-rate) loan to a fixed-rate (floating-rate) loan; duration of an interest rate swap; effect of an interest rate swap on an entity's cash flow risk; the notional principal value needed on an interest rate swap to achieve a desired level of duration in a fixed-income portfolio; methodology used by a company to generate savings by issuing a loan or bond in its own currency and using a currency swap to convert the obligation into another currency; use of a currency swap to convert a series of foreign cash receipts into domestic cash receipts; use of equity swaps to diversify a concentrated equity portfolio, provide international diversification to a domestic portfolio, and alter portfolio allocations to stocks and bonds; use of an interest rate swaption to change the payment pattern of an anticipated future loan and, to terminate a swap.

16.9 **Execution of portfolio decisions**

- The context of trading: market microstructure: order types and their price and execution uncertainties, their effective spread and their quoted bid ask spread ; types of markets and their quality; roles of brokers and dealers
- Costs of trading: transaction costs components (explicit and implicit costs); implementation shortfall and volume weighted average price (VWAP) as measures of transaction costs; use of econometric methods/models in pre-trade analysis to estimate implicit transaction costs
- Major types of traders: their motivation to trade, time versus price preferences, and preferred order types; major trading tactics ;algorithmic trading strategies and determining factors including order size, average daily trading volume, bid–ask spread, and the urgency of the order
- Trade execution decision and tactics: meaning and criteria of best execution; firm's investment and trading procedures, including processes, disclosures, and record keeping, with respect to best execution
- Role of ethics in trading

16.10 **Portfolio monitoring and rebalancing**

- Monitoring : fiduciary's responsibilities in monitoring an investment portfolio; monitoring of investor circumstances, market/economic conditions, and portfolio holdings; revisions to an investor's investment policy statement and strategic asset allocation, given a change in investor circumstances
- Rebalancing: benefits and costs of rebalancing a portfolio to the investor's strategic asset allocation; calendar rebalancing; percentage-of-portfolio rebalancing; optimal corridor width of an asset class; target portfolio rebalancing versus allowed range portfolio rebalancing; rebalancing strategies (linear, concave, and convex rebalancing strategies); constant mix, buy-and-hold, and constant proportion portfolio insurance (CPPI) rebalancing strategies

16.11 **Evaluating portfolio performance**

- Importance of performance evaluation from the perspective of fund sponsors and the perspective of investment managers
- Components of performance evaluation: performance measurement, performance attribution, and performance appraisal
- Performance measurement: total, time-weighted, money-weighted rates of return, linked internal rate of return and annualized return;
- Benchmarks: concept of a benchmark; properties of a valid benchmark; types; steps involved in constructing a custom security-based benchmark; validity of using manager universes as benchmarks; tests of benchmark quality; hedge funds and hedge fund benchmarks
- Performance attribution: inputs for micro and macro attribution; use of macro and micro performance attribution methodologies to identify the sources of investment performance; use of fundamental factor models in micro performance attribution

- Performance appraisal: risk-adjusted performance measures, including (in their *ex post* forms) alpha, information ratio, Treynor measure, Sharpe ratio, and Modigliani-Modiglian measure(M^2) ;incorporation of portfolio's alpha and beta into the information ratio, Treynor measure, and Sharpe ratio; use of performance quality control charts in performance appraisal
- Practice of performance evaluation: noisiness of performance data; manager continuation policy decisions

PAPER NO. 17 INTERNATIONAL FINANCE

GENERAL OBJECTIVE

To equip the candidate with the knowledge and skills on international finance and financial decision making in a global environmnent.

17.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Evaluate the operations of international financial markets
- Analyse and discuss fixed versus flexible exchange rate regimes
- Explain the operations of foreign exchange markets and risk management strategies in international markets
- Evaluate the need for government in international finance management and international debt crisis
- Assess the role of the multinational corporation in international financial and capital flows
- Analyse the various finance issues related to multinational corporations
- Critique various ethical dilemmas faced by multinational corporations managers.

CONTENT

17.1 The environment of international finance

- International finance: Theory of comparative advantage, the theory of factors endowment, product life cycle, globalisation of the world economy, the multinational corporation
- Goals of international finance
- International flow of funds
- The balance of payments: current account, financial account; factors affecting the financial account
- Sources of international finance: rising funds in foreign markets and investments in foreign projects (short term, medium term and long term sources)
- Terms of payments in international trading

17.2 The foreign exchange market

- Function and structure of the foreign exchange market
- Mechanics of foreign exchange: The market for foreign exchange; exchange rates(direct and indirect quotations, cross-rate calculations, bid-ask quotes and spreads, cross-rate calculations with bid-ask spreads), exchange rate determination
- Parity relationship: interest rate parity, purchasing power parity; international fisher effects
- Forecasting exchange rates
- Indices of currency movements and exchange rate speculation; efficient fundamental and technical approaches to forecasting; forecasting performance and market efficiency; currency betas and consistent forecasts; international arbitrage.

17.3 **The foreign exchange rates regimes**

- Fixed or pegged exchange rate system
- Floating or flexible exchange rate system
- Managed floating exchange rate systems
- Government Intervention in the foreign exchange market
- Deficit finance and exchange rates

17.4 **Managing foreign exchange exposure**

- Transaction exposure: identification of transaction exposure; hedging (forward, money and options market hedges), limitations of hedging short term exposure, hedging long term exposure, techniques of reducing transaction exposure
- Economic exposure: Measuring economic exposure, managing operating exposures (selecting low cost production sites, flexible sourcing policy, research and development and product differentiation, financial hedging, and diversification of the market)
- Translation exposure: Translation methods, financial accounting standards, hedging translation exposure

17.5 **International financial markets**

- Motives for world trade and foreign investment
- International financial institutions, the international monetary system, multilateral financial institutions, bilateral financial institution , trade-related investment measures (TRIMS),trading blocks
- International banking and money market: International banking services; capital adequacy standards; banking regulations among countries; international money markets
- International bond and equity markets: Long term financing decisions, foreign bonds, types of instruments, dual currency bonds, bond market credit ratings, market capitalisation (developed and developing countries), market structures, trading practices and costs, equity market benchmarks, trading in international equities

17.6 **International financial crisis**

- The debt crisis
- Causes and remedies of the international debt crises
- Bank management of loan exposure
- Bank assessment of country risk
- Country risk assessment procedures
- Basel I,II and III requirements

17.7 **Foreign direct investments (FDIs)**

- Definition of FDI
- Classification of FDI
- Motives for FDI
- Foreign market entry strategies, factors favouring FDI, complexities of FDI, Imperfect markets and foreign direct investments FDI's, benefits of international diversification, the direct foreign investment decision, political risks and foreign direct investments FDI's

17.8 **International capital structures and the cost of capital**

- Cost of Capital
- Cost of Capital in segmented versus integrated markets
- Comparisons of capital structure across countries
- Cross-border listings of stocks
- Capital asset pricing model (CAPM) under cross-listings
- The effect of foreign equity ownership restrictions
- The financial structure of subsidiaries

17.9 **International capital budgeting**

- Subsidiary versus parent perspective: translation
- Foreign investment decision process
- Factors to consider in multinational capital budgeting
- The adjusted present value model
- Risk adjustment in capital budgeting analysis
- Divesture analysis; international acquisitions, reducing exposure to host government takeovers

17.10 **Multinational cash Management**

- The size of cash balances, choice of currency
- Cash management systems in practice: bilateral and multilateral netting of internal and external net cash flow
- Transfer pricing and related issues
- Blocked funds, methods used in moving blocked funds
- Factors influencing financing in foreign currencies
- Cash flow analysis for parent/subsidiary, optimisation of cash flows, and distortion of subsidiary performance, reduction in precautionary cash balances, financing with a portfolio of currencies

17.11 **The international tax environment**

- The objectives of taxation: tax neutrality, tax equity
- Types of taxation: income tax, withholding tax, value-added tax
- National tax environment: worldwide taxation, territorial taxation, foreign tax credit
- Organisational structures for reducing tax liabilities: branch and subsidiary income, tax havens, controlled foreign corporation
- Use of transfer pricing to reduce taxes
- Corporate behaviour and international tax laws
- Multinational corporate policy

17.12 **Ethics in the international financial environment**

- Ethical dilemmas for multinational corporations (MNC) and its manager
- What managers can do about ethical dilemmas
- Key issues in the governance of a public corporation

PAPER NO. 18 DERIVATIVES ANALYSIS

GENERAL OBJECTIVE

To equip the candidate with the competencies in pricing, hedging and trading strategies of various types of derivative instruments in the global financial market.

18.0 LEARNING OUTCOMES

A candidate who passes this paper should be able to:

- Explain the types of derivatives instruments and markets
- Value and price the basic types of derivatives instruments
- Explain the Greek letters and apply them in hedging strategies
- Apply various hedging strategies of the different derivatives
- Discuss the various lessons on derivatives mishaps.

CONTENT

18.1 **Overview of derivative markets and instruments**

- Introduction
- Players in the derivative markets: hedgers, speculators and arbitrageurs
- Types of derivative markets
- Regulation of derivative markets
- Derivative Instruments- options contracts, forward contracts, futures contracts, swaps contracts, hybrid derivatives

18.2 **Mechanics of forward contracts**

- Types of forward contracts: currency contract, equity contract, bond contract, interest- rate contract, commodity contract
- Pricing and valuation of forward contracts

18.3 **Mechanics of futures contracts**

- Types of futures contracts: currency contracts, equity (stock- index) contracts, bond contracts, interest – rate contracts, commodity contracts
- Trading in the futures contracts : clearing house, daily settlement and margins, delivery, closing futures positions, termination of futures, specifications of futures contracts
- Pricing and valuation futures contracts: factors determining futures contracts price

18.4 **Risk management strategies using futures and forwards**

- Basic Principles
- Arguments for and against hedging
- Hedging strategies: minimum variance, hedge ratio, portfolio immunisation, basis risk, cross hedging,
- Computing the futures position; altering the beta of a portfolio
- Spread strategies with financial futures

18.5 **The swaps market**

- Introduction
- Characteristics of the swaps market
- Swap dealers; swap dealers as financial intermediaries
- Motivations for swaps: commercial needs, comparative advantage
- Types of swaps: interest rate swaps, currency swaps, equity swaps, commodity swaps, and credit swaps; advantages and drawbacks of various types of swaps
- Mechanics of swaps: pricing, factors that affect swaps pricing, market microstructure
- Valuation of swaps

18.6 **Risk management with swaps**

- Interest rate risk with interest rate swaps
- Equity risk with equity swaps
- Foreign exchange risk with currency swaps
- Credit risk with credit swaps
- Commodity price risk using the commodity swaps
- Sophisticated swap structures: flavored swaps, forward swaps and extension swaps
- Managing seasonal financing requirements with seasonal swaps
- Swaptions

18.7 **Options markets**

- Trading in the options market: commissions, margins
- Put-call parity
- Options valuation: factors affecting options prices, discrete- time option pricing, binomial model, one- period binomial model, two- period binomial model, Black - Scholes- Merton Model, black and its sensitivity to the inputs, volatility, upper and lower bounds for options prices
- Options on stock indices
- Early exercise: calls and puts on a non-dividend paying stock
- Options on currencies
- Option- based interest rate instruments and techniques
- Option Strategies: covered call, protective put, straddles, strangles, bull spread, bear spread, butterfly spread, box spread, collar spread, strips

18.8 **Futures options**

- Nature of futures options
- Bounds for futures options
- Valuation of futures options using binomial trees
- Futures price as a stock paying continuous dividend yield
- Comparison of futures options and spot options prices

18.9 **Option Greeks**

- Introduction; general overview of the option Greeks
- Naked and covered positions
- Stop-loss strategy

- Theta
- Gamma
- Relationship between delta, theta and gamma
- Vega
- Rho
- Hedging using the Greeks
- Scenario analysis
- Portfolio insurance

18.10 **Risk management with options contracts**

- Introduction
- Options strategies for equity portfolio, standard long and long positions, risk management strategies with options and underlying, money spreads, combination of calls and puts
- Interest rate option strategies; using interest rate calls with borrowing and lending, using interest rate cap, floor and collar with floating rate loan

18.11 **Derivative Mishaps**

- Overview
- Lessons for all users
- Lessons for financial institutions
- Lessons for non-financial corporations