ALAGAPPA UNIVERSITY

(Accredited with 'A' Grade by NAAC)

KARAIKUDI – 630 003 TAMILNADU

DIRECTORATE OF DISTANCE EDUCATION

(Recognized by Distance Education Council (DEC), New Delhi)

POST GRADUATE / P.G.DIPLOMA /CERTIFICIATE COURSE PROGRAMMES

REGULATIONS AND SYLLABI

ALAGAPPA UNIVERSITY, KARAIKUDI
DIRECTORATE OF DISTANCE EDUCATION

REGULATIONS AND SYLLABI

P.G. / P.G. DIPLOMA

Course	**:**	**M.Com.**
Mode	:	Distance Education
Duration	:	Two years
Eligibility	:	Any degree from a recognised University with Commerce/ Accountancy as a subject
Medium	:	English and Tamil

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Marks*
I YEAR		
1.1	Management Concepts	100
1.2	Advanced Accounting	100
1.3	Business Environment	100
1.4	Management Accounting	100
1.5	Financial Services	100
II YEAR		
2.1	Marketing Management	100
2.2	Investment Analysis and Portfolio Management	100
2.3	Financial Management	100
2.4	Advanced Cost Accounting	100
2.5	Principles of Personnel Management	100
	Total	**1000**

Paper 1.1: MANAGEMENT CONCEPTS

UNIT I

Management: Definition – Nature – Scope and functions – Evolution of management thought – Relevance of management to different types of organisation like, Insurance, Hospitals, Universities, Hotels, Social Service organisations etc.

UNIT II

Planning: Nature, importance and strategic considerations in planning – Planning premises – Components of planning as objectives, policies, strategies, procedures, methods, rules, projects and budgets – Planning process – Decision making – Meaning – Importance – Types – Process.

UNIT III

Organising: Nature, purpose and kinds of organisation – Structure – Principles and theories of organisation – Departmentation – Span of control – Line and staff functions – Authority and responsibility – Centralisation and decentralisation – Delegation of authority – Committees – Informal organisation.

UNIT IV

Staffing: General principles and importance – Motivation: Meaning – Importance – Types – Theories – Communication: Meaning – Types – Process – Barriers – Overcoming barriers – Leadership: Meaning – Styles – Essential qualities.

UNIT V

Controlling: Objectives and process of control – Devices of control – Integrated control – Special control techniques – Coordination – Need and techniques.

UNIT VI

Recent trends and new perspectives in management - Strategic alliances – Core competence – Business process reengineering – Total quality management – Bench marking.

REFERENCE BOOKS :

1. Stoner and Wanker: *Management*, Prentice Hall.
2. Koontz and O'Donnel: *Management: A Systems Approach*, Tata McGraw Hill.
3. Weihrich and Koontz: *Management: A Global Perspective*, McGraw Hill.
4. John Argenti: *Management Techniques: A Practical Guide.*
5. Gene Burton and Manab Thakur: *Management Today: Principles and Practice*, Tata McGraw Hill.
6. Griffin: *Management*.

Paper 1.2: ADVANCED ACCOUNTING

UNIT I

Accounting Systems: Cash and mercantile systems – Accounting concepts – Principles – Accounting standards.

UNIT II

Single Entry System: Calculation of profit – Statement of Affairs method – Conversion of single entry into double entry system – Preparation of profit and loss account and balance sheet under single entry system.

UNIT III

Partnership Accounts – Admission, retirement and death of partners – Amalgamation of firms – Dissolution – Piecemeal distribution – Sale to a company.

UNIT IV

Company Final Accounts – Profit prior to incorporation.

UNIT V

Accounting for company amalgamation – Absorption – External reconstruction – Capital reduction and internal reconstruction.

UNIT VI

Holding Company Accounts – Computation of capital profit, revenue profit, minority interest – Cost of control/ capital reserve – Preparation of consolidated profit and loss account and balance sheet.

REFERENCE BOOKS :

1. Jain and Narang: *Advanced Accountancy.*
2. Arulanandam and Raman: *Financial Accounting.*
3. Shukla M C: *Advanced Accounting.*

Paper 1.3: BUSINESS ENVIRONMENT

UNIT I

Business Environment: Concept – Significance – Factors – Environmental influence on business – Environmental Scanning for business planning.

UNIT II

Social and Cultural Environment: Demographic trend – Indian social structure – Caste and communal systems – Interplay of various systems.

UNIT III

Entrepreneurial Culture: Emerging entrepreneurial class – Ethos: Business ethics – Meaning – Need – Enforcing agencies – Social Responsibility: Responsibility towards various interest groups – Social cost benefit analysis.

UNIT IV

Political Environment: Fundamental rights – Directive principles of State Policy – Centre-State relations – Impact of political environment on business - Economic Environment: Basic economic systems – Capitalism, socialism, communism, mixed economy – Characteristics of Indian economic system.

UNIT V

State Policies: Monetary policy – Control of money supply and credit control impact on business – Fiscal Policy – Public debt, budgets, direct and indirect taxation impact on business – Industrial Policy – New industrial policy.

UNIT VI

Technological Environment: Choice of technology – Problems in selecting appropriate technology – Implications to business.

REFERENCE BOOKS :

1. Adhikary: *Business Environment.*
2. Dutt and Sundaram: *Indian Economy.*
3. Srinivasan N P and Gupta: *Enterepreneurship Development.*
4. Cherunilam: *Business and Government.*
5. Mamoria and Mamoria: *Business Planning and Policy.*

Paper 1.4: MANAGEMENT ACCOUNTING

UNIT I

Management Accounting: An introduction – Definition – Scope – Objectives – Functions – Role – Importance – Limitations – Management accounts Vs Financial accounting and Cost accounting – Installation of management accounting system – Tools of management accounting – Reporting.

UNIT II

Financial Statement Analysis: Financial Statements – Nature and limitations of financial statements – Analysis and Interpretation – Comparative statements – Common size statements – Criticism of published accounts and cost accounting.

UNIT III

Ratio Analysis: Types – Profitability ratios – Turnover ratios – Liquidity ratios – Proprietary ratios – Market earnings ratios – Factors affecting efficiency of ratios – How to make effective use of ratio analysis – Uses and limitations – Construction of profit and loss account and balance sheet with ratios and relevant figures.

UNIT IV

Fund Flow, Cash Flow Analysis: **Fund Flow**: Need and meaning – Preparation of schedule of change in working capital and the fund flow statement – Projected fund flow statement – Managerial uses and limitations of fund flow analysis - **Cash Flow**: Need – Meaning – Preparation of cash flow statement – Managerial uses of cash flow statement – Limitations – Differences between fund flow and cash flow analysis.

UNIT V

Budgeting: Meaning of Budget and Budgetary Control – Importance – Limitations – Classification of budgets and budgets preparation – Fixed and flexible budgeting – Performance budgeting – Zero-base budgeting.

UNIT VI

Marginal Costing and Break Even Analysis: Definition – Marginal costing Vs Absorption costing – Justification for marginal costing – Marginal cost sheet – Segregation of semivariable costs – Contribution – Key factor – Managerial uses of marginal costing – Pricing decisions – Level of activity planning – Mix of sale – Profit planning techniques – Make or buy decisions – **Break-even Analysis**: Break-even Analysis – Break-even chart and graph – P/V ratio – Margin of Safety – Assumptions of break – Even analysis – Limitations of break-even analysis – Advantages and limitations of marginal costing – Differential costing.

REFERENCE BOOKS :

1. Maheswari: *Management Accounting.*
2. Srinivasan N P: *Management Accounting.*
3. Khan and Jain : *Financial Management.*

Paper 1.5: FINANCIAL SERVICES

UNIT I

Nature and various facets of financial service industry – Analysis of financial services – Ned for financial innovation – Financial services and market environment – Development of financial markets – Global integration of financial market – Finance Companies: Functions, strengths and weaknesses.

UNIT II

Commercial Banking and their fund based and non-fund based financial services – Leasing, hire purchase financing: Salient features, guidelines, functions – Mutual Funds: Types of mutual funds – Floatation – Asset management company of mutual funds – Regulations.

UNIT III

Factoring – Forfeiting – Securitisation – Venture capital – Consumer finance and credit cards: Salient features, guidelines, functions – Strategies involved in financing.

UNIT IV

Merchant Banking including public issue management – Underwriting – Portfolio management – Stock and security broking – Merger and Takeover: Salient features – Guidelines – Functions.

UNIT V

Foreign Exchange Broking – Bills discounting – Financial consultancy – Corporate advisory services – Credit rating services – Salient features – Guidelines – Functions.

UNIT VI

Non-banking Financial Companies: Regulations of RBI – Role of NBFCs.

REFERENCE BOOKS :

1. Prasanna Chandra: *Financial Management*.
2. Avadani: *Investment Management including Securities Market.*
3. Varma: *Merchant Banking.*
4. ICSI Study Materials: *Financial Management.*
5. ICSI Publication: *A Manual of Capital Issues.*

Paper 2.1: MARKETING MANAGEMENT

UNIT I

Marketing: Meaning – Scope – Importance – Approaches to the study of Marketing – Marketing Concept – Market Segmentation: Meaning – Bases for segmentation – Uses. Marketing Mix: Four P's in marketing – Marketing Planning – Importance – Types of planning.

UNIT II

Marketing Environment – External factors – Internal factors – Consumer Behaviour – Meaning and importance – Consumer buying process – Determinants of consumer behaviour – – Theories and their relevance to marketing.

UNIT III

Product Mix Management: Product planning and development – New Product development – Product Life Cycle – Meaning – Stages –Managing PLC – Product positioning – Branding – Packaging.

UNIT IV

Price Mix Management: Factors affecting pricing – Pricing and pricing policies – Objectives – Procedures – Methods of price fixation – Administered and regulated prices.

Physical Distribution Mix: Distribution channel policy – Types – Factors determining choice of channel – Channel management – Middlemen functions.

UNIT V

Promotional Mix: Personal selling Vs Impersonal selling – Personal selling process – Steps in selling – Compensation plans – Evaluation of salesmen performance – Advertising: Importance – Objectives – Media planning and selection – Factors influencing selection – Advertising copy – Layout – Evaluation of advertising – Advertising budget – Sales Promotion methods – Publicity – Sales promotion tools.

UNIT VI

Marketing Research & Marketing Information System: Meaning – Scope – Need – Elements – Research Process – Steps involved – Consumerism: Meaning – Consumer rights – Consumer movement in India – Salient provisions of Consumer Protection Act.

REFERENCE BOOKS :

1. William Stanton: *Fundamentals of Marketing*, McGraw Hill.
2. Mamoria & Joshie: *Fundamentals of Marketing*.
3. Armstrong and Kotler: *Principles of Marketing.*

Paper 2.2: INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT

UNIT I

Investment: Concepts and goals – Types of investment: Financial, Real, Business, Personal and Institutional – Comparison of investments, speculation, gambling and hedging – Concept of portfolio management: Goals – Risk and return trade-off.

Financial Investment Avenues: Fixed income and Varying income securities.

UNIT II

Investment Analysis: Aspects of analysis –Return Analysis: Concepts, measures and computation of return of individual security and portfolio – Risk Analysis: Concepts, types, measure, computation of risk of individual security and portfolio – Valuation Analysis: Share and bond valuation – Price Earnings Analysis.

UNIT III

Approaches to Investment Analysis: Fundamental Analysis: Concept and components – Tools of economy, industry and company analysis – Technical Analysis: Concept and tools – Assumption – Theories: Dow theory – Contrary opinion – Confidence index, Breadth of market and Relative strength analysis – Moving average analysis – Chart patterns.

UNIT IV

Portfolio Construction and Choice: Markowtz diversification – Efficient frontier – Risk-return indifferent curves – Portfolio choice – Single and two factorial models – Lagrange multiplier method.

UNIT V

Capital Asset Pricing Model – Assumptions and application – Capital market line and security market line – Efficient market hypotheses – The weakly efficient, semi strongly efficient and strongly efficient market forms – Random-walk theory.

UNIT VI

Portfolio Performance Measures: Sharpe, Treynor and Jensen – Portfolio Audit and Portfolio Revision: Need and methods – Formula plans.

REFERENCE BOOKS :

1. Francis J C: *Investment Analysis and Management*.
2. Francis J C: *Management Investments*.
3. Bhalla V K: *Investment Management*.
4. Preeti Singh, *Investment Management*.

Paper 2.3: FINANCIAL MANAGEMENT

UNIT I

Financial Management: An introduction – Concept, nature, evaluation and significance – Finance functions – Managerial and operative – Investment – Function, meaning and scope – Financing function – Meaning and scope – Dividend function – Goals of Financial Management – Types – Maximisation of profit, profitability/ wealth/ liquidity/ solvency – Minimisation of risk, cost of capital, dilution of management control etc. – Risk – Return trade off – Maximisation and minimisation vs optimisation.

UNIT II

Long Term Capital Resources – Equity and debt sources – Equity share, preference shares and debentures as sources of long term capital – Relative merits, demerits and uses – Significance of convertible issues and right issues – Borrowings from term lending institutions – The institutional framework – Types of assistance – Public deposits.

UNIT III

Working Capital: Concept and types – Determinants – Financing approaches – Conservative – Aggressive and hedging approaches – Their risk – Return features and significance – Sources of working capital finance – Working capital financing by commercial banks.

UNIT IV

Capital Planning – Determinants of capital structure – Optimum capital structure – Capital structure theories – Net income and net operative income theories – M.M. Theory – Traditional theory – Their assumptions – Significance and limitations.

UNIT V

Cost of Capital Concept – Cost of debt, equity, preference share capital, retraining earning – Weighted average cost – Book weight, market weight – Marginal cost of capital use and computations.

Capital Budgeting: Concept – Significance – Methods of appraisal: Payback periods, ARR, IRR, NPV, Simulation and Certainty equivalent methods.

UNIT VI

Leasing: Concept – Types – Significance – General considerations – Economics of leasing – Evaluation – Present value and IRR methods – Leverage – Concept – Types – Degree of operative leverage – Financial leverage and total leverage – Implications of high and low degrees of leverages.

Dividend Theories: Valuation under Gorden and Walter theories – Dividend irrelevance under M.M. Theory – Assumptions – Limitations – Dividend policy – Different policies and practices – Factors affecting dividend decision.

REFERENCE BOOKS :

1. Prasanna Chandra : *Financial Management*.
2. Van Horne: *Financial Management*.
3. Khan and Jain: *Financial Management*.
4. Weston and Briham: *Managerial Finance*.

Paper 2.4: ADVANCED COST ACCOUNTING

UNIT I

Cost Accounting Principles: Meaning of cost and cost accounting – Objectives of cost accounting – Installation of a costing system – Elements of cost – Cost concepts – Cost classifications – Methods, systems and techniques of costing – Cost sheet.

Cost Accounting for material cost control – Need for material cost control – Purchase control – Stores control – Stock levels – EOQ analysis – Pricing of stores issues – Perpetual inventory control – ABC analysis – VED analysis – Treatment of waste, scrap, defectives and spoilage.

UNIT II

Labour Cost Control – Time keeping and time booking – Treatment of idle time and overtime cost – Wage rates for costing – Systems of wage payment – Time wage and piece rate – Incentive schemes of wage payment – Labour turnover.

UNIT III

Overhead Cost Control – Classification of overheads – Allocation and appointment – Absorption of overheads – Different methods – Treatment of under absorption and over absorption of overheads.

UNIT IV

Methods of Costing – Job costing – Contract costing – Profit on incomplete contracts – Cost plus contracts – Target costing – Escalation clause – Cost sheet – Unit costing.

Process Costing – Features – Job costing Vs Process costing – Process cost accounts – Inter-process profits – Accounting for joint products and by products.

UNIT V

Standard Costing – Definition –Advantages and limitations of standard costing – Variance analysis.

UNIT VI

Reconciliation of cost and final accounts – Cost control and cost reduction – Meaning – Tools and techniques – Essentials for success of cost control and cost reduction – Distinction between cost control and cost reduction – Areas of cost reduction and control – Advantages.

REFERENCE BOOKS :

1. Bhar B K: *Cost Accounting*.
2. Iyengar S P: *Cost Accounting*.
3. Horngren : *Cost Accounting*.
4. Batty: *Management Accounting.*

Paper 2.5: PRINCIPLES OF PERSONNEL MANAGEMENT

UNIT I

Personnel Management – Definition – Objectives and functions – Role and structure of personal function in organisations – Personnel principles and policies.

UNIT II

Human Resource Planning: Characteristics – Need for planning – Human Resource Planning Process – Job Analysis – Job Design – Job Description – Job Specification.

UNIT III

Selection Process: Placement and induction – Training and development – Promotion – Demotions – Transfers – Separation.

UNIT IV

Wage and Salary Administration: Factors – Principles – Compensation plan – Individual –Group – Incentives – Bonus – Fringe benefits – Job evaluation systems – Wage and salary administration in relation to personal taxation.

UNIT V

Employee maintenance and integration – Welfare and society – Accident prevention – Administration of discipline – Employee motivation – Need and measures.

UNIT VI

Personnel Records / Reports: Personnel Research and Personnel Audit: Objectives – Scope and importance.

REFERENCE BOOKS :

1. Venkataratnam C S and Srivastava B K: *Personnel Management and Human Resources*.
2. Arun Monappa: *Industrial Relations*.
3. Dale Yodder and Paul D Standohar: *Personnel Management and Industrial Relations*.
4. David A Decenzo and Stephen P Robbins: *Personnel / Human Resource Management*.

Course : **M.Com. (Finance and Control)**
Mode : Distance Education
Duration : Two years
Eligibility : Any degree from a recognised University
Medium : English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
I YEAR		
1.1	Management Concepts	100
1.2	Financial Accounting and Analysis	100
1.3	Cost and Management Accounting	100
1.4	Quantitative Techniques	100
1.5	Business Law	100
II YEAR		
2.1	Financial Management	100
2.2	Investment Analysis and Portfolio Management	100
2.3	Financial Services and Institutions	100
2.4	Global Financial Management	100
2.5	Taxation and Tax Planning	100
	Total	**1000**

Paper 1.1: MANAGEMENT CONCEPTS

UNIT I

Concept of Management – Definition of management – Nature and process – Need for management – Management thought: History and evaluation – Major schools of management thought – Contribution by F.W. Taylor, Fayol, and Peter F. Drucker – Management by objectives.

UNIT II

Managerial planning – Meaning and characteristics – Elements – Policies, strategies, procedures, rules, budgets – Planning process – Types of plan – decision making: Meaning – Forecasting and decision making – Decision making under uncertainty.

UNIT III

Organizing – Organizational structure – Organizational chart – Organizational relationship – Formal and informal organization – Span of management – Departmentation – Line staff – Functional committee – Delegation of authority and responsibility – Centralization and decentralization.

UNIT IV

Staffing – Job analysis, job evaluation – Manpower planning – Selection – training and development – Needs – Methods – Performance appraisal – Methods.

UNIT V

Direction – Methods – Motivation – Theories – Communication: Importance of communication – Types of communication process – Barriers to communication – Leadership: Definition – Leadership theories and styles – Managerial grid.

UNIT VI

Control – Meaning and process of control – Management control techniques – Budgetary and non-budgetary control – Modern techniques – PERT, CPM, management audit – Requirements for effective control system.

REFERENCE BOOKS:

- Koontz H, O'Donnel FE, "Management", McGraw Hill.
- Louis A Allen, "Management & Organisation", McGraw Hill.

Paper 1.2: FINANCIAL ACCOUNTING AND ANALYSIS

UNIT I

Accounting – Definition – Accounting for historical function and managerial function – Scope of accounting – Financial accounting: Accounting concepts – Conventions – Principles – Accounting standards – International accounting standards.

UNIT II

Double entry system of accounting – Accounting books – Preparation of journal and ledger – Subsidiary books – Errors and rectification – Preparation of trial balance and final accounts – Accounting from incomplete records – Statement of affairs method – Conversion – Method – Preparation of trading, profit & loss account and balance sheet from incomplete records.

UNIT III

Company final accounts & Balance sheet – Schedules – Treatment of various items.

UNIT IV

Financial statement analysis – Financial statements – Nature of financial statements – Limitations of financial statements – Analysis and interpretation – Types of analysis – External Vs internal analysis – Horizontal Vs vertical analysis – Tools of analysis – Trend analysis – Common size statements – Comparative statements – Ration analysis – Types – Profitability ratios – Factors affecting efficiency of ratios – How to make effective use of ratio analysis? – Uses and limitation of ratios – Construction of profit and loss account and balance sheet with ratios – Construction of profit and loss account and balance sheet with ratios and relevant figures – Inter-firm, intra-firm comparisons.

UNIT V

Fund flow statements – Need and meaning – Preparation of schedule of changes in working capital and the fund flow statement – Managerial uses and limitations of fund flow statements – Cash flow statement – Need – Meaning – preparation of cash flow statement – Managerial uses of cash flow statement – Limitations – Differences between fund flow and cash flow analysis.

UNIT VI

Inflation accounting: limitations of historical accounting – Methods of accounting for price level changes – General price level accounting or current purchasing power accounting – Current cost accounting – An appraisal of the CPP and CCA methods – Human resource accounting – Approaches – Methods of valuation accounting – Human resource accounting models – Computer applications in accounting.

REFERENCE BOOKS:

- Arulanandan M A & Raman K S, Advanced Accounting
- Jain S P & Narang, Advanced Accounting
- Maheswari S N, Management Accounting and Financial Control
- Khan M Y, Jain P K and Katyal, Management Accounting.

Paper 1.3: COST AND MANAGEMENT ACCOUNTING

UNIT I

Cost Accounting: Meaning of cost – Objective of costing – Installation of a costing system – Elements of cost – Cost concepts – Cost classifications – Cost sheet preparation.

UNIT II

Material cost control – Stock levels – EOQ analysis – Pricing of stores issues – Perpetual inventory control – ABC analysis – VED analysis – Treatment of waste, scrap – Treatment of idle time and overtime cost – Systems of wage payment – Labour turnover – Overhead cost control – Classification – Allocation apportionment and absorption of overheads – Different methods.

UNIT III

Methods of costing: Job costing – process costing – Accounting for inter process profits – Accounting for equivalent production.

UNIT IV

Management accounting: definition – Scope and importance – management accounting Vs financial accounting – Functions – Limitations.

UNIT V

Budgeting and budgetary control – Sales budget – Cash budget – operating budget – Master budget – Flexible budgeting – Zero base budgeting – Performance budgeting – Programme budgeting – Capital budgeting – Nature and significance – Methods of evaluation of alternative capital expenditure programmes.

UNIT VI

Marginal costing – Break even analysis – Costing – Standard costing – Variance analysis – Responsibility accounting – Cost control and cost reduction techniques – Value engineering.

REFERENCE BOOKS:

- Jain S P and Narang K L, Advanced Cost Accounting
- Katyal, Management Accounting

Paper 1.4: QUANTITATIVE TECHNIQUES

UNIT I

Concept and use and quantative techniques – Investment decision making – Sources of data: Primary and secondary – Methods of data collection – Classification – Construction of discrete and discrete and continuous frequency distribution – Charts.

UNIT II

Measures of central tendency: Mean – Median – Mode – Geometric mean – Harmonic mean – Weighted mean.

UNIT III

Measures of dispersion: Standard deviation coefficient of variation – Skewness – Kurtosis.

UNIT IV

Concept of probability – Types – Theoretical probability distributions: Binomial – Poisson – Normal.

UNIT V

Testing of hypothesis: Equality of mean and difference between means and equality standard deviation differences between standard deviations.

UNIT VI

Linear correlation and regression as applied investment decisions – Forecasting – Decision theory: Criteria for risk and uncertainty linear programming – Return maximizing exercise under graphic and simplex methods.

REFERENCE BOOKS:

1. Gupta S P, Sanchetti and Kapoor, Statistical Methods
2. Kothari C R, Quantitative Techniques.
3. Levin, Statistical Methods in Management.
4. Levin at al, Quantitative Approach to Management.

Paper 1.5: BUSINESS LAW

UNIT I

Law of Contract: Definition of contract – Essential elements of a valid contract – Kinds of contracts – Rules relating to offer and acceptance – Consideration – Capacity of parties – Free consent – Legality of objects and consideration – Void agreements – Contingent contracts – Performance – discharge of contracts – Quasi contracts – Remedies for breach of contract.

UNIT II

Special contracts: Indemnity and guarantee – Bailment and pledge – Agency – Types of agency – Rights, duties and liabilities of agent and principal – Termination of agency.

UNIT III

Sales of Goods Act: Definition and essentials of a contract of sale – Sale Vs agreement to sell – Kinds of goods – Price – Stipulation as to time – Conditions and warranties – Transfer of property – Performance of contract of sale – Rights of an unpaid vendor.

UNIT IV

Negotiable Instruments Act: Negotiable instruments – Definition – characteristics – Cheque, bill of exchange and promissory note – Definition and characteristics – Holder – Holder in due course – Presentation of negotiable instruments – Negotiation – Endorsement – Dishonor and discharge – Banker and customer – Crossing – Paying banker – Collecting banker – Their protection.

UNIT V

Insurance: Definition – Types – Principles of insurance contracts – Life insurance – Life policies – Claims and settlement – Fire and marine insurance – Types of policies – Claims – Marine losses – Total and partial – Settlement.

UNIT VI

Laws of Carriage of Goods: Contracts of carriage of goods – Classification of carriers – Rights, duties and liabilities of carrier by road/rail carriage of goods by sea and air – Documents used – Rights, duties and liabilities of carrier by sea and air.

REFERENCE BOOKS:

1. Kuchhal M C, Mercantile Law
2. Kapoor N D, Mercantile Law.

Paper 2.1: FINANCIAL MANAGEMENT & CONTROL

UNIT I

Financial Management – An introduction: concept, nature, evaluation and significance – Finance functions risk return trade off – Maximization and minimization Vs optimization.

UNIT II

Long term capital resources – Equity and debt sources – Equity share, preference shares and debentures – Uses – Significance of convertible issues and right issues – Borrowings from term lending institutions – Institutional frame work – Types of assistance – General procedure and conditions – Public deposits: meaning, scope and regulations.

UNIT III

Working Capital – Concept and types – Determinants – Financing approaches – Sources of working capital – Financing working capital – Financing by commercial banks: Types of assistance working capital gap – Recommendation of tendon committee and chore committee reports.

UNIT IV

Capital structure planning – Determinants of capital structure – Optimum capital structure – Capital structure theories – Significance and limitations – Cost of capital: Concept – Cost of debt, equity, preference share capital, retained earning weighted average cost.

UNIT V

Management of current assets – Forecasting of current assets needs – Management of cash and liquidity – Objectives budgeting – Planning the optimum level of cash: Inventory model, stochastic model – Model of miller and orr – Payment and collection practices, management of receivables – Credit policy – Credit period – Credit terms – Collection policies – Control of receivables – Inventory management: Meaning and importance – Inventory costs – Inventory levels – Inventory levels – Inventory management techniques – Stock out cost determination techniques.

UNIT VI

Leasing – Concept – Types –Significance – Economics of leasing – Evaluation present value and IRR methods – Leverage: Concept – Types – Computation of degree of leverages – Implications of leverage analysis – Dividend theories – Valuation under Gordon and Walter theories – Dividend irrelevance under M.M. Theory – Assumptions and limitations – Dividend policy – Different policies and practices – Factors affecting dividend decision.

REFERENCE BOOKS:

- Jain, Khan, and Pandey I M, Financial Management
- Solomon Ezra and Priyle John, An introduction to Financial Management
- Prasanna Chandra and James C Van Horne, Financial Management and Policy.

Paper 2.2: INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT

UNIT I

Investment: Concepts and goals – Types of investment – Financial – Real business – Personal – Institutional – Comparison of investments, speculation, gambling – Hedging – Concepts of portfolio and portfolio management – Goals – Risk and return trade off – Financial investment avenues – Fixed income – Varying income securities.

UNIT II

Investment Analysis: Aspects of analysis – Analysis – Return analysis – Concepts, measures and computation of return of individual security and portfolio – Risk analysis – Concepts, types, measure, computation of risk of individual security and portfolio – Valuation analysis – Share valuation – Bond value – Price earnings analysis.

UNIT III

Approaches to Investment Analysis: Fundamental analysis – Concept and components – Tools of economy, industry and company analysis – Technical analysis – Concept and tools – Assumption – Theories – Dow theory – Contrary opinion – The confidence index, breadth of market and strength analysis – Moving average analysis – Chart patterns.

UNIT IV

Portfolio Construction and Choice: Markowtz diversification – Efficient frontier – Risk-return indifferent curves – Portfolio choice – Single and two factorial models – Lagrange multiplier method.

UNIT V

Capital Asset Pricing Model: Assumptions and application – Capital market line and security market line – Efficient market hypotheses – The weakly efficient, semi strongly efficient and strongly efficient market forms – Random-Walk theory.

UNIT VI

Portfolio Performance: Measures – Sharpe, Treynor and Jenson – Portfolio audit and portfolio revision – Need and methods – Formula plans.

REFERENCES :

1. Francis J.C, *Investment*.
2. Francis J.C, *Management of Investments*.

Paper 2.3: FINANCIAL SERVICES AND INSTITUTIONS

UNIT I

Financial Services: Concept and scope of financial services – Functions concerning public and private placement of capital issues - Lead management – Issue pricing and promotion – Disclosure norms – Issue underwriting – Collecting banker – SEBI regulations regarding lead managers and merchant banking functionaries.

UNIT II

Mutual Fund Services – Concept, need and scope – Mfs in India: Types of schemes – Performance – Portfolio performance evaluation measures – Regulations regarding mutual funds.

UNIT III

Credit Rating: Objectives – Institutions: CRISIL – ICRA – CARE – Debt and deposit rating equity rating procedures – Reading different grades of rating – International credit rating institutions.

UNIT IV

Role of UTI and LIC as investment institutions – Portfolio management services – Concept and need – Services of NBFC to investors.

UNIT V

Development Financial Institution – Role on functions of IDBI, IFC, ICICI and IRBI – RBI and management of gilt securities market.

UNIT VI

Stock Exchanges: Role and organizations of BSE and NSE – OTCEI – SEBI and stock exchange – Investor information and education – Role of SEBI – Role of investor association and investment consultancies.

REFERENCE BOOKS:

- Raghunathan V, Stock Exchanges and Investments
- Avadhani V, Security Market
- Varma, Merchant Banking

Paper 2.4: GLOBAL FINANCIAL MANAGEMENT

UNIT I

Global Finance: Concept and scope – Types of Global Finance: Multilateral and private – Direct and Indirect – Macro and Micro – Multilateral Finance Institutions: WB, IDA, IFC and IMF: Functions and achievements.

UNIT II

International Financing methods – Equity instruments – Foreign equity – GDRS and ADRS – Debt instruments and forms – Debt Vs equity in the context of a firm and nation.

UNIT III

Global Investments: Need and significance for recipient and investor entities – Portfolio implications direct investment and portfolio investment – nature and features.

UNIT IV

Foreign Direct Investment by MNC's – Appraisal of capital projects: Adjusted present value and CAPM techniques – Handling political and economic risk.

UNIT V

International working Capital Management: Cash management tools – netting, leading, lagging, transfer pricing, intercompany loans, inventory management - Overview & Tools – Outstanding and overseas production – Credit management - Policy variables – Letters of credit.

UNIT VI

Foreign Exchange Management: Types of quotations – Spot and forward market – Purchasing power and interest rate parity theorems – Forex derivatives options, features and swaps – Managing exposures – Transaction and operating exposures – International strategies and external strategies.

REFERENCE BOOKS:

- Apte P G, International Financial Mangement
- Alan C Shapiro, Multinational Financial Management

Paper 2.5: TAXATION AND TAX PLANNING

UNIT I

Definition and concepts – Basis of charge – Concept of tax planning – Tax evasion and tax avoidance – Residential status and scope of total income – Income exempted from tax.

UNIT II

Computation of income under the head salary – Basis of charge – Allowances – Perquisites – Deductions from salary Income-tax planning relating to salary income.

UNIT III

Computation of income from house property – Chargeability – Determination of annual value – Allowable deductions – Tax planning practices.

UNIT IV

Computation of Income from Profits and Gains of business/profession – Charging provision – Provisions governing assessment of business income – Deductions – Scope for tax planning – Capital gains – Computations of total gains – Transfer of capital assets – Deductions – Exempted capital gains – Areas of tax planning – income from other sources.

UNIT V

Set-Off and carry forward of losses – Clubbing of income – Deductions from gross total income.

UNIT VI

Assessment of individuals, firms and companies.

REFERENCE BOOKS:

1. Vinod K Singhania, Direct Taxes - Law and Practice
2. Bagawati Prasad, Gaur and Narang, Income Tax Law and Practice
3. Lal B B, Income Tax Law and Practice
4. Sukumar Battacharya, Indian Income Tax.

ghltFg;gpd; ngau; - vk;.V. jkpo;

top - njhiyepiyf; fy;tp

tFg;gpd; fhyk ;- ,uz;L fy;;tpahz;Lfs;

Nru;f;iffhd jFjp - gp.V/gp.ypl;. jkpo; /VNjDk; xU gl;lg;gbg;gpy;

jkpo; ghlj;Jld; Nju;r;rp.

ghlq;fs; kw;Wk; Nju;T Kiw

jhs; 1.1 - ,f;fhy ,yf;fpak;

$W-1:- ftpij

ghujpahu;-Rje;jpug; gapu; (jz;zPu; tpl;Nlh tsuj;;Njhk;...) njhz;L nra;Ak; mbik – t.c. rpf;F tho;j;J (Ntshsd; rpiwGFe;jhd;...)-

ghujpjhrd; mofpd; rpupg;G (Jtf;fj;jpypUe;J %d;W ghly;fs;) – ghujpjhrd; ftpijfs; ✲-Mk; njhFjp - rpWj;ijNa ntspapy; th (G+l;ba ,Uk;Gf; $l;bd; fjT..) jkpo; ,af;fk; - khztu;.

$W-✲

fz;zjhrd;: fz;zjhrd; ftpijfs; - NeU gw;wpa ifaW epiyg; ghly; - rpw;gp : xspg;gwit(mfypif ,d;W fhj;jpUf;fpwhs;)- kPuh : fdTfs; + fw;gidfs; = fhfpjq;fs; - eh. fhkuhrd;: fWg;G kyu;fs; njhFg;gpy; - fWg;G kyu;fs; kl;Lk; - mg;Jy; uFkhd;: Neau; tpUg;gk;(tlY}Uk; thu;jhTk;)

$W:- ehlfk;

mwpQu; mz;zh: Ntiyf;fhup - n[ae;jd;: epidf;fg;gLk; (mfuk;> rptfq;if) - #.,d;dhrp: [Q;rpW FO(Xuq;f ehlfq;fs;) E}ypy; ,U ehlfq;fs;- mk;gyj;jhbfs;> fl;rpkhwpfs;

$W:- rpWfijfs;

GJikg;gpj;jd;: GJikg;gpj;jd; fijfspy; rhgtpNkhrdk; kl;Lk; - K.tujuhrd;: Fwl;il xyp(kl;Lk;) – n[afhe;jd;: Afre;jp (kl;Lk;) – Rr{yh: jil Xl;lq;fs (kdpjidj; NjLfpd;Nwd; kl;Lk;) - ma;f;fz;: Ntu;fs; njhFg;gpy; - Nkd;kf;fs; fij kl;Lk; - ntw;wp - epytd;: #tl;if (tpujk; nfhz;l Ntu;fs;).

$W:- Gjpdk;

gpugQ;rd;: khDlk; nty;Yk; - Njhg;gpy; Kfk;kJ kPuhd;: xU flNyhuf; fpuhkj;jpd; fij.

$W:- ciueil

uh.gp.NrJg;gps;is: flw;fiuapNy (jpUts;Stu;> ,sq;Nfhtbfs; kl;Lk;) – jpU.tp.f: rPu;jpUj;jk; my;yJ ,sik tpUe;J (jkpo; khzhf;fu; kfhehL gFjp kl;Lk;).

$W:- ciueil

kiwkiy: Kw;fhy gpw;fhyk; jkpo;g; GyNthu; (Gytu;fNs ehfupfj;jpw;Fj; jhafk;> gz;ilg;Gytu;> jkpo; Xk;gpdik)- t.R.g. khzpf;fk;: ts;Stk;(ts;Stu; neQ;rk; kl;Lk;)

$W:- ciueil

fz;zjhrd;: khq;fdp

jhs; 1.✲: mw ,yf;fpaq;fSk; rka ,yf;fpaq;fSk;

$W:-1

1 jpUf;Fws;: Kg;ghy;fspYk; Kjy; %d;W mjpfhuq;fs;

$W:-✲

ehybahu;: el;ghuha;jy;> $lh el;G - gonkhop: fy;tp> fy;yhju;> mwpTilik.

$W:-3

xsit: ey;top (Kjy; ✲✲ ghly;fs;) - ,d;dh ehw;gJ: Kjy; gj;Jg; ghly;fs; - ,dpait ehw;gJ: Kjy; gj;Jg; ghly;fs;

$W:- ✲

fhiuf;fhy; mk;ikahu;: jpU ,ul;il kzpkhiy - mg;gu;: Nghw;wpj; jpUj;jhz;lfk; - rk;ge;ju;: jpUePw;Wg; gjpfk;> NfhsW gjpfk;- kzpthrfu;: rptGuhzk;.

$W:-5

ek;kho;thu;: Kjy; gj;J - cau;T mw vd;Dk; Kjy; jpUtha; nkhopAk; tPLkpd; vd;Dk; ,uz;lhk; jpUnkhopAk; - Mz;lhs;: jpUkzf; fdit ciuj;jy;> tyk;Gupf;Ff; fpilj;j NgW - FyNrfuho;thu;: CNdW -jpUNtq;flKilahd; tp\ak;...

$W:-✲

gl;bdj;jhu;: jpUtpil kUJ}u; Kk;kzpf;Nfhit- jpU%yu;: mwQ;nra;thd; jpwk;> mwk; nra;ahd; jpwk;

RW:- 7

jhAkhdtu;: gupG+udhde;jk; ghly;fs; - ts;syhu; : nja;tkzp khiy.

$W: ✲

Fzq;Fb k];jhd; rhfpG : guhhuf; fz;zp - Njrpa tpehak;gps;is: Mrpa N[hjp.

jhs; 1/3 ,yf;fzk; - 1

njhy;fhg;gpak;: vOj;jjpfhuk;: ,sk;G+uzk;

jhs; 1.✲ ,yf;fzk;-✲

njhy;fhg;gpak;: nrhy;yjpfhuk;: Nrdhtiuak;

jhs; 1.5: jkpof tuyhWk; gz;ghLk;

$W:- 1

jkpof tuyhw;wpw;Fupa rhd;Wfs;> gy;ytu;> Nrhou;> ghz;bau; nrg;NgLfs;- fy;ntl;Lfs;> ,yf;fpaq;fs;> ntspehl;lhu; Fwpg;Gfs;> jkpofj;jpy; gioa fw;fhyk;> Gjpa fw;fhyk;> ,Uk;Gf;fhyk; Mfpatw;wpf;fhd rhd;Wfs;> rpe;Jntsp ehfupfk; - jpuhtplu;.

$W:- ✲

jkpofj;jpd; njhd;ik> Fkupf;fz;lk; - rq;ffhyr; Nruu;> ghz;bau;> Nrhou;; tuyhW - rq;ffhyr; r%fepiy - ngz;bu; - fy;tp - rq;ffhyk; jkpofj;jpd; nghw;fhyk; - fsg;gpuu; Ml;rpapy; jkpofk;.

$W:-3

gy;ytu; Njhw;wKk; tuyhWk; - Kw;fhyg; gy;ytu;fs;> ,ilf;fhyg; gy;ytu;fs;> gpw;fhyg; gy;ytu;fs; - gy;ytu;fspd; Ml;rp Kiw- rKfepiy – ngz;bu; epiy – fy;tp epiy.

$W:- ✲

gpw;fhyr; Nrhou; tuyhW – Kjy; ,uhruhrd; Kjy; ,uhNre;jpud; MfpNahhpd; jdpr;rpwg;G – NrhoUk; ,uhl;bu $lUk; - NrhoUk; Nkiyr; rhSf;fpaUk; - jkpofj;jpw;Fk; ,yq;iff;Fk; cs;s njhlu;G – gpw;fhyr; Nrhohpd; r%f epiy - ngz;bu; - ,ir> eldk;> rka epiy.

$W:- 5

Kjy; ghz;bag; NguuR> ghz;ba ehl;by; Nrhouhl;rp - ,uz;lhk; ghz;bag; NguuR - ,Ryhkpaupd; tUif – ghz;bau; Ml;rpapy; r%f epiy – ngz;fs; epiy – ghz;bau; Ml;rpapy; fly; fle;j tzpfk;.

$W-✲.

jkpofj;jpy; ,Ryhkpau;> tpraefu kugpdu;> kuhl;bau; Ml;rp gw;wpa nra;jpfs; - kJiu ehaf;fu; tuyhW- ehaf;fu;fspd; ghisag;gl;L Ml;rp Kiw – r%f epiy.

$W:-7

Mq;fpyf; Fk;gpdpahu; Ml;rpj; jkpofj;jpy; Nt&d;wy; - r%f epiy – fy;tp epiy – nghUshjhu epiy – Mq;fpNyau; Ml;rpia vjpu;j;j G+ypj;Njtd;> fl;lnghk;kd; - kUJ rNfhjuu;fs;> NtY}u;f; fofk;

$W:- ✲

,e;jpa tpLjiyg; Nghuhl;lj;jpy; jkpofj;jpd; gq;F> Ntjhuz;zpak; cg;Gr; rj;jpahf;fpufk; - fhq;fpu]; - ePjpf; fl;rp> Rakupahij – jpuhtpl ,af;fq;fspd; tpLjiyg; Nghuhl;lg;gzp.

ghu;it E}y;fs;

1. Nf.Nf. gps;is> jkpof tuyhWk; gz;ghLk;> jkpo;ehl;Lg; ghlW}y; epWtdk;> nrd;id.

✲. b.tp. rjhrptg; gz;lhuj;jhu;> ghz;bau; tuyhW> irt rpj;jhe;j E}w;gjpg;Gf; fofk;.

3. b.tp. rjhrptg; gz;lhuj;jhu;> gpw;fhy Nrhou; tuyhW> mz;zhkiy gy;fiyf;fofk;.

✲. kh. ,uhf khzpf;fdhu;> gy;ytu; tuyhW> irtrpj;jhe;j E}w;gjpg;Gf; fofk;> nrd;id.

5. Nf.tp. ,uhkd;> ghz;bau; tuyhW> jkpo;ehl;L ghlE}y; epWtdk;> nrd;id.

✲. m.njl;rpzh%u;j;jp> jkpof tuyhWk; gz;ghLk;> jQ;rhT+u;.

7. m.fp. gue;jhkdhu;> kJiu ehaf;fu; tuyhW.

✲. k..ngh. rp. ,e;jpa tpLjiyg; Nghupy; jkpofk;.

9. R. tpj;jpahde;jk;> jkpou; rhy;G.

1✲. M.NtYg;gps;is> jkpo; ,yf;fpaj;jpy; fhyKk; fUj;Jk;/

11. f.neLQ;nropad;> ,e;jpag; gz;ghl;by; jkpOk; jkpOfKk;.

1✲. M.,uhkrhkp> jkpo;g; NguuRfspd; rupTk; tPo;r;rpAk;.

jhs; ✲.1 ,yf;fzk; - 3

njhy;fhg;gpak;: nghUsjpfhuk;: ,sk;G+uzk;.

jhs;. ✲.✲ ,yf;fzk; - 3

$W:- 1

FwpQ;rpg; ghl;L

$W:-✲

Ky;iyf; fyp

$W:- 3

[q;FE}W: kUjk;

$W:- ✲

mfehD}W: nea;jy;

$W:-5

FWe;njhif: ghiyg; ghly;fs;

$W:-✲

ew;wpiz: Kjy; ehw;gJ ghly;fs; - gupghly;fs;: itiag; ghly;fs;.

$W:-7
GwehD}W: 151 Kjy; ✲✲✲ ghly;fs; tiu – gjpw;Wg;gj;J: [e;jhk; gj;J
$W:-✲
rpWghzhw;Wg;gil.

jhs; ✲.3 fhg;gpaq;fs;

$W:-1
Rpyg;gjpfhuk;: Gfhu;f; fhz;lk;
$W:-✲
kzpNkfiy: Kjy; 15 fhijfs;
$W:- 3
rPtf rpe;jhkzp: Nfhtpe;ijahu; ,yk;gfk;.
$W:- ✲
fk;guhkhazk;: ke;jiu R+o;r;rpg; glyk;> ifNfap R+o;tpidg; glyk;.
$W:-5
nghpaGuhzk; : fz;zg;g ehadhu; Guhzk; - tpy;ypghujk; : fd;d gUtk;
$W:-✲
Njk;ghtdp : Kjw; fhz;lk; - ghy khl;rpg; glyk; - rPwhg;Guhzk; : EGtj;Jf; fhz;lk; - ckW fj;jhG <khd; nfhz;l glyk;.
$W:- 7
esntz;gh: Rak;tu fhz;lk; (1 - ✲5 ghly;fs;)
$W:-✲
tisahgjp

jhs; ✲.✲ rpw;wpyf;fpaq;fs;

$W:-1
fypq;fj;Jg;guzp – Kjy; ehd;F gFjp
$W:-✲
FNyhq;Jq;f Nrhod; cyh.
$W:3.
ee;jpf; fyk;gfk; (Kjy; ✲5 ghly;fs;)
$W:- ✲
jkpo;tpL J}J.
$W:- 5

Fw;whyf; FwtQ;rp – tre;jty;yp Fwj;jpaplk; kiytsk; Nfl;ly; Kjy; FwpNfl;ly; tiu (✲✲ - 111).

$W:- ✲

kPdhl;rpak;ikg; gps;isj; jkpo; - mk;Gypg; gUtk;

RW:- 7

Kj;njhs;shapuk; (Nrhod;)

$W:- ✲

jQ;ir thzd; Nfhit – ghq;fp- kjpAld;ghL kl;Lk;

jhs; ✲.5 ,yf;fpj; jpwdha;tpay;

$W:- 1

,yf;fpaj; jpwdha;tpd; ,ay;Gk; Nehf;fKk; - jpwdha;thsupd; jFjpfs; - jpwdha;tpd; gad; - ,yf;fpaf; fy;tp> ,yf;fpaj; jpwdha;T> njhlu;Gfs; - njhy;fhg;gpaKk;> jkpo;j; jpwdha;tpd; mbg;gilfSk; - jkpo;j; jpwdha;tpd; tsu;r;rpAk; tuyhWk;

$W:-✲.

jpwdha;T tiffs; - tpjpKiwk; jpwdha;T – kjpg;gPl;LKiwk; jpwdha;T – xg;gPl;LKiwj; jpwdha;T – ghuhl;LKiwk; jpwdha;T> ,tw;iw vLj;Jf;fhl;Lld; mwpjy;.

$W:- 3.

fw;gid vd;w nrhy;ypd; tpsf;fKk; Ml;rpAk; - fw;gid gw;wp mbrd;> tpy;ypak; nja;yu;> Ntu;l;]; xu;j;> Nfhypupl;[;> upr;ru;l;]; MfpNahupd; tpsf;fq;fs;.

$W:- ✲

fw;fidapd; tiffs; - tho;f;ifAk; fw;gidAk; - ,y;yd gilj;jy; - cyfpaw; fw;gid – my; ,aw;iff; fw;gid.

$W:- 5

,yf;fpaKk; czu;r;rpAk; - ,yf;fpaj;jpw;Fg; nghUj;jkhd ey;y czu;r;rpfs; - ,yf;fpak; nebJ thOjw;Fj; jf;f czu;r;rpfs; - njhy;fhg;gpa nka;g;ghLfs;

$W:-✲

fiyAk; tbtKk; - ,yf;fpaKk; fUj;Jk; - xypeaj;jpd; rpwg;G – xypeaKk; czu;r;rpAk; - czu;r;rpf;Nfw;wgb tbt khw;wk;.

$W:-7

jpwdha;T: [tifg; ghu;itfs; - mwtpay; - r%ftpay; - cstpay; - njhy;gbktpay; - khdplypay;.

$W:- ✲

,yf;fpa ,af;fq;fs; - elg;gpay; - Gidtpay; - nrt;tpay; - Mfpatw;iwg gw;wp mwpjy; - jkpo; Ma;tpy; gad;gLj;Jjy; - FwpaPl;bay; - cUj;Njhw;wtpay;.

<u>ghu;it E}y;fs;</u>

1. jh. V. Qhd%u;j;jp - ,yf;fpaj; jpwdha;tpay;> [e;jpizg; gjpg;ggk;>nrd;id.

✲. K.tujuhrdhu; - ,yf;fpaj;jpwd;> ghup epiyak;> nrd;id.

3. R.ghyr;re;jpud; - ,yf;fpak; jpwdha;T> mzpafk;> nrd;id.

✲. m.r. Qhdrk;ge;jd; - ,yf;fpaf; fiy> irtrpj;jhe;j E}w;gjpg;Gf; fofk;> nrd;id

5. f.ifyhrgjp - ,yf;fpaf;fiy> irtrpj;jhe;j E}w;gjpg;Gf; fofk;>nrd;id.

✲. e. rQ;rPtp - ,yf;fpa ,ay;> m. $l;LwT vOj;jhsu; rq;fk;> nrd;id.

7. jkpoz;zy; - Nehf;F> kPdhl;rp Gj;jf epiyak;> kJiu.

✲. f. gQ;rhq;fk; - jkpo; ,yf;fpaj; jpwdha;T tuyhW> nry;td; gjpg;gfk;> GJit.

9. FNshhpah (nkh. M) - ,yf;fpaf; nfhs;if> ghup epiyak;> nrd;id.

1✲. F.gftjp (g.M.) - jpwdha;T mZFKiwfs;> cyfj; jkpohuha;r;rp epWtdk;> nrd;id.

11. e. gpr;ir Kj;J - jpwdha;Tk; ,yf;fpaf; nfhs;iffSk;> Ntq;fluq;fd; gjpg;gfk;> nrd;id.

1✲. jp. R. eluh[d;. - jpwdha;Tf; fiy.

13. ,.kiwkiy - ,yf;fpaKk;> r%ftpaYk;.

1✲. -\- - ,yf;fpaKk;> khu;f;rpaKk;.

15. -\- - GJf;ftpijAk;> r%ftpaYk;> kzpthrfu; E}yfk;.

1✲. ghyh. - rhu;yprk;> md;dk;> rptfq;if.

17. Nfh. Nfrtd; - ,yf;fpaKk; ,af;fg; Nghf;FfSk;.

Course	**:**	**M.A. (English)**
Mode	:	Distance Education
Duration	:	Two years
Eligibility	:	Any degree from a recognised University with English as a subject
Medium	:	English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	Total Marks
I YEAR		
1.1	Poetry	100
1.2	Prose	100
1.3	Drama	100
1.4	Literary Criticism	100
1.5	New Media and advertising	100
II YEAR		
2.1	Shakespeare	100
2.2	Fiction	100
2.3	Comparative Literature and Translation	100
2.4	Indian Literature in English Translation	100
2.5	English for Communication	100
	Total	**1000**

Paper 1.1 : POETRY

UNIT I

Edmand Spenser: Prothalaamion – John Donne: The Canonization – The Goodmorrow – John Milton: Paradise host, Book II – John Dryden:Mac Flecthroe – William Blake: A poison Tree – The Lamp – The Tiper – William Wordswith: Tintem Abbey – John Keats: The Eve of St. Agnes.

UNIT II

Alfred Tennyson: The Lotos Eaters – Robert Brouning: The Last Ride Together – Matthew Arnold: The scholar Gipsy – W.B Yeats: Byzantium – Sailing to Byzantium – T.S. Eliot: The Wasteland – Philip Larlin: Hamage to Government – Seamns Heancy: The Harvest.

UNIT III

R.W. Emerson: Brahma – Jerminus – Emily Dickinson: My life closed Twice before its close I Taste a liquor never Breueed Because I could not stop for Death I felt a Fureval in My Brain – Robert Frost: West running Brook Wallace Stevens : Sunday Morning – Langston Hughes: The Weary Blues – Dream variations – Denise lever tov: A marigold from Nontle victnam advert 1966 – Sylvia Plath: Lady Lazarus.

UNIT IV

Nissm Ezethiel: Background, Casually Enterprise – Night of the scorpion – A.K. Ramanujan: Small scale Reflection on a Great House – Kamala Das: The old play-House – The Freaths – Jayant Mahapatna: The Twenty-Fifth Anniversary of a Republic, 1975 – Waiting – Fulfillment – Kethi Daruwalla: Dreams District Law Courts – Meena Alexander:Tiruvella, My Hometown.

UNIT V

A.J.M Smith: A Hyacinth for Edith – The lonely Land – Marpaaret Ondaatje: The Time Around Scars – A.D Hope: Australia – Moschus Moschiferus: A song for St. Cecilias Day – Dereth Walcott: Ruens of a Great House A sea-schantey – Vincent o's Sullivan: Elesy for a schoolmate – The children – Wole Soyenka:Telephonic conversation – Dedication – Jean Arasan ayagam: In the month of July.

Paper 1.2 : PROSE

UNIT I

Francis Bacon: Of Truth – Of Ambition – Of Revenge – Of Superstition – Johnson: Life of Milton.

UNIT II

Addison & Steele: Coverley Papers (from the Spectator) – Charles Lamb: New Year's Eve – In Praise of Chimney Sweepers – South-Sea House – Dream Children: A Reverie – Carlyle:Dante and Shakespeare.

UNIT III

George Orwell: Why I Write – Reflections on Gandhi – The writing of History – Propaganda and Demotic Speech – Will Durant :The conditions of civilization – What is beauty? – Ariel.

UNIT IV

Emerson: Self-Reliance – Thoreau: Civil Disobedience.

UNIT V

Ngugi Wa Thiong'o: De'colonising the Mind – Russell: Open Letter to Eisenhower and Khruschev – Stephen Leacock: The Financial Expert – Robert Lynd: Forgetting – A.G. Gardiner: On Umbrella Morals.

Paper 1.3 : DRAMA

UNIT I

Sophocles: Oedipus Rex – Ibsen: The Doll's House.

UNIT II

Marlowe: Dr. Faustus – Goldsmith: She stoops to conquer.

UNIT III

Pinter: The Birthday Party – T. S. Lliot: The Cocktail Party.

UNIT IV

Arthur Miller: All my sons – George Ryga: The Ecstasy of Rita Joe

UNIT V

Girish Karnad: Tughlag – Tendulkar: Silence: The Court is in Session

Paper 1.4 : LITERARY CRITICISM

UNIT I

Aristotle: Poetries (English Translation by S.H Butcher, Aristotle's Theory of poetry and Fine Art, Macmillan, 1932) – Sir Philip Sidney: An Apology for Poetry – William Wordsworth: Preface to Lyrical Ballads.

UNIT II

Matthew Arnold: The study of poetry – T.S. Eliot: Tradition and individual Talent – Edgar Allen Poe: The philosophy of composition – Sri Aurobindo: The word and the sprit.

UNIT III

C.G. Jung: Psychology and Literature – Lionell Trilling: Frend and Literature – Northrop Frye: The Archetypes of Literature.

UNIT IV

Harold Bloom: The Breathing of form – Roland Baithes: Criticism as Language – Jacques Derrida: Structure, sign and play in the Discourse of the Human sciences.

UNIT V

Mark Sehporer: Technique as Discovery – Elaine Showalter: Towards a feminist politics – Linda Hutcheon: Eruptions of postmodernity : The postcolonial and the Ecological.

REFERENCES:

Most of the prescribed tests are available in the following anthologics of critical essays:

1. Hodge, David. El. Literary Criticism. England : Hongman, 1972.
2. Sethuraman, V.S. El. Contemporary Criticism : Anthology. Chennai : Macmillan, 1989.

Paper 1.5 : NEW MEDIA AND ADVERTISING

UNIT I

Introduction to Computers - Role of Information Technology in Communication – Why computers – Characteristics of computers i/o systems – Operating system – DOS, Windows.

UNIT II

Introduction to Word Processing Software – MS Word – Excel – Access – Powerpoint – Adobe Photoshop – Growth of computer networks and World Wide Web – Administration – Commerce and publishing through new media – Media convergence.

UNIT III

Introduction to Websites and Web pages – Features of a typical website – Tools for new media – Hardware and Software – Glossary of terms associated with websites.

E-mail and Internet – Network protocols – Mailing lists – Search engines, browses, plug-ins and forts, news groups – Internet relay chart, teleconferencing, video conferencing – Accessing references on the Internet.

UNIT IV

Conventions of writing for new media, styles, presentation, newsfeeds, hyperlinks, VRLs, linkage to original sources of news and background information, e-zines.

UNIT V

Public relations and advertisement through new media – Working with graphics, images, streaming audio and video, ethical issues, regulation mechanisms, influences on social behaviour, future trends.

Paper 2.1 : SHAKESPEARE

UNIT I	:	Twelfth Night – Much of do about Noting
UNIT II	:	Henry IV, Part I
UNIT III	:	Antony and Cleopatra
UNIT IV	:	Hamlet Othello
UNIT V	:	Tempest

Paper 2.2 : FICTION

UNIT I

Charles Dickens: A Tale of Two Cities – Charlotte Bronte: Jane Eyre.

UNIT II

D.H. Lawrence: Sons and Lovers – James Joyce: Ulysses.

UNIT III

Hawthrone: The Scarlet Letter – Ernest Hemingway: A Farewell to Arms.

UNIT IV

Dostoesvsky: Crime and Punishment - Gunter Grass: The Tin Drum.

UNIT V

Margaret Atwood: Surfacing – Patrick White: Voss.

Paper 2.3 : COMPARATIVE LITERATURE AND TRANSLATION

UNIT I

What is comparative literature? Different definitions – National literature – Comparative literature – General literature – World literature - French and American Schools of comparative study.

The scope and relevance of the subject in the Indian context – The methodology of study of comparative literature.

UNIT II

The study of genres; a theory of genres in world-literature identified and compared; how genres originate and spread.

UNIT III

Influence and imitation – Periodisation, age, epoch, school and movement.

UNIT IV

The study of reception of one literature/ movement/ author/ work in another literature, a theory of reception, epoch, period, generation, movement, thematology.

UNIT V

The study of translation – A theory of literary translation; Adaptation; abridgement; Literal Vs. Literary rendering; Literature and other arts; Music; Architecture; Theatre; Dance; Other disciplines like psychology, biography, philosophy, sociology.

REFERENCE BOOKS:

1. Ulrich Weisstein, *Comparative Literature and Literary Theory*.
2. Alridge, *Comparative Literature: Matter and Method*.
3. Stallenckht & Frenz, *Comparative Literature: Method and Perspectives*.
4. Rene Welleck, *Theory of Literature*.
5. Concept of Literature Series, *Theory of Literature*.

Paper 2.4 : INDIAN LITERATURE IN ENGLISH TRANSLATION

UNIT I

Novel: Neela Padmanabhan, **Generations**, tr. Ka. Naa. Subramanyam (Mac.1997) – Ashapurana Debi, **Subarnalata**, tr. Gopa Majumdar (Mac.1997)

UNIT II

Novel: Bhalchandra Nemade, **Cocoon**, tr. Sudhakar Marathe (Mac.1998) – Rajee Seth, **Unarmed**, tr. Raj Narasimhan (Mac.1998)

UNIT III

Drama: Bhavabhuti, **Malati and Madhava** (Penguin Classics) – Chandrasekhar Kamkar, **Sambasiva – A Farce** (Seagul, Calcutta, 1992).

UNIT IV & V

Poetry: K. Sachidanandam, **"The Rights of the Earth"** from ***Vibhava*** ed. U.R. Ananthamurthy and others (1992) – Nikileswarar, **"The Black Flag in the hands of Ambedkar"** from ***Down to the Earth*** Ed. Seelavi Kundurti Satya Murthy (1994) – Srikant Varma, **"The Pleasure Dome"** from ***Oxford Anthology of Modern Indian Poetry*** ed. Vinay Dharwarkar and A.K. Ramanujan (OUP, 1999)

Paper 2.5 : ENGLISH FOR COMMUNICATION

UNIT I

Linguistic Communication – Importance of communication – Patterns of communication – Management of communication – Barriers to communication.

UNIT II

Non-Verbal Communication – Personal appearance – Posture – Gestures – Facial expression – Eye contact – Spare distancing – Face to face conversation – Telephonic conversation – Interviews – Instruction – Dictation.

UNIT III

Purpose and procedure of meetings – Chairmanship – Participation – Physical arrangements – Seminars and Conferences – Group discussion – Use of audio and video aids.

UNIT IV

Report Writing – Preparation of technical proposals – Business correspondence.

UNIT V

Preparation of notices, agenda and minutes – Handbooks and manuals – Research papers and articles – Use of graphic aids.

Course : M.A. (History)
Mode : Distance Education
Duration : Two years
Eligibility : Any degree from a recognised University
Medium : English & Tamil

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
I YEAR		
1.1	History of India upto 1206 A.D	100
1.2	History of India from 1206 A.D. to 1761 A.D	100
1.3	History of India from 1761 A.D.to 1964 A.D	100
1.4	Constitutional History of India from 1773 to 1950 A.D	100
1.5	History of Tamil Nadu upto 1801 A.D.	100
II YEAR		
2.1	History of China and Japan from 1840 A.D. to 1966 A.D.	100
2.2	History of U.S.A. from 1865 A.D. to 1992 A.D.	100
2.3	History of Europe from 1789 A.D. to 1970 A.D.	100
2.4	Historiograpghy and Historical Methods	100
2.5	History of Tamil Nadu from 1800 A.D. to 1969 A.D.	100
	Total	**1000**

Paper 1.1 History of India upto 1206 A.D.

UNIT I - Sources for the study of ancient Indian History-Literary and archeological sources – Foreign accounts.

UNIT II - Harappan culture.

UNIT IIII - The Aryans – Early-Later Vedic period

UNIT IV - The age of new religions-Buddhism, Jainsim-Principles- Causes for their spread-Decline

UNIT V - Contact with the Persians and the Greeks-Alexander's conquest and its result.

UNIT VI - The Age of the Mauryas-Decline-the Sungas.

UNIT VII - The Age of the Kushanas.

UNIT VIII - The Gupta Age-Decline

UNIT IX - The Vardhanas

UNIT X - The Rajputs

UNIT XI - The Arab conquest of Sind

UNIT XII - The Gaznavides-Ghorides

Reference Books:

1. Majundar R.C.Rai Chaudary and Datta, An advanced History of India.
2. The Cambridge History of India, Vol.I
3. Bharatiya Vidya Bhawan Serieds, Vol.I to III.
4. Sastri K.A.N, Advanced History of India
5. Sathianathier R, A Political and Cultural History of India, vol-I.
6. Kosanbi D.D, An intoruduction to Indian History.

7.**`Dke;jd; fp.u.**& **kq;fs KUNfrd; e.f. ,e;jpa tuyhW 15✲✲ tiu**

✲. jq;fNtY Nfh> ,e;jpa tuyhW

9. kq;fs KUNfrd; e.f.,e;jpa Ml;rp mikg;G tsu;r;rp tuyhW.

1✲. kq;fs KUNfrd; e.f.`u;rupd; fhyj;jpy; tl ,e;jpah.

11. kq;fs KUNfrd; e.f.,e;jpar; rKjha tuyhW

1✲. `Dke;jd; fp.u.nkshpau; tuyhW.

Paper 1.2 History of India From 1206 A.D. to 1761 A.D.

UNIT I - Sources for the study of medieval Indian History
UNIT II - The Mameuluks – Qutbuddin Aibek-Iltitimish – Raziya Sultan-Balban
UNIT IIII - Khaljis-Khalji revolution-Alauddin Khalji-Economic measures – Therory of kingship – Imperialism
UNIT IV - Thuglaks-Ghiyasdudin Thuglak-Mohammed bin Thuglak-Feroz Shah Thuglak
UNIT V - Sayyids and Lodis
UNIT VI - Administration, Social life and culture under the Delhi Sultanate
UNIT VII - Condition of India on the eve of Babar's invasion
UNIT VIII - Babar
UNIT IX - The Afgan interlude-Sher Shah- Administration
UNIT X - Humayun
UNIT XI - Akbar, the great
UNIT XII - Jahangir
UNIT XIII - Shah Jahan
UNIT XIV - Aurangazeb-Disintegration of Mughal Empire
UNIT XV - Administration under the Mughals-Mansabdari system-Land revenue system-Social and cultural life.
UNIT XVI - The Marathas-The rise of Marathas-Shivaji-Administration-Peshwas-Balaji Viswanath, Baji Rao and Baji Rao II
UNIT XVII - The Third battle of Panipat

Reference Books:

1. Eswari Prasad, A short History of Muslim rule in India
2. Srivastava A.L, History of Mughals.
3.Sharma R.S.The Mughal Rule
4. Pandey, Rise of Marathas.
5.Pande A.B, Later Medeival India
6.Luniya B.N, History of Indian Culture
7. **jq;fNtY Nfh.,e;jpa tuyhW**
✲. c];khd; n\upg;> ,e;jpahtpd; rpwg;G tuyhW> njhFjp II
9. **`Dke;jd; fp.u.** & **kq;fs KuNfrd; e.f.,e;jpa tuyhW 1✲✲✲-17✲7 fp.gp.**

Paper 1.3 History of India From 1761 A.D. to 1964 A.D

UNIT I - The Coming of the Europeans-Anglo French rivalry
UNIT II - The rise of English power in Bengal
UNIT IIII - Warren Hastings
UNIT IV - Lord Cornwallis
UNIT V - Growth and Consolidation of the British Power-Anglo Mysore wars-Anglo Maratha wars-Relationship with Hyderabad Nizam
UNIT VI - Lord Wellesley
UNIT VII - Lord Hastings
UNIT VIII - Lord Dalhousie
UNIT IX - Indian revolt of 1857
UNIT X - The Policy of Mastery inactivity
UNIT XI - Growth of Modrern Education
UNIT XII - Social and relogous reforms
UNIT XIII - National awakening-Political movementws upto 1947
UNIT XIV - Nehru Era

Note: Constitutional changes need not be stressed.

Reference Books:

1. Majumdar R.C. Ray Chaudary and Datta, Advanced History of India
2. Roberts P.E, History of British India
3. Sathianathier R, A. Political and Cultural History of India
4. Cambridge History of India, Vol-II and VI
5. Majumdar R.C, History and Culture of the Indian people.
6. Mahajan V.D, History of India, Oxford
7. Smit V.A.History of India, Oxford.
8. Vishnu Baghavan, Constitutional History of India, Vol-II
9. Seetharamayya P, History of Indian National Congress
10. Tarachand, History of Freedom Movement

11**jq;fNtY Nfh. ,e;jpa tuyhW** II

1. **kq;fs KUNfrd; e.f.,e;jpa tuyhW 1757 Kjy; ,d;Wtiu**
2. **ehuhazd; e.F.,e;jpa tuyhW 19*5 Kjy; ,d;Wtiu> jkpo;ehl;Lg; ghlE}y; epWtdk;**

Paper 1.4 Constitutional History of India (1773 to 950 A.D)

UNIT I - Regulating Act-Circumstances leading to the passing of the Act-Merits and demeris
UNIT II - Fox's India Bill-Pitt's India Act of 1784
UNIT IIII - Charter Acts of 1813 and Parliamentary Legislation between 1813 and 1833
UNIT IV - The Charter Act of 1833 Law making and Law Commission-The Charter Act of 1853
UNIT V - The Queen's Proclamation and the Government of India Act of 1858
UNIT VI - The Act of 1861 and 1892-Nature of the Law making bodies
UNIT VII - The Act of 1909
UNIT VIII - Political condition of India between 1909-1919
UNIT IX - The World War I and its impact of Constitutional developmentws -1917 August Declaration
UNIT X - The Act of 1919-Provincial Government and Dyarchy-Working of Dyarchy at Chennai
UNIT XI - Simon Commission-The Nehru Committee Report-Reaction of the Congress
UNIT XII - Round Table Conference
UNIT XIII - The Act of 1935 Central and Provincial Governments working of Provincial autonomy
UNIT XIV - Impact opf World War II on Indian Politics
UNIT XV - Cripps Mission-Cabinet Mission-Mountbatten Plan-Simla Conference and Independence
UNIT XVI - Independence Act of 1947 – Discussion
UNIT XVII - Constituent Assembly-Constitution of Free India

Reference Books:

1. Aggarwal R.C, Constitutional History of India and National Movement
2. Gupta D C, Indian National Movement and Constitutional Developments
3. Keith A B, Constitutional History of India
4. Vishnoo Bhagwan, Constitutional History of India Vol.II

Paper 1.5 Histoty of Tamil Nadu Upto 1801 A.D.

UNIT I	-	Sources for the History of Tamil Nadu
UNIT II	-	Sangam age-Socio-political History-Administration-Trade and commerce-culture
UNIT IIII	-	Kalabhras
UNIT IV	-	Pallavas-Mahendra Varman-Narasimha Varman and other Pallava rulers.
UNIT V	-	Art and Architecture under Pallavas
UNIT VI	-	Pallava Administration
UNIT VII	-	Bhakthi Movement
UNIT VIII	-	First Pandian Empire
UNIT IX	-	Later Cholas-Decline
UNIT X	-	Chola administration-Local Self-Government
UNIT XI	-	Cultural contribution of Cholas
UNIT XII	-	Second Pandian Empire
UNIT XIII	-	Muslim invasion in Tamil country
UNIT XIV	-	Tamil Nadu under Vijaya Nagar Rule
UNIT XV	-	Tanjore Nayaks
UNIT XVI	-	Nayaks of Madurai-Administration and Social life-Poligar system
UNIT XVII	-	Sethupathis of Ramnad and Thondamans of Pudukkottai
UNIT XVIII	-	Maratha Rule in Tmil Nadu
UNIT XIX	-	Nawabs of Arcot-Carnatic Wars
UNIT XX	-	South Indian rebellion-Pulithevan-Kattabomman-Maruthu Brothers-Oomaidurai

Reference Books:

1. Subraminain N, Sangam Polity.
2. Mangala Murugesan N K, Sangam Age.
3. Kanakasabai, Tamil's 1800 years ago
4. Pillai K K, Social History of Tamils
5. Sastri K A N, Cholas.
6. Rajayyan K, History of Tamil Nadu
7. Rajayyan K, South Indian rebellion
8. **,uhkrhkp m> jkpo;ehl;L tuyhW**
9 ,uhkrhkp m> jkpo;g; NguuRfspd; rupTk; tPo;r;rpAk;
1☼. kq;fs KUNfrd; e.f. jkpo;ehl;L tuyhWk; gz;ghLk;> njhFjp-I
11. **kq;fs KUNfrd; e.f.jkpo;ehl;L tuyhWk; gz;ghLk;> njhFjp-**II
12. **jkpof muR- jkpo; tsu;r;rpj;Jiw> jkpo;ehl;L tuyhW**
13. Rthkpehjd; M. jkpo;ehl;L tuyhWk; gz;ghLk;

Paper 2.1 History of China and Japan (From 1840 to 1966 A.D.)

UNIT I - China at the beginning of the 19th Century
UNIT II - The Opium War
UNIT IIII - The Taiping Rebellion 1851-64
UNIT IV - Partititon of China 1861-1894
UNIT V - Reform Movements in China and the Boxer Rebellion
UNIT VI - Japan-Tokugawa Shogunate
UNIT VII - Opening of Japan to the West
UNIT VIII - Meiji Era
UNIT IX - First Sino-Japanese War 1894-95
UNIT X - Rise of Imperialism in Japan
UNIT XI - China-Reform and Revolution 1901-1911
UNIT XII - Yuan-Shi-Kai and era of War-lords
UNIT XIII - China-Japan and ther First World War
UNIT XIV - Sun Yat Sen
UNIT XV - Rise of Militarism in Japan 1905-1945
UNIT XVI - Manchurian Crisis
UNIT XVII - Allied Occupation of Japan 1945-1952
UNIT XVIII - Post-War Japan 1953-1966
UNIT XIX - Chiang Kai Shek and Kuomintang Nationalism 1926-1946
UNIT XX - Rise of Communism and Civil War in China
UNIT XXI China under Mao
UNIT XXII China in World Affairs
UNIT XXIII Korea and Taiwan in the 20th Century

Reference Books:

1. Latourette-A History of Japan
2. Lattimore-Making of Modern China
3. Fitzgerald-Birth of Communist China
4. Hinton-Communist China in World Politics
5. Jones F C Japan's New order in West Asia: Its rise and fall 1937 to 1945
6. Micheal Schaller-The United States and China in the 20th Centruy
7. **jpahfuh[d;** J- **rPd [g;ghdpa tuyhW 1✲✲✲ Kjy;**
✲. kq;fs KUNfrd; eh.f. fpof;fpe;jpa tuyhW.

Paper 2.2 History of U.S.A. (From 1865 to 1922 A.D.)

Unit I

A brief introduction of American History may be given upto 1865 with special emphasis on American constitution, expansion, Union-State relations, slavery and the conditions of the States on the eve of the reconstruction.

UNIT II - Reunion and Reconsturuction – The problem defiend
UNIT IIII - The Age of Capitalism in USA
UNIT IV - The later 19th Century American Life and its Transformation
UNIT V - The Progressivism in Action
UNIT VI - The First World War-America, a spectator and the participant
UNIT VII - Aftermath of First World War
UNIT VIII - The New Deal
UNIT IX - American Society between two world wars
UNIT X - Second World War and U.S.A
UNIT XI - Cold War: Quest for peace
UNIT XII - The Turbulant Sixties

Reference Books:

1 Oscar Handhin America-A History
2 Foster Rhea Dulles The United States since 1865
3 Harold Whitman Bradley The United States from 1865
4 Arthur S.Link Woodrow Wilson and the Progressive Era
5 Blu J M The Republican and Roosevelt
6 Kenneth Stamp The Era of Reconstruction
7 Faulkner H U Politics, Reform and Expansion
8 George M.Mowry Era of Theodore Rooselvelt
9 Hofstadter R The Progressive Movement
10 Parkes H B Recent America
11 George E Mowry The Urban Nation
12 Harvey Webber(ed.) The Negro since emancipation
13 Ronald Webber(ed.) America in Change:Reflection on the 60's & 70's.
14 **jpahfuh[d; mnkupf;f Kf;fpa ehLfspd; tuyhW**
15 **ek;gp MNus; mnkupf;f Kf;fpa ehLfspd; tuyhW**
16 **kq;fs KUNfrd; e.f. mnkupf;f tuyhW**

Paper 2.2 History of Europe. (From 1789 to 1970)

UNIT I	-	Condition of Europe at the time of French Revolution
UNIT II	-	Causes for the French Revolution-Work of the National Assembly-The Reign of Terror-The Directory-Coalitions against France
UNIT IIII	-	Napoleon Bonaparte
UNIT IV	-	The Congress of Vienna-Metternich-Holy Alliance and the Concert of Europe
UNIT V	-	Louis XVII and Charles X of Frnace
UNIT VI	-	1830 Revolution and its effects-Louis Philippe-1848 Revolution and its effects
UNIT VII	-	Napoleon III, Domestic and Foreign policies
UNIT VIII	-	Austria-Hungary 1848-1914
UNIT IX	-	Italian unification
UNIT X	-	German unification- Otto Von Bismarck
UNIT XI	-	German Empire 1890-1914
UNIT XII	-	The Third Frech Republic(1871-1914)
UNIT XIII	-	Foreign Policy of Italy 1870-1914
UNIT XIV	-	Russia 1796-1914-Russian Revolution 1979
UNIT XV	-	Socialism-Sanit Simon-Robert Owen-Charles Fourier-Joseph Prodhon-Louis Blanc-Michail Bakunin-Karl Marx, Engels-Kropotkin
UNIT XVI	-	The Eastern Question 1821-1836-The Eastern Question 1836-1908-The Eastern Question 1908-1914-The Triple Alliance-The Triple Entente
UNIT XVII	-	The First World War-Causes-Courses and results
UNIT XVIII	-	Wurope between two world wars-League of Nations-Rice of Dictatorships-Second World War and UNO
UNIT XIX	-	Reconstruction of Europe-Cold War-NATO-Warsaw Pact
UNIT XX	-	Development of Science and Technology-Art and Literature

Reference Books:

1	Benns	Europe Since 1780
2	Fisher G.A.	History of Modern Europe
3	Fisher H.A.L.	A History of Europe
4	Kettelberg	A History of Modern Time
5	Hsyrd and Gole	History of Europe since 1500
6	Hayes, C.I.H.	Modern Europe upto 1870
7	Lipson, B	Europe in the 19th and 20th Centuries
8	South Gate	A Textbook of Modern European History from 1789-1979, Vol.II
9	South Gate	A Textbook of Modern European History from 1870 to the present day
10	Haley, H	World Crisis, 1914-1919
11	Mahajan, V D	History of Modern Europe
12	Jaman TL	The European World 1790-1945
13	**jpyftjp n[fjPrd;**	**[Nuhg;gpa tuyhW**
14	**,uh[Nfhghyd;**	**[Nuhg;gpa tuyhW**
15	**thRNjtuht;> j.eh.**	**[Nuhg;gpa tuyhW**

Paper 2.4-Historiography and Historical Methods

Unit-I Concepts of History

Meaning of History-Definitions-Scopes-Art or science-Varieties of history-History and allied subjects-Uses of history-Lessons of history-Abuses of history

Unit-II Causation and Change

Nature of Causation-Role of individuals-Does history repeats itsef?-Concepts of Progress

Unit-III History of Historical Writing

Ancient Greece: Herodotus, Thucydides, Xenophon, Polybius Characters of Greek Historiography.

Ancient Rome: Livy, Tacitus, Character of Roman Historiography

Christian Church: Eusebius, St. Augustine-Contribution made by the church.

Unit IV: Modern Europe

Renaissance-Reformation-Cartesianism, Anticartesianinsm-Enlightenment-Romantic idealism-Utilitatianism-Postivism and Scientific Sopcialism.

Unit V

Objectivity in Historical Writing-Historical methods-Heuristics, criticism, synthesis and exposition-Documentation.

Reference Books:

1	Carr, EH	What is History
2	Collingwood, RG	Idea of History
3	Groce, B	Theory and History of Historiography
4	Manickam, S	Theroy of History and Methods of Research
5	Rajayyan, K	History in Theroy and Methods, Historiography
6	Subramanian N	Historiography
7	Rajayyan, K	**Tuyhw;Wf; Nfhl;ghLk; KiwapaYk;**
8	Rouse, A L	The Use of History
9	Sheik Ali, H	History: Its Theroy and Method

Paper 2.5 History of Tamil Nadu (from 1800 A.D. to 1969 A.D)

UNIT I	-	Vellore Mutiny
UNIT II	-	The Land Revenue administration famine policy and relief measures – Rules
UNIT IIII	-	Governors of Madras Presidency upto 1920
UNIT IV	-	Education under the company
UNIT V	-	Justice Party Ministry from 1920 to 1926
UNIT VI	-	Dr.P.Subbarayan Minsitry
UNIT VII	-	Justice Party Ministry upto 1937
UNIT VIII	-	Rajaji as Premier-World War and Madras Presidency
UNIT IX	-	T.Prakasm's Ministry
UNIT X	-	Omandur P.Ramasamy Reddiar's Ministry
UNIT XI	-	P.S.Kumarasamy Raja's Ministry
UNIT XII	-	Rajaji's Second Ministry
UNIT XIII	-	K.Kamaraj's Ministry
UNIT XIV	-	M.Bhakthavathchalam's Minsitry
UNIT XV	-	C.N.Annadurai's Ministry
UNIT XVI	-	Growth of Language and Literature
UNIT XVII	-	Social reform movements in the 19th and 20th centuries-Ramalinga Swamingal-Vaikundasamy and Periyar E.V.Ramasamy
UNIT XVIII	-	Freedom Movement in Tamil Nadu
UNIT XIX	-	The role of Christian Missionaries in Tamil Nadu
UNIT XX	-	Language problem in Tamil Nadu
UNIT XXI		The economic development of Tamil Nadu in the 20th Century
UNIT XXII		Cultutal development in Tamil Nadu in the 19th and 20th Century –Folk Arts

UNIT XXIII Five year plans and Tamil Nadu

UNIT XXIV Frontier Agitations in Tamil Nadu

UNIT XXV Women Development in Tamil Nadu

Reference Books:

1. Rajaram, P, Justice Party in Tamil Nadu

2. Managala Murugesan N K, Self Respect Movement in Tamil Nadu

3. **,uhkrhkp m.,uj;jj;jpy; [k;gJ ehl;fs;**

☼. rhkp rpjk;gudhu;> jkpou; jiytu;

5. Baliga B S, Studies in Madras Adminsitration (2 Vols.), Madras 1949.

6. **rptQhdk; k.ngh.tpLjiyg; Nghupy; jkpofk;**

7. nghd;D Mu;> ma;ah top

☼. Jeyaraj K V, Histiory of Salt Monopoly in Madras Presidency 1805-1878

9. Swaminathan, A, Social and Cultural History of Tamil Nadu

10. **,uhkrhkp m> jkpo;ehl;L tuyhW**

11. ,uhkrhkp m> jkpou;fspd; vOr;rpAjl tPo;r;rpAk;.

1☼. uh[a;ad; Nf> jkpof tuyhW

13. kq;fs KUNfrd; e.f. jkpo;ehl;L tuyhWk; gz;ghLk;

1☼. gps;is Nf.Nf. jkpof tuyhW kf;fSk; gz;ghLk;

15. nry;yk; tp.b.jkpof tuyhWk; gz;ghLk;.

ALAGAPPA UNIVERSITY
DIRECTORATE OF DISTANCE EDUCATION
(Accredited with 'A' Grade by NAAC)
KARAIKUDI

APPENDIX-1
M.A. (EDUCATION) - REGULATIONS

1. NAME OF THE PROGRAMME **:** M.A. Education

2. DURATION **:**The duration of the M.A. Education programme is Two academic years under Annual Pattern through Distance Education.

3 ELIGIBILITY FOR ADMISSION **:** A Bachelor's Degree in any discipline

4. MEDIUM OF INSTRUCTION **:** English

5. PATTERN OF THE COURSE : Non-Semester

6. STRUCTURE OF THE COURSE:

Code No.	TITLE OF THE COURSE	Marks
FIRST YEAR		
1.1	Philosophical & Sociological bases of Education	100
1.2	Essentials of Educational Psychology	100
1.3	Curriculum Design Process	100
1.4	Methods of Educational Inquiry	100
1.5	Perspectives of Educational Technology	100
SECOND YEAR		
2.1	Contemporary Issues in Education	100
2.2	Principles of Educational Management	100
2.3	Guidance and Counselling	100
2.4	Quality Issues in Education	100
2.5	Project Work	100
Total Marks		**1000**

7. Project Work :

- After the Completion of First Year, students are eligible to commence the Project work under the supervision of the qualified guide. The Candidates are

permitted to submit the Project work on completing 18 months of the course but not later than five years after the commence of the course

- The Guide / Supervisor of the Project work shall be an approved guide of Alagappa University, Karaikudi or a person with an M.Phil Degree working with three years teaching experience in any Government or Government Aided College of Education or Department of Education or DIET or a person working in Government or Government Aided College of Education or Department of Education or DIET with Ph.D (Education) qualification.
- The students shall submit the consent letter from the guide in the prescribed format before the commencement of the project work.
- The Project Report shall not exceed 150 Pages and be not less than 50 Pages
- The Project Report should be certified by the Approved Guide with Self Declaration of the Candidate for assuring the Quality and Originality of the work.
- There is an internal Viva-Voce examination for the Project Report submitted.
- **The Split up of marks for the project will be :**

1. Innovativeness	25 Marks
2. Methodology and Analysis	25 Marks
3. Reporting and Presentation	25 Marks
4. Viva – Voce examination	25 Marks
TOTAL :	100 Marks

8. PERSONAL CONTACT PROGRAM :

There will be contact classes for a minimum of 50 hours in each year

9. SCHEME OF EXAMINATION:

Each paper including project work carries 100 marks.

The performance of the students in the course shall be assessed for a maximum of 1000 marks.

10. PATTERN OF QUESTION PAPER:

Part I	**:**	**Five out of Eight Questions 5 X 8 = 40 marks**
Part II	**:**	**Four out of Seven Questions 4 X 15 = 60 marks**
Total	**:**	**100 Marks**

11. PASSING MINIMUM

A candidate appearing for the whole examination shall be declared to have passed the examination if he/she obtains not less than 50% of the total marks in each paper including project work. All other candidates shall be deemed to have failed in the examination.

12. CLASSIFICATION OF CANDIDATES

1. Candidates securing 60% and more marks in the aggregate in the whole examination shall be declared to have passed the examination in First Class.
2. All other successful candidates shall be declared to have passed in second class.

13. COMPLETION OF THE COURSE

Those who are not able to complete the course within two years are permitted a period of additional five years to complete the course, failing which their registration will stand automatically cancelled and they have to register afresh, if they want to continue the course, subject to the availability of the programme during that period.

14. OTHER REGULATIONS

Besides the above, the common regulations of the DDE of Alagappa University shall also be applicable to this programme.

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1.1 PHILOSOPHICAL AND SOCIOLOGICAL BASES OF EDUCATION

UNIT –I : Education – Meaning, scope and objectives-philosophy-meaning and scope-philosophy of education-meaning and scope-relationship between education and philosophy-major systems of philosophy of education-idealism, naturalism, pragmatism, and democracy and their views on education.

UNIT –II : Major schools of Indian philosophy-Hinduism, Buddhism and Jainism-Educational doctrines of great thinkers of India-Swami Vivekananda, Rabindranath Tagore, Mahathma Gandhi and Sri Aurobindo-relevance of Indian Values to modern education and administration of education.

UNIT –III : Great thinkers of the West-Plato, Rousseau, Frobel, Montessori, John Dewey-Relevance of western values to modern education and administration of education

UNIT –IV : Sociology of Education-Meaning and scope-relationship between education and sociology-social institutions such as family, community, educational institution, state and property-education and culture-moral and religious education-socialization of the learner-meaning of socialization-learning social expectations and social manners-factors promoting socialization.

UNIT V : Education for new social order and socialistic pattern of society-education as an instrument of social change-education as related to social equity and equality of educational opportunities-constraints on social change in India such as caste, class, language, religion and regionalism-education for downtrodden such as schedule caste, tribal and rural mass-education of women-problems and programmes promoting women's empowerment.

Education and social mobility of the individual and the community-social stratification and mobility-reservation policies of the government to minimize social

inequality – education for national integration and international understanding- education in tackling terrorism and maintaining global peace

Reference:

1. Sharma, D.L, *Education in the Emerging Indian Society*, Surjeet Publications, Delhi, 2004.
2. Dash B.N. *Teacher and Education in the Emerging Indian Society*, Neelkamal Publications, Hyderabad, 2000.
3. Lakshmi, S. *Challenges in Education*, Sterling Publishers Pvt. Ltd., New Delhi, 1990.
4. J.C.Aggarwal, *Basic Ideas in Education*, Shipra Publications, Delhi, 2005.

1.2 Essentials of Educational Psychology

Unit - I Educational Psychology- Meaning and Scope

Psychology: Modern definitions - classifications.

Educational Psychology: Meaning - Nature - Aims - Scope - Relation between Psychology and Education- Latest trends in educational psychology

Unit- II Human Development

Growth and Development: Concept - stages - various aspects - principles –Role of Heredity and Environment in development-Individual differences - educational Implications.

Unit- III Motivation

Motivation: Definition - functions of motivation - classification of motives - concept of motivation - Maslow theory of need hierarchy - characteristics - Mc Clelland's Achievement motivation –Strategy for enhancing achievement motivation

Unit- IV Intelligence and Personality

Intelligence: Theories and Measurement:

Meaning- Theories **:** Spearman's theory - structure of intelligence - Multifactor theory - structure of intellect by Guilford –Measuring social intelligence and emotional intelligence-Distributions of intelligence- - Types of intelligence Tests - use and limitations of intelligence Test

Personality and Assessments : Meaning-Theories - Type theory - Trait theory - factors affecting personality - Assessment of personality

Unit: V The Cognitive Process

Perception: Role of Sense organs- Sensation-Attention- Information Processing-Formation of concepts- Piaget Theory-Remembering and forgetting-Memory-Strategies to enhance memory

Unit- VI Metacognitive Perspectives

Meaning - determinants of metacognition - Metacognition in learning - The automation of cognitive and metacognitive processes - principles of metacognitive Instructions and Regulation - Metacognition and attention

Unit- VI Learning

Meaning, Types- Theories of Learning- Thorndike, Pavlov- Skinner-Kohler-Gagne-Transfer of Learning

References:

Agarwal, J.C. (2005). *Essentials of Educational Psychology.* Vikas Publishing House Pvt. Ltd., New Delhi.

Dandapani, S.(2005). *Advanced Educational Psychology.* Anmol publications Pvt., Ltd., New Delhi.

Kundu, CL and Tutoo, DN (1985). *Educational Psychology,* Discovery Publishers Pvt., Ltd., New Delhi.

Mohan (1993). *Educational Psychology,* wiley Eastern, New Delhi.

Mangal, S.K.(2004). *Advanced Educational Psychology.* Prentice Hall of India Pvt., Ltd., New Delhi.

Nagarajan, K., Selvakumar, S.D., Devaraj and Srinivasan (2003). *Educational Psychology,* Ram Pablishers, Chennai.

Ponda, B.N. (2005). *Advanced Educational Psychology.* Discovery Publishing House, New Delhi.

Spirnthall, C., Richard and Sprinthall A. Norman (1990). Educational *Psychology, A Developmental Approach* Mc Grow Hill Publishing Company, New York.

Saravanakumar (2008). *Metacognitive perspectives* New Century Book. House Pvt., Ltd., Chennai.

Saravanakumar (2008). *Attention: An overview,* Arivu Pathippagam, Chennai.

Sivakumar P. and Krishnaraj R (2004) " Information Processing models of Teaching – Theory and Research". Neelkamal Publication, Hyderabad.

1.3 CURRICULUM DESIGN PROCESS

UNIT 1 :

Curriculum – meaning - philosophical, sociological, and psychological bases of curriculum - principles of curriculum designing - curriculum as an instrument of national development

UNIT 2 :

Factors influencing curriculum construction such as national political, economic, cultural, social and intellectual aspects – systems approach to curriculum construction – curriculum as an output in the system

UNIT 3 :

Curriculum planning – development of programmes, syllabi and textbooks, characteristics of a good curriculum and a good textbook – overcoming present drawbacks in curriculum construction

UNIT 4 :

Curriculum implementation – curriculum as an input in the system – curriculum transaction strategies at higher education level – traditional and non-traditional strategies – group and individual methods of instruction – lecture, demonstrations, seminars, symposia, workshops, brainstorming, case analysis and team teaching – components effective curriculum transaction.

UNIT 5 :

Resources for curriculum transaction – instructional materials, library and electronic devices, audio-visual devices, the chalkboard, overhead projector, liquid crystal display projector, laboratory and field experience – using internet and computers for effective curriculum transaction.

UNIT 6 :

Curriculum evaluation – meaning of evaluation – objectives and methods of evaluation-measurement and evaluation in education-formative and summative evaluation tools of evaluation such as achievement test-psychological scales such as attitude scales, interest inventories, personality test-curriculum revision-need and principles to be adopted – curriculum designing and redesigning as continuous process.

References:

1. Jenkins David and Shipman D. Martin, *Curriculum-Introduction,* Open Books Publication Ltd. 1976.
2. Joyce S. Choate, Lamoine J. Miller et al., *Assessing and Programming Basic Curriculum Skills,* Allyn and Bacon Inc. 1986.
3. Kaba, R.M. and Rishi Ram Singh, *Curriculum Construction and youth Development,* sterling publishers, New Delhi, 1987.
4. Mc Neil, J.D. *Curriculum: A comprehensive Evaluation,* Little Brown and Co. 1985.
5. NCTE, *National Curriculum for Primary and Secondary Education. A framework,* New Delhi, 1986.
6. Srivtsava, A.P. *Teaching and Learning in 21st century,* Indian Books Centre New Delhi, 1987.

1.4: METHODS OF EDUCATIONAL INQUIRY

UNIT 1: Concept of Research: Definition – Scientific basis of research – Research paradigms – Positivist – Interpretivisst – Critical – need for research – Characteristics – Types of research – Thrust areas – Emerging trends – Problems encountered in research – Research founding agencies – Research Ethics.

UNIT 2: Problem Selection and Problem Statement : Choosing a problem – Sources – Criteria for selection – Significance – Justifying problem selection – Problem and delimitation – Need for literature review – Hypothesis: Meaning – Importance _ Sources – Types: Hypothesis formulation type-I and type-II – Errors – Sampling: Meaning – Importance – Characteristics – Techniques – Choosing a sample size.

UNIT 3: Methods of Investigation: Positivist – Empirical – Rational (Quantitative) – Enquiry – Naturalistic qualitative enquiry – Historical survey – Experimental – Case study – Content analysis – Triangulation: Need for integrated methodological approach.

UNIT 4: Tools of Research: Questionnaires – Observation – Interviews – Construction of tools: Objectivity – Reliability – Validity – Norms – Standardization process.

UNIT 5:

Part-I: Analysis of Research Data: Importance of statistics – Properties of normal probability curve – Statistical assumptions – 'F' and 't' tests – Introduction to analysis of covariance – Multivariate analysis – Multiple regression – Canonical correlation – Path analysis – Factor analysis – discriminate function analysis – Profile analysis.

Part-II: Non-parametric Techniques: Need for non-parametric techniques – Binomial test – Chisquare – Goodness of fit-test of independence – Mcnemor change test – Fisher exact test – Kolmogrov-Smirnov sample test – Change point test – Sign

test – Kruskal Wallis test – Wilcoxon signed rank test – Median test – Mann Whitney 'U' test – Robust rank order test – Siegel Turkey test for scale differences.

UNIT 6: Writing of Research Report: Format of Research Report: Effective synthesis of conceptual, methodological, analytical and communicative perspectives – Operationalisation of research findings and their contribution to knowledge – Writing a research report: Style, correct usage, typography – Bibliography and footnote form – Headings – Paginations – Tables, Figures and graphs – Evaluating a research report.

UNIT 7: Computer Application to Research: Computer application in different stages of research: Problem selection – Literature review – Multivariate statistical analysis through SPSS Package – Research report preparation – Role of internet in educational research.

REFERENCES:

1. Thomas R Black, Understanding Social Scientific Research, Sage, New Delhi, 2001.
2. Stephanie Taylor, Ethnographic Research, Sage, New Delhi, 2001.
3. Nigel Gilbert, Researching Social Life, Sae, ;New Delhi, 2001.
4. Edward F Fern, Advanced Focus, Group Research, Sage, New Delhi, 2001.
5. Jaber F Gubriusm & James A Holstein, Handbook of Interview Research, Sage, New Delhi, 2001.
6. Venkataiah S, Education in Information Age, Daya, New Delhi, 2001.
7. Venkataiah S, Education Via Internet, Daya, new Delhi, 2001.
8. Agarwal, Rashmi, Educational Technology and conceptual Understanding, Daya, New Delhi, 2000.

1.5: PERSPECTIVES OF EDUCATIONAL TECHNOLOGY

UNIT – I:

Educational Technology: Meaning and scope, Technology in Education – Technology in Education – Phases – Foundations of Educational Technology: Psychology, Sociology, Human Engineering, communications and management – system approach as applied to Educational Technology.

UNIT – II:

Communication: Definition, meaning and components of communication – Types of Communication: Interpersonal, Intrapersonal, Small Group, Large Group and Mass Communication Barriers to Communication – Overcoming Barriers – Methods and media of Communication – principles of effective class room communication – verbal and Non-verbal communication.

UNIT – III:

Hardware and Software in Educational Technology, High and low technology – CCTV-video tape recorders-radio, projectors- epidiascope – motion pictures – films – T.V. Micro computers – types characteristics, advantages and disadvantages – e-learning – Internet web based learning.

UNIT – IV:

Distance Education: concept – Objectives of Distance Education – strategies and counseling methods different contemporary system viz correspondence, open and distance education: student support services. Distance learning: Resources for Distance Learning: print, Self Instructional Modules (SIM), Radio, Televison Educaitonal satellite SITE.

UNIT – V:

Information and Communication Technology – Meaning – Definition – Stages of Development – ICT Paradigms and practices – Utilization of Various E-Resoruces in Education- E-content- E-Book-E Journal-Advantages and Limitations – Multimedia-Applications of Multimedia-Interactive Multimedia –Advantages of learning through Interactive Multimedia.

REFERENCES:

1. Elecusing, K.H. (1975) : Towards a critical appraisal of Educational Technology: Theory and practice, Strasbourg, steering group of Educational Technology.
2. Traavers, R.M. (1973) Educational Technology and related Research viewed as a political foree, Chicago: Rand Mcnally.
3. Freed, P and Hency, E., (1984):" A hand book of Educational Technology" London Kogan page.
4. Encyclopaedia of Educational Technology.
5. Mukhopadhyay, Mm. (ed) (1988): Year Book of Educational Technology, New Delhi, Sterlling.

6. Mukhopadhyay, M (ed) (1990): Educational Technology challenging issues, new Delhi, Sterling.
7. Mukhopadhyay, M (ed) (1990) : Educational Technology challenging issues, New Delhi, Sterling.
8. Monhanty, J (1984) Educational Broadcasting: Radio and T.V. in Education, Delhi, Sterling.
9. Abnove, R.F. (1976): Educational Television: A policy critique and guide for developing countries, New York, Praeger.
10. Academy for Educational Development (1971): Hand book of Educational Technology, Washington Dc.
11. OECD, Educational Technology: The Design and implementation of learning systems, paris, OECDICERI.
12. Rowntree, D, (19820: "Educational Technology in Curriculum Development" London, Harper & Row.
13. Kulkarni S.S. (1986): Introduction to Educatioinal Technology, New Delhi: Oxford & IBH
14. Sivakumar P and Arulsamy(2009) "Application of ICT in Education", Neelkamal Publication, Hyderabad.

2.1 CONTEMPORARY ISSUES IN EDUCATION

UNIT 1

Multiplicity of Courses: Tradition and off-shoot specialization courses – Distance and e-learning courses, full-time, part-time and own-time courses, Interdisciplinary, hybrid and interface courses: Issues and significance.

UNIT 2

Growth Dimensions: Growth in institutions at all levels – Growth in student strength – Heterogeneity of student population – Quantity vs Quality issues.

UNIT 3

Autonomy and Accountability: Issues relating to autonomy, accountability and accreditation of individual, departmental and institutional levels – Impact on stake-holders and the societal system – Autonomy as an instrument of transformational leadership – Leadership in education management - Change Management: Issues – Innovators – Adopters – Legends.

UNIT 4

Resources and Facilities: Govt. Funding: Size, trend and need for higher support – Private capital in educational investment – Community resources: Financial, intellectual, infrastructural and motivational resources: Harnessing and commitment thereof.

UNIT 5

Quality Management: Need for excellence in standard of education – Matching global standards: Challenges and strategies – Top-down and bottom-up approaches – SWOT analysis of every constituent – ISO standards.

UNIT 6

Relations Management: Internal and external relations – Campus tranquility management – Stakeholders participation in management – Extracurricular activities for institution and social bonding extension services and outreach programmes for societal development initiatives.

Systems Orientation: Education as an integral part of every individual, family and society – Open Vs closed systems approach – Concepts of management, digital management, virtual management – System issues: Bench marking, MOUs, Franchising, Downsizing, Emotional intelligence and Tecno-ethics.

REFERENCE BOOKS:

1. Hanna DE and Associates, *Higher Education in the era of Digital Competition – Choices and challenges*, Modison, WI, Atwood Publishing, 2000.
2. Catherine M and David M, *Educational Issues in the Learning Age*, London.
3. Ann FL and Associates, *Leading Academic Change: Essential Roles for Departmental Chairs*, San Fransisco, Jossey-Bass Publishers, 2000.

2.2 PRINCIPLES OF EDUCATION MANAGEMENT

UNIT-I

Education Management – Meaning – Need – Importance – Characteristics – Scope – Objectives – Art or Science or Profession – Functions – Management – Operative – Education administration Vs Education management – Theory of education management – Principles of education administration.

UNIT -II

Education Planning – Meaning – Rationale – Types of education plans – Approaches to education planning – Education planning process – Steps in education planning process – MBO in education – Decision-making – Types – Process.

UNIT- III

Organisation – Meaning – Structures – Organisation Chart – Organisation for education administration: Central and State Government bodies – Delegation Vs Decentralisation – Organisational competence – Strategic alliances.

UNIT- IV

Direction – Meaning and significance – Principles of effective direction – Supervision – Education Leadership – Meaning – Scope – Importance – Styles – Qualities of successful educational leader.

Motivation – Meaning – Types – Motivational theories – Their impact on educational management – Motivating the employees of educational institutions.

UNIT-V

Education Communications – Types – Barriers – Methods to overcome barriers – Principles of effective communication – Coordination – Importance of coordination in education institutions – Techniques of coordination.

UNIT -VI

Control – Meaning – Need – Control process – Techniques – Evaluation – Quality assurance – Total Quality Management (TQM) – ISO Certification for education institutions – Academic audit.

Reference Books:

1. Koontz and O'Donnel, *Essentials of Management*

2. Griffin, *Management*

3. John I Nwankwo, *Educational Administration-Theory and Practice*

2.3 GUIDANCE AND COUNSELLING

UNIT 1

Guidance: Concept – Scope – Importance – Principles of Guidance - Types – Fields: Education – Career – Vocational – Professional- Profile of a Competant guide.

UNIT 2

Counselling: Definition – Purpose – Elements – Characteristics – Forms – Counselling as applied to education.

UNIT 3

Foundations of Guidance and Counselling: Philosophical: Dignity of the human being – Sociological: Influence of social system – Psychological: Concept of self directed behaviour – Learning principles.

UNIT 4

The Counsellor – Personal growth and effectiveness – Concerns of self, attitude, values, beliefs, relationships, self-esteem and openness to other – Accepting personal responsibility – Realistic levels of aspiration – Self-actualisation – Portrait of a helper and a trainee.

UNIT 5

Approaches to counselling – Personal models of counselling for teaching - Types of counselling: Client centred – Behavioural – Cognitive – Solution oriented.

UNIT 6

The Egan Model of Counselling: Stages: Problem exploration and clarification – Integrative understanding dynamic self understanding – Facilitating action, developing a new perspective.

Reference Books:

1. Dr. Paul Hauck, *Depression.*
2. Eugene Kennedy, *On Becoming A Counsellor*, 1977.
3. Eugene Kennedy, *Crisis Counselling*, 1981.
4. Gerard Egan, *The Skilled Helper*, 1982.
5. Stephen Murugatroyal, *Counselling and Helping*.

2.4 QUALITY ISSUES IN EDUCATION

UNIT 1

Quality in Higher Education: Quality related terminologies: Quality – Quality control – Quality assessment – Quality assurance – Need for quality in higher education – Factors influencing quality – Accountability: Impact of accountability and accreditation on stake-holders and society.

UNIT 2

Performance Indicators and Benchmarking in Higher Education: Performance Indicators: Concept – Types – Uses – Performance Indicators of NAAC – Benchmarking: Meaning – Types – Benefits – Methodologies and procedures.

UNIT 3

Quality Assessment and Accreditation: Meaning – Types – Accreditation procedure – Accreditation by NAAC: Existing practices – New methodologies and initiatives of NAAC accreditation – Re-accreditation process – National Board of Accreditation (NBA): Preamble – Need – Advantages – Process of Accreditation – Criteria and weightages.

UNIT 4

Total Quality Management in Education: Definition – Elements – Management plans – Approaches to TQM – TQM Process – Academic Audit: Objectives – Advantages – Limitations – Accreditation and Academic Audit.

UNIT 5

Quality in Global Perspective: Global standards – Strategies for matching global standards – International practices of accreditation – ISO 9000 Certification for

Educational Institutions: Methodology for Implementation of ISO 9000 – Benefits – Limitations – Accreditation Vs ISO 9000 Certification.

UNIT 6

New Quality Perspectives in Higher Education: Capacity Building Model – Modification of Accreditation System – Industry Academia Partnership for quality education and research.

REFERENCE BOOKS:

1. Armond V. Feigerbaum, *Total Quality Control*, McGraw Hill.
2. Ron Collard, *Total Quality*, Jaico, Delhi.
3. John Bark, *Essence of TQM*, Prentice Hall, Delhi.
4. Willborn & Cheng, *Global Management of Quality Assurance Systems*, McGraw Hill.
5. Townsend & Gebhardt, *Commit to Quality*, John Wiley & Sons.

1. **NAME OF THE PROGRAMME** : M.A. Sociology

2. **DURATION** : The duration of the M.A Sociology programme is two academic years under Annual Pattern through Distance Education.

3. **ELIGIBILITY FOR ADMISSION** : A Bachelor's Degree in any discipline

4. **MEDIUM OF INSTRUCTION** : English

5. **PATTERN OF THE PROGRAMME** : Non-Semester

6. **STRUCTURE OF THE PROGRAMME** :

Code No.	TITLE OF THE COURSES	Marks
FIRST YEAR		
1.1	Principles of Sociology	100
1.2	Indian Social Institutions	100
1.3	Sociological Theories and Perspectives	100
1.4	Research Methods	100
1.5	Rural – Urban Sociology	100
SECOND YEAR		
2.1	Sociology of Health	100
2.2	Human Resource Management	100
2.3	Sociology of Mass Communication	100
2.4	Social Welfare Administration and Legislation	100
2.5	Sociology of Modernization and Development	100
Total Marks		**1000**

PAPER 1.1 PRINCIPLES OF SOCIOLOGY

UNIT 1 BASIC CONCEPTS

Sociology, Sociology as Science, Forms of Social Life: Society, Community, Institution and Association, Culture and Civilization.

UNIT II INDIVIDUAL AND SOCIETY

Personality, Heredity and Environment: Physical, Biological and Social; Socialization: Stages, Agencies, Types and Importance of Socialization. C.H. Cooley's Looking Glass Self Theory.

UNIT III SOCIAL PROCESSES

Associative Processes: Co- Operation, Accommodation and Assimilation, Disassociative Processes: Competition and Conflict.

UNIT IV SOCIAL CONTROL

Meaning - Kinds of Social Control. Means of Social Control: Formal and Informal: Folkways, Mores, Norms and Laws.

UNIT V SOCIAL CHANGE

Forms of Social Change, Factors of Social Change: Technological, Cultural and Demographic, Theories of Social Change: Unilinear, Cyclical and Diffusionism.

References:

1. Giddens, Antony: Sociology, U.K. Polity Press, London, 2007.
2. Chriss James, James J Chriss; Social control: An Introduction, Polity Press, 2007.
3. Jeanne H. Ballantine, Keith A.Roberts, Our Social World - Introduction to Sociology, Sage Publication, New Delhi. 2009.
4. Kivisto Peter, Key Ideas in Sociology, Sage Publication, New Delhi.2010.
5. Kuper. A. Social Science Encyclopedia, Rutledge Publishers, London.1996.

PAPER 1.2 INDIAN SOCIAL INSTITUTIONS

UNIT 1 SOCIO – CULTURAL ASPECTS OF INDIAN SOCIETY

Traditional Hindu Social Organization: Socio Cultural Life of Muslims, Christians, Sikhs and Parsis.

UNIT II CASTE SYSTEM

Characteristics, Theories of Caste System. Constitutional Safeguards against Caste discrimination and Untouchability. Persistent and Change of Caste in Modern India.

UNIT III MARRIAGE

Marriage – Definition, Hindu Marriage: Ideals, Types and Forms. Muslim Marriage and Christian Marriage. Legislation and Changing Trends.

UNIT IV KINSHIP AND FAMILY

Kinship: Kinship System in India: Lineage and Descent; Regional variations in Kinship system. Clan, Moiety, Kinship terms, Forms of Kinship Relationship, Joking relationship, Cobuved.

Family: Definition, Types: Joint, Nuclear and Extended family, Changing Trends.

UNIT V CHANGING TRENDS IN THE INDIAN SOCIETY

Sanskritization, Industrialization, Urbanization, Westernization, Modernization, Secularization and Globalization.

References:

1. Hutton, J.H. Caste in India. Bombay: Oxford University Press, 1983
2. Kapadia, K.M .Marriage and Family in India. Bombay: Oxford University Press, 1966
3. Mencher, John P. Agriculture and Social Structure in Tamilnadu: Past Origins, Present Transformations and Future Prospects, New Delhi: Allied publisher 1978.
4. Yogendra Singh Modernization of Indian Tradition Delhi, Thompson Press, 1972

PAPER-1.3 SOCIOLOGICAL THEORIES AND PERSPECTIVES

UNIT – I FOUNDING FATHERS OF SOCIOLOGY

August Comte – Law of Three Stages – Hierarchy of Sciences.

Herbert Spencer – Evolutionary Doctrine – Organismic Analogy.

UNIT – II FUNCTIONALISM

Emile Durkheim – Division of labour - Religion.

Robert K. Merton – Latent and Manifest Functions – Reference Groups.

UNIT – III CONFLICT THEORIES

Karl Marx – Dialectical Materialism – Class Conflict – Alienation.

Lewis Coser – Functions of Conflict

UNIT – IV ETHNOMETHDOLOGY

Harold Garfinkel – Social Order – Theory of Information and Communication. Dramaturgy - Stages, Discrepant notes.

UNIT – V SOCIAL DYNAMICS

P.A. Sorokin – Socio – Cultural Dynamics.

Vilferedo Pareto – Circulation of Elites – Leisure Class.

References :

1. Abraham and Morgan., Sociological Thought – From Comte to Sorokin., McMillan India Ltd., New Delhi., 1997.
2. Abraham, Francis., Modern Sociological Theory., Oxford University Press., Calcutta., 2000.
3. Lewis A. Coser., Masters of Sociological Thought., 2nd Edition., Rawat Publications., Jaipur., 1996.
4. Jonathan H. Turner., the Structure of Sociological Theory. 4th Edition., Rawat Publications., Jaipur. 1995.
5. Ritzer, George. Sociological Theory., 5th Edition., Mc-Graw Hill., New Delhi., 2000.

PAPER-1.4 RESEARCH METHODS

UNIT 1

Meaning, Types and Process of Research: Meaning – Purpose – Types of research – Pure, applied, historical, analytical, descriptive and experimental – Significance of research in social sciences – Process of research – Meaning – Scientific method – Induction and deduction.

UNIT 2

Planning Research: Research problem – Identification, selection and formulation of research problem – Review of literature in the field of corporate management – Hypothesis – Meaning – Sources of hypothesis – Types of Hypothesis – Formulation and testing – Research design – Factors affecting research design – Evaluation of research design.

UNIT 3

Sampling Design: Census method and sampling method for investigation – Advantages and disadvantages of sampling – Principle of sampling – Essentials of a good sampling – Methods of sampling – Probability and non-probability sampling methods – Selection of a sample – Factors affecting the size of the sample – Biased sample – Sampling and non-sampling errors.

UNIT 4

Sources and Collection of Data: Sources of data – Primary and secondary data – Modes of data collection – Analytical method – Case study – Observation – Survey method – Interview – Its purpose and importance –

Types of interview – Preparation for an interview – Effective interview techniques – Limitations of interview – Schedule – Its meaning and kinds – Essentials of a good schedule – Procedure for the formulation of a schedule – Questionnaire – Meaning and types – Format of a good questionnaire – Factors affecting the response to a questionnaire – Advantages and limitations of schedules and questionnaires – Pre-testing and its importance.

UNIT 5

Processing and Analysis of Data: Meaning – Importance – Process of data analysis – Editing – Coding – Tabulation – Diagrams – The process of interpretation – Guidelines for making valid interpretation – Scaling techniques – Meaning – Importance – Methods of their construction.

UNIT 6

Report Writing: Role and types of reports – Contents of research report – Steps involved in drafting reports – Principles of good report writing – Referencing – Criteria for evaluating research reports/ research findings.

REFERENCES :

1. John W Best, *Research in Education*.
2. Anderson et-al, *Thesis and Assignment Writing*.
3. Goode and Hatt, *Methods of Social Research*.
4. Wilkinson and Bhandarkar, *Methods and Techniques of Social Research*.
5. ICSSR, *Training in Research Methodology in Social Sciences in India*.

PAPER 1.5 RURAL AND URBAN SOCIOLOGY

UNIT 1 RURAL – URBAN SOCIOLOGY

Rural Sociology: Definition, Nature and Scope. Urban Sociology: Definition, Nature and Scope. Rural – Urban Differences.

UNIT II RURAL PROBLEMS IN INDIA

Rural Problems in India: Rural Poverty and Indebtedness, Unemployment, Health and Sanitation, Illiteracy and Agrarian tensions.

UNIT III PLANNING FOR RURAL DEVELOPMENT

Planning for Rural Development: Panchayat Raj, Rural Development Programmes: SGSY, MGNREGS, PMGSY, IAY. Role of NGOs in Rural Development.

UNIT IV URBAN PROBLEMS IN INDIA

Urban Problems in India: Housing, Slums, Crime, Health and Sanitation, Environmental Pollution, Alcoholism and Drug Addiction.

UNIT V URBAN PLANNING

Urban Planning: Growth of Cities, Urban Reconstruction and New Settlements. Agencies for Urban Development: Corporations and Municipalities, SGSRY, TNUDP III, CMDA, Tamil Nadu Slum Clearance Board, Tamil Nadu Pollution Control Board.

References:

1. Madan, G.R. Indian Social Transformation, Madras: Allied Publisher Private Limited, 1978.
2. Sinha, D. Indian Villages in Transition. New Delhi: Associated Publishing House, 1969.
3. Srinivas, M.N. The Remembered Village. Delhi: Oxford University Press, 1976.
4. Burgess, Ernest W and Bogue, Donald, J. Urban Sociology, Chigago: The University of Chicago Press, 1964.
5. Prakash Rao, V.L.S. Urbanization in India, New Delhi: Concept Publishing Company, 1983.

PAPER- 2.1 SOCIOLOGY OF HEALTH

UNIT 1 SOCIOLOGY OF HEALTH

The Sociology of Health – Nature and scope; The Concept of Health: Four Dimensions, relationship between medicine and sociology; System of Medicine in India; Social epidemiology measures: age, sex, race and social class.

UNIT 1I SOCIAL COMPONENTS OF HEALTH

Social Components of Health; The interaction of mind, body and society – Stress – Psycho-physiological medicine, social factors and stress, Socio demographic variables in the process of seeking medical care. Attitudes and Beliefs towards ill health and treatment.

UNIT 1I I ILLNESS AND DEVIANCE

Illness as deviance, the sick role, Patient role, labeling theory. Models of seeking medical care.

UNIT 1V PHYSICIAN IN A CHANGING SOCIETY

Physician in a changing society – Nursing – Past and Present and Future trends, other health practitioners, hospital as a social institution, health care, a right or privilege.

UNIT V MEDICAL SOCIAL SERVICE IN HOSPITAL

Medical Social Service in Hospitals – Role of Sociologists and Social Workers in Medical Service in Pediatrics, Skin and STD, Psychiatry, Tuberculosis. Reproductive and Child Health. Primary Health Care – Health Indicators.

Health Policy of Government of India. Health for All by 2000 AD.

References:

1. Coe, Rodney, Sociology of Medicine. New McGraw Hill, 1970.
2. Freeman, H. handbook of Medical Sociology, Englewood Cliffs: Prentice Hall, 1963.
3. Venkataratnam, R. Medical Sociology in an Indian Setting, Madras: MacMillan Co., 1979.
4. John Bond, Senga Bond, Sociology of Health Care, New Delhi: Churchill Living Store, 1994.
5. Ommen, T.K. Doctors and Nurses, New Delhi: MacMillan & Co., 1978.

PAPER-2.2 HUMAN RESOURCE MANAGEMENT II YEAR

UNIT 1

Human Resource Management – Definition – Objectives and functions – Role and structure of personnel function in organizations – Personnel principles and policies.

UNIT 2

Human Resource Planning – Characteristics – Need for planning – HRP Process – Job analysis – Job design – Job description – Job specification.

UNIT 3

The Selection Process – Placement and induction – Training and development – Promotion – Demotions – Transfers – Separation.

UNIT 4

Wage and Salary Administration – Factors – Principles – Compensation plan – Individual – Group – Incentives – Bonus – Fringe benefits – Job evaluation systems – Wage and salary administration in relation to personal taxation.

UNIT 5

Employee Maintenance and Integration – Welfare and safety – Accident prevention – Administration of discipline – Employee motivation – Need and measures.

UNIT 6

Personnel Records/ Reports – Personnel research and personnel audit – Objectives – Scope and importance.

References:

1. Venkataraman C.S & Srivastava B.K, *Personnel Management and Human Resources*, Tata McGraw Hill, 1991.
2. Arun Monappa, *Industrial Relations*, Tata McGraw Hill, 1987.
3. Dale Yodder & Paul D Standohar, *Personnel Management and Industrial Relations*, Sterling Publishers, 1990.

PAPER-2.3 SOCIOLOGY OF MASS COMMUNICATION

UNIT I NATURE AND SCOPE

Meaning, Nature and Scope of communication. Elements - Types of communication Models of Communication: - Barriers - Hypodermic and One Step Flow and Theories of communication: Social Responsibility and Authority.

UNIT II CHARACTERISTICS AND DIFFERENCES

Characteristics and Differences in Communication mode, Interpersonal and Mass Communication.

UNIT III ORIGIN AND GROWTH OF MASS MEDIA IN INDIA

Origin of mass media: Press –Film– Television – Internet - Cellular Phone - SMS – 3G – Video Conferencing.

UNIT IV COMMUNICATION AND PROCESS OF DIFFUSION

Communication and the process of diffusion. Two step flow and the role of opinion leaders in the process of diffusion.

UNIT V COMMUNICATION AND SOCIAL CHANGE

Technology and communication. Communication Technology and Social Change. Formation of Public Opinion, Propaganda. Role of Communication in Development of Digital Divide.

References:

1. Agee,Warren K.Philip. Ault and Edwin Emery, Introduction to Mass Communucation, (6th Edition) Oxford and IH Publishing Co., New Delhi : 1979.
2. Cassata, Mary. B. and Molefik. Asante, Mass Communucation : Principles and Practices. Macmillan Publishing Co., Inc. New York : 1979.
3. Kewal Kumar J., Mass Communucation in India, Jaico Publishing House, Bombay, 1984.
4. MC Quail, Dennis and Sven Windhal, Communication Models, Longman London, 1984.
5. MC Quail, Dennis, Mass Communication Theory : An Introduction (2nd Edition) Sage Publications, London, 1988.
6. Trilochan Pande, Understanding Languages as Communications: Inter Cultural context, Himalaya Publishing House, 1999.

Paper 2.4 Social Welfare Administration and Legislation

UNIT I

Social Welfare Administration: Concepts and scope - nature of Social Welfare administration in Government and Non-government Organisation. The Social welfare boards and its functions. Concept of Social policy – needs and choice, rights and obligations, justice and merit citizenship and status.

UNIT II

Social Legislation: meaning and scope: Indian Constitution and social legislation, fundamental rights and directive principles of state policy. Social legislation: As an instrument for social control and social change and social justice and social defense.

UNIT III

Personal laws: Hindu laws related to marriage, divorce, dowry, widow remarriage, child marriage and inheritance. Laws related to children, adoption, guardianship and maintenance. Laws safeguard Scheduled Castes (Dalits)- Untouchability, Juvenile delinquency, mentally sick. Legal Aid : Meaning and organization, Lok Adalats. Application of Public Interest Litigation.

UNIT IV

Registration - Societies Registration Act 1860, Procedure under Tamil Nadu Societies registration Act 1975 – Foreign Contribution (Regulation) Amendment Act, 1985, Indian Trust Act 1881 – The Duties and Responsibilities of office bearer and the executives, The role of general body and governing board.

UNIT V

Evolution of Social Policy in India – sources and instrument of social policy – policies regarding other backward classes, Scheduled Castes, Scheduled Tribes and other de-notified communities – Provisions of safe guarding the welfare of weaker sections – social welfare services for women and children and minority communities.

References:

1. Adoms Robert, 2002 : Social Policy for Social Work, Palgrove
2. Badlock John.2000 : Social Policy, Oxford University Press
3. Yeetes Nicole. 2001: Globalisation of Social Policy, Sage Publication.
4. Shanmugavelayudham, K 2000: Social Legislation and Social Change, Valgha Valamudan Publishers, Chennai.
5. David Bills and Margaret Harris 2000: Voluntary Agencies: Challenges of Organisation and Management (ed) Macmillan, New York.
6. Gills Stewart 2000: Social Policy for Social Workers, Practical Social Work Series, Macmillan, New York.
7. Tiwari S, 2000 : Encyclopedia of Indian Government : Programme and Policies, Anmol, New Delhi.

PAPER-2.5 SOCIOLOGY OF MODERNISATION AND DEVELOPMENT

UNIT I **CONCEPT OF DEVELOPMENT:**
Meaning – Characteristics - Types of Development: Gender and Human Development, Social Development, Economic Development, Sustainable Development.

UNIT II **DEVELOPMENT MODELS:**
Capitalistic, Socialistic, Nehruvian: Mixed Economy, Gandhian, Mixed Economy, Third-world models of Development, Modernization. Millennium Development Goal (MDG).

UNIT III **DEVELOPMENT ISSUES:**
Poverty and Social Inequality, Agrarian Crisis, Energy Crisis, Climate Change, Environmental Crisis and Global Warming, Impact on Health Issues.

UNIT IV **MODERNIZATION:**
Meaning- Characteristics - Theories: Dependency perspective - Classical dependency theory- New dependency theory.

UNIT V **IMPACT OF MODERNIZATION IN INDIA:**
Modernization in India - Modernization and Development and its impact on; Socio-Economic and Cultural

References:

1. Desai, A.R., (Ed.) Essays on Modernization of Underdeveloped Societies, Thacker and Company, Mumbai, 1971.
2. Srinivas, M.N., Social Change in Modern India, Allied Publishers Pvt. Ltd., Bombay. 1966.
3. Erenstadt, S.N., Modernization, Protest and Change.
4. Dube, S.C.., Modernization and Development: The Search for Alternative Paradigm, Vistaar Publications, New Delhi, 1988.
5. Lavy, M.J., Modernization and Structures of Society.
6. Harrison, D.H., The Sociology of Modernization and Development, Routledge, London, 1958.
7. Milton Singer and Cohen, B.S., Structure and Change in Indian Society.

Course	**:**	**M.A. (Personnel Management and Industrial Relations)**
Mode	:	Distance Education
Duration	:	Two years
Eligibility	:	Any degree from a recognised University
Medium	:	English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
I YEAR		
1.1	Management Concepts	100
1.2	Principles of Personnel Management	100
1.3	Labour Legislations-I	100
1.4	Labour Legislations-II	100
1.5	Industrial Relations	100
II YEAR		
2.1	Organisational Development	100
2.2	Human Resource Development	100
2.3	Labour Economics	100
2.4	Organisational Behaviour	100
2.5	Computer Applications in Personnel Management	100
	Total	**1000**

Paper 1.1. MANAGEMENT CONCEPTS

UNIT I

Management: Definition – Nature – Scope and functions – Evaluation of management thought – Relevance of management to different types of organization like Hospitals, Universities, Hostels, Social Service organizations, etc.

UNIT II

Planning: Nature, importance and strategic considerations in planning – Planning premises – Components of planning as objectives, policies, strategies, procedures, methods, rules, projects and budgets – Making plans effective – Planning and decision making.

UNIT III

Organising: Nature, purpose and kinds of organization – Structure – Principles and theories of organization – Departmentation – Span of control – line and staff functions – Authority and responsibility – Centralization and decentralization – Delegation of authority – Committees – Informal organization.

UNIT IV

Staffing and directing: General principles, importance and techniques.

UNIT V

Controlling: Objectives and process of control – Devices of control – integrated control – Special control techniques – Co-ordination – Need and techniques.

UNIT VI

Recent trends and new perspectives in management: Strategic alliances – Core competence – Business process reengineering – TQM – Bench marking.

REFERENCE BOOKS:

1. Stoner and Wanker, Management, Prentice Hall.
2. Koontz and O'Donnel, Management, A Systems Approach, Tata McGraw Hill.
3. Weihrich and Koontz, Management – A Global Perspective, McGraw Hill.
4. John Argenti, Management Techniques – A Practical Guide.
5. Gene Burton & Manab Thakur, Management Today: Principles and Practice, TMH.

Paper 1.2. PRINCIPLES OF PERSONNEL MANAGEMENT

UNIT I

Personnel Management – Definition – Objectives and functions – Role and structure of personnel function in organizations – Personnel principles and policies.

UNIT II

Human Resource Planning – Characteristics – Need for planning – HRP process – Job analysis – Job design – Job description – Job specification.

UNIT III

The Selection Process – Placement and induction – Training and development – Promotion – Demotions – Transfer – Separation.

UNIT IV

Wage and salary administration – Factors – Principles – Compensation plan – Individual – Group – Incentives – Bonus – Fringe benefits – Job evaluation systems – Wage and salary administration in relation to personal taxation.

UNIT V

Employee maintenance and integration – Welfare and safety – Accident prevention – Administration of discipline – Employee motivation – Need and measures.

UNIT VI

Personnel Records/Reports – Personnel research and personnel audit – Objectives, scope and importance.

REFERENCE BOOKS:

1. Venkataratnam C S and Srivastava B K, Personnel Management and Human Resources, Tata McGraw Hill, 1991.
2. Arun Monappa, Industrial Relations, Tata McGraw Jill, 1987.
3. Dale Yodder, Paul and Standohar D, Personnel Management and Industrial Relations, Sterling Publishers, 1990.
4. David A Decenzo and Stephen, Robbins P, Personnel/Human Resource Management, Prentice Hall, 1955.

Paper 1.3: LABOUR LEGISLATIONS - 1

UNIT I

Factories Act, 1948: Provision's relating to health, safety, welfare, working hours, leave etc., of workers approval – Licensing and registration of factories, manager and occupier – Their obligations under the Act, powers of the authorities under the Act, Penalty provisions.

UNIT II

Workmen's Compensation Act, 1923: Employer's liability for compensation, amount of compensation method of calculating wages – Review – distribution of compensation – Remedies of employer against stranger – Returns as to compensation – Commission for workmen's compensation.

UNIT III

Industrial Dispute Act, 1947: Industrial dispute – Authorities for settlement of industrial disputes – Reference of industrial disputes – Procedures – Power and duties of authorities, settlement and strikes – Lock-out – Lay-off – Retrenchment – Transfer and closure – Unfair labour practices – Miscellaneous provision offences by companies, conditions of service to remain unchanged under certain circumstances, etc.

UNIT IV

Shops and Establishments Act, 1947: Definitions – Sailent provisions – Powers of the authorities.

UNIT V

Employee's State Insurance Act, 1948: Registration of Factories and Establishments, the employee's State Insurance Corporation, Standing Committee and Medical Benefit Council, provisions relating to contributions – Inspectors – Their functions and disputes and claims – Offences and penalties – Miscellaneous provisions.

UNIT VI

Employees Provident Fund and Msicellaneous Provisions Act, 1952: Employees provident fund and other schemes – Determination and recovery of money due from employer, appointment of inspectors and their duties – Provisions relating to transfer of accounts and liability in case of transfer of establishment exemption under the Act – Count's power under the act.

REFERENCE BOOKS:

1. Bare Acts
2. Kapoor N D, Industrial Law
3. Shukla M C, Industrial Law

Paper 1.4: LABOUR LEGISLATIONS - II

UNIT I

Computation of available surplus calculation of direct tax payable surplus calculation of direct tax payable by the employer, eligibility for bonus and payment of bonus – deduction from bonus payable – adjustment of customary of interim bonus payable, adjustment of customary or interim bonus linked with production or productivity – set on and set off allocable surplus, presumption about accuracy of balance sheet and profit and loss account.

UNIT II

Payment of Gratuity Act, 1972: Payment of Gratuity – exemption – nomination – determination and recovery of the amount of gratuity.

UNIT III

Payment of Wages Act, 1936: Objects, provisions relating to responsibility for payment of wages – fixation of wage periods, time of payment, deduction and fines – maintenance of records and registers, inspectors appointment of authorities and adjudication of claims.

UNIT IV

Minimum Wages Act, 1948: Objects, fixing of minimum rate or wages – procedure for fixing and receiving minimum wages – appointment of advisory board – payment of minimum wages, maintenance of registers and records contracting out – powers of appropriate government offences and penalties.

UNIT V

Industrial Employment(Standing Orders) Act, 1946: Provisions regarding certification and operating of standing orders – duration and modification of standing orders – power of certifying officer – interpretation of standing orders.

UNIT VI

Trade Union Act, 1926: Registration of Trade Unions, rights, and liabilities trade unions – procedure – penalties

REFERENCE BOOKS:

1. Bare Acts
2. Kapoor N D, Industrial Laws
3. Shukla M C, Industrial Laws

Paper 1.5: INDUSTRIAL RELATIONS

UNIT I

Constitution of India – Salient features – Fundamental rights and directive principles of State policy – Labour movement – Concept of labour movement and Union Organization – Trade union movement and various phases of the movement – Trade unions and economic development.

UNIT II

Development of Trade Unionism in India – Historical retrospect – Central organization of workers in India – Role of internal trade union – Inter and intra union rivalries – Union recognition – International Labour Movement: ICFTU – WFTU – ILO – History, objective and functions – Convention and recommendations.

UNIT III

Concept of Industrial Relations – Social obligations of industry – Role of government employers and the unions in industrial relations – Industrial relations machinery – Joint consultation – Works committee – Negotiation: Types of Negotiations – Conciliations – Adjudication, voluntary arbitration – Workers participation in industry – Grievance procedure.

UNIT IV

Process of collective bargaining – Problems and prospects – Bipartism in agreements – Code of conduct and code of discipline – Wage boards – Reports of wage boards – Management of strikes and lockouts.

UNIT V

Employee safety programme – Types of safety organization – Safety committee – Ergonomics – Damage control and system, safety.

UNIT VI

Employee communication – House journals – Notice boards suggestion schemes – upward communication, personnel counselling and mental health – educational and social development – modern trends – employee education.

REFERENCE BOOKS:

1. Bhagoliwal T N, Personnel Management and Industrial Relations, Agra Publishers, Agra.
2. Arun Monappa, Industrial Relations, Tata McGraw Hill, New Delhi.
3. Michael V P,HRM and Human Relations,Himalaya Book House, Mumbai.

Paper 2.1. ORGANISATIONAL DEVELOPMENT

UNIT I

Introduction to Organization Development – Concept – Nature and scope of organizational development – History of organizational development – Underlying assumptions and values.

UNIT II

Theory and practice of organizational development – Operational components – Diagnostic, action and process – Maintenance component.

UNIT III

Action Research as a process – An approach – History – Use and varieties of action research – When and how to use action research in organizational development.

UNIT IV

Organizational development interventions – Team interventions – Inter-group interventions – Personal, interpersonal and group process interventions – Comprehensive interventions – Structural interventions.

UNIT V

Implementation and assessment of organizational development – Conditions for success and failure – Ethical standards in organizational development – Organizational development and organizational performance – Implications.

UNIT VI

Key consideration and issues in organizational development – Future of organizational development – Indian experiences in organizational development.

REFERENCE BOOKS:

1. French and Bell, Organizational development, Prentice Hall, 1995.
2. French, Bell, Zawach (Edn) Organization Development: Theory, Practice and Research. UBP.
3. Rosabeth Moss Kanter, The Change Masters, Simon & Schaster.

Paper 2.2: HUMAN RESOURCE DEVELOPMENT

UNIT I

Introduction – Evolution of Human Resource Development as a Management Philosophy – Scope and importance – Personnel management Vs human resource development – Human resources system designing.

UNIT II

Role Analysis and Human Resource Development – Role analysis methods – Key performance areas – Critical attributes and role effectiveness – Performance appraisal and its objectives – Considerations in performance appraisal – Development oriented appraisal system.

UNIT III

Performance counseling and interpersonal feedback – Developing dynamic relationship through effective counselling – Potential appraisal and development – Career planning and individual development.

UNIT IV

Conceptual framework – Learning principles – Identification of training needs – Training objective – Designing training programmes – Training methods – Evaluation of training and retraining.

UNIT V

Organizational effectiveness – Organizational culture – Human resource development – Organizational development interface – Human resource development and TQM & ISO 9000 – Human resource development in service sector.

UNIT VI

Human Resource Development – Current status and future directions – Human resource development experiences in India – Human resource development strategies for higher organizational performance.

REFERENCE BOOKS:

1. Pareek Udai and Rao T V, Designing and Managing Human Resource Systems, Oxford & IBH.
2. Rao T V, Performance Appraisal, Theory and Practice, AIMA – Vikas.
3. Rao T V, et-al (ed) Alternative Approached and Strategies of Human Resources Development, Rawat Publications.
4. Silvera D M, Human Resource Development – The Indian Experience, New India Publications.
5. Kohli UNIT and Sinha D (Ed) Human Resource Development, Global and Strategies in 2000 AD, Alied Publishers.

Paper 2.3: LABOUR ECONOMICS

UNIT I

Nature and scope of labour economics: Evaluation of the labour problem - Labour problems of developing economy – Concept of labour force, structure, composition and extent of Indian Labour Force participation – Basics of labour market supply and demand.

UNIT II

Employment: Economics of employment, theories of employment, full employment technology and employment- flexibilities and rigidities in the Indian Labour Market.

UNIT III

Wages: Economics of wages, wage theories, methods, methods of wage payment, development of rational wage system, principles of wage policy for a developing economy.

UNIT IV

Dearness Allowance: Various schemes – Concept of cost of living and price indices for computing Dearness Allowance – Extent of neutralization – Case for full and partial neutralization – Productivity – Definition, measures and gins sharing.

UNIT V

Employee migrations – Push and pull factors – Theories – Trend and impact.

UNIT VI

Labour absenteeism – Labour turnover – Rationalization and automation – Technology and labour – Gender and labour – Exit of industries and labour.

REFERENCE BOOKS:

1. Pramod Verma, Labour Economics and Industrial Relations.
2. Mcconnell & Campbell R, Contemproary Labour Economics.

Paper 2.4: ORGANISATIONAL BEHAVIOUR

UNIT I

Organizational Behavior – Importance to managers – Organizational behavior as global phenomenon.

UNIT II

Individual behavior – Psychological processes and behavioral issues – Ability – Personality – Learning – Perception – Managerial implications.

UNIT III

Motivation: Maslow, Herzberg, Vroom, Porter, X, Y and Z theories – Values and attitudes – Job satisfaction – Morale.

UNIT IV

Group behaviors – Formation of groups – Group norms – Group cohesion – Group conflict – Cultural diversity and group effectiveness – Inter personal communication – Barriers to effective communication.

UNIT V

Leadership – Style and functions – Leadership theories – Implications for managers – Power and politics.

UNIT VI

Organizational Dynamics – Organizational design – Organizational climate – Organizational culture – Management of change – Organizational effectiveness.

REFERENCE BOOKS:

1. Fred Luthans, Organizational Behaviors, McGraw Hill Book Co., 1995.
2. Stephen, Robbins P, Organizational Behavior, Prentice Hall, 1997.
3. Keith Davis, Human Behavior at Work, McGraw Hill Book Co., 1991.
4. Gregory Moorehead and Griffin R S, Organizational Behavior – Managing People and Organisations, Jaico, 1994.
5. Judith, Gordon R, A Diagnostic Approach to Organizational Behavior, Allyn & Bacon, 1993.

UNIT I

Introduction to Computers: Functional Elements – Processor Memory, Input/Output Disk Storage, Program – parts of PC – business data processing – main areas of applications in personnel management.

UNIT II

Hardware: Input devices and media – key to tape – key to disk – magnetic devices and media – output devices and media – VDU, Dot matrix printers, line and laser printers – storage devices and media – magnetic tape and magnetic disk – arithmetic and logic unit – control unit.

UNIT III

Applications software: Machine language, assembly language and high level languages – major high level language – compilers, interpreters and assemblers.

UNIT IV

Word Processing: Processing a document – functions of a word-processor – menus – entering and editing texts – marking and moving blocks – finding and replacing texts – formatting text on screen – special print features – mail merge – form letters.

UNIT V

Relational Database Manager: Introduction to dBaseIII – creating a database – adding data – viewing data – editing and modifying databases – duplicating databases and structures – printing formatted reports – working with multiple databases – command files – setting up screen displays.

UNIT VI

Personnel Management Applications – case studies – recruitment – selection – payroll – training – separation.

REFERENCE BOOKS:

1. Computers and Business
2. Business Information Systems
3. Computers and Business Systems
4. Introduction to Wordstar, Arthur Naiman, BPB Publ.(SYBEX)
5. Understanding dBase III, BPB Publ.(SYBEX)

Course	**:**	**M.A. (Master of Journalism and Mass Communication)**
Mode	:	Distance Education
Duration	:	Two years
Eligibility	:	Any degree from a recognised University
Medium	:	English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Marks*
I YEAR		
1.1	Introduction to Mass Communication	100
1.2	Reporting	100
1.3	Editing	100
1.4	Media History and Laws in India	100
1.5	Women and Media	100
II YEAR		
2.1	Advertising	100
2.2	Public Relations	100
2.3	Development communication	100
2.4	Mass Comunication Research	100
2.5	Writing and Reporting for New Media	100
	Total	**1000**

Paper 1.1: INTRODUCTION TO MASS COMMUNICATION

UNIT I

Communication: Definitions – Communication and Society – Types of Communication – The human communication process: A review of some basic models and the ingredients.

UNIT II

The influence of technology on the means of communication – The concept of Mass Media – A discussion of the characteristics of individual mass medium – Mass Media in India and their present status.

UNIT III

The concept of Journalism – The functions of press – Press freedom and responsibility and the theories of Press – Current trends in Journalism – Press codes and ethics of Journalism – A code of ethics for the Indian Press.

UNIT IV

Mass Media institutions in India – Government Media Units – as Akashvani, Doordarshan, PIB, DAVP etc. – Press Registrar of India, press council of India – Indian News agencies – Professional organizations as INS, AINEC, IFWJ, PRST, AAAI, ILNA etc – Media educational institutions.

UNIT V

Press Commissions and Committees: The First and Second Press Commission reports – Reports of Chanda committee, Varghese Committee, Joshi committee, Karanth working group etc. – Prasar Baharati Bill, FM and Community Radio – DTH, Cable Revolution.

REFERENCE BOOKS:

1) Emery, Agee, Ault "Introduction to Mass Communication".
2) Spencer Crump, "Fundamentals of Journalism".
3) Hohenberg, "Professional Journalist".
4) Sean Macbride "Many Voices, One World".
5) Keval J. Kumar, Mass Communication in India

Paper 1.2: REPORTING

UNIT I

Definition of News – Values of News – Kinds of News – Structure of a news story – Lead and kinds of leads, body, backgrounding and conclusion.

UNIT II

Functions, responsibilities and qualities of a Reporter – Functional differences of Reporter – Special Correspondents, foreign Correspondents, Columnists, Freelancers, Roving Reporters.

UNIT III

News gathering methods – Sources – Interviews – Research – Beat reporting – Reporting speeches, press conferences, accidents, deaths, disasters, crime, court proceedings – Legislature proceedings, Elections and sports, business, finance, science and technology- Syndicates.

UNIT IV

Interpretative reporting – Indepth reporting – Investigative reporting – New journalism – Development reporting – Precision journalism – Public service journalism – News letters and Trend reporting.

UNIT V

Language and style of creative news writing – Craft of non-fiction writing – Types of features and features writing – Writing reviews.

REFERENCE BOOKS:

1. Critichfield R "Indian Reporter's Guide".
2. Crump S "Fundamentals of Journalism".
3. Hohenberg J, "Professional Journalist".
4. Sethi P, "Professional Journalism".
5. Johnson S and Harris J, "The Complete Reporter".
6. Lewis J, "Active Reporter".
7. McDouglas CD, "Interpretative Reporting".
8. Campbell and Wolseley, "How to Report & Write the News.
9. Kamath, M.V. Professional Journalism

Paper 1.3: EDITING

UNIT I

A brief review of Newpaper, organization and management – Newspaper production process – Technology advances – News management and the functioning of a news room – The functions of Editor, Assistant Editor, News Editor, Sub-Editor, Sources of news and news copy flow.

UNIT II

Fundamentals of copy editing – Copy reading and proof reading symbols – Rewriting techniques – Copy fitting – Space saving techniques – Style sheet – Readability – Glossary.

UNIT III

Writing news headlines in news paper and magazines – Modern trends of headline writing – Electronic news editing – Picture editing – Outline writing – Editorial writing – Types of editorials and analysis of editorials.

UNIT IV

Principles if Page Make-up and Design – Mechanics of dummying – Front and inside page make-ups – Trends in page make-up.

UNIT V

Introduction of Typography – Type faces and sizes – Classification and measurements – Setting styles – Kinds of type setting: Traditions and modern – Modern reproduction process.

REFERENCE BOOKS:

1. Westly Bruce, “News Editing”.
2. International Press Institute, “The Active Newsroom”.
3. Evans Harold, News Headlines, “Newspaper Design”, Editing and Design.
4. Bastian George C, “Editing and the Day’s News”.
5. Sellers and Leslie, “Doing it in Style”.

Paper 1.4: MEDIA HISTORY AND LAWS IN INDIA

UNIT I

History of Press in India – Historical perspective of Mass Media Laws.

UNIT II

Development of Radio Broadcasting in India – Development of Television in India – A short history of Indian Cinema.

UNIT III

Provision of the Constitution applicable to Mass Media – Laws applicable to Mass Media: The Indian Penal Code – The Press and Registration of Books Act, 1867 – The newspaper (Price and Page) Act, 1956 – The Copyright Act, 1957 – The Press Council Act, 1978.

UNIT IV

The contempts of Courts Act, 1971 – The Official Secrets Act, 1923 – The Civil Law of Defamation – The Drugs and Magic Remedies (Objectionable Advertisement)Act, 1954 – The Indecent Representation of Women (Prohibition) Act, 1933 – The MRTP Act, 1969 – The Working Journalists Act, 1955, 1958.

UNIT V

Broadcast Code governing commercial advertisements in Radio, Television.

REFERENCE BOOKS:

1. Natarajan S, “A History of the Press in India”.
2. Nadig Krishnamoorthi, “Indian Journalism”.
3. Rangaswami Parthasarathy, “Journalism in India”.
4. Chalapathi Rau M, “The Press”.
5. Venkateswaran K S, “Mass Media Laws and Regulations in India”.
6. Basu, “Press Law”.
7. Kagzi Jain MC, “Constitution of India”.
8. Umrigar K L, “Press Laws in India”.

Paper 1.5: WOMEN AND MEDIA

UNIT I

Mainstream Modes of Communication in India: Electronic, Visual and Audio – Role of women.

UNIT II

Media Portrayal of Women: Reductionism, objectification, Dial image and commodization of women –consumerism – Stereo-type images – Trivializing women's question – Cultural meaning.

UNIT III

Women in Media: Jobs for women in different media – Opportunities, Barriers, breaking down barriers – Women in new media.

UNIT IV

Media and Social changes: Interaction between media and movement – Countering strategies in media portrayal – Media policy, decision-making and advocacy – Alternative media.

UNIT V

Appropriate media – Training media – Planning and designing – Training material.

REFERENCE BOOKS:

1 Balasubramaniyan, Vimal, Mirror Image, Centre for Edn. & Doc. Mumbai, 1988.
2 Baehr, Helen and Gillian Dyer, Boxer in: Women and Television, Pandora, London, 1987.
3 Bhasin, Kamal (ed.,) Towards Empowerment, FAO-FFHO/AD South Asia Training for Women Development Workers, 1983.
4 Bhasin Kamal and Bina Agarwal, Women and Media: Analysis, Alternatives and Action, Kail for women, New Delhi, 1984.
5 Gallagher, Margaret, Unequal Opportunities: The case of women and media, UNESCO, 1981.
6 Kapoor, Sushma & Anuradha, Women and Media in Development, United India Press, New Delhi, 1986.
7 Krishnan, Prabha and Anita Dighe, Construction of Feminity of Indian Television, council for Social Development, New Delhi, 1987.

Paper 2.1: ADVERTISING

UNIT I

Advertising in the Marketing Process – Development of Advertising in India – The Advertising industry – Structure of an advertising agency – Staff and functions.

UNIT II

Functions of advertising – Psychology of advertising – Types of advertising – Advertising media.

UNIT III

Structure of an Advertisement – Advertisement Design: Visualization, Headlines, Body copy, Visuals copy appeal etc. Copy writing techniques – Fundamentals of Arts in the layout and design.

UNIT IV

Advertising Campaigns: Planning process – Media mix and media scheduling – Measuring advertising effectiveness.

UNIT V

Professional organizations in advertising – The code for commercial advertising on AIR – The code of commercial advertising on Doordarshan – The code of advertising pratice of the Advertising Standard Council of India.

REFERENCE BOOKS:

1 Otto Klepner, "Advertising Procedure".
2 Borden, "Advertising".
3 Watson and Dunn, "Advertising".
4 Fryburger, Sanger Vernon CH, "Advertiseing Theory and Practice".
5 John J Wheatley, "Measuring Advertising Effectiveness".
6 Rajeev Batra, et-al, "Advertising Management".
7 Chunawalla & Shetia, "Foundations of the Theory and Practice of Advertising".
8 Dyer Gillian, "Advertisings as Communication".

Paper 2.2: PUBLIC RELATIONS

UNIT I

Public Relations: Definitions – Public Relations and publicity – PR and Public Opinion – History and Development of PR in India – Role and functions of PR in management – PR Policy.

UNIT II

Structure and functions of a PR Department in Government, Public and Private Sectors – Qualities of a good PRO – Organization and its publics – Functions of a PRO – Media relations – Employee relations.

UNIT III

PR Counselling – PR and Mass Media – House Journals – Press Conferences – Newsletters, Annual Reports – Exhibitions and Trade Fairs.

UNIT IV

PR Programmes and Campaigns: Planning, promoting and evaluating.

UNIT V

PR Professional Organizations – New trends in PR – Ethics of Public relations.

REFERENCE BOOKS:

1. Cutlip & Centre, Effective Public Relations".
2. Reddy, Narasimha, "How to be a Good PRO".
3. Lesley Philip, "Public Relations Handbook", Lesley's Public Relations Handbook".
4. Black, Sam, :Practical Public Relations".
5. Robert L Dilenschneider,"The Dartnell Public Relations Handbook".
6. Robert D Ross, "The Management of Public Relations".
7. Philip J Kitchen, "Public Relations – Principles & Practice".
8. Sam Black, "Practical Public Relations".

Paper 2.3: DEVELOPMENT COMMUNICATION

UNIT I

Development: Concept – Dynamics of development – Development issues – Development indicators – Dysfunctions of development – Communication perspective on development – Role of Communication in Development: Development motivation, Development participation – Approaches to Development Communication.

UNIT II

Dominant paradigm of Development: Evolutionary model – Psychological variable model – Cultural factors model – Economic growth model – Industrialization approach – The critique of the above models.

UNIT III

Communication approaches of Dominant paradigm: Powerful effects model of mass media – Diffusion of innovations – Mass media in modernization – The critique of above models.

UNIT IV

Alternative paradigms of Development and development communication: Basic needs programme – Integrated Development – Intermediate technology – Self Development – Self reliance – Popular participation – New communication technologies – Traditional media use – Development support communication.

UNIT V

Historical analysis of India's Development: Gandhi Metha model, Elawath experiment, Nilokheri experiment, Five Year Plans, Models of Experimental Project: Rural Television – SITE, Kheda, Communications Project, Radio Rural Forum.

REFERENCE BOOKS:

5. Wilhur Schram, "Mass Media and National Development".
6. S.C. Dube, India's Changing Vilalges: Human Factors in Community Development".
7. Y.V. Lakshman Rao, "Communication and Development".
8. Uma Narula, "Development communication: Theory and Practice.
9. Everett Rogers, "Diffusion of Innovations".

Paper 2.4: MASS COMMUNICATION RESEARCH

UNIT I

What is Mass Communication Research? Need for research – Phases of development of Mass Media research – Status of Mass Media Research in India.

UNIT II

Research methods/designs: Exploratory Research – Descriptive research – Focus group and case studies – Survey research – Content analysis – Experimental Research: Laboratory and Field – Historical research – Legal research.

UNIT III

Research Procedure: Systematic steps in doing a research study – Statements of Research topic – Defining objectives – Formulation of Hypotheses – Operational definition of terms – Decision on research design and sampling procedure – Construction of data collection tools – Planning for data analysis and reporting.

UNIT IV

Mass media Research: Print media research – Radio research – Television research – Advertising research – Public Relations research – Media effects research.

UNIT V

Data Collection Techniques: Questionnaire design – Interview techniques – Observation – Content analysis procedure – Projective techniques – Sampling design – Physiological techniques.

UNIT VI

Data Analysis and Report Writing – Quantification of data collection – Tabulation – Selection of appropriate statistical tools – Analysis and interpretation of data – Report writing.

REFERENCE BOOKS:

2. Roger D Wimmer & Joseph R Dominick, "Mass Media Research –An Introduction".
3. Shearon Lowery and Melvin L DeFleur, "Milestones in Mass Communication Research.
4. Ralph Nafziger and David M White, "Introduction to Mass Communication Research.

Paper 2.5: WRITING AND REPORTING FOR NEW MEDIA

UNIT I

Introduction to Computers – Role of Information Technology ub Communication – Why computers – Characteristics of computers i/o systems – Operating system – DOS, Windows.

UNIT II

Introduction to Word Processing Software – MS Word – Excel – Access – Powerpoint – Adobe Photoshop – Growth of computer networks and World Wide Web – Administration – Commerce and publishing through new media – Media convergence.

UNIT III

Introduction to Websites and Web pages – Features of a typical website – Tools for new media – Hardware and Software – Glossary of terms associated with websites.

UNIT IV

E-Mail and Internet – Network protocols – Mailing lists – Search engines, browses, plug-ins and forts, news groups – Internet relay chart, teleconferencing, video conferencing – Accessing references on the Internet.

UNIT V

Conventions of writing for new media, styles, presentation, newsfeeds, hyperlinks, VRLs, linkage to original sources of news and background information, e-zines.

UNIT VI

Public relations and advertisement through new media – Working with graphics, images, streaming audio and video, ethical issues, regulation mechanisms, influences on social behavior, future trends.

REFERENCE BOOKS:

1. James L Peterson & Abraham Silberschatz, *Operating System Concepts*, Addision Wesley (1985).
2. Andrew S Tanenbaum, *Operating Systems Design and Implementation*, Prentice Hall (1987).
3. Stuart E Madnick & John J Donovan, *Operating Systems*, McGraw-Hill, ISE (1968).
4. Per Brinch Hansen, *Operating System Principles*, Prentice-Hall of India (1973).
5. Bob Breedlove et-al, *Web Programming Unleased*, Sams Net Publ., 1996.
6. Young, *Internet*, Millennium edition, Complete reference, TMH, 1998.

Course : **M.A. (Child Care and Education)**
Mode : Distance Education
Duration : Two years
Eligibility : Any degree from a recognised University
Medium : English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
I YEAR		
1.1	Principles of Child Development	100
1.2	Child Health and Nutrition	100
1.3	Education of the Young Child	100
1.4	Child in the Emerging Indian Society	100
1.5	Pre-School Educational Activities	100
II YEAR		
2.1	Rights of the Child and Child Care in India	100
2.2	Education of the Children with Special Needs	100
2.3	Planning and Organisation of Institutions of Young Children	100
2.4	Research in Child Studies	100
2.5	Pre-School Home Community Linkages	100
	Total	**1000**

Paper 1.1: PRINCIPLES OF CHILD DEVELOPMENT

UNIT I

Meaning of growth – Stages of development – Areas of development – Importance of the study of development – General principle of development – Genetic factors in development – Importance of environmental factors in development – Maturation and learning.

UNIT II

Physical growth during infancy, toddlerhood and early childhood – Development of different parts of the body – height, weight, hearing speech and sight – Development of gross motor skills and fine motor skills – Promoting motor skills.

UNIT III

Cognitive development – Meaning of cognition – Piaget's theory with special reference to development upto the period of early childhood – Acquisition of concept – A few cognitive abilities of the pre-school child.

UNIT IV

Language development – Learning to speak – Factors influencing language development – The first sentences – Individual difference in acquisition of language – Development of vocabulary of language rules – Promoting language skills – Speech problems in childhood.

UNIT V

Socio-emotional development – Interacting with the infant and children – Development of attachment – Learning to relate – Trust – Emotional expressions of children – Love, fear, rivalry, anger, frustrandrums, enuresis, withdrawn behaviour, aggression and stealing ways of handling.

REFERENCES

1. Erikson H Erick, "Childhood and Society", Penguin, 1969.
2. George G Thompson, "Child Psychology", The Times of India, 1965.
3. Issacc Susan, "The Nursery Years", Routledge, London, 1956.
4. Craig Grace J, and Marguerite Kermis, "Children Today", Allyn and Bacon, New Jersey, 1995.
5. Gordon Ira J, "Human Development", D.B.Taraporevala, Mumbai, 1970.
6. Todd V E and Helers Heffernon, "The Years Before School", Macmillan, London, 1970.
7. Sharma Adarsh, "Social and Personal Development of the Young Child", ECEIM Services, 1996.
8. Paul Henry Mussen, et-al, "Child Development and Personality", Harper & Row, New York, 1977.
9. Smart and Smart, "Readings in Child Development and Relationships", High and Hize Publ, New Delhi, 1972.

Paper 1.2: CHILD HEALTH AND NUTRITION

UNIT I

The concept of nutrition – Interrelation between nutrition and health – Indications of health – Health situation in India – National Health Policy – Health care services – Health care delivery system.

UNIT II

Nutritional requirements of children of different age groups – Infancy and early childhood and middle childhood – Planning balanced diets for children of different age groups – Balanced diet for pregnant and lactating women.

UNIT III

Major deficiency diseases of children and their symptoms – Protein, energy, malnutrition and exophthalmia – Nature, clinical features, causes, treatment and prevention – Other nutritional problems – 'B' complex deficiency – Vitamin 'D' deficiency – Vitamin 'C' deficiency – Common childhood ailments – Common childhood accidents and first aid.

UNIT IV

Major nutrition programmes – Nutrient deficiency control programmes such as national prophylaxis programmes for prevention of blindness due to vitamin 'A' deficiency – National nutrition anemia control programme and National iodine deficiency disorders control programme – Food supplementation programme such as Integrated Child Development Services (ICDS), Mid Day Meal programme (MDM), Special Nutrition Programme (SNP) and Balwadi Nutrition Programme (BNP).

UNIT V

Major health programmes – Health programmes such as National Immunisation programmes – National Family Welfare programme – National programme for Control of Blindness – National Mental Health Programme – Child Survival and Safe Motherhood programme – Assessment of nutrition status – Methods such as anthropometric measurements, diet survey, growth monitoring – Personal hygiene as an essential factor for health of the children.

REFERENCES

1. Ali Mohamad: "Food and Nutrition in India", K.B. Publications, New Delhi.
2. "National Seminar on Nutrition Education", NCERT, 1975.
3. Rirchie A S Jean, "Learning Better Nutrition", Raner, Italy, 1967.
4. Holmes C Alan, "Visual Aids in Nutrition Education", FAO, Rome, 1969.
5. Fee, "A Handbook for Nutrition Trainers of Anganwadi Worker", NIPCCD, 1994.
6. Brakhane Jeanmette, Robert E Rockwelt, "Food, Nutrition and the Young Child", Missowri, St. Louis, 1985.
7. Cameron Margaret & Hotwander Yugne, "Manual on Feeding Infants and Young Children", UNICEF, New York.

Paper 1.3: EDUCATION OF THE YOUNG CHILD

UNIT I

Early childhood care and education – Its scope – Rationale – Theoretical orientations in early childhood education contributions of Rousseau, Froebel, Montessori, Tagore, Tarabai Modak and Anutai Wagh – Head Start Programme – The system of pre-basic education of Gandhi.

UNIT II

Challenges of Indian education at preprimary and primary education – Equalisation of educational opportunities – The problem of wastage and stagnation – Education of the girl child – Pre-school education in strengthening the primary education. Recommendations of the National Policy on Education (1986) on Early childhood care and Education at Elementary education.

UNIT III

Financing of education of young children grant-in-aid for creches – National Creche Fund – Sources of finance – Policies and programmes of the Centre and State for the five year plans – Rules of recognition and grant-in-aid Chittibabu Committee Report on Code of Regulations for Nursery and Primary Schools and on the study of Tamil Schools – Minimum specification for pre-schools.

UNIT IV

Educating the young child – Learning through play – Activities for promoting cognitive and language skills – Activities for sensory exploration – Play activities for pre-reading and pre-writing skills – Music and movement.

UNIT V

Basic features of Minimum Level of hearing (MLL) – MLL in language – MLL in mathematics – MLL in environmental studies – Non-cognitive areas of learning – Evaluation as an essential input to primary education – Curricula for pre-primary and primary education.

REFERENCES

1. Amberg Lemore, "Raising Children Bilingually", Multilingual Malters Ltd. 1987.
2. Annie I Butler, "Early Childhood Education", D.Van Hogland, New York, 1974.
3. Bernard Spodek, "Early Childhood Education", Prentice Hall, New Jersey, 1976.
4. Wagh Anutai, "Parent and Community", ECEIM, 1979.
5. Sharma Adarsh, "Social and Personal Development of the Young Children", ECEIM, 1987.
6. Taneja V R, "Education: Thought and Practice", Delhi University Publishers.
7. Rusk Robert, "The Doctrine of Great Educators", McGraw Hill, 1964.
8. Sylvia Krown, "Threes and Fours go to School", Prentice Hall, New Jersey, 1974.
9. Report of the National Education Commission (1964-66), MHRD, New Delhi.

Paper 1.4: CHILD IN THE EMERGING INDIAN SOCIETY

UNIT I

The Child and the structural aspect of the Indian family – Type of family – 'Significant others' in the family – Family size – Dynamics of social interaction – Role of family in socialisation of the child – Their stages in child socialisation – Internalization – Role expectations of a child – Sex stereotyping of role – Changing concept of childhood – Western values and ideas.

UNIT II

Social agencies of child development – Stages of parenting – Patterns of parenting – Democratic, autocratic, authoritarian – Parent-child interaction – Oedipus complex and electra complex in children – The neglected child – After care homes.

UNIT III

Religious institutions – Roles of church, mosque, temple – The process of social weaning – Schools, textbooks – The pre-school, play group, mass media – Television – Children's styles of life – Community and caste.

UNIT IV

Social practices, customs, rituals and child care – Concept of childhood – Sex determination – Practice of female infanticide and foeticide – Causes and consequences – Schemes of the Government of Tamil Nadu for the girl child – Cradle baby scheme – Sex ratio – The fertility rates by sex – Late marriages – IMR by sex.

UNIT V

Indian Society – Characteristics – Village community, caste system, joint family – Plurality of culture – Unity in diversity – Urban way of living – Housing – Crime-migration and children – Employment pressure – Western values and ideas – Religious, linguistic, ethnic, racial groups – Their importance in the context of child development.

REFERENCES

1. Bosard James H S and Eleanor Stoker Boll, "The Sociology of Child Development", 4th ed, Harper & Row, London, 1966.
2. Berk Laura E, "Infants, Children and Adolescents", 2nd ed, Allyn and Bacon, Singapore, 1966.
3. Medinnus, Gene R and Ronald C Johnson, "Child and Adolescent Psychology", John Wiley, New York, 1976.
4. Bijou Sidney W, "The Basic Stage of Early Childhood", Prentice Hall, New Jersey, 1976.
5. Rajammal P Devadas and N Jaya, "A Textbook on Child Development", Macmillan, Chennai, 1984.
6. Craig Grace J and Marguerite Kermis, "Children Today", Prentice Hall, New Jersey, 1995.

Paper 1.5: PRE-SCHOOL EDUCATIONAL ACTIVITIES

UNIT I

Objectives of Pre-School Education – Educational Activities (E.A) - Meaning – Importance – The Pre-primary school as a centre for play, stimulation and developmental activities – Classification of Educational Activities based on age level of the child, domains of development, grouping of children, based on level of teacher supervision and place of activity.

UNIT II

Educational activities for gross muscle co-ordination among toddlers and preschoolers – E.A. to promote sensory – motor and fine-muscle coordination – Indoor and outdoor equipments to promote gross muscle and five muscle coordination.

UNIT III

Pre-reading and Pre-writing activities to promote language development - Stories, Rhymes, Music, and Creative Drama for the young child – suitability of themes for young children – Activities for creative self-expression.

UNIT IV

Educational activities to promote cognitive abilities for toddlers and preschoolers – Activities for observation, grouping seriation / sequencing – enhancing memory – simple problem solving – Introducing Pre-number concepts – Providing simple science experience activities.

Educational activities for Socio – emotional development – Role Play – Imaginative Play Activities – Drama – Activities for Channalisation of emotions.

UNIT 5

Planning and Organising Educational Activities – Effective Use of Indoor and Outdoor space – Improvisation using rural and urban waste materials – Organising Simple Traditional Games for young Children – Monitoring childrens' progress in E.A.

REFERENCES

1. 'Activity-Based Curriculum for Pre-School Education', Indian Association for Pre-School Education, 2000.
2. 'Stimulation Activities for Young Children', Rajalakshmi Muralidharan and Shobika Asthana, New Delhi : NCERT, 1999.
3. 'Strategies for Effective Pre-School Education', Indian Association for Pre-School Education, 1999.
4. 'A Textbook on Child Development', Rajammal P. Devadas and N. Jaya, Coimbatore : Macmillan India Ltd., 1991.
5. 'gs;sp Kd; gUtf; fy;tp', Dr. G. Pankajam, Gandhigram : Lakshmi Seva Sangam, 1988.
6. Publications of IAPE on Play, Music, Drama and other activities for the Pre-Schoolers.

Paper 2.1: RIGHTS OF THE CHILD AND CHILD CARE IN INDIA

UNIT I

Profile of children of the world – Convention of the rights of the child – Four sets of basic rights – Major goals for child survival, development and protection – Measures to promote children's rights – goals for the year 2000 fixed by the Government of India.

UNIT II

Protecting the basic rights of the children – Providing safe drinking water, nutritious food and health services – Protecting children from exploitation and abuse – Child labour as exploitation of children – Legal protection for child labour – Provision of children's homes and adoption facilities for street children and orphans.

UNIT III

Concept of child care – Need for child care – Types of child care – A few innovative approaches to child care as a support service for working women – Social and economic justification for early childhood care and education.

UNIT IV

Family and community participation in child care – Family day – Care center in Mumbai – Mobile crèches in Delhi and Mumbai for construction worker's children – Community pre-schools for the rural poor, the Tamilnadu Experiments Palmyrah Workers Development Society, Martandom – Child care in other countries – Parent run daycare centers of France – The Beta Israel Project.

UNIT V

Child Welfare Services – State level services – Balwadi – Anganwadi – Role of organisations providing child welfare services in India – NCERT, ICCW, CSWB, NIPCCD.

REFERENCES

1. Chhabra Rami Petterson Willy, "The Situation of Children in India", 1979.
2. Erikson H Erick, "Childhood and Society", Pergium Dorks Ltd, 1969.
3. Slackotane Fesser, "Education and Daycare for Young Children in Need", The American International, Geneva, 1985.
4. De'Souza Alfred, "Children in India: Critical Issues in Human Development", 1979.
5. Jameson Kenneth, "Pre-school and Infant Studies", Vista, London, 1972.
6. "Why Children Matter", Bernard Van Leer Foundation (BVLF), 1994.
7. Salach Simcha, "In First Person Plural", BVLF, 1993.
8. Ruthpaz, "Paths to Empowerment", BVLF, 1990.

Paper 2.2: EDUCATION OF CHILDREN WITH SPECIFIC NEEDS

UNIT I

Special Children – Meaning – Categories – Handicapped and the gifted – Physically handicapped – Vision, speech and hearing impaired – Mentally retarded – Gifted and talented – Culturally disadvantaged – Socially disadvantaged – Their needs and education.

UNIT II

Visually handicapped – Categories and characteristics – Identification, correction and medical treatment – Education of the visually handicapped – Instructional materials.

UNIT III

Speech and hearing impaired – Nature – Types – Causes – Identification of problems – Educational provisions for the physically handicapped in India – The role of All India Institute of Speech and Hearing Handicapped (AIISH).

UNIT IV

Mentally retarded – Degrees of mental retardation – Identifying the mentally retarded – Causes – Working with a mentally disabled child.

UNIT V

Gifted children – Concept – Characteristics – Needs – Identification of gifted children – Creativity – Meaning – Identification – Promoting education of the gifted and creative children.

REFERENCES

1. Daniel P Hallahan and James M Kauffman, "Exceptional Children: Introduction to Special Education", Prentice Hall, London, 1991.
2. Blake K A, "The Mentally Retarded: An Education Psychology", Prentice Hall, New Delhi, 1976.
3. Indira Swaminathan, "Developing Creativity in Young Children".
4. Jangira, N.K. et-al, "Source Book for Teaching Visually Disabled Children", NCERT, New Delhi, 1988.
5. Uday Shanker, "Exceptional Children", Sterling Publ. New Delhi, 1984.
6. Mani MNG, "Techniques of Teaching Blind Children", Sterling, New Delhi.
7. Garret J F, "Psychological Aspects of Physical Disability", Washington, 1952.

Paper 2.3: PLANNING AND ORGANISATION OF INSTITUTIONS OF YOUNG CHILDREN

UNIT I

Physical set up of the day center, pre-school and primary school – Building – Site – Location – Ventilation – Light arrangement – Floor and space – School garden –Playground – Provision of safe drinking water and sanitary conditions.

UNIT II

Guiding principles for programme planning – Setting up and running a child care centre – Planning of activities and programmes of the preschool and primary school – Short-term and Long-term – Daily schedule – Weekly planning – Planning for the term and yearly planning – Time-table and Calender.

UNIT III

Furniture, equipment and appliances – Criteria for selection and purchase – Their functional utility and maintenance – Indoor and outdoor equipments – Equipments suitable for different age groups.

UNIT IV

Records to be maintained in a crèche, pre-school – Importance, types and maintenance – Admission register, fee register, library register, stock book, school cash book, cumulative records.

UNIT V

Parent education programme – Programme for the parents and community – Purpose – Organisation – Motivation of the community – Methods of educating the parents in the community – Securing cooperation through strategies such as home visits, interviews, group discussion, parent-teacher meetings, exhibitions, lectures by specialists, pamphlets, booklets, posters, newsletter, picnics – Parental involvement of the school and the community in programmes for the children – 'Annaiar Kazhagam' (Mother's Association).

REFERENCES

1. Wagh Anutai, "Parent and Community", ECEIM, 1979.
2. Allen of Hurtwood, "Planning for Play", Thames & Hudson, London, 1971.
3. Herron R E, "Children's Play", Johnwiley, London, 1971.
4. Betty L Broma, "Early Years in Childhood Education", Rand McNally, Chicago, 1978.
5. Annie L Butler, "Early Childhood Education", D.Van Hogland, New York, 1974.
6. Brophy J E et-al, "Teaching in the Pre-school", Harper and Row, New York, 1975
7. Golby Greenward and West, "Curriculum Design", ELBS, London, 1979.
8. Rajalakshmi Muralidharan and Uma Banaerjee, "A Guide for Nursery School Teacher", NCERT Publication.

Paper 2.4: RESEARCH IN CHILD STUDIES

UNIT I

Concept of Research – Meaning – Importance – Characteristics – Need for research on children – Problems for research on children – Types of research (fundamental, applied and action) – Areas of research on child studies.

UNIT II

Steps in developing a research project – Selection of a research problem – Sources – Criteria for selection of the problem – Justifying the significance of the problem – The value of review of related literature – Hypothesis – Meaning – Formulating types – Sampling – Meaning – Need – Techniques.

UNIT III

Common methods used to study children – Systematic observation (naturalistic observation and structural observation) – Self reports (clinical interview, structural interview, questionnaires and psychological test) – Clinical method (case study) – Ethnography – Construction and standardization of research tools.

UNIT IV

General research designs – Co-relational designs – Experimental designs – Designs for development – The longitudinal design – The cross sectional design – Problems in conducting longitudinal and cross sectional research – Ethics in research on children – Guidelines for ethical research practice.

UNIT V

Analysis of research data and report writing – Qualitative data analysis – Descriptive and inferential statistics – Preparation and evaluation of research report – Writing of qualitative research report.

REFERENCES

1. Bhatia H R, “Understand your Children”.
2. Driscoll G, “How to Study the Behaviour of Children”.
3. Straney Ruth, “Introduction to Child Study”.
4. Slee Philip T, “Child Observation Skills”.
5. Thomson George G, “Child Psychology”, Surjeet Publ. Delhi, 1979.
6. Jor Bagh, “Study of the Young Child”, UNICEF, New Delhi.
7. Best John W, “Research in Education”, Prentice Hall, New Delhi, 1985.
8. Buch M B, “The Fifth Survey of Research in Education”, NCERT, New Delhi, 1996.

Paper 2.5: PRE-SCHOOL HOME COMMUNITY LINKAGES

UNIT I

Community – Meaning and scope – Types of communities – Pre-school as a part of the community – Home as a sub-system in the society – Child as a link between the home and the community – Linking objectives of pre-school education with the expectations of the parents, and the community.

UNIT II

The importance of partnership between the pre-school and the parents; and the link between the pre-school and the community – Communication as an essential component in establishing linkage – Hurdles in establishing the linkage – Ways to overcome barriers communication.

UNIT III

Strategies for enhancing pre-school-parent partnership – Ensuring involvement of rural and urban parents in the pre-school programme – Formal and informal strategies: Parent-teacher meetings, observing parents day, newsletters, circulars, bulletin boards; home visits and informal discussion, games with parents, simple celebration of birthdays, wedding anniversaries of the parents.

UNIT IV

Improving pre-school – Community linkages – Involving the community in planning, executing, monitoring and assessing the pre-school programme – Establishing linkages with nearby pre-schools – Peer supervision – Ways of obtaining services and financial assistance from the community.

UNIT V

The role of traditional and non-traditional media to reach the community – Folk media – Villupattu, street plays, oyilaattam, harikatha, puppet shows – Modern media – Mass media, radio, television, cinema, newspapers and magazines and posters – Their relative effectiveness in establishing the link.

UNIT VI

Planning and organising meetings of the pre-school staff with the parents and the community – Identifying the community leaders – Involving the village panchayat and local administration bodies in the development of the pre-school – Issues and agenda for discussion in these meetings – Organising festivals and celebration of important national days and religious festivals with the help of the community – The

role of service organisations like Rotary Clubs, Lions Clubs and Jaycees, strengthening the pre-school – Involving the rural and urban disadvantaged groups and educating them about the philosophy of the pre-school.

REFERENCES :

1. Wagh Anutai, 'Parent and Community', ECEIM, 1979.
2. G. Pankajam, 'Pre-school Education: Philosophy and Practice', Gandhigram Rural University Press, 1991.
3. IAPE Conference reports on Parents and Community Links with Pre-Schools.
4. Rajalakshmi Muralidharan and Uma Banerjee, 'A Guide for Nursery School Teachers', NCERT Publication.
5. Erickson H. Erick, 'Childhood and Society', Perguim Dorks Ltd., 1969.
6. Salach, Simcha, 'In First Person Plural', Bernard Van Leer Foundation, 1993.
7. Sarah Hamond Leeper et-al, 'Good Schools for Young Children', The Macmillan Company, London, 1968.
8. Sylvia Krown, 'Threes and Fours Go to School', Prentice-Hall Inc., New Jersey.
9. Venna Hildebrand, 'Introduction to Early Childhood Education', Macmillan Publishing Co. Inc., New York.

Course : **M.Sc. Mathematics**
Mode : Distance Education
Duration : Two Years
Eligibility : B.Sc. in Mathematics/Statistics/Applied Mathematics
Medium : English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
I YEAR		
1.1	Algebra	100
1.2	Real Analysis	100
1.3	Differential Equations and Numerical Methods	100
1.4	Operations Research	100
1.5	Mathematical Statistics	100
II YEAR		
2.1	Complex Analysis	100
2.2	Topology and Functional Analysis	100
2.3	Graph Theory	100
2.4	Programming in C / C ++	100
2.5	Discrete and Combinatorial Mathematics	100
	Total	**1000**

Paper 1.1: ALGEBRA

UNIT I

Groups – Subgroups – Normal subgroups – Isormorphism theorems – Permutation groups – Abelian groups – Automorphisms – Conjugate classes – Sylow's theorems – Direct products.

UNIT II

Rings – Ideals – Maximal, prime ideals – Integral domains – Euclidean domains – Unique factorisation domains.

UNIT III

Vector spaces, linear transformations – Canonical form, triangular form – Nilpotent transformation – Jordan form – Hermitian, unitary and normal transformations.

UNIT IV

Fields, extension fields, roots of polynomials – Splitting fields – Galois theory, finite fields.

TEXTBOOKS AND REFERENCES :

1. Herstein I N, *Topics in Algebra*, ed2, Vikas Publications.
2. John B Fraliegh, *A First Course in Abstract Algebra*, Addision Wesley.

Paper 1.2: REAL ANALYSIS

UNIT I

Open balls, Closed balls in R^n – Closed sets and adherent points – The Bolzano-Weierstrass theorem – The Cantor intersection theorem – The Heine-Borel covering theorem – Compactness in R^n, limits and continuity – Continuous functions, functions continuous on compact sets, Union continuity – Fixed point theorem for contractions.

UNIT II

Derivatives – The chain rule, functions with nonzero derivative, Zero derivatives and local extrema, Rolle's theorem, the Mean-value theorem for derivatives, intermediate value theorem for derivatives, Taylor's formula with remainder, Partial derivatives, Directional derivative, the Total derivative, the Inverse function theorem, the Implicit function theorem.

UNIT III

The Riemann-Stieltjes Integral – Definition and existence of the integral, properties of the integral, differentiation under integral sign, interchanging the order of integration – Sequence of functions, uniform convergence and Riemann-Stieltjes integration, uniform convergence and differentiation.

UNIT IV

Lebesque measure, Outer measure, Measurable sets and Lebesgue measure, Measurable functions, Egoroff's theorem, Lusin's theorem, the Lebesgue integral, Bounded convergence theorem, Fatou's lemma, Monotone convergence theorem, Lebesgue convergence theorem, Convergence in measure.

TEXTBOOKS AND REFERENCES :

1. Tom M Appostol, *Mathematical Analysis*, Addision Wesley, Narosa.
2. Walter Rudin, *Principles of Mathematical Analysis*, Mc-Graw Hill.
3. Royden, *Analysis*.

Paper 1.3: DIFFERENTIAL EQUATIONS AND NUMERICAL METHODS

UNIT I

Ordinary Differential Equations – Initial value problems for second order equations, a formula for the Wronskian, The use of a known solution to find another, Linear equations with variable coefficients, The method of undetermined coefficiens, The method of variation parameters, Power series solution – The Legendre equation, Bessel equation.

UNIT II

Partial Differential Equations – Linear equations of first order, Cauchy's method of characteristics, Charpit's method, Solutions satisfying given conditions, Jacobi's method, Second order equations, Equation with variable coefficients, Separation of variable, Laplace's equation, Boundary value problems, Wave equation, Elementary solution of one-dimensional wave equation.

UNIT III

Numerical Analysis – System of equations and unconstraint optimization – Steepest descent – Newton's method – Fixed point iteration and relaxation method – Uniform approximation by polynomials – Data fitting - Orthogonal polynomials – Least square approximation by polynomials.

UNIT IV

Numerical differentiation, integration, the solution of differential equations.

TEXTBOOKS AND REFERENCES :

1. Ian Sneddon, *Elements of Partial Differential Equations*, McGraw-Hill.
2. Coddington, *An Introduction to Ordinary Differential Equations*, PHI.
3. Simmons F, *Differential Equation with Applications*, TMH.
4. *Elementary Numerical Analysis: An Algorithmic Approach*, McGraw-Hill.

Paper 1.4: OPERATIONS RESEARCH

UNIT I

Linear programming – Simplex method – Dual simplex method – Revised simplex method – Sensitivity or postophmal analysis – Parametric linear programming – Integer programming.

UNIT II

Dynamic programming – Decisions under risk – Decisions under uncertainty – Game theory.

UNIT III

Project Scheduling by PERT-CPM, Inventory models – Types of inventory models – Deterministic models – Probabilistic models.

UNIT IV

Queueing theory – Queueing models (M/M/I): (GD/∞/∞), (M/M/I): (GD/N/∞), (M/M/C): (GD/∞/∞).

TEXTBOOKS AND REFERENCES :

1. Hamdyn A Taha,*Operations Research*, Macmillan.

Paper 1.5: MATHEMATICAL STATISTICS

UNIT I

Two dimensional and n-dimensional random variable, Marginal distribution, Distribution functions, Independent random variables, Conditional expectation, Principle of least squares, Discrete distributions, Continuous distributions, Beta and Gamma distributions, Generating functions, Convergence and Limit theorems.

UNIT II

Exact sampling distributions, t-distribution, Weak law of large numbers and Central limit theorem, Exact distribution of sample characteristics, Theory of estimation, Maximum likelihood estimation, Confidence intervals, Large sample confidence intervals.

UNIT III

Test of hypothesis, Composite hypothesis, Comparison of normal population, Large sample tests, Test of multinomial distribution.

UNIT IV

Statistical quality control and analysis of variance.

TEXTBOOKS AND REFERENCES :

1. Baisnal AP and Jas M, *Elements of Probability and Statistics*, Tata McGraw-Hill, New Delhi, 1993.
2. Gupta SC and Kapur VK, *Fundamentals of Applied Statistics*, Sultan Chand & Sons.

Paper 2.1: COMPLEX ANALYSIS

UNIT I

The geometric representation of a complex number – The spherical representation and stereographic projection – Analytic function – CR equations – Harmonic conjugate – To find an analytic function f(z)=u+iv if a harmonic function us is gien.

Power series – Radius of convergence – Power series represents an analytic function inside the circle of convergence – Abel's limit theorem.

Conformal mappings – Bilinear transformations – Fixed point of bilinear transformations – Cross ratio – Most general bilinear transformations which transforms unit disk onto the unit disk; half plane $\text{Im}(z) \geq 0$ onto the unit disk.

Transformations $w=z^n$, $w=z^{1/2}$, $w=e^z$, $w=1/z$, $w=\sin z$, $w=\tan z$, $w=(1/2)\,[z+(1/z)]$.

UNIT II

Complex integration – Cauchy's theorem for a rectangle – For a disk – The index of a point with respect to a closed curve – Cauchy's integral formula – Higher derivatives – Taylor's theorem – Zeros – The local mapping theorem – The maximum principle – Schwarz's lemma – Morera's theorem – Cauchy's estimate – Liouville's theorem – Fundamental theorem of algebra.

UNIT III

The Laurent series – Singularities – The residue theorem – The argument principle – Rouche's theorem – Evaluation of definite integrals.

Mittag – Leffler theorem – Entire functions – Canonical products – Genus – The gamma function – Legendre's duplication formula – Jensen's formula – Hadamard's theorem.

UNIT IV

Doubly periodic functions – Weierstrass $\wp$-function – First order differential equation for $w=\wp(z)$.

TEXTBOOKS AND REFERENCES :

1. Aholfors V, *Complex Analysis*.
2. Karunakaran V, *Complex Analysis*.
3. Sridharan N, *Introduction to Complex Analysis*.
4. Arumugam S, *Complex Analysis*.

Paper 2.2: TOPOLOGY AND FUNCTIONAL ANALYSIS

UNIT I

Topological spaces – Definition – Elementary concepts – Bases, sub-bases, product spaces – Compactness – Tchonoff's theorem – Compactness for metric spaces – Locally compact spaces.

UNIT II

Separation axioms – Uryshon's lemma – Tietze extension theorem – Urshon's imbedding theorem – Connected spaces – Components of a space – Totally disconnected spaces – Locally connected spaces – Locally compact Hausdorff's spaces – One point compactification.

UNIT III

Banach spaces – Bounded linear transformations – The Hahn-Banach theorem – The open mapping theorem – The closed graph theorem – The uniform boundedness theorem.

UNIT IV

Hilbert spaces – Schwartz inequality – The parallelogram law – Orthogonal complements – Orthonormal sets – Bessel's inequality – Equivalent conditions for complete orthonormal set – Conjugate space H^* - The adjoint of an operator – Self-adjoint operators – Normal unitary operators – Projections – Finite dimensional operator theory.

TEXTBOOKS AND REFERENCES :

1. Simmons G F, *Introduction to Topology and Modern Analysis*.

Paper 2.3: GRAPH THEORY

UNIT I

Graphs – Walk, path, cycle – Bipartite graphs – Trees – Cutest – Fundamental circuits – Spanning trees – Cayley's formula – Kruskal's algorithm.

UNIT II

Connectivity – Blocks – Euler tours – Hamiltonian cycles – Closure of a graph – Chavatal theorem for Non-Hamiltonian simple graphs.

UNIT III

Independent sets – Cliques – Ramsey's numbers – Vertex colouring – Brook's theorem – Hajo's conjecture – Chromatic polynomials.

UNIT IV

Planar graphs – Dual graphs – Euler's formula – The five colour theorem – Non-Hamiltonian planar graphs – Directed graphs – Networks of flows – Max-flow Min-cut theorem.

TEXTBOOKS AND REFERENCES :

1. Bondy and Murty, *Graph Theory and Its Applications*.
2. Balakrishnan R, *Graph Theory*.
3. Arumugam S, *Invitation to Graph Theory*.

Paper 2.4: PROGRAMMING IN C/C++

UNIT I

Introduction: A computer program – Programming languages – Compilers and interpreters – Why C/C++ - Function libraries – Object oriented programming – Steps in program development – Syntax of language and logic programming.

C/C++ Basics: Structure of a C program – Return () function – Comments in C and C++ - # include command – Characters, integers, decimal numbers – Keywords – Constants and variables and their declaration – Data types and functions – Literals.

UNIT II

Output and Input in C/C++: Puts() and putchar() functions – Control codes – Printf() function – Formatted output – Output in C++ - gets() and getchar() functions – Scanf() function – Input in C++ - Useful input functions.

Arithmetic Operations and Functions: Arithmetic operators – Integer division – Operators and data types – Extensions – Order of precedence – Counters, increment and assignment operators – Using functions – Local and global variables.

UNIT III

Control Structures: if and if …. else statements – Nested if statements – Relational operators – Logic operators – Switch command – for, do …. while, while loops – Nested do loops – Combining loop types – Using flags and break statement.

Arrays and Strings: Arrays – Definition, declaration, entering variables in manipulating arrays – Examining and passing an array – Strings – Comparing two strings – Determining string length – Assigning and combining strings – String arrays.

UNIT IV

Structures and Pointers: Structures – Definition – Assigning structure variable – Assigning initial values – Using a structure – Structure ways – Structure and functions – Understanding pointers – Pointers and functions.

File operations: Understanding files – Declaring a file – Opening a file – Closing a file – Input and output functions – Formatted input and output – Working with structures – Adding data to a file – Reading and printing a disk file.

TEXTBOOKS AND REFERENCES :

1. Allan R. Neibauer, *Your First C/C++ Program*.
2. Paul M. Chirian, *Programming in C++*.

Paper 2.5: DISCRETE AND COMBINATORIAL MATHEMATICS

UNIT I

Generating functions for combinations – Enumerators for permutations – Distributions of distinct objects into non-distinct cells – Partitions of integers – The Ferrers graph – Recurrence relations – Linear recurrence relations with constant coefficients – Non-linear difference equations – Recurrence relations with two indices.

UNIT II

The principle of inclusion and exclusion – Derangements – Permutations with restrictions on relative positions – Permutation with forfidden positions.

UNIT III

Polya's theory of counting – Equivalence classes under a permutation group – Polya's fundamental theorem – Generalization of Polya's theorem.

UNIT IV

Lattices and Boolean algebra – Lattices – Properties of lattices – Modular and distribution lattices – Boolean algebra – Boolean polynomials – Canonical forms – Karnaugh map – Simplification of logical functions using Karnaugh map – Switching circuits.

TEXTBOOKS AND REFERENCES :

1. Liu C L, *Introduction to Combinatorial Mathematics*, McGraw-Hill.
2. Venketraman M K, Sridharan N and Chandrasekaran N, *Discrete Mathematics*.

Course : **M.Sc. (Information Technology)**
Mode : Distance Education
Duration : Two years
Eligibility : Any bachelor degree from a recognised University
Medium : English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
I YEAR		
1.1	Principles of Information Technology	100
1.2	Operating System	100
1.3	Object Oriented Programming and C++	100
1.4	Data Structures and Algorithms	100
1.5	Object Oriented DBMS	100
1.6	Lab – I : C++	100
1.7	Lab – II : Data Structures	100
II YEAR		
2.1	Internet Programming and Web Design	100
2.2	Computer Networks	100
2.3	Software Engineering	100
2.4	Visual Programming	100
2.5	Multimedia Applications	100
2.6	Lab – III : Internet Programming	100
2.7	Lab – IV: Visual Programming	100
	Total	**1400**

Paper 1.1: PRINCIPLES OF INFORMATION TECHNOLOGY

UNIT I

An overview of the Revolution in Computers and Communications: From the analog to the digital age: The "New Story" of computers and communications – The six elements of a computer and communications system – Computer and communications technology combined: Connectivity and interactivity – Application Software: The four types of applications software – The user interface and other basic features – Word processing – Spreadsheets – Database software – Presentation graphics software – Communications software – Desktop accessories and personal information managers – Integrated software and suites – Groupware – Internet web browsers – Specialised software.

UNIT II

Communications: Starting along the information highway: The practical uses of communications and connectivity – Telephone related communications services – Video/voice communication: Video conferencing and picture phones – Online information services – The Internet – Shared resources: Workgroup computing, Electronic data interchange and Intranets.

UNIT III

Telecomputing and virtual offices – Using a microcomputer to communicate: Analog and Digital signals – Modems and Datacomm software, ISDN lines and Cable modems – Communication Channels: Communications networks – Local networks – Factors affecting data transmission – Cyberethics: Netiquette, Controversial material and censorship, and privacy issues.

UNIT IV

Introduction to C: Fundamentals of C Programming – C characters – Names or identifiers – Keywords – Sample C program – Arithmetic operations: Operators, Assignment, Hierarchy, Library functions – Characters and strings – Input/output streams, Program Control: Logical operators – IF and IF..ELSE constructions – Looping – Nested loops – Switch case construction – Bitwise operations – Structured programming.

UNIT V

Arrays: Vectors – One dimensional arrays – Vectors and pointers – Using vectors with functions – Multidimensional arrays – Multidimensional arrays and pointers – Strings – Structures, Pointers and Functions.

UNIT VI

Functions: Functions – Argument Passing: Pass-by-value, Pass-by-reference – Variables – Scope – Libraries – Recursion – Default Arguments – Overloaded functions – Pointers to functions – Macros and Inline functions – Modularization.

TEXT AND REFERENCE BOOKS:

1. Stacey C Sawyer, Brain K Williams, Sarah E Hutchinson, *Using Information Technology: A Practical Introduction to Computer and Communications*, Ed2, McGraw-Hill, Unit-I,II.
2. Byron Gottrifried, *Programming with C*, McGraw-Hill (1990).
3. J Hames O'Brien, *Introduction to Information System*.

Paper 1.2: OPERATING SYSTEMS

UNIT I

Introduction: What is an operating system – History of operating systems – Operating system concepts – System calls – Operating system structure.

UNIT II

Process Management: Introduction to processes – Interprocess communication: Race conditions – Critical sections – Mutual exclusion – Semaphores – Event counters – Monitors – Message passing – Process scheduling – Round robin scheduling – Priority scheduling – Multiple queues – Shortest job first – Policy driven scheduling – Two level scheduling.

UNIT III

Input/Output Management: I/O Devices – Device controllers – Goals of I/O software – Interrupt handlers – Device drivers – Device-independent I/O software – User-space I/O software – Deadlocks: Resources – Deadlock modeling – Detection and recovery – Deadlock prevention – Avoidance.

UNIT IV

Memory Management: Memory management without swapping or paging: Multiprogramming without swapping or paging – Multiprogramming and memory usage – Multiprogramming with fixed partitions.

UNIT V

Swapping: Multiprogramming with variable partitions – Memory management with Bit-maps, Linked-lists and Buddy system – Analysis of swapping systems – Virtual memory: Paging – Segmentation – Page replacement algorithms.

UNIT VI

File Management: File basics – Directories – Disk space management – File storage – Directory structure – Shared files – File system reliability – File system performance – File servers – Security – Protection mechanisms.

TEXT AND REFERENCE BOOKS:

1. James L Peterson & Abraham Silberschatz, *Operating System Concepts*, Addision Wesley (1985).
2. Andrew S Tanenbaum, *Operating Systems Design and Implementation*, Prentice Hall (1987).
3. Philippe A Janson, *Operating Systems Structures and Mechanisms*, Academic Press (1985).
4. Harvey M Deitel, *An Introduction to Operating Systems*, Addison Wesley (1984).
5. Stuart E Madnick & John J Donovan, *Operating Systems*, McGraw-Hill, ISE (1968).
6. Per Brinch Hansen, *Operating System Principles*, Prentice-Hall of India (1973).

Paper 1.3: OBJECT ORIENTED PROGRAMMING AND C++

UNIT I

Basics and Conventions – Evolution of Object Oriented Languages – Object Oriented Paradigm – Object Oriented Languages – Objects and Classes – Encapsulation and Abstraction – Inheritance and Polymorphism.

UNIT II

Moving to C++ - A better C – Using predefined objects – Streams – Controlling execution in C and C++ - Standard I/O – Programming using stream and standard I/O.

UNIT III

Creating classes with C++ - C++ operators and their uses – Creating functions – Unique features of C++ functions – The Class: Defining boundaries – Defining class member functions – Derived classes – Constructors and Destructors.

UNIT IV

Pointers – Using pointers and addresses – Variable pointers – Array pointers – The size of a pointer – Function Addresses – Examples of pointer use – Reference feature – Advantages and problems with reference.

UNIT V

Operator Functions – Overloading functions and operators – Syntax of operator overloading – Examples – Creating type conversion operators – Function overloading.

UNIT VI

Reusing Code in C++ : Reusing code with member objects – Reusing code with inheritance – Storing objects on disk – A list that can save and retrieve itself.

REFERENCE BOOKS:

1. Bruce Eckel, *Using C++*, Osborne McGraw-Hill (1989).
2. Kaare Christian, *The Microsoft Guide to C++ Programming*, Microsoft Press (1992).
3. Stroustrup, *The C++ Programming Language*, Galgotia Publications (1999).

Paper 1.4: DATA STRUCTURE AND ALGORITHMS

UNIT I

Introduction – Primitive data types – Algorithms – Complexity time and space.

UNIT II

Arrays – Storage structures – Arrays or structures – Stacks – Queues – Priority queues – Applications. Pointers linked allocations – Linear lists – Singly linked – Doubly linked – Circularly linked applications.

UNIT III

String manipulations – Representation – Pattern matching algorithms.

UNIT IV

Trees: Binary trees – Binary tree representations – Search trees – Trees and their applications – Binary operations – Graphs – Representations, traversals – Algorithms.

UNIT V

Sorting: Selection, Bubble, Merge, Heap, Quick, Radix, Tree sorting.

UNIT VI

Searching: Basic search techniques – Tree searching – General search trees – Hashing.

TEXT AND REFERENCE BOOKS:

1. Jean Paul Tremblay & Paul G Sorenson, *An Introduction to Data Structures with Applications*, McGraw-Hill, 1984.
2. Tannenbaum A M, Langsam Y & Augestein M J, *Data Structures Using C*, Prentice Hall, 1990.
3. Sara Base, *Computer Algorithms: Introduction to Design and Analysis*, Addison Wesley, 1989.
4. Ellis Horowitz & S Sahani, *Fundamentals of Computer Algorithms*, Galgotia Publ.

Paper 1.5: OBJECT ORIENTED DBMS

UNIT I

Introduction to Database Systems: File systems versus DBMS – Advantages of DBMS – Describing and storing data in DBMS – The relational model – Levels of abstraction in DMBS – Data independence – Queries in DBMS – Transaction management – Structure of DBMS.

UNIT II

The Entity-Relationship Model: Overview of database design – Entitles, Attributes and Entity Sets – Relationships and relationship sets – Additional features of the ER Model – Key constraints – Participation constraints – Week entities – Class hierarchies – Aggregation – Conceptual database design with the ER model.

UNIT III

SQL: The form of a basic SQL query – Union, Intersect and Except – Nested queries – Aggregate operators – Null values – Embedded SQL – Cursors – Dynamic SQL – ODBC and JDBC – Complex integrity constraints in SQL-92 – Triggers and active databases – Designing active database query by example (QBE): Basic QBE queries – Queries over multiple relations – Negation in the relation – Name column – Aggregates – The conditions box – Unnamed columns – Updates – Division and relational completeness.

UNIT IV

Database Design: Introduction to schema refinement – Functional dependencies – Normal forms – Boyce-Codd normal form – Third normal form – Decompositions – Lossless-Join Decomposition – Dependency-Preserving Decomposition – Decomposition into BCNF – Decomposition into 3NF – Other kinds of dependencies – Multivalued dependencies – Fourth normal form – Join dependencies – Fifth normal form – Inclusion dependencies. Physical Database Design and Tuning: Introduction to physical database design – Guidelines for index selection – Basic examples of index selection – Clustering and indexing – Co-clustering two relations – Indexes on Multiple-Attribute search keys – Overview of database tuning – Choices in tuning the conceptual schema.

UNIT V

Security: Introduction to database security – Access control – Discretionary access control – Mandatory access control – Additional issues related to security. Parallel and distributed databases: Architectures for parallel databases – Parallel query evaluation – Parallelizing individual operations – Parallel query optimization – Introduction to distributed databases – Distributed DBMS architectures – Storing data in a distributed DBMS – Distributed query processing.

UNIT VI

Internet Databases: The World Wide Web – Introduction to XML – XML DTDs – Domain – Specific DTDs – XML-QL: Querying SML Data. Object-Database Systems: Database design for an ORDBMS – Structured types and ADTs – Object identity – Extending the ER model – Using nested collections – The ODMG data model and ODL – OQL – RDBMS versus ORDBMS – OODBMS versus ORDBMS: Similarities – OODBMS versus ORDBMS: Differences.

TEXT AND REFERENCE BOOKS :

1. Raghu Ramakrishnan & Johannes Gehrke, *Database Management Systems*, 2nd edition, McGraw-Hill.
2. Silberschatz A, Korth H F & Sudarshan S, *Database systems Concepts*, 3rd edition, McGraw-Hill, 1997.
3. Eimasri R, Navathe S & Benjamin Cummings, *Fundamentals of Database Systems*.
4. Rob Coronel, *Database Systems Design: Implementation and Management*, 4th edn.
5. David M Kroenke, *Database Processing Fundamentals: Design and Implementation*, 7th edition.

Paper 2.1: INTERNET PROGRAMMING AND WEB DESIGN

UNIT I

Foundations for Internet Programming: An overview of internet programming – WWW design issues – Security and Encryption – Developing Intranet applications.

UNIT II

Internet Programming Languages: Java – Java in Windows – CGI – Perl – Microsoft Internet implementation.

UNIT III

Internet Scripting Languages: Java Script – VB Script – Other Scripting languages.

UNIT IV

Internet Markup Languages: HTML – SGML – Netscape extensions – Microsoft internet explorer – Only HTML tags – Shockwave and Lingo.

UNIT V

ActiveX Controls: Creating an ActiveX control to activate a Web Page – VDO Live Technology – Creating Netscape Navigator Plug-ins – Pulling web information – Creating a custom integrated application with multiple protocols.

UNIT VI

Web Graphics: A graphic view of web – Essay web graphics – Images and Hyperlinks – Adding graphics to web pages – Site and page design – Framing your graphics – Dynamic graphics – Animation.

REFERENCE BOOKS :

1. Bob Breedlove et-al, *Web Programming Unleased*, Sams Net Publ., 1996.
2. Ron Wodaski, *Web Graphics Bible*, Comdex Computer Publ., 1997.
3. Young, *Internet*, Millennium edition, Complete reference, TMH, 1998.
4. Powerll, *HTML: The Complete Reference*, Tata McGraw Hill, 1998.

Paper 2.2: COMPUTER NETWORKS

UNIT I

Introduction: Uses of computer networks – Network hardware and network software – Reference models – Example networks – Network standardisation.

UNIT II

Physical Layer: Transmission media – Telephone system – ISDN – Broadband and Narrowband ISDN – ISDN and ATM – Communication Satellites.

UNIT III

Data Link Layer: Design issues – Error detection and correcting codes – Elementary data link protocols – Sliding window protocols – Protocol Specification and Verification: Finite State models – Petri Net models – Example Dlink Protocols: HDLC – SLIP – PPP – Media Access Sublayer: Multiple access protocols – ALOHA – Carrier sense multiple access protocols – Collision free protocols.

UNIT IV

Network Layer: Design issues – Routing algorithms – Congestion control algorithms – Internet working: Tunneling – Fragmentation – Firewalls – Network layer in the internet – IP – Subnets – Internet Control Protocols: Address resolution protocol – ICMP – RARP – Internet multicasting – Network Layer in ATM Networks: Cell format – Connection setup – Routing and switching – Services categories – ATM LANs.

UNIT V

Transport Layer: Transport service – Elements of Transport Protocols: Addressing – Flow control and buffering – Multiplexing – Crash recovery – Performance issues – Measuring network performance – Internet transport protocols – TCP – UDP – Protocols for Gigabit networks.

UNIT VI

Application Layer: Network security – Cryptography – Secret and public key algorithms – DNS – SNMP – Electronic Mail – Electronic Mail privacy – World Wide Web: Client side – Server side – Multimedia – Audio – Video – Data Compression – JPEG, MPEG Standards.

TEXT AND REFERENCE BOOKS:

Andrew S Tanenbaum, *Computer Networks*, 3rd edition, Prentice Hall of India.

Uless Black, *Computer Networks*, Prentice Hall of India.

Paper 2.3: SOFTWARE ENGINEERING

UNIT I

The Evolving role of Software – Process methods and tools – Software process models – Linear sequential model – Prototyping model – Real model – Evolutionary software process model – Formal methods model – Fourth generation techniques – Project management concepts – Software process and project metric.

UNIT II

Software Project Planning – Observation on estimating software Scope, Resources, Project estimation, Decomposition techniques, Empirical estimation models – The Make Busy divisions – Risk management – Software risk identification – Risk projection, Risk mitigation – Monitoring and management.

UNIT III

Project Scheduling and Tracking – Basic concepts – Defining a task set for the software project – Scheduling plan – Software quality assurance – Quality concepts and assurance – Software reliability – ISO 9000 Quality standards – Software configuration management – Software reviews – Formal technical reviews – Statistical quality assurance.

UNIT IV

System Engineering: System engineering hierarchy – Analysis concepts and principles – Requirements analysis – Communication techniques – Analysis, principles – Software prototyping – Specification modeling and information flow – Behavioural modeling – Mechanics of structured analysis – Design concepts and principles – Design process – Principles – Concepts – Effective modular design.

UNIT V

Design Methods: Architectural design – Data design – Architectural design and process – Transform mapping design – Post processing and optimization interface design – Human computer interface design.

UNIT VI

Software testing methods – Fundamentals – Test case design – White box testing – Basis path testing – Control structure testing – Black box testing – Testing for specialized environment – Testing strategies – Unit testing – Integration – Validation – System testing – Art of debugging.

TEXT AND REFERENCE BOOKS:

1. Roger S Prssman, *Software Engineering: A Practitioner's Approach*, McGraw Hill (2000).
2. Pankaj Jaiote, *An Integrated Approach to Software Engineering*, Narose Publishing House (1991).
3. Richard Fairlay, *Software Engineering Concepts*, McGraw-Hill (1985).

Paper 2.4: VISUAL PROGRAMMING

UNIT I

Windows Programming: Conceptual comparison of traditional programming paradigms – Overview of windows programming – Data types – Resources.

UNIT II

Windows messages – Device contexts – Document interfaces – Dynamic linking libraries – Software Development Kit (SDK) tools – Context help.

UNIT III

Visual Basic Programming: Introduction – Forms – Variables, Types – Properties – Decision-making – Looping – Modules – Procedures – Functions.

UNIT IV

Tool Box Controls – Menus – Grid controls – Dialog boxes – Database manager – Data control – Recordset objects.

UNIT V

Visual C++ Programming: Objects – Classes – VC++ components – Resources – Event handling – Menus – Dialog boxes – Importing VBX controls – Files – MFC file handling – Document view architecture – Serialization – Multiple Document Interface (MDI) – Splitter windows.

UNIT VI

Exception Handling – Debugging – Object Linking and Embedding (OLE) – Database Application – DLL – ODBC.

TEXT AND REFERENCE BOOKS :

1. Charles Petzold, *Windows Programming*, Microsoft Press, 1992.
2. Garry Cornell, *Visual Basic 6 From the Ground up*, Tata McGraw Hill, 1999.
3. Steven Holzner, *Visual C++ Programming*, 2nd edition, PHI Publishers, 1997.
4. David Kruglinski J, *Inside Visual C++*, Microsoft Press, 1993.
5. Mueller, *VC++ 5 From the Group up*, TMH, 1997.
6. Viktor Toth, *Visual C++ 5 Unleashed*, 2nd edition, Tech Media, 1997.

Paper 2.5: MULTIMEDIA AND APPLICATIONS

UNIT I

Multimedia in Use and Technology: Introducing multimedia – Multimedia definition – Need, benefits and problems – System components – Multimedia platforms – Development tools; Types – Cross platform compatibility – Commercial tools – Standards.

UNIT II

Media Types: Non-temporal – Text, image, graphics – Temporal – Analog, digital audio/video, music, animation, other media types – Extended images, digital ink, speech audio.

UNIT III

Digital Video and Image Compression: Evaluating a compression system – Redundancy and visibility – Video compression techniques – Image compression standards – JPEG, MPEG, DV1.

UNIT IV

Object Oriented Multimedia: Objects, Classes and related items – Multimedia Frameworks: Overview, Media classes, Transform classes, Format classes, Component classes.

UNIT V

Multimedia Environments: The CD family, CD-i – Overview – Media types – Media organization – Architecture and operations, Applications: Media in real world – Multimedia on networks – Training and education.

TEXT AND REFERENCE BOOKS :

1. Juidth Jeffcoate, *Multimedia in Practice: Technoloy and Application*, Chapters 1, 2, 3, 12, 13, Prentice-Hall, 1995.
2. Simon J Gibbs and Dionysion C Tsichrikzis, *Multimedia Programming*, Chapters 2, 3, 4, 5, Addison Wesly, 1994.
3. John F Koegel Buford, *Multimedia Systems*, Addison Wesley, 1994.
4. Walter Worth John A, *Multimedia Technology and Applications*, Ellis Horowood Ltd, 1991.
5. Arch C Luther, *Designing Interactive Multimedia*, Bantam Books, 1992.

M.Sc. (IT) I Year

Practical: Lab-I: C++

SYLLABUS : C++ Programming using Standard I/O statements, Control statements, strings, arrays, structures, pointers and files.

Object Oriented Programming using

Class and objects, constructors and destructors
Online, friend and virtual functions
Overloading - functions and operators
Inheritance and Templates

TOTAL MARKS : 100 (1 or 2 PROBLEMS are TO BE SOLVED IN UNIVERSITY PRACTICAL EXAMINATION)

BREAK-UP OF MARK:

RECORD NOTE BOOK	: 10
ALGORITHM AND FLOWCHART	: 10
PROGRAM	: 50
DEBUGGING	: 10
EXECUTION	: 10
RESULT	: 10

MODEL PROBLEMS

1. Write a C++ program to reverse the sentence and find the given sentence is palindrome or not.

2. Write a temperature conversion program that gives the user the option of converting fahrenheit to celcius or celcius to fahrenheit. Then carry out the conversion. Use floating point numbers.

3. Create a class called TIME that has integer data elements for hours, minutes, seconds. The constructors should initialize these data elements to specified value, if given, and otherwise to 0. A member function should display it, in

11:50:45 format. The final member function should add two objects of type Time passed as arguments.

4. Using operator overloading, write a C++ program to find the different and total length of given two various tubes specified in meters and centimeters.

5. Assumes you want to generate a table of multiples of any given number. Write a program that allows the user to enter the number, and then generates the table, formatting it into ten columns and 20 lines.

6. Write a program to process students marks with the help of classes. The class has private variables, for name, mark1, mark2, mark3. It has two member functions - getdata()- to get input. - result() - to print the results. All subjects mark must be >= 50 for Pass otherwise Fail

7. Using dynamic constructors write a C++ program to concatenate two given strings.

8. Create a class Employee that contains a Employee number, Employee name and address. Write a Menu driven C++ program to get the 'n' number of employee details and display all details in employee namewise sorted order.

9. Using Pointers create a class and write a program to get the n names and display them in sorted order.

10. Create a class DONOR that contains donor number, donor name, age, address, sex, blood group.
    Write a Menu driven C++ program to display the number, name and address of the donors for the following categories:
    (i) blood donors having the blood group O+
    (ii) blood donors in the age group between 16 to 25
    (iii) female donors having blood group A in the age between 19 and 24.

11. Write a menu driven C++ program to add and subtract given two matrices of order m x n defined in class, using operator overloading.

12. 12. Create a class called Employee that contains Employee number, employee name, designation, basic pay, deductions(LIC,PF). Include a member function to getdata from user for 'n' employees. Write a C++ program to prepare the payslips for 'n' number of employees using the following details:

D.A = 40% of basicpay
H.R.A = 25% of Basicpay
Gpay = Basicpay+D.A+H.R.A
Npay = Gpay-deductions

The Result of Problem is in given format:

Emp.no	Emp.name	Basic	D.A	HRA	LIC	PF	Gpay	Npay
---	--	--	--	--	--	--	---	---

13. Imagine a publishing company that markets both books and audio-cassette versions of its works. Create a class publication that stores the title (a string) and price (type float) of a publication. From this class derive two classes:

    BOOK, which adds a page count (type int).and TAPE, which adds a length count (type int). Each of these three classes should have a getdata() function to get its data from the user at the keyboard, and a putdata() function to display its data. Write a main() program to test the book and tape classes by creating instances of them, asking the user to fill in their data with getdata() and then displaying the data with putdata().

14. Raising a number n to power p is the same as multiplying by itself t times. Write a function called power() that takes a double value for n and an int value for p, and returns the result as double value. Use default argument of 2 for p, so that if this argument is omitted, the number will be squared. Write a main() function that gets values from the user to test this function.

15. Create a equivalent of a four-function calculator. The program should request the user to enter a number, an operator, and another number. It should then carry out the specified arithmetical operations: adding, multiplying, subtracting, dividing the two numbers. Finally it should display the result. When it finishes the calculation, the program should ask if the user wants to do another calculation.

16. 16. Create a class that imitates part of the functionality of the basic data type int. Call the class Int. The only data in this class is an integer variable. Include member functions to initialize an Int to zero, to initialize it to an integer value, to display it, and to add two Int values. Write a program that exercise this class

by creating to initialized and one uninitialized Int values, adding these two initialized values and placing the sum in the uninitialized value, and then displaying the result.

17. Create a class called employee that contains a name and an employee number. Include a member function called getdata() to get data from the user, another function called putdata() to display the data. Write a main() program to exercise this class. It should create an array of type employee and then invite the user to input data for n employees.

18. Write a program using Polymorphism to calculate the square of any two numbers of type int, float, double and long.

19. Write a function called reversit() that reverse a string(an array of char). Use a for loop that swaps the first and last characters, then the second and next-to-last characters and so on. The string should be passed to reversit() as an argument. Write a program to exercise reversit(). The program should get a string from the user, call reversit(), and print out the result. Use an input method that allows embedded blanks. Test the program with Napolean's famous phrase "Able was I ere I saw Elba".

20. Create a class Int to Overload all five integer arithmetic operators (+,-,*,/,and %) so that they operate on objects of type Int. If the result of any such arithmetic operation exceeds the normal range of int's - from -32,768 ro 32,767- have the operator print a warning and terminate the program. Write a program to test this class.

21. Write a program that reads a group of numbers from the user and places them in array of type float. Once the numbers are sorted in the array, the program should average them and print the result. Use Pointer notation whenever possible.

22. Write a program using friend function frifunc() which can act on the classes alpha and beta.Using constructors fix the values for alpha and beta.

23. 23. Write a program that emulates the DOS COPY command. That is, it should copy the contents of a character file(such as any cpp file) to another file. Invoke the program with two command line arguments - the source file and the destination file. C> copy srsfile.ext destfile.ext In the program, check that the user has typed the correct number of command line arguments, and that the files

specified can be opened. Improve on the DOS TYPE command by having the program signal an error if the destination file already exits.

24. Write a C++ program which will accept a string of 10 characters in length from the key board and count the occurrences of each of the five vowels in the string. The o/p should be in a (tapped) format similar to this example.

A	E	I	O	U
0	1	0	0	1

25. 25. Create a C++ class for a stock item abstract data type. It should have the attributes of stock levels(an integer) and unit price (a float). Define the methods to t return the values of these two attributes and to set them using parameters. Add two more methods to allow stock receipts and issues updating the stocklevel as appropriate. Write a menu driven c++ program to solve the problem.

* * *

M.Sc. (IT) I Year

Practical: Lab-II: DATA STRUCTURES

SYLLABUS : C++ programming for implementing the data structures like array, linked list, stack, queue and performing their operations.

TOTAL MARKS : 100 (1 or 2 PROBLEMS TO BE SOLVED IN UNIVERSITY PRACTICAL EXAMINATION)

BREAK-UP OF MARK:

RECORD NOTE BOOK	: 10
ALGORITHM AND FLOWCHART	: 10
PROGRAM	: 50
DEBUGGING	: 10
EXECUTION	: 10
RESULT	: 10

Write C++ program to perform the following :

1. Matrix manipulation (Addition, Subtraction, Multiplication, Inverse and Transpose)
2. Sorting elements using selection sort
3. Sorting elements using insertion sort
4. Sorting elements using Bubble sort.
5. Searching elements using linear search method
6. Searching elements using Binary search method
7. Creation of linked list and performing its operations using array.
8. Creation of linked list and performing its operations using pointers
9. Implementing stack operations using array.
10. Implementing stack operations using linked list.
11. Implementing queue structure and its operations using array.
12. Linked list implementation of queue.
13. Sorting elements using Quick Sort.
14. Sorting elements using Heap Sort.
15. Copy contents of one file to another file.

* * *

M.Sc. (IT) II Year

Practical: Lab-III: INTERNET PROGRAMMING

SYLLABUS : Prorgramming in Java, Javascript, Vbscript, JFC/Swing Java Applet Programming using various controls like Text Box, Button, Frame, Panel, Fonts and Colours

TOTAL MARKS : 100 (1 or 2 PROBLEMS TO BE SOLVED IN UNIVERSITY PRACTICAL EXAMINATION)

BREAK-UP OF MARK:

RECORD NOTE BOOK	: 10
ALGORITHM	: 10
PROGRAM	: 50

DEBUGGING : 10
EXECUTION : 10
RESULT : 10

MODEL PROBLEMS

JAVA SCRIPT

1. Write a Java Script to create a window by using the confirm message?
2. Write a JavaScript to create an Order Form to select the home appliances (home need products)?
3. Write a JavaScript to create a color Pallet and display the background in the color chosen from the Pallet.

VB SCRIPT

4. Write a VBScript to do the following
   (a) Check the given Password
   (b) Change the existing Password

5. Write a VBScript to do the following
   a) Display the current date
   b) Find the difference between the two dates
   c) Find the age of a person by providing date of birth.
6. Write a VBScript to create a calendar for a given month and year?

JDBC

7. Using database connectivity display the records in a table.

8. Using database connectivity insert and delete records from a table.

Applets / HTML

9. Write a Java program using Applet to display any 3 images when 3 buttons in the Border layout are clicked. The image should be displayed at the center.

10. Write a Java program using Applet to display the dialogue and menu in applet.

11. Write a Java program using Applet to create the frames and its controls.

12. Write a JAVA program to create an applet to display the message "HAVE A NICE DAY" with different colors and fonts for each click.

13. Write an applet program to draw a filled rectangle and circle. Use graphic controls.

14. Design a web page using HTML code to display the details of your institution where you are doing course.

15. Design a web page with a form in it. The form has the following details :

Employee Number, Employee Name, Designation, Basic Pay, Dearness Allowance (DA), House Rent Allowance (HRA), Provident Fund(PF) and Net Pay.

Input : Employee Number, Employee Name, Designation and Basic pay. Determine other details using the following:

DA = 43 % of basic pay
HRA = 5% of basic pay
PF = 10% of basic pay
Net Pay = Basic pay + DA + HRA - PF

16. Design a web page with a form in it. The form has the following details :

Student Name	Text Box
Number	Text Box
Age	Range (10 - 20 years)
Sex	Radio Button
Address	Text Box
Religion	List Box
Nationality	Text Box

17. Write a JAVA program to read students particulars like name, number, date of birth, course of study, and address using frame and text controls. Then display the given details on the screen.

18. Design a web page using HTML code shows your biodata.

JFC / Swing

19. Write a Swing program to create Buttons with
    a) Tool tip text b) Image c) Border d) Short cut Key

20. Write a Swing program to create the Tabbed Panels.

* * *

M.Sc. (IT) II Year

Practical: Lab-IV: VISUAL PROGRAMMING

SYLLABUS : VISUAL BASIC PROGRAMMING - Event procedures, Creating and using various controls - Forms,Text, Message Box, Labels, List Box, Graphics - DDE Events - Database Access - Data Control - Field Control - Data Grid - Manipulation of data.

VISUAL C++ PROGRAMMING - MFCs - Using various object properties - Resources : Menus, Accelerators, Dialogs, Icons, Bitmaps - Using DAO and ODBC - Using Synchronization Classes.

TOTAL MARKS : 100 (2 PROBLEMS (One in VB and another in VC++) are TO BE SOLVED IN UNIVERSITY PRACTICAL EXAMINATION)

BREAK-UP OF MARK:

RECORD NOTE BOOK	: 10
ALGORITHM	: 10
PROGRAM	: 50
DEBUGGING	: 10
EXECUTION	: 10
RESULT	: 10

MODEL PROBLEMS – VISUAL BASIC

1. Write event procedure for the following.
   (a) Display date and time in the label box at run time.
   (b) Find the power of a number (Accept two inputs as number and power.
   (c) Temperature conversion (From Fahrenheit centigrade).
   [Use Label, TextBox and Command Button in the form]

2. Write event procedure to perform the following.

(a) Reverse a string.
(b) Determine whether the given string is palindrome or not.
(c) Change the case of a string to upper of lower.[use Label, Textbox, Command Button].

3. Create a form with Textbox, Combo box and Command Button and do the following operation.
(a) Add the University name in the Combo box at the run time.
(b) Search and delete the particular University in the combo box.
(c) Display the message box with number of University available in the Combo box.
(d) Sort the University names in the alphabetical order.

4. Using a control array, create a simple calculator which will do the following operation.

1. Addition	2. Subtraction.
3. Multiplication	4. Division.
5. Square	6. Square root.
7. Modulus	8. Power.
9. Percentage.	

[Using Textbox, Command Button, Frames].

5. Using MSFlex grid control, display the multiplication and addition table of 20 rows and columns.[Use MSFlex Grid, Button].

6. Using built in Ax control, develop the windows NOTEPAD with File and Edit menu operation and also display the floating menu whenever necessary.[Use RichTextBox, menu editor].

7. Create an employee with Empno, Empname, Basicpay,HRA,DA,PF,LIC,GP and NP with the following calculation.
HRA = 10% OF BP
DA = 5% OF BP
PF = 3% OF BP
LIC = 5% OF BP
GP = BP + DA + HRA
NP = GP - (PF + LIC)

USING REMOTE DATA ACCESS OBJECT, Implement THE FOLLOWING OPERATIONS.

(a) Insert a record.
(b) Search and delete a record.
(c) Modify the record.
(d) Display all the employee records whose names are starting with the letter "S".

8. Create a table Hospital with the following fields Patient number, Patient Name, address, Blood Group, Disease. Using Ax data access object, develop a hospital management sys. with the following operation.
a) Insert a record into the table
b) Search and Delete a record
c) Modify the record
d) Display all the patients details with the corresponding blood group from the combo box.

9. Using Ax DLLor EXE add a class module that would perform the following function.
a) Text whether the given number is perfect or not
b) Whether the given number is Armstrong number or not
c) Find the factorial of the given number
d) sum of digits

10. Develop a data report using Employee table with the following
a. Display all the Employee details
b. Display all the employee details in each department and display total salary in each department.
c. Display all the employee details which starts with the employee name specified in Textbox.

11. Write a VB program to perform the following operation in a record of random Access File.
1. Insert 2. Delete 3. Search.

12. Create a VB application with a DriveListbox, Dir listbox.
(a) Select exe file & execute it.
(b) Select the picture and load it to the form.
(c) Filter the file in the file list box according to the extension chosen in the combo box.

13. Using Activex X control create a Textbox that accepts only numeric value with the following properties.
(a) Background of the textbox.

(b) Foreground of the textbox.
(c) Text property of the textbox.
(d) Resize the textbox at the standard application without using properties.

14. Expand the 7th problem. Using DHTML application.

15. Create a worksheet with the following fields student_name, internal mark, external mark and result.
Using data access Object, create a student application to do the following operations.
    1. Insert the records.
    2. Delete the records.
    3. Update the records.

LIST OF PROBLEMS - VISUAL C++

1. Write a Visual C++ program to create a window of desired size using MFC?

2. Write a Visual C++ program to handle Windows messages in MFC program.

3. Write Visual C++ program to fill background of the client area with a bitmap?

4. Write a Visual C++ program to get the status of the shift and toggle keys using MFC

5. Write a Visual C++ program to generate a status bar and show the status of Caps Lock, Num Lock and Scroll Lock in it?

6. Write a Visual C++ program to create a List box in a window?

7. Write a VC++ program to find out whether a mouse is Attached or not; and if attached how many buttons are present or not.

Course	**:**	**M.Sc.(Computer Science) [2007-08 onwards]**
Duration	:	2 years
Eligibility	:	Any degree with Mathematics at +2 level
Medium	:	English

Course of Study and Scheme of Examinations

Code No.	Name of the Course	Max. Mark
	I Year	
1.1	Mathematical Foundation of Computer Science	100
1.2	Computer Architecture	100
1.3	Data Structures using C++	100
1.4	Visual Programming	100
1.5	Database Management Systems	100
1.6	Computer Lab I (C++ and Data Structures Lab)	100
1.7	Computer Lab II (Visual Programming Lab)	100
	II Year	
2.1	Computer Networks	100
2.2	Software Engineering	100
2.3	Internet Programming and Web Design	100
2.4	Image Processing and Analysis	100
2.5	Operating Systems	100
2.6	Computer Lab III (Internet Programming)	100
2.7	Project	100

Paper 1.1: MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE

UNIT I

Mathematical Logic: Statements and Notation - connectives -normal forms - The theory of inference for the statement calculus - The predicate calculus - Inference theory and predicate calculus.

UNIT II

Set theory: Sets - Basic concepts - notation - inclusion and equality of sets - the power set - relations and ordering - properties - relation matrix and graph of a relation - partition - equivalence and compatibility relations - composition – partial ordering - partially ordered set.

UNIT III

Functions - definition - composition - inverse - binary and n-ary operations - characteristic function - hashing function.

UNIT IV

Algebraic Structures: Algebraic Systems: Examples and General Properties - Semigroups and Monoids: Definitions and Examples - Homomorphism of Semigroups and Monoids - Subsemigroups and Submonoids - Groups: Definitions and Examples - Cosets and Lagrange's Theorem - Normal Subgroups - Algebraic Systems with two Binary Operations.

UNIT V

Graph theory: Basic concepts - definition - paths - reach - ability and connectedness - matrix representation of graphs - trees.

REFERENCE BOOKS:

1. J.P. Tremblay and R. Manohar Discrete mathematical structures with applications to Computer Science Mc.Graw Hill Book Company, New York, 1975.
2. Venkatraman M K, Sridharan N and Chandrasekaran N, Discrete Mathematics, The National Publishing Company, 2000.
3. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science PHI, 1987.

Paper 1.2: COMPUTER ARCHTECTURE

UNIT I

Fundamentals Of Computer Design: Measuring and Reporting performance - Quantitative principles of computer Design - Classifying instruction set Architecture - Memory addressing - Addressing modes - Type and size of operands - Operations in the instruction set - Operands and operations for media and signal processing - Instructions for control flow - Encoding an instruction set - Example Architecture - MIPS and TM32.

UNIT II

Instruction Level Parallelism: Pipelining and Hazards - Concepts of ILP - Dynamic scheduling - Dynamic Hardware prediction - Multiple issues - Hardware based speculation - Limitations of ILP - Case studies: lP6 Microarchitecture

UNIT III

Instruction Level Parallelism With Software Approaches: Compiler techniques for exposing ILP - Static branch prediction - Static multiple issue : VLIW - Advanced compiler support - Hardware support for exposing parallelism - Hardware Vs software speculation. Mechanism - IA 64 and Itanium Processor.

UNIT IV

Memory And I/O: Cache performance - Reducing cache miss penalty and miss rate - Reducing hit time - Main memory and performance - Memory technology. Types of storage devices - Buses - RAID - Reliability, availability and dependability - I/O performance measures - Designing I/O system.

UNIT V

Multiprocessors And Thread Level Parallelism: Symmetric and distributed shared memory architectures - Performance issues - Synchronization - Models of memory consistency - Multithreading.

REFERNCE BOOKS

- John L. Hennessey and David A. Patterson," Computer Architecture: A Quantitative Approach", Third Edition, Morgan Kaufmann, 2003.
- D. Sima, T. Fountain and P. Kacsuk, " Advanced Computer Architectures: A Design Space Approach", Addison Wesley, 2000.
- Kai Hwang " Advanced computer architecture Parallelism Scalability Programmability" Tata Mcgraw Hill Edition 2001.
- Vincent P.Heuring, Harry F.Jordan, " Computer System Design and Architecture" , Addison Wesley , 2nd Edition 2004.

Paper 1.3: DATA STRUCTURES USING C++

Unit I

The arrays as an ADT: Using One-Dimensional arrays - Using two-dimensional arrays - Using multi-dimensional arrays - Claases in C++ - Class Rational - Using the Class Rational - Implementing the methods – Overloading – Inheritance – Constructors - Primitive operations.

Unit II

Stack: Stack as an ADT – Queue and its sequential representation – Queue as an ADT – Definitions and Examples – Infix, Postfix, and Prefix – Program to evaluate a postfix expression – Limitations of the program.

Unit III

Linear Data Structures and their representation: Definition, concept, operation on Linked lists, Circular linked lists, Doubly linked lists – Operations like insertion, deletion, insertion in order, searching, updating, Application of linked lists: Polynomial manipulation.

UNIT IV

Trees and Graphs: Definition – Operation on binary trees, linked storage representation for binary search trees – Basic operations on binary search tree such as creating a binary search tree, searching , modifying an element, inserting and deleting the element, destroy a binary search tree, tree traversals, inorder, preorder and postorder, tree application for expression evaluation.

UNIT V

Sorting and Searching: Different sorting techniques, classification on the basis of big-O notation, technique such as straight selection sort, bubble sort, merge sort, quick sort – Sequential Searching – Binary searching.

REFERENCE BOOKS :

1. Yedidyah Langsam, Moshe J.Augenstein,Aaron M.Tenenbaum, Data Structures Using C and C++, 2nd Edition, 1995, Prentice Hall...
2. Malik D S, Data Structures Using C++ , 2003, Thomson

Paper 1.4: VISUAL PROGRAMMING

UNIT I

Windows Programming: Conceptual comparison of traditional programming paradigms – Overview of windows programming – Data types – Resources. Windows messages – Device contexts – Document interfaces – Dynamic linking libraries – Software Development Kit (SDK) tools – Context help.

UNIT II

Visual Basic Programming: Introduction – Forms – Variables, Types – Properties – Decision-making – Looping – Modules – Procedures – Functions.

UNIT III

Tool Box Controls – Menus – Grid controls – Dialog boxes – Database manager – Data control – Recordset objects.

UNIT IV

Visual C++ Programming: Objects – Classes – VC++ components – Resources – Event handling – Menus – Dialog boxes – Importing VBX controls – Files – MFC file handling – Document view architecture – Serialization – Multiple Document Interface (MDI) – Splitter windows.

UNIT V

Exception Handling – Debugging – Object Linking and Embedding (OLE) – Database Application – DLL – ODBC.

REFERENCE BOOKS :

1. Charles Petzold, *Windows Programming*, Microsoft Press, 1992.
2. Garry Cornell, *Visual Basic 6 From the Ground up*, Tata McGraw Hill, 1999.
3. Steven Holzner, *Visual C++ Programming*, 2nd edition, PHI Publishers, 1997.
4. David Kruglinski J, *Inside Visual C++*, Microsoft Press, 1993.
5. Mueller, *VC++ 5 From the Group up*, TMH, 1997.
6. Viktor Toth, *Visual C++ 5 Unleashed*, 2nd edition, Tech Media, 1997.

Paper 1.5: DATABASE MANAGEMENT SYSTEMS

UNIT I

DBMS: Database - Database Management System - Features - Advantages - Data Base Scheme - Schema and Subschema - Manipulative capabilities - Guidelines - Different User Interfaces.

UNIT II

Relational Model : Concepts of Relational Model - Comments on the Relational Model: Semantic issues, Navigation, Efficiency - DBMS based on the Relational Model: The mapping operation - Data Manipulation facilities - Data Definition facilities - Data Control facilities.

UNIT III

Introduction to Oracle: Types of Databases, Relational Database properties, Benefits of Oracle, Client/Server Systems - Oracle Database Architecture: Overview of Oracle Architecture, Processes, Physical files, CPU, Network System Tables, Oracle Users, Logical Structures.

UNIT IV

Oracle Fundamentals: Elements of SQL Language: Database Objects, Data Access SQL commands, DML commands - Oracle Queries - Basic Query, Using Expressions, Working with NULL values, Joining Multiple Tables in a Query, Selecting Distinct values, Using Subqueries, Unions and Multiple part Queries.

UNIT V

Table Creation: Create Table statement, Privileges required, Describing Table Definitions, Modifying Tables, Renaming a Table, Copying another table, Dropping a Table - Other Database Objects, Reason for Database Objects, Indexes - Embedded SQL: Languages supported by Oracle Precompiler, Embedded SQL statements.

REFERENCE BOOKS:

1. Naveen Prakash, Introduction to Data Base Management, 1994, Tata McGraw-Hill Pub. Co.Ltd.
2. David Mcclanahan, Oracle Developers's Guide, 1996, Oracle Press.
3. Abraham Silberschatz, Henry. F. Korth, S.Sudharsan, Database System Concepts, 4th Edition, Tata McGraw Hill, 2002.
4. Ramez Elmasri, Shamkant B. Navathe, Fundamentals of Database Systems, 3rd Edition, Addison Wesley, 2004.
5. Jim Buyens, Step by Step Web Database Development, PHI, 2001.
6. Stefano Ceri & Giuesppe Pelagatti, Distributed Databases - Principles and Systems, McGraw Hill Book Company, 1987.
7. C.J.Date, "An Introduction to Database system", Pearson Education, 7th Edition, 2003

Paper 1.6: Computer Lab I (C++ and Data Structures Lab)

26. Write a C++ program to convert a given number into words for numbers 1 to 5. (Eg.1 as one).

27. Write a C++ program to find the roots of a quadratic equation (ax2+bx+c=0).

28. Write a C++ program to find the roots of a quadratic equation using function.

29. Write a C++ program for matrix operations (Addition, Subtraction and Multiplication) using function.

30. Write a C++ program to find the factorial of a given number using recursion.

31. Write a C program to read 10 values to an array variable. Use pointers to locate and display each value.

32. Using operator overloading, write a C++ program to find the different and total length of given two various tubes specified in meters and centimeters.

33. Using dynamic constructors write a C++ program to concatenate two given strings.

34. Write a menu driven C++ program to add and subtract given two matrices of order m x n defined in class, using operator overloading.

35. Create a class called employee that contains a name and an employee number. Include a member function called getdata() to get data from the user, another function called putdata() to display the data. Write a main() program to exercise this class. It should create an array of type employee and then invite the user to input data for n employees.

36. Write a program using Polymorphism to calculate the square of any two numbers of type int, float, double and long.

12. Write a C++ program to implement push and pop operations on stack.

13. Write a C++ program to evaluate the given mathematical expression using stack.

14. Write a C++ program to implement insert and delete operations on Linked List structure.

15. Write a C++ program to implement insert and delete operations on Queue using array concept.

16. Write a C++ program for linked list implementation of Queue operations.

17. Write a C++ program to sort 10 Nos. in Ascending order with naming of variable and the value before and after sorting.

18. Write a C++ programs to sort a set of elements using selection sort, Insertion sort, and Quick sort..

Paper 1.7: Computer Lab II (Visual Programming)

Visual Basic

1. Write event procedure for the following.
   (a) Display date and time in the label box at run time.
   (b) Find the power of a number (Accept two inputs as number and power.
   (c) Temperature conversion (From Fahrenheit centigrade).
   [Use Label, TextBox and Command Button in the form]

2. Write event procedure to perform the following.
   (a) Reverse a string.
   (b) Determine whether the given string is palindrome or not.
   (d) Change the case of a string to upper of lower.[use Label, Textbox, Command Button].

3. Create a form with Textbox, Combo box and Command Button and do the following operation.
   (a) Add the University name in the Combo box at the run time.
   (b) Search and delete the particular University in the combo box.
   (c) Display the message box with number of University available in the Combo box.
   (d) Sort the University names in the alphabetical order.

4. Using a control array, create a simple calculator which will do the following operation.
   1. Addition 2. Subtraction.
   3. Multiplication 4. Division.
   5. Square 6. Square root.
   7. Modulus 8. Power.
   9. Percentage.
   [Using Textbox, Command Button, Frames].

5. Using MSFlex grid control, display the multiplication and addition table of 20 rows and columns.[Use MSFlex Grid, Button].

6. Using built in Ax control, develop the windows NOTEPAD with File and Edit menu operation and also display the floating menu whenever necessary.[Use RichTextBox, menu editor].

7. Create an employee with Empno, Empname, Basicpay,HRA,DA,PF,LIC,GP and NP with the following calculation.
   HRA = 10% OF BP DA = 5% OF BP
   PF = 3% OF BP LIC = 5% OF BP
   GP = BP + DA + HRA NP = GP - (PF + LIC)

USING REMOTE DATA ACCESS OBJECT, Implement THE FOLLOWING OPERATIONS.

(a) Insert a record.
(b) Search and delete a record.
(c) Modify the record.
(d) Display all the employee records whose names are starting with the letter "S".

8. Create a table Hospital with the following fields Patient number, Patient Name, address, Blood Group, Disease. Using Ax data access object, develop a hospital management sys. with the following operation.

a) Insert a record into the table b) Search and Delete a record c) Modify the record

d) Display all the patients details with the corresponding blood group from the combo box.

9. Using Ax DLLor EXE add a class module that would perform the following function.
a) Text whether the given number is perfect or not
b) Whether the given number is Armstrong number or not
c) Find the factorial of the given number
d) sum of digits

10. Develop a data report using Employee table with the following
a. Display all the Employee details
b. Display all the employee details in each department and display total salary in each department.
c. Display all the employee details which starts with the employee name specified in Textbox.

11. Write a VB program to perform the following operation in a record of random Access File.

1. Insert 2. Delete 3. Search.

12. Create a VB application with a DriveListbox, Dir listbox.
(a) Select exe file & execute it.
(b) Select the picture and load it to the form.
(c) Filter the file in the file list box according to the extension chosen in the combo box.

13. Using Activex X control create a Textbox that accepts only numeric value with the following properties.
(a) Background of the textbox. (b) Foreground of the textbox.
(c) Text property of the textbox.

(d) Resize the textbox at the standard application without using properties.

VISUAL C++

1. Write a Visual C++ program to create a window of desired size using MFC?

2. Write a Visual C++ program to handle Windows messages in MFC program.

3. Write Visual C++ program to fill background of the client area with a bitmap?

4. Write a Visual C++ program to get the status of the shift and toggle keys using MFC

5. Write a Visual C++ program to generate a status bar and show the status of Caps Lock, Num Lock and Scroll Lock in it?

6. Write a Visual C++ program to create a List box in a window?

1. Write a VC++ program to find out whether a mouse is Attached or not; and if attached how many buttons are present or not.

Paper 2.1: COMPUTER NETWORKS

UNIT I

Introduction: Uses of computer networks – Network hardware and network software – Reference models – Example networks – Network standardisation. Physical Layer: Transmission media – Telephone system – ISDN – Broadband and Narrowband ISDN – ISDN and ATM – Communication Satellites.

UNIT II

Data Link Layer: Design issues – Error detection and correcting codes – Elementary data link protocols – Sliding window protocols – Protocol Specification and Verification: Finite State models – Petri Net models – Example Dlink Protocols: HDLC – SLIP – PPP – Media Access Sublayer: Multiple access protocols – ALOHA – Carrier sense multiple access protocols – Collision free protocols.

UNIT III

Network Layer: Design issues – Routing algorithms – Congestion control algorithms – Internet working: Tunneling – Fragmentation – Firewalls – Network layer in the internet – IP – Subnets – Internet Control Protocols: Address resolution protocol – ICMP – RARP – Internet multicasting – Network Layer in ATM Networks: Cell format – Connection setup – Routing and switching – Services categories – ATM LANs.

UNIT IV

Transport Layer: Transport service – Elements of Transport Protocols: Addressing – Flow control and buffering – Multiplexing – Crash recovery – Performance issues – Measuring network performance – Internet transport protocols – TCP – UDP – Protocols for Gigabit networks.

UNIT V

Application Layer: Network security – Cryptography – Secret and public key algorithms – DNS – SNMP – Electronic Mail – Electronic Mail privacy – World Wide Web: Client side – Server side – Multimedia – Audio – Video – Data Compression – JPEG, MPEG Standards.

TEXT AND REFERENCE BOOKS:

1. Andrew S Tanenbaum, Computer Networks, 3rd edition, Prentice Hall of India.
2. Uless Black, Computer Networks, 1993, Prentice Hall of India.
3. Ajit Kumar Singh, Computer Networks, 2006, Firewall Media.

Paper 2.2: SOFTWARE ENGINEERING

UNIT I

The Evolving role of Software – Process methods and tools – Software process models – Linear sequential model – Prototyping model – Real model – Evolutionary software process model – Formal methods model – Fourth generation techniques – Project management concepts – Software process and project metric.

UNIT II

Software Project Planning – Observation on estimating software Scope, Resources, Project estimation, Decomposition techniques, Empirical estimation models – The Make Busy divisions – Risk management – Software risk identification – Risk projection, Risk mitigation – Monitoring and management.

UNIT III

Project Scheduling and Tracking – Basic concepts – Defining a task set for the software project – Scheduling plan – Software quality assurance – Quality concepts and assurance – Software reliability – ISO 9000 Quality standards – Software configuration management – Software reviews – Formal technical reviews – Statistical quality assurance.

UNIT IV

System Engineering: System engineering hierarchy – Analysis concepts and principles – Requirements analysis – Communication techniques – Analysis, principles – Software prototyping – Specification modeling and information flow – Behavioural modeling – Mechanics of structured analysis – Design concepts and principles – Design process – Principles – Concepts – Effective modular design.

Design Methods: Architectural design – Data design – Architectural design and process – Transform mapping design – Post processing and optimization interface design – Human computer interface design.

UNIT V

Software testing methods – Fundamentals – Test case design – White box testing – Basis path testing – Control structure testing – Black box testing – Testing for specialized environment – Testing strategies – Unit testing – Integration – Validation – System testing – Art of debugging.

TEXT AND REFERENCE BOOKS:

1. Roger S Prssman, *Software Engineering: A Practitioner's Approach*, McGraw Hill (2000).
2. Pankaj Jaiote, *An Integrated Approach to Software Engineering*, Narose Publishing House (1991).
3. Richard Fairlay, *Software Engineering Concepts*, McGraw-Hill (1985).

Paper 2.3: INTERNET PROGRAMMING AND WEB DESIGN

UNIT I

Foundations for Internet Programming: An overview of Internet Programming - WWW Design Issues - Security and Encryption - Developing Intranet Applications. Internet Programming Languages: Java - Java in Windows - CGI - Perl - Microsoft Internet Implementation.

UNIT II

Internet Scripting Languages: JavaScript - VBScript- Other Scripting Languages.

UNIT III

Internet Markup Languages: HTML - SGML - Netscape Extensions - Microsoft Internet Explorer - Only-HTML tags - Shokwave and Lingo.

UNIT IV

ActiveX controls: Creating an ActiveX control to Activate a Web Page - VDOlive Technology - Creating Netscape Navigator Plug-Ins - Pulling Web Information - Creating a Custom Integrated Application with Multiple Protocols.

UNIT V

Web Graphics: A Graphic View of Web - Easy Web Graphics - Images and Hyperlinks - Adding Graphics to Web Pages - Site and Page Design - Framing your Graphics - Dynamic Graphics - Animation.

REFERENCE BOOKS:

1. Bob Breedlove et.al, Web Programming Unleased, 1996, Sams.net Publishing.
2. Ron Wodaski ,Web Graphics Bible, 1997, Comdex Computer Publishing.
3. Young, Internet: Millenium Edition: Complete Reference, 1998, Tata McGraw Hill.
4. Powell, HTML The Complete Reference, 1998, Tata McGraw Hill.

Paper 2.4: IMAGE PROCESSING AND ANALYSIS

UNIT I

Digital Image: Introduction : Motivation and Perspective - Scenes and Images - Applications - Components of Image Processing System - Visual Preliminaries : Brightness Adaptation and Contrast - Acuity and Contour - Texture and Pattern Discrimination - Shape Detection and Recognition - Perception of Colour - Image Formation : Geometric Model - Basic Transformations - Perspective Projection - Camera Calibration - Photometric Model - Digitization : Sampling - Quantization - Visual Detail in the Digital Image - Digital Image - Elements of Digital Geometry.

UNIT II

Image Processing: Image Enhancement : Contrast Intensification - Smoothing - Image Averaging - Mean Filter - Ordered Statistic Filter - Edge-preserving Smoothing - Low-pass Filtering - Image Sharpening - High-pass Filtering - Homomorphic Filtering - Restoration : Minimum Mean-square Error Restoration - Least-square Error Restoration - Constrained Least-square Error Restoration - Restoration by Singular Value Decomposition Restoration by Maximum a Posterior Estimation - Restoration by Homomorphic Filtering.

UNIT III

Image Compression: Error criterion - Lossy Compression methods - Loss-less Compression - Huffman Coding - Run-length Coding - Block Coding - Quad Tree Coding - Contour Coding - Registration : Geometric Transformation - Plane-to-plane Transformations Mapping - Problems in Discrete Domain - Stereo Imaging Algorithms - Multi-valued Image Processing : Processing of Colour Images - Processing of Satellite Images - Medical Image Processing.

UNIT IV

Image Analysis Segmentation : Region Extraction - Pixel-based Approach - Feature Thresholding - Optimum Threshold - Threshold Selection Methods - Multi-level Thresholding - Local Thresholding - Region-based Approach - Edge and Line Detection : Edge Detection - Derivative Operators - Pattern Fitting Approach - Morphologic Edge Detection - Edge Linking and Edge Following - Edge Elements Extraction by Thresholding - Edge Detector Performance - Line Detection - Corner Detection.

UNIT V

Feature Extraction : Representation - Topological Attributes - Geometrical Attributes - Some Other Properties - Description : Boundary-based Description - Region-based Description - Relationship - Recognition : Deterministic Methods - Clustering - Statistical Classification - Fuzzy Mathematical Recognition - Syntactic Recognition - Grammar - Recognition Strategy - Tree Search - Graph Matching.

REFERENCE BOOKS:

1. Chanda B and Dutta Majumder Digital Image Processing and Analysis Prentice Hall of India Pvt Ltd (2001)
2. Adrian Low, Compuer vision and Image Processing, 1991, McGraw Hill.
3. Kenneth R. Castleman, Digital Image Processing, 1995, PHI

Paper 2.5: OPERATING SYSTEM

Unit I

Introduction: Main frame Systems, Desktop Systems – Multiprocessor Systems – Distributed Systems – Clustered Systems – Real Time systems – Hand held Systems, Operating Systems Structures: System Components – Operating System Services - System calls - System Programs – System Design and Implementation - CPU scheduling: Basic Concepts – Scheduling Algorithms.

Unit II

Process Management: Process Concepts - Process Scheduling - Operation on Process - Co-Operating process - Inter Process Communication - Threads: Multithreading Models - Process Synchronization: The Critical Section Problem – Synchronization Hardware - Semaphores – classical problem of Synchronization – Monitors - Deadlock: Deadlock Characterization - Methods for handling Deadlocks - Deadlock Prevention – Deadlock Avoidance - Deadlock Detection – Recovery from Deadlock.

Unit III

Memory Management: Background – Swapping - Contiguous Memory Allocation - Paging - Segmentation – Segmentation with paging - Virtual Memory: Demand paging - Page Replacement - Thrashing.

Unit IV

File Systems: File Concepts - Access methods - Directory Structure - File Protection - File System Implementation: File System Structure and Implementation – Directory Implementation – Allocation methods Free Space Management – Recovery - Disk Structure – Disk Scheduling.

Unit V

Distributed Operating System: Design issues in distributed operating system-Distributed file systems - Naming and Transparency-Remote File Access-Stateful versus Stateless service – Distributed Coordination- Event Ordering-Mutual Exclusion- Atomicity-Concurrency Control- Deadlock Handling-Election Algorithms-Case Study-Linux.

REFERENCE BOOKS

1. Silberschatz, Galvin, Gagne, Operating System Concepts, Sixth Edition, 2003, John Wiley
2. Pradeep K.Sinha, " Distributed OS concepts and Design ", IEEE computer Society Press, PHI 1998.
3. Andrew S. Tanenbaum , Modern Operating Systems, 2nd Edition 2001, Prentice Hall.
4. Achut S. Godbole and Kahate Atul , Operating Systems & Systems Programming, 2003, Tata Mcgraw Hill.
5. Charles Crowley, Operating systems: A Design Oriented Approach, 1999, Tata McGraw Hill.

Paper 2.6: Computer Lab III (Internet Programming Lab)

JAVA SCRIPT

1. Write a java Script to create a window by using the confirm message.
2. Write a JavaScript to create a Order Form to select the house articles.
3. Write a JavaScript to create a color Palet and display the text in the color chosen from the Palet with proper background color.

VB SCRIPT

4. Write a VBScript to do the following
   a) Check the given Password
   b) Change the existing Password
5. Write a VBScript to do the following
   a) Display the current date
   b) Find the difference between the two dates
   c) Find the age of a person by providing date of birth for all use the date in dd/mm/yy format.
6. Write a VBScript to create a calandor for given month and year.

JDBC

7. Write a menu drive Java program to do database functions using database conectivity facility. The functions include display,edit, insert and delete a records from a table.

APPLETS

8. Write a Java program using Applet to display any 3 images when 3 buttons in the Border layout are clicked. The image should be displayed at the center.
9. Write a Java program using Applet to display the dialogue menu in applet.
10. Write a Java program using Applet to create the frames and its controls.
11. Write a Java program using Applet to display the different colors and fonts.

JFC / Swing

12. Write a Swing program to create Buttons with
    a) Tool tip text
    b) Image
    c) Border
    d) Short cut Key
13. Write a Swing program to create the Tabbed Panels.
14. Write a Java program to create a color as the background.

HTML

15. Using atleast 20 HTML Tags, Create a screen with a string "WEB Design"
16. Create a web page in the format of front page of a news paper using Text links. Align the text with colors.
17. Develop a picture gallary having atleast 5 pages. Each of them is having several pictures with suitable information.
18. Develop a single page advertisement for a shop to be opened shortly.
19. Develop a web page for job recruitment agency in an IT industry.
20. Design and publish a web page for a college.

Course : Master of Library and Information Science (MLIS)
Mode : Distance Education
Duration : One year
Eligibility : B.L.I.S. or B.Lib.Sc. from a recognised University
Medium : English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
1	Information Processing and Retrieval	100
2	Library and Information System Management	100
3	Information Technology and Information Systems	100
4	Research Methodology	100
5	Academic Library System	100
6	Technical Writing	100
7	Information Processing and Retrieval (Practice	100
8	Information Technology (Practice)	100
	Total	**800**

Paper 1: INFORMATION PROCESSING & RETRIEVAL

UNIT I

Role of basic concepts in Information transfer- Universe of subjects – Structure & development – Impact on the schemes for classification.

UNIT II

Classification Schemes: CC, DDC, UDC, &LC Indexing Languages-Vocabulary Control-Thesaurus, design of indexing languages, general theory of subject indexing languages.

UNIT III

Indexing Systems & Techniques-Precoordinate indexing – PRECIS, POPSI, Chain indexing – Relational indexing, post coordinate indexing systems, uniterm indexing, citation indexing, KWIC and KWOC, evaluative studies.

UNIT IV

Bibliographic description – Standardization – Print & Non Print Media – ISBD, ASER-II, MARC formats, CCF, ISO-2709.

UNIT V

Objectives – Structure and functions of information retrieval systems – Search strategy – Criteria for evaluation – Recall, precision – Relevance and failure analysis.

UNIT VI

Impact of Computer Application – Physical forms of catalogues – Bibliographic descriptions – Concept of main entry – Evaluation of catalogues and cataloguing – Major findings**.**

REFERENCE BOOKS:

1. Lancaster F W, Information Retrieval Systems, Ed-2, 1976, Vocabulary Control for Information Retrieval, Information Retrieval Systems – Characteristics, Testing and Evaluation.
2. Maltby A, (Ed) Classification in the 70's: A second look, Ed-7.
3. Medow CT, Analysis of information system, 1973.
4. Neelamegan A, Ordering systems for Global Information Network, 1979.
5. Renganathan SR, Classified catalogues code.Ed 5, 1964, Prolegomena to Library classification, Ed3.
6. Soergal D, Indexing Languages and Thesauri.
7. Library of Congress: Information of MARC System.

Paper 2: LIBRARY AND INFORMATION SYSTEM MANAGEMENT

UNIT I

Concept of management and organization – Definition – Library and information system as Non Profit Organizations – Various schools of management thought: Classical, Human relations, behavioral schools of thought – Management theories: Taylor, Payol, Gantts, McGregor, Maslow.

UNIT II

Scientific principles of management as applied to library and information system – Areas of application – Methodology – Advantages and limitations.

UNIT III

Systems approach – Systems analysis in library and information systems – Contingency approach – Decision making approach, MBO, POSDCORB.

UNIT IV

Personnel management – Human resources planning – Recruitment – Selection – Training and Development – Performance appraisal promotion – Motivation.

UNIT V

Fiscal management – Budgeting –Types of Budget – Process of budgeting – PPBS – ZBB.

UNIT VI

Management Information System(MIS) – Designing – Work Analysis – Flow process chart – Decision flow charts – Block diagram, Gantt chart, network analysis, PERT and CPM.

REFERENCE BOOKS:

1. Koonttz, Harold and Weihrich, Heinz, Essentials of Management, Ed 5, New York: McGraw Hill, 1990.
2. Mittal RL, Library Administration: Theory and Pratice, Ed 4, 1978.
3. Murdick, Information systems for modern management, 1979.
4. Ranganathan SR, Library Administration, 1959.
5. Stoner, James AP, Management Ed 2. 1978.
6. Tripathi, Personnel Management.
7. Reece Brandt, Effective HR in Organizations.
8. Richardson, Dougherty, Scientific Management of Library operation, 1986.
9. Iyer VK, Management of Library Information Services, New Delhi, Rajat Publications, 1998.

Paper 3: INFORMATION TECHNOLOGY & INFORMATION SYSTEMS

UNIT I

Computer basics – Computer generations and classification – Role of Computer in information transfer technology.

UNIT II

Operating Systems: Ms-Dos, Windows, and Unix.

UNIT III

Information System analysis and Design – Overview, System development, Lifecycle method**.**

UNIT IV

Database system – Definition, scope, need and purpose – Overall system structure – Selection of Hardware and Software – Use of Dbase.

UNIT V

File organization: Serial, sequential, indexed sequential and inverted files – Database models – Hierarchical, network, relational.

UNIT VI

Networking: Technological development in communication: Transmission media – Digital Networks – LAN, WAN, PSTN, ISDN, Optical Communication systems, FAX, Modem, Teletext, Videotext, email, Internet, and Intranet.

UNIT VII

Origin, Development, Structure and functions of National & International Information systems – INIS, AGRIS, BIOSYS, NISSAT.

REFERENCE BOOKS:

1. Rajaraman V, Fundamentals of Computers, New Delhi: PHI, 1996.
2. Lancaster FW, Information Retrieval Systems, Ed-2, 1976.
3. Ravichandra Rao IK, Library Automation, New Delhi: Wiley Eastern, 1992.
4. Medow CT, Analysis of Information System, 1973.
5. Kimber RT, Automation in Libraries.

Paper 4: RESEARCH METHODOLOGY

UNIT I

Research – Definition – Importance & meaning of research – Characteristics of research –Types of research – Scientific method – Nature of research in library & information science – Relevance of research methods to LIS.

UNIT II

Research Problem: Sources of research problem – Locating the problem – Formulation of the research problem – Criteria in selecting a problem – Defining and delimiting problems – Literature search – Importance of surveying related literature – Library sources, research reviews, catalogue, indices, abstracts, bibliographies, microforms, computerized information retrieval systems.

UNIT III

Hypothesis – Meaning, importance, types, sources, characteristics – Different forms of hypothesis – Difficulties in formulation – Testing the hypothesis.

UNIT IV

Research methods – Definitions – Sources – Advantages – Limitations – Steps involved etc for historical method, case study method, survey method, experimental method and other methods(Field investigation Research, Evaluation research, Action research, Ex post Facto research etc)

UNIT V

Research Design – Characteristics of a good research design, components, types: Descriptive, Diagnostic, Exploratory and Experimental.

UNIT VI

Data collection, primary and secondary data, methods of data collection, schedule, interview, questionnaire, observation-questionnaire construction & design, types of questionnaire – secondary data sources and precautions in the use of secondary data – Data analysis, interpretation and presentation – Research reporting.

REFERENCE BOOKS:

1. Kothari CR, Wishwa Prakashan, Research Methodology: Methods & Techniques, New Delhi: 1996.
2. Ravichandran Rao IK, Quantitative methods for Library & Information Science, New Delhi, 1985.
3. Panda BD, Research Methodology for Library Science, New Delhi, Anmol Publications 1997.
4. Santhosh Gupta, Research Methodology and Statistical Techniques, New Delhi: Deep & Deep, 2000.

Paper 5: ACADEMIC LIBRARY SYSTEM

UNIT I

Types of Libraries – Role of University/College libraries and functions of higher education – Growth of University and College libraries in India and the role of UGC in promoting University/College Libraries.

UNIT II

Authorities in University/college libraries – Budgeting – Collection Building-problems and methods – Centralizations & Decentralization of University Libraries – Merits and Demerits –Resource Sharing among university libraries in India – Networking – Role of INFLIBNET.

UNIT III

Academic Libraries – Types of users & their information needs user education and services – User behavior and user studies.

UNIT IV

Human Resources and staff formula – Standards for University/College Libraries – Automation in academic libraries in India – Impact of information technology on academic library services – Electronic library, Digital library, virtual library.

UNIT V

Library Building – Furniture and equipment.

REFERENCE BOOKS:

1. Gelfand MA, University Libraries for Developing Countries, 1968.
2. Krishnan Kumar, Research Libraries in Developing Countries.
3. Metcalf, Keyes, Planning Academic and Research Library buildings, 1965.
4. Buckland MK, et all, System Analysis of a University Library, 1970.
5. Wilson and Tauber, University Library, 1956.

Paper 6. TECHNICAL WRITING

UNIT I

Communication Process – Characteristics features of technical writing, reader-writer relationship.

UNIT II

Language as a medium for communication of thought, Readability and text – Aberrations in technical writing.

UNIT III

Organization and Presentation of data in abstracts, textual manner, references – Preparation of popular articles, technical reports, monographs, house journals.

UNIT IV

Repackaging of information: Preparation of Review, Trend report, Progress report.

UNIT V

Editorial Process: Editorial tools, use of style manuals proof reading**.**

UNIT VI

Publication Ethics – Pre-publication and post-publication process**.**

REFERENCE BOOKS:

1. Krishnan Kumar, Research Libraries in Developing Countries.
2. Santhosh Gupta, Research Methodology and Statistical Techniques, New Delhi: Deep & Deep, 2000.
3. Lancaster FW, Information Retrieval Systems, Ed-2, 1976.

Paper 7:
INFORMATION PROCESSING & RETRIEVAL - PRACTICE

Practice

1. Classification of Documents according to abridged English Edition of UDC and CC-6th edition.

2. Cataloguing of books, Serials and Non Nook material according to AACR-II and Sears list of Subject Headings.

Paper 8.
INFORMATION TECHNOLOGY - PRACTICE

Practice

1. Creating a database using DBASE/FoxBASE, CDS/ISIS, SOUL.
2. Thorough Knowledge of MS-Word, MS-EXCEL & MS ACCESS and Power Point.
3. Installing and searching CD-ROM Database
4. Browsing and online searching.

Course	**:**	**M.Sc. (Physics) [2008-09 onwards]**
Pattern	:	Annual pattern
Mode	:	Distance Education
Duration	:	Two years
Eligibility	:	B.Sc. – Physics / Electronics / Any B.Sc., degree with specialization Applied Mathematics, Applied Physics, Electronics, Nuclear Physics or Nanobiotechnology
Medium	:	English only

PROGRAMME OF STUDY AND SCHEME OF EXAMINATIONS

Code No.	Name of the Course	Max. Mark
	I Year	
1.1	Classical and Statistical Mechanics	100
1.2	Mathematical Physics	100
1.3	Integrated and Digital Electronics	100
1.4	Electromagnetic Theory	100
1.5	Numerical Methods and Programming	100
1.6	Advanced Electronics and Physics Lab - I	100
	II Year	
2.1	Spectroscopy	100
2.2	Quantum Mechanics	100
2.3	Solid State Physics	100
2.4	Nuclear and Particle Physics	100
2.5	Materials Science	100
2.6	Advanced Electronics and Physics Lab - II	100

Paper 1.1 : CLASSICAL AND STATISTICAL MECHANICS

UNIT I: LAGRANGIAN FORMULATION :

Generalized co-ordinates - D 'Alembert's principle – Lagranges equation of motion – Hamilton's variational principle and Lagranges equation – Conservative and non-conservative systems**.**

UNIT II: HAMILTONIAN THEORY:

Hamilton's equations of motion – Cyclic co-ordinates and Routh's procedure – Hamilton's equations of motion from variational principle – Principle of least action – Canonical transformations – Poission brackets – Hamilton's equations in poission bracket notations – Elements of Hamilton- Jacobi theory – Action angle variables and Kepler's problem.

UNIT III: CANONICAL TRANSFORMATION AND HAMILTON – JACOBI THEORY

Canonical transformation and its examples, poisson's brackets, equations of motion, Angular momentum, poisson's bracket relations, infinitesimal canonical transformation, conservation theorems. Hamilton-jacobi equations for principal and characteristic functions action – angle variables for systems with one – degree of freedom.

UNIT IV: SMALL OSCILLATIONS AND REGID BODY MOTION

Theory of small oscillations – Normal co-ordinates and normal modes of vibrations – Linear triatomic molecule. Mechanics of rigid bodies: Generalized co-ordinates for rigid body motion – Euler angles – Angular momentum of rigid body – Euler's equations – The motion of symmetric top under the action of gravity.

UNIT V: ENSEMBLE THEORY

Phase space and Liowille's theorem, the microcanonical ensemble theory and its application to ideal gas of monoatomic particles. The canonical ensemble and its thermodynamics, partition function, classical ideal gas in canonical ensemble theory, energy fluctuations, equipartition and vital theorems, A system of quantum harmonic oscillators as canonical ensemble, statistics of paramagnetism. The grand canonical

ensemble and significance of statistical quantities. Classical ideal gas in grand canonical ensemble theory. Density and energy fluctuations. Maxwell – Boltzmann statistics – Maxwell distribution of velocities – Mean, Root mean square and most probable velocities.

BOOKS FOR STUDY:

1. Classical mechanics – S.N.Gupta, V.Kumar and H.V.Sharma, Pragati prakasan,1985, New Delhi.

2. Classical mechanics – H.Goldstein, Addison – Wesley, 1950, U.S.A.

3. Elementary statistical mechanics – S.L.Gupta, V.Kumar Pragati Prakashn Publication 1979

4. Fundamentals of statistical and Thermal Physics, F.Reif (1985, McGrawHill, International Edition)

BOOKS FOR REFERENCE:

Classical mechanics – S.L.Gupta, Meenakshi prakashan, 1970, New Delhi.
Introduction to classical mechanics – R.G.Takwall and P.S.Puranik, Tata –

McGraw Hill, 1980, New Delhi.

3. Classical mechanics – N.C.Rana and P.S.Joag, Tata-McGraw Hill, 1991, New Delhi.

4. Classical Mechanics of particles and Rigid bodies: K.C.Gupta (Wiley Eastern, New Delhi.)

5. Classical Mechanics: N.C.Rana and P.G.Joag (Tata McGraw Hill, New Delhi)
6. Statistical Mechanics: K.Huang (Wiley Eastern, New Delhi)

7. Statistical Mechanics: B.K.Agarwal and M.Eisner (wiley Eastern, New Delhi)

Paper 1.2 : MATHEMATICAL PHYSICS

UNIT I: MATRICES:

Vector space, Linear transformation - Inverse transformation, Orthogonal and unitary transformation - Schwarz inequality – Gram-Schmidt's orthogonalization process - Determination of eigen values and eigen vectors – Cayley Hamilton theorem – Diagonalization of Hermitian matrices.

UNIT II: SPECIAL FUNCTION

Beta and Gamma functions, Legender's,- Associate Legender's - Generating function, Rodirgues formula, Orthogonal properties and recurrence relations. Hermite and Laguerre polynomials and Bessel functions- Generating function, Rodirgues formula, Orthogonal properties and recurrence relations.

UNIT III : TRANSFORMS AND COMPLEX VARIABLE

Fourier transform – Cosine and Sine – Transforms of derivatives – Convolution theorem – Parseval's theorem – Laplace transform – Properties – Laplace transforms of special functions. Analytic functions – Cauchy-Riemann integral theorem – Cauchy's integral formula –Taylor's series – Lorentz's expansion – Zero's, Singular points – Residues theorem – Evaluation of definite integrals – Conformal mapping ($a = wz+b$, $a = e^z$)

UNIT IV: APPLICATION OF PARTIAL DIFFERENTIAL EQUATIONS:

Diffusion equation of heat flow-one dimension-two dimensions (Temperatures of both ends and one end at zero , and infinite length) - Laplace's equation: two dimensions – cartesian co-ordinates - Wave equation: one dimension – Solution - Application to a string (I) stretched at two ends and (ii) Plucked at the centre - two dimensions – Solution: applications – vibration of rectangular membrane.

UNIT V: TENSOR ANALYSIS AND GROUP THEORY :

Contravariant and Covariant tensors – Addition – Subtraction – Outer and inner products – Contraction – Metric tensor – Hooke's law -stress— strain- Piezoelectricity and dielectric susceptibility – Moment of inertia tensor. Theory of group representation – symmetry elements – classification of groups – conditions – multiplication table for C_{2v}, C_{3v}, D_4 - Reducible and Irreducible representation – Great Orthogonality theorem – Classification of molecules according to symmetry –Character table (C_{2V}, C_{3V}).

BOOKS FOR STUDY:

1. Introduction to Mathematical Physics, C.Harper, Prentice Hall, 1978.

2. Matrices and Tensors in Physics, A.W.Joshi, Wiley Eaten, 1985.

3. Applied Mathematics for Engineers and Physicists, Pipes and Harwill, Mc-Graw Hill,1970.

4.Theory and problems of Matrices, Frank Ayres.Jr, Schaum's outline series, Mc Graw Hill Internationational Book Company, Singapore, 1982.

5. Complex variable and Applications. R.V.Churchill, Mc-Graw Hill, 1982.

6. Matrices and Tensors in Physics, A..W. Joshi, Wiley Eastern, 1985.

7. Mathematical Physics, B.D.Gupta, Vikas Publication, 1982.

8. Chemical Applications of Group Theory, F.A.Cotton, Addison Wiley, 1970.

BOOKS FOR REFERENCE:

1. The Mathematical Physics and Chemistry Vol. I, Margenau Murphy, Van Nosterland, 1959.

2. Mathematical Statistics, Kanpur and Saxena, S.Chand & Co, 1973.

3. Advanced Engineering Mathematics, Wulie and Barrett, Mc-Graw Hill, 1982.

4. Mathematical Physics, Butkov, Addition-Wesley, 1973.

5. Tensor Analysis, I.S.Soklnikoff, John Wiley and Sons, 1960.

6. Applied Mathematics for Engineers and Physicists, Pipes and Harvill, Mc-Graw Hill, 1970.

7. Advanced Engineering Mathematics, Wyile & Baratte, Mc-Graw Hill, 1982.

Paper 1.3 : INTEGRATED AND DIGITAL ELECTRONICS

UNIT I: CIRCUITS & TRANSISTOR AMPLIFIER:

Transistor- switching time – Maximum power transfer theorem – Hybrid model analysis of a transistor amplifier using h parameter – Transistor biasing – FET – Biasing the FET - Common source and source follower - Emitter follower – Miller theorem – High input resistance transistor amplifier – Class A large signal amplifier – Class B amplifier – Push pull amplifier – Transformer coupled audio power amplifier.

UNIT II: OPERATIONAL AMPLIFIERS

Operational amplifier – block diagram – schematic symbol – Equivalent circuit of an op-amp – IC 741 – electrical parameters – input offset voltage and current – input bias current – differential input resistance – input capacitance – output offset voltage and nullification – CMRR – scew rate – opamp applications: differential amplifier – inverting and non-inverting amplifier – integrator – differentiator – comparator – voltage follower – current to voltage converter – active filters – low pass – high pass – band pass (I order only) – analog computations (solutions for simultaneous equations).

UNIT III: DIGITAL CIRCUITS:

Logic gates – TTL logic circuits – ICs 7404, 7408, 7432, 7486 – Truth table & timing diagrams – Boolean algebra – AND, OR, NOR, NAND, NOT, and XOR operations – De morgan's theorem – Boolean laws – sum of products – implement – product of sums – implementation – Karnaugh map – truth table to Karnaugh map – three & four variable maps – simplification. - Flip flops - R-S, clocked R-S, D, J-K, J-K Master slave - Shift registers – serial in-serial out – serial in-parallel out – parallel in parallel out - parallel in-serial out - counters - Asynchronous counters – Synchronous counters – Mod - n- counters.

UNIT IV: MICROPROCESSOR ARCHITECTURE AND INSTRUCTION SET :

Block diagram – ALU – Instruction handling area – Control section – Memory devices – Explanation using 8085 – Instructions cycle – Fetch operation – Execute operations – Instruction & Data flow- Timing Diagrams – Op-code fetch – Memory read & Memory write, 8086

Microprocessor Architecture and operation only. - Instruction format – Addressing modes – Types of Instructions – Instructions for 8085 – Subroutine – Stack Operations.

UNIT V: DEVICES & CHARACTERIZATION:

Fabrication of monolithic IC's- Photovoltaic detector –Solar cell – Types of Solar Cell- I-V characteristics – Solar Cell Fabrication technology – Hall Effect – Resistivity Measurements.

BOOKS FOR STUDY:

1. Electronic devices and circuits – J.Millman and C.Halkias, Mc-Graw Hill publishers,1982.

2. Electronic principles – A.P Malvino, TMH, 1984.

3. Electronic circuits – Schilling and Belove, Mc-Graw Hill, 1981.

4. Digital computer electronics – A.P.Malvino, Tata- Mc-Graw Hill, 1989, New Delhi.

5. Integrated electronics – Millman & Halkias, Mc-Graw Hill, 1971, USA.

6. Digital principles and applications – A.P.Malvino and D.Leach , Tata-Mc-Graw Hill, 1969, New Delhi.

7. Op-Amps and Linear Integrated Circuits 3rd Ed. By Ramkant A.Gayakwad, Prentice – Hall of India (P) Ltd, New Delhi-1997.

8. Microprocessor Architecture, Programming and Applications, R.S.Gaonkar,

Wiley,New Delhi, 1986.

BOOKS FOR REFERENCE:

1. Electronic devices and circuits – G.K.Mithal, Khanna Publishers, 1987,

New Delhi.

Paper 1.4 : ELECTROMAGNETIC THEORY

UNIT I: MAXWELL'S EQUATIONS & ELECTROMAGENTIC WAVES

Maxwell's equations – Differential and integral forms – Electromagnetic energy, Pointing theorem – Pointing vector - Wave equation – Plane electromagnetic waves in (a) free space, (b) Non-conducting isotropic medium, (c) non-conducting anisotropic medium and (d) conducting medium –Polarization of electromagnetic waves.

UNIT II: APPLICATIONS OF ELECTROMAGNETIC WAVES: I.REFLECTION AND REFRACTION

Boundary conditions at the surface of Discontinuity - Reflection and refraction of electromagnetic waves at the interface of non-conducting media –Fresnel's equations – Reflection and Transmission Co-efficients at the interface between two non-conducting media – Brewster's law and Degree of polarization-Total internal reflection.

UNIT III: APPLICATIONS OF E-M WAVES: II.DISPERSION AND SCATTERING

Normal and Anomalous dispersion – Dispersion in Gases – Solids and Liquids – Clasusius Mossotti relation – Lorentz – Lorentz formula – scattering and scattering parameters - Theory of scattering of e-m waves – polarization of scattered Light – coherence and incoherence of scattered light.

UNIT IV: MICROWAVES

Generation of microwaves – Klystron – Magnetron – Gunn diodes – Waveguides – Rectangular and cylindrical waveguides – Resonant cavities-TEM modes.

UNIT V: PLASMA PHYSICS

Plasma Physics – conditions for plasma existence – occurrence of plasma – charged particle in Electric and Magnetic fields – Magnetohydrodynamics – plasma waves.

BOOKS FOR STUDY:

1. Electromagnetic theory and Electrodynamics – Satya Prakash, Kedarnath Ramnath & Co, 1985, Chapter – 8,9,10&14.

BOOKS FOR REFERENCE:

1. Electromagnetics – Kraus & Carver, TMH, 1973.
2. Electromagnetic fields and waves – Paul Lorain & Dale R.Corson, CBS publishers, NewDelhi, 1986.
3. Foundations of Electromagnetic theory – Reitz, Milford & Frederick, Narosa publishing House, 1986.
4. Classical Electrodynamics, J.D.Jackson, Wiley Eastern Limited, New Delhi, 1978.

Paper 1.5 : NUMERICAL METHODS AND PROGRAMMING

UNIT-I: FUNDAMENTALS OF C

History – Features of C – General Structure of a C Program – Sample C Program – Editing and Executing a C Program – Character set – Identifiers and key words –Identifiers-Keywords-Data Types-Basic Data Types-Type Qualifiers-Constants-Numeric Constants-Character Constants-Variables-Arrays-Expressions-Statements-Symbolic Constants-Operators-Arithmetic Operators-Unary Operators-Relational Operators-Logical Operators-Assignment Operators-Conditional Operators-Hierarchy Operators-Library Functions-Data Input and Output Statements-Character Input and Output-String Input and Output-Formatted Input and Output-Control Statement in C-Control Statements-Branching Statements-Conditional branching statements (i) the if-else statement-Conditional branching statements(ii) the switch-case statement-Unconditional branching statement-the goto statement-Looping Statement-The while statement-The do-while statement-The for statement

UNIT-II: FUNCTION IN C

What is a C function?-Types of function in C-Advantages of C Functions-Definition of a C Function-Function Prototype-Passing parameters by value-Returning Multiple Values from a Function-Passing Arrays as Arguments-Recursion-Pointers in C-What is a Pointer in C?-Advantages of Pointers-Pointer Variables-Address operator(&)-Indirection operator(*)-Declaration of pointers-Pointers and Arrays-Dynamic Memory Allocation using Pointers-Storage Classes-Function used for Dynamic Memory Allocation-Structures and Unions in C-Declaration of a structure-Accessing a Structure-Array of Structures-Pointers to Structures and Array of Structures-Unions in C-Data Files in C-Using Files in C - Declaration of the FILE pointer-Opening a file using the fopen ()function-Closing a file using the fclose()function-File input and output-Character input and output-String Input and Output-Formatted input and output

UNIT III: COMPUTER PROGRAMMING:

Normalized floating points – Errors and pitfalls - Iteration methods for solving f(x) =0 - Bisection , False , Position , Newton Raphson, Secant method and successive approximation methods.

UNIT IV: SOLUTIONS OF ALGEBRAIC SIMULTANEOUS EQUATIONS AND INTERPOLATION:

Gauss elimination – Gauss Jordan – Gauss seidal methods – Pivoting - up to three unknowns Lagrange, Newton and Stirling's formula – Curve fitting – Methods of least squares.

UNIT V: NUMERICAL DIFFERENTATION AND INTEGRATION:

Simpson's rule and trpezoidal's rule – Numerical solution to ordinary differential equations – Euler, Modified Euler and second order Runge – Kutta methods.

BOOKS FOR STUDY:

1. Essentials of Programming in C for Life Sciences – S.Parthasarathy.

2. Numerical Methods in Science and Engineering – M.K.Ventaraman, National

Publishing Co, 1989.

BOOK FOR REFERENCE:

1. Numerical Methods in FORTRAN, Mc Cormick & Salvador, Prentice Hall, 1987.

2. Numerical Methods for Science and Engineering – R.G.Stanton, Prentice Hall, 1977.

PAPER 1.6 : ADVANCED ELECTRONICS AND PHYSICS LAB

(Any Fifteen of the following)

1. Transistor as a switch and Schmitt trigger.
2. Monostable multivibrator (Transistor).
3. Characteristics of a FET.
4. Design of FET amplifier - CS Configuration.
5. Characteristics of UJT.
6. Characteristics of SCR.
7. Relaxation oscillator (UJT).
8. Transistorized Hartely and Colpitt's audio oscillator.
9. Transistor Astable multivibrator.
10. Phase shift audio oscillator (Basic parameter).
11. Calibration of Spectrograph – Iron or Copper spectrum.
12. Michelson's Interferometer.
13. q, n,σ - Elliptical and Hyperbolic fringes.
14. G.M Counter – Statistical probability, Absorption measurements,

Half life

Measurements and inverse square law verification.

15. Resistivity measurements of a thin films.
16. Susceptibility by Guoy's method and Quincke's method.
17. Thermal expansion using optical air wedge
18. e/m by Thompson's oil drop method
19. Determination of BH and M using magnetometers
20. Band gap of a semiconductor from the temperature variation of resistance of lightly doped sample of Germanium.

Paper 2.1: SPECTROSCOPY

UNIT I: SYMMETRY ASPECTS OF MOLECULAR ORBITALS:

Valence bond theory – Molecular orbital theory- Heitler London theory for Hydrogen molecule - Hybridization – SP – SP^2 & SP^3 Hybrids.

UNIT II: ROTATIONAL SPECTRA:

Rotational energy of a diatomic molecule – Rigid and non-rigid rotators – isotopic substitution – Stark effect – its importance in microwave spectroscopy – quadrupole hyperfine interaction - Rotational spectra of polyatomic molecules – pure rotational Raman spectra – diatomic linear molecule – symmetric top molecules – mutual exclusion principle - Molecular structure – using IR & Raman spectroscopy.

UNIT III: VIBRATIONAL PROPERTIES:

Vibrational spectra of diatomic and polyatomic molecules – Information on molecular constitution from I.R studies – Vibrational Raman spectra – Vibrational course structure – Rotational course spectra – Franck – Condon principle – intensity distribution – portrait parabolae – disassociation - predisassociation.

UNIT IV: NON-LINEAR SPECTROSCOPIC PHENOMENA:

Non linear Raman phenomena – Hyper Raman effect – Classical treatment – Experimental techniques – Stimulated Raman scattering – Inverse Raman effect – Coherent anti-stoke's Raman scattering – Photo acoustic Raman scattering – Multiphoton spectroscopy – two-photon absorption – Multiphoton absorption.

UNIT V: RESONANCE SPECTROSCOPY:

Interaction between spin and magnetic field – Nuclear resonance – Bloch equations - Chemical shift – Dipole –Dipole interaction and spin lattice interaction – Mossbauer –ESR-NQR (principle only) spectroscopy and its application – Mossbaure spectroscopy - applications – Electronic structure – molecular structure – crystal symmetry and molecular structures.

BOOKS FOR STUDY:

1. Atomic structure and chemical bonding – Manas Chandra, T.M.H, New Delhi, 1979.

2. Molecular Spectroscopy – P.S.Sindu, T.M.H Pub. Co.

3. Molecular structure and spectroscopy, G.Aruldhas, Prentice Hall of India, New Delhi –

2001.

4.Molecular Spectroscopy – Banwell, Tata MacroHill Publication, New Delhi (1998)

BOOKS FOR REFERENCE:

1. Basic principles of Spectroscopy, Chang. Mc-Graw Hill, Tokyo.

2. Quantum Chemistry and Spectroscopy, Madan .S, Pathania, Vishal Publications, New Delhi, 1984.

3.Quantum chemistry – Eyring, Walter & Kimabl, John Wiley & Sons.

Paper 2.2 : QUANTUM MECHANICS

UNIT I: FOUNDATIONS:

Wave particle duality -- Uncertainty principle – applications - Postulates of quantum mechanics – Schrodinger equation – both time dependent and independent – eigen function and eigenvectors – probability density - Applications to one dimensional problems (Linear harmonic oscillator and tunnel effect).

UNIT II: DISCRETE EIGEN VALUE PROBLEM:

Three dimensional harmonic oscillator – Rigid rotator – Application to diatomic molecules – Hydrogen atom - Separation of variables and solution of R, θ, Φ equation – Discussion of bound states and parity.

UNIT III:OPERATOR METHOD IN QUANTUM MECHANICS AND APPROXIMATION METHODS

Definition of an operator – Operator algebra – Eigen values and Eigen functions – Properties of Eigen functions – Dirac's bra and ket notation – Different types of operators – Linear operators – Hermitian operators – Parity operator – Projection operator – Unitary operator – Schwartz inequality. - Perturbation theory (first order)– Time independent – Stark effect in hydrogen atom – Variation method – Ground state of helium atom – W.K.B approximation – Application to bound states.

UNIT IV: TIME EVOLUTION:

Time dependent perturbation theory – The golden rule and application – Spontaneous emission – Stimulated emission – Einstein's A & B coefficients - Semi – classical and quantum theory of radiation – Eigenvalue and Eigenfunction - Rayleigh and Raman scattering – Selection rules. - Optical Theorem – Born approximation – Diffusion Scattering – Particle wave analysis – Scattering Cross section.

UNIT V: THEORY OF ANGULAR MOMENTUM AND SCATTERING THEORY:

Angular momentum of a system of particles – Commutation relations -- Matrix representation of angular momentum – Pauli spin matrices –Addition of two angular momentum – C.G. coefficients for j

= ½ system only. - Optical Theorem – Born approximation – Diffusion Scattering – Particle wave analysis – Scattering Cross section.

BOOKS FOR STUDY:

1. A text book of quantum mechanics – P.M Mathews and K.Venkatesan, Mc Graw Hill, New Delhi 1975.

2.Introductory Quantum Mechanics – Zettili.

3. Quantum mechanics – L.Schiff, Mc-Graw Hill, 1968.

4. Quantum mechanics – B.N.Srivastava, Pragati prakashan, 1975.

BOOKS FOR REFERENCE:

1. Quantum mechanics – L.Schiff, Mc Graw Hill, 1968.

2. Quantum mechanics – J.P.Dicke and R.H.Wittke, Addison Wiley, 1978.

3. Quantum mechanics - A.K. Ghatak and Lokanathan, Mc Millan, 1977.

4. Principles of Quantum Mechanics – R.Shankar, Springer (2007)

5.Quantum mechanics - V.K. Thangappan, Wiley Eastern, 1985.

6.Quantum electrodynamics - P. G. Puranik, S.Chand & co, 1980

Paper 2.3 : SOLID STATE PHYSICS

UNIT I: CRYSTAL STRUCTURE

Periodic arrays of atoms – Fundamental types of lattices – Index system for crystal planes – simple crystal structures – Direct imaging of atomic structure – Nonideal crystal structures – Crystal structure data.

RECIPROCAL LATTICE: Diffraction of waves by crystals – scattered wave amplitude – Brillouin zones – Fourier analysis of the basis – Quasicrystals.

Crystals of inert gases – Ionic crystals – Covalent crystals – Metals – Hydrogen bonds – Atomic radii – Analysis of Elastic strains – Elastic compliance and stiffness constants – Elastic waves in cubic crystals

UNIT II: PHONONS I – CRYSTALS VIBRATIONS:

Vibrations of crystals with monoatomic basis – Two atoms per permitive basis – Quantization of elastic waves phonon momentum – Inelastic scattering by phonons-

PHONONS-II- Thermal properties: Phonon heat capacity – Anharmonic crystal interactions – Thermal conductivity

UNIT III : FREE ELECTRON FERMI GAS:

Energy levels in one dimension – Effect of temperature on the Fermi dirac distribution – Free electron gas in three dimensions – Heat capacity of the electron gas – Electrical conductivity and Ohm's law – Motion in magnetic fields – thermal conductivity of metals – Nanostructures. - Energy Bands: Nearly free electron model Bloch functions – Kronig – Penney model – Wave equation of electron in a periodic potential – Number of orbitals in a band.

UNIT IV: SEMICONDUCTOR CRYSTALS:

Band gap – Equations of motion – Intrinsic carrier concentration – Impurity conductivity – thermoelectric effects – semimetals – Superlattices

Fermi surfaces and metals: Construction of Fermi surfaces – Electron orbits, hole orbits and open orbits – calculation of energy bands – Experimental methods in Fermi surface studies

UNIT V: DIELECTRICS, FERROELECTRICS, FERROMAGNETISM AND ANTIFERROMAGNETISM

Macroscopic electric field – Local electric field at an atom – Dielectric constant and polarizability – Structural phase transitions – Ferroelectric crystals – Displacive transitions.

Diamagnetism and paramagnetism:- Langevin Diamagnetism equation – Quantum's theory of diamagnetism of mononuclear system – paramagnetism – Quantum theory of paramagnetism – cooling by isentropic demagnetization – paramagnetic susceptibility of conduction electrons.

Ferromagnetic order – Magnons – Neutron magnetic scattering – Ferrimagnetic order – Antiferro magnetic order – Ferromagnetic domains – Single domain particles – Magnetic bubble domains.

Paper 2.4: NUCLEAR AND PARTICLE PHYSICS

UNIT I: NECLEAR DECAY:

Gamow's Theory of Alpha decay - Fermi's theory of Beta decay – Kurie plots – Selection rules – Electron capture – Parity violation in Beta decay - Neutrinos – Measurement of neutrino helicity – Gamma decay – Internal Conversion Nuclear Isomerism.

UNIT II: NUCLEAR MODELS:

Liquid Drop model – Bohr Wheeler theory - Shell model – Single particle model – Magic numbers – Spin – orbit coupling - Angular momentum of nucleus ground states – Magnetic Moments of the shell model – Schmidt lines – Magnetic dipole moment – Electric quadrupole moment – Collective Model.

UNIT III: NUCLEAR FORCES:

Simple theory of deutron – Tensor forces (qualitative) - Normalization of deutron wave functions – Method of partial wave analysis and phase shifts - Effective range theory – n-p scattering at low energies– Yukawa 's meson theory of nuclear forces.

UNIT IV: REACTION CROSS SECTIONS AND NUCLEAR REACTORS:

Nuclear cross sections – Compound nuclear formation and breakup – Resonance scattering cross section – Interaction of neutron with matter – Thermal neutrons – neutron cycle in a thermo nuclear reactor – Critical size – Types of nuclear reactors - cylindrical and spherical- sub-nuclear particles (elementary ideas only) – Nuclear fusion – energy release in fusion – plasma confinement – source of stellar energy – controlled thermo nuclear reactions.

UNIT V: NUCLEAR & ELEMENTARY PARTICLES:

Classification – Paricle Directory – Leptons, Baryons and quarks – The fundamental interactions – Translations in space – Rotations in space – SU(2) and SU(3) groups – Charge conjugation – Parity – Time reversal –CPT Theorem.

BOOKS FOR STUDY:

1. Introduction to Nuclear Physics – Herald Enge, Addision Wesley Pub. Co, U.S.A.

2. Nuclear Physics – Irving Kaplan, Oxford & I.B.H Pub & Co.

3. Nuclear Physics – D.C.Tayal, Himalaya House, Bombay.

BOOKS FOR REFERENCE:

1. Atomic Nucleus – R.D.Evans, Mc-Graw Hill, 1955.
2. Nuclear Physics – R.R.Roy and B.P.Nigam, John Wiley 1967.

Paper 2.5: MATERIALS SCIENCE

UNIT I: MATERIAL BEHAVIOUR:

Elastic, Inelastic and Viscoelastic behaviour of materials – Failures of materials due to creep and fatigue - Polymers – Addition and condenation polymerization – Corrosion and oxidation.

UNIT II: LASER AND LASER MATERIALS:

Basic principles – Population rate equation Shallow – Town s condition – Optical resonator – Solid state lasers - Semiconductor lasers – Compound semiconductor laser - Gas lasers, Liquid, Dye and Chemical lasers and Applications.

UNIT III: ELECTRO-OPTICAL MATERIALS AND DEVICES:

Electro-optical effect – Materials – Pockel's effect, Kerr effect – Acoustic - optical effect – Faraday effect – Second harmonic generators.

UNIT IV: THIN FILMS:

Production and Measurement of high Vacuum - Rotary pump and

Diffusion pump - Pirani and Penning Gauge - Deposition processes – Thermal evaporation – Reactive Sputtering - RF Sputtering - Thickness measurement – Weight gain method and Quartz crystal method – LB films.

UNIT V: SOLID STATE IONICS:

Types of Ionic solids – Silver ion conductors – Copper ion conductors – Applications – Fuel cells – Solid state battery – Electrochromic display systems.

BOOKS FOR STUDY:

1. A First course in Materials science and Engineering – V.Raghavan.

2. Material science and Processes – G.B.S.Narang, Khanna Publishers.

3. Handbook of Thin film technology – L.L.Maissel and R.Alang, Mc-Graw Hill, 1972.

4. Crystal growth Technique, Pamplin.

5. Super ionic solids principles and applications – Suresh Chandra North Holland Publishing company.

BOOKS FOR REFERENCES:

1. Material Science for Engineers - Van Vlack, Addison Wisley, 1975.

2. Thin Film – Eckertrova.

Paper 2.6 : ADVANCED ELECTRONICS AND PHYSICS LAB

(Any Twelve of the following)

1. Half adders and Full adders.
2. Integrator and Differentiator circuits using IC 741.
3. D/A converters (a) Ladder network (b) Weighted resistor method.
4. A/D converter.
5. Square wave, Sine wave and Triangular wave generators using IC.
6. Schmitt trigger using op-amp.
7. Demultiplexer.
8. BCD to 7 segment display and BCD decoder.
9. Shift register and ring counter.
10. Operation of 7489 RAMS.
11) Hall effect –Mobility and Hall constant determination.
12) Determination of Curie point – Ferromagnetic material.
13) Refractive index of liquid by laser.
14) Determination of wavelength of a laser source by diffraction grating.
15) Electron spin resonance spectrometer
16) Magnetic Hystersis loop tracer
17) e/m by Millikan's oil drop method
18) Hydrogen spectrum and Rydbergs constant
19) Determination of the value of the capacitance using Impedance vs $1/C\omega$
20) Maxwell's bridge

Course : **M.Sc. (Chemistry) [2008-09 onwards]**

Pattern : Annual pattern

Mode : Distance Education

Duration : Two years

Eligibility : Bachelor Degree in Chemistry

Medium : English only

PROGRAMME OF STUDY AND SCHEME OF EXAMINATION

Code No	**Name of the Course**		**Max. Mark**
I Year			
1.1	Organic Chemistry - I	3	100
1.2	Inorganic Chemistry - I	3	100
1.3	Physical Chemistry - I	3	100
1.4	Instrumental Methods of Analysis	3	100
1.5	Organic Chemistry Practical	6	100
1.6	AnalyticalChemistryPractical	6	100
II Year			
2.1	Organic Chemistry - II	3	100
2.2	Inorganic Chemistry - II	3	100
2.3	Physical Chemistry - II	3	100
2.4	Applied Chemistry	3	100
2.5	Inorganic Chemistry Practical	6	100
2.6	Physical Chemistry Practical	6	100
	Total Marks		**1200**

1.1 ORGANIC CHEMISTRY – I

Unit – I

Electron Displacement: Inductive and field effects – mesomeric effect – steric inhibition of resonance – steric enhancement of resonance – hyperconjugation - time variable effects -hydrogen bonding – effect of structure on the dissociation constants of acids and bases.

Reaction Mechanisms: Classification of organic reactions - Principle of microscopic reversibility - Hammond postulate - Kinetic and thermodynamic control of chemical reactions - Kinetic and non-kinetic methods for determining organic reaction mechanisms - formation and stability of reactive intermediates - carbocations, carbanions, carbenes and nitrenes.

Aromaticity: Concept of aromaticity - HMO theory – concept of homoaromaticity and antiaromaticity – Non-benzenoid aromatic compounds – cyclopentadienyl anion, fulvene, ferrocene, azulene, tropolones, annulens and tropylium cations - Alternate and non-alternate hydrocarbons.

UNIT – II

Aliphatic nucleophilic substitutions: Nucleophiles and bases – ambident nucleophiles – hard and soft acids, S_N1 and S_N2 mechanisms - Phase Transfer catalysis - effect of structure, medium, nucleophile and leaving group - stereochemical changes - S_N1, S_N2, S_Ni, mechanisms - Esterification and ester hydrolysis mechanisms.

Aliphatic electrophilic substitutions: S_E1,S_E2 and S_Ei mechanisms. Aromatic electrophilic substitutions: Mechanisms - orientation and reactivity - ortho/para ratio - partial rate factors – mechanisms of nitration, nitrosation, diazonium coupling, sulphonation, halogenation, Friedel craft alkylation and acylation - Gatermann Koch formylation - Vilsmier Haak reaction.

Aromatic Nucleophilic substitutions: Unimolecular and bimolecular mechanisms - benzyne mechanism - Orientation and reactivity -Von-Richter reaction.

Unit – III

Elimination reactions: E_1, E_2 and E_1cB mechanisms - orientation of the double bond - effect of substrate, base, leaving group and reaction medium - Hofmann and Saytzeff rules - elimination versus substitution - pyrolytic cis elimination - Bredt's rule.

Addition to carbon-carbon double bonds**:** Electrophilic, Nucleophilic and free radical additions - stereochemistry of additions - addition to conjugated systems - regioselectivity and chemoselectivity in additions - hydration of olefins – hydroboration - Michael addition - Addition of Grignard reagents and lithium dimethyl Cuprate - Diels-Alder reaction.

Addition to carbonyl groups: Mechanisms of Aldol condensation, Perkin reaction, Knovenagal reaction, Mannich reaction, Claisen ester condensation, Dickmann condensation, Darzen reaction. Wittig reaction, Cannizzaro reaction, Benzoin condensation and Reformatsky reaction.

Unit – IV

Heterocyclic compounds: Structure and synthesis of Indole, Oxazole, Thiazole, Flavone, Isoflavone, Anthocyanin – Cyanidin chloride.

Alkaloids: Structure and synthesis of Morphine, Atropine and Tylophorine. Biosynthesis of Alkaloids.

Terpenes: Structure and synthesis of α-Pinene, Camphor and Zingiberene. Biosynthesis of terpenes

Unit – V

Proteins: Solid phase peptide synthesis - end group analysis-structure of oxytocin - primary, secondary and tertiary structure of proteins-enzymes, coenzymes-DNA and RNA – their biological importance.

Carbohydrates: Configuration and conformation of disaccharides - Maltose and cellobiose –Polysaccharides - starch and cellulose.

Text books

1. **Advanced Organic Chemistry – Reactions, Mechanisms and Structure,** Jerry March, IV Edn., John Wiley & Sons, 1992.
2. **A Guide Book to Mechanisms in Organic Chemistry**, P.Sykes, VI Edn., Longmans Scientifics and Technical, Essex 1986.
3. **Reaction Mechanism in Organic Chemistry**, S.M. Mukherji and S.P.Singh, III Edn. 1984, MacMillan.
4. **Organic Chemistry, Vol. I & II**, I.L. Finar**,** V Edn. First Indian reprint, Pearson Education Asia Pvt. Ltd. 2000.

Reference books

1. **Advanced Organic Chemistry, Part A & B**, F.A.Carey and Sundberg, III Edn. Plenum Press, 1990.
2. **Organic Chemistry,** S.H.Pine, J.B. Hendrickson, D.J.Cram and G.S.Hammond, IV Edn. McGraw-Hill Company 1980.
3. **Mechanism and Theory in Organic Chemistry** – T.H. Lowry and K.S. Richardson, Harper and Row, NY 1976.
4. **Organic Reactions and Mechanisms**, P.S.Kalsi, II Edn. New Age International Publishers, 2000.
5. **Fundamentals of Organic Reaction Mechanisms**- J.M.Harris and C.C. Wamser, John Wiley & Sons, Inc. 1976.
6. **Organic Reaction Mechanisms**-R.K. Bansel, Tata McGraw Hill, 1975.
7. **Chemistry of Alkaloids,** S.W. Pelletier, Van Nostrand Reinhold, 1970.
8. **Chemistry of Terpenes and Terpenoids**, A.A.Newman (editor), Academic Press, London, 1972.
9. **Organic Chemistry,** P.Mehta & M.Mehta, Prentice Hall India, New Delhi, 2005.
10. **Chemistry of Terpenoids**, P.De Mayo, Interscience publishers, 1959.
11. **Biochemistry**, A.L.Lehninger, Nath publishers, 2000.

1.2 INORGANIC CHEMISTRY – I

UNIT – I

Basic concepts in Inorganic Chemistry: VB approach to covalent bonding - Heitler-London, Pauling-Slater refinements - Hybridization and structure of molecule. VSEPR theory - shapes of molecules. MO approach to covalent bonding - symmetry and overlap of atomic orbitals -symmetry of molecular orbitals - sigma-pi-and delta-bonding - energy levels in homo- and hetero nuclear diatomic molecules. Bond length, bond order and bond energy – ionic character in a covalent bond. The concept of multi centre bonding. Structure and bonding in fluorine and oxygen compounds of xenon and krypton. Bonding in simple triatomic molecules/ions.

Lattice energy and its calculations by Born-lande and Born-Meyer equations - Determination by Born-Haber cycle - Kapustinski equation. Energetics of dissolution of ionic compounds in polar solvents. Properties of ionic compounds-hardness and electrical conductivity. HSAB principle – Pearson's concept- hardness and softness-symbiosis-theoretical basis of Hardness and softness - Electronegativity and hardness and softness.

UNIT – II

Solid Sate Chemistry: Crystal structure - classification of ionic structures - AX,AX_2,AX_3 types – AX type (ZnS, NaCl, CsCl) structures only - AX_2 type(fluorite, rutile, beta-cristobolite) structure only - layer structure – CdI_2- Nickel arsenite structure. Schottky and Frenkel defects -explanation and calculation of number defects per cm^3 – metal excess defect - F-centers and interstitial ions - metal deficiency defect - positive ions absent - extra interstial negative ions – semiconductors and transistors – rectifiers - photovoltaic cell.

UNIT – III

Nuclear chemistry: Radioactive decay - theories of decay processes – Laws of radioactivity - detection and measurements of radiations - nuclear structure - composition of nuclei properties of nuclei - nuclear radii, nuclear spin etc – nuclear forces-its characteristics - meson field theory -nuclear stability - nuclear models - liquid drop shell and collective models. Artificial radioactivity - nuclear reactions - transmutation, stripping and pick up, fission, fusion, spallation and fragmentation reactions - scattering reactions - nuclear cross-section. Nuclear reactors -charged particle accelerators, neutron sources - γ ray and X ray sources - Application C^{14} dating – agriculture - biology – neutron activation and isotopic dilution analysis.

UNIT – IV

Lanthanides and actinides: Lanthanides - occurrence, extraction and separation techniques (fractional crystallization, precipitation, ion exchange, solvent extraction and thermal decomposition, selective reduction and oxidation) - lanthanide contraction – spectral and magnetic properties -

coordination compounds of lanthanides - uses of lanthanides and their compounds - position in the periodic table. Actinides - synthesis of elements - electronic configuration and oxidation states - spectral and magnetic properties - comparative account of lanthanides and actinides - position in the periodic table.

UNIT – V

Polyacids and silicates: Isopoly and heteropoly acids - solution equilibria and pH dependence –structure of polymolybdates and vanadates - Anderson structure. Hetero-polyanions - 6,9,12 hetero-polyanions - Keggin structure. Silicates: Paulings rule of electrovalence and structure of silicates - isomorphous replacements – some important silicate structures - ortho and metasilicates. Pyroxenes and amphiboies - layer structures - clay minerals – mica – silicate with frame work structures - feldspar, zeolites - molecular sieves.

Text books

1. **Modern aspects of Inorganic chemistry,** H.J. Emelius and Sharpe, Universal book Stall, New Delhi, 1989.
2. **Inorganic Chemistry- Principles of structure and reactivity**, J.E. Huheey, E.A. Keiter and R.L. Keiter, 4th edition, Pearson-Education, 2002.
3. **Advanced Inorganic Chemistry** - F.A. Cotton and G. Wilkinson, Wiley Eastern, 5th edition, 1998.
4. **Source book of atomic Energy**, S. Glasstone, Van Nonstrand Co., 1969.
5. **Essentials of nuclear chemistry**, H.J. Arniker, 2nd edition Wiley eastern Co.,1987.

Reference books

1. **Inorganic Chemistry**, D. F. Shriver and P. W. Atkins, Oxford U.K., 1999
2. **Physical Methods in Inorganic Chemistry**, R. S. Drago, Van Nostrand Reinhold. 2nd Edn., 1968.
3. **The Magneto Chemistry of Complex Compounds** in Modern Coordination Chemistry, B. N. Figgeis and J. Lewis, Ed: Lewis & Wilkins, Interscience. N.Y., 1967.
4. **Non -Aqueous Solvents**, T. C. Wadington, Nelson, 1969.
5. **A Text book of Quantitative Inorganic Analysis**, A. I. Vogel, ELBS, 3rd Edn, 1969.
6. **Inorganic Chemistry,** K.F. Purcell and J.C. Kotz, WB Saunders Co. USA 1977.
7. **Inorganic Chemistry,** G.S. Manku. TMH Co., 1984.
8. **Elements of Nuclear Chemistry,** A.K. Srivatsava and P.C. Jain, S. Chand and Co., 1989.
9. **Nuclear and radiochemistry,** G. Friedlander, J.W. Kennedy and J.M. Miller, Wiley, 1964.

1.3 PHYSICAL CHEMISTRY – I

UNIT - I

Classical thermodynamics: Second law of thermodynamics – Need, Statements. Entropy - Definition, entropy changes in reversible and irreversible processes, Carnot's cycle clausius inequality, entropy changes in ideal gases, entropy of mixing, entropy changes in phase changes - Degradation of energy.

Gibb's and Helmholtz free energies - Criteria for spontaneity and conditions of equilibrium Maxwell relations - Thermodynamic equations of state Free energy changes in ideal gases. Gibbs Helmholtz equation, applications - Nernst Heat theorem - Third law of thermodynamics, apparent exceptions to third law - Partial molar quantities - chemical potential Gibb's Duhem equation - Duhem Margules equation - determination of partial molar quantities.

Fugacity and its determination - Activity and activity co efficient - determination of mean activity co - efficient of electrolytes - Reaction isotherm - equilibrium constant and its dependence on temperature and pressure.

UNIT -II

Electrochemistry: Transport number and ionic mobilities (only definition and not determination) - Debye Huckel theory of interionic attraction - Debye Huckel Onsagar equation - Validity and extension of the theory - Activity of ions in solution - Debye Huckel limiting law - Applications of conductivity measurements - Electrode potential and Nernst equation - types of electrodes and electrochemical cells - Applications of cell EMF - Electrode Kinetics over voltage and its determination - Butler-Volmer equation and approximation of the equation.

UNIT – III

Quantum Chemistry-I: Inadequacy of classical mechanics, wave-particle dualism - Heisenberg's uncertainty principle - Mathematical preparation for quantum chemistry: functions, operators, matrices, vectors – Eigen value and eigen functions, postulates of quantum mechanics-schrodinger wave equation - Application of quantum chemistry to one and three dimensional boxes - degeneracy

UNIT-IV

Chemical Kinetics-I: Theories of reaction rates: Absolute reaction rate theory(ARRT) - thermodynamic and statistical treatment - comparison to simple collision theory - Application of ARRT to unimolecular (Lindemann, Hinshelwood and KRRM and Slater) bimolecular and third order reactions - Potential energy surfaces, Kinetic isotopic effect (qualitative approach only) - Principles of microscopic reversibility - steady state approximation - Kinetics of complex reactions: Parallel consecutive and opposing or reversible

reactions, Branched chain and explosive reactions - Fast reactions - Flow, relaxation and NMR methods.

UNIT-V

Photochemistry and radiation chemistry: Absorption of light by atoms and molecules - photophysical processes of the electronically excited states - fluorescence and phosphorescence -energy transfer mechanisms - photosensitization and Chemiluminescence - actinometers and quantum yield determination - Flash photolysis. Study of photochemical reactions - Hydrogen -Halogen reaction - decomposition of carbonyl compounds - Solar energy conversion. Radiation chemistry of aqueous solutions - hydrated electron - radiolysis of water.

Text Books

1. **Quantum Chemistry**, D.A. McQuarrie, University Science Books, Mill Valley, California, 1983.
2. **Thermodynamics for Students of Chemistry**, J. Rajaram and J.C. Kuriacose, Lal Nagin Chand, New Delhi, 1986.
3. **Kinetics and Mechanism of Chemical Transformations**, J. Rajaram and J.C. Kuriacose, MacMillan India Ltd. 1993.
4. **Physical Chemistry,** P.W.Atkins, Oxford University Press, Oxford, 1990.
5. **Text Book of Physical Chemistry**, D.A. McQuarrie, University Science Books, Mill Valley, California, 1983.
6. **Introduction to Electrochemistry**, S.Glasstone, Affiliated East west Press, New Delhi 1960.

Reference Books

1. **Molecular Quantum Mechanics**, P.W. Atkins, Oxford University Press, Oxford, 1983
2. **Quantum Mechanics in Chemistry**, M.W.Hanna, W.A.Benjamin Inc. London 1965
3. **Thermodynamics for Chemists**, S. Glasstone, Affiliated East West Press, New Delhi 1960.
4. **Chemical Kinetics**, K.J.Laidler, Harper and Row, New York,1987.
5. **Kinetics and Mechanism**, R.G. Frost and Pearson, Wiley New York, 1961
6. **Kinetics and Mechanism**, W.J. Moore and R.G. Pearson, 1981.
7. **Quantum Chemistry**, R.K.Prasad, Wiley Eastern, New Delhi,1992.
8. **Physical Chemistry**, R.A. Alberty and R.J.Silbey, John Wiley and Sons, New York, 1992.
9. **Principles and application of Electrochemistry**, D.R. Crow, Chapman and Hall, 1991.
10. **Electrochemistry**, J.O.M. Bockris and A.K.N. Reddy Vols. 1 and 2, Plenum, New York, 1977.
11. **Electrochemistry**, P.H.Rieger, Chapman and Hall, New York, 1994.

1.4 INSTRUMENTAL METHODS OF ANALYSIS

Unit - I

UV-Visible spectroscopy: Basic Principles – electronic excitations-solvent effects - factors affecting position and intensity of absorption bands - instrumentation - applications – Qualitative analysis - Quantitative analysis - spectra of dienes - α,β-unsaturated ketones and aromatic carbonyl compounds – Woodward –Fieser rules - charge transfer complexes.

IR-Spectroscopy: Basic principles-stretching vibrations - Hook's law - Bending vibrations –Overtone and combination bands - Fermi resonance – Instrumentation - Applications to organic compounds - characteristic frequencies - effects of substitution, conjugation, bond angle and hydrogen bond - vibrational frequencies.

Unit – II

NMR Spectroscopy: Theory of ^{1}H NMR spectroscopy – chemical shift – factors affecting chemical shift – spin –spin coupling Instrumentation - first order and non-first order spectra - shift reagents, Double resonance - spin tickling - Nuclear Overhauser Effect - Deuterium exchange reactions – Applications - ^{13}C NMR - FT-NMR.

ESR Spectroscopy: Theory – Instrumentation - Presentation of spectrum - comparison between ESR and NMR - 'g' values - applications to organic and inorganic compounds.

Unit-III

Mass Spectroscopy: Principle - parent ion - Meta stable ion - isotopic ions - Basic peak Nitrogen rule - Instrumentation – general rule of fragmentation - Mclafferty rearrangement. Structure elucidation.

ORD and CD: Principle – Circular birefringence and circular dichromism – Cotton effect - ORD curves - Application on cotton effect curves - α-haloketone rule - octant rule - Applications for determination of conformation and configuration.

Chromatographic methods: Definition - Classification - Basic and elementary principle and practice of Paper chromatography. Thin Layer Chromatography and Gas chromatographic techniques - High Pressure Liquid Chromatography.

Unit – IV

Thermal and Spectrometric methods of analysis: Thermogravimetry - Differential thermal analysis - Differential scanning calorimetry - Thermometric titrations, Principles and applications of calorimetry, Fluorimetry, turbidimetry and Nephelometry - flame photometry.

Unit-V

Electroanalytical methods: Ion selective electrodes - Potentiometric methods – electrogravimetry - Coulometric analysis. Polarography - Instrumentation,

principles and applications. Cyclic voltammetry - chrono techniques - amperometry and stripping analysis.

Error analysis: Types of errors - methods of elimination of errors - Statistical analysis of data -Precision and accuracy - standard and normal error curves - null hypothesis – Student t- Test - Rejection criteria - Q-test and F-test - Linear regression analysis.

Text Books

Instrumental Methods of Analysis, Willard, Merit Dean and Settle CBS Publishers and Distributors, IV Edn., 1986.

1. **Principles of Instrumental Analysis,** Schoog, Holler, Nieman, Thomson, Asia Pvt. Ltd., Singapore, 2004.
2. **Spectrometric identification of organic compounds**, R.M Silverstein, C.G. Bassler and Morril, VI Edn., John Wiley & Sons, New York, 2002.
3. **Text Book of Quantitative Inorganic Analysis**, A.I Vogel, ELBS III Edn, 1987.
4. **Instrumental methods of chemical analysis**, Chatwal and Anand, Himalaya publishing House New Delhi, 2000.

Reference Books

1. **Electronic Principles**, Albert Paul Malvino PMH Publishers, III Edn, 1984.
2. **Analytical Chemistry,** J.G. Dick McGraw Hill Publishers, 1974.
3. **Instrumental Methods of Chemical Analysis,** G.W.Ewing McGraw Hill Pub, 1975.
4. **Electroanalytical Chemistry,** B. H. Vassos and G.W. Ewing, John Wiley and Sons, NY, 1983
5. **Instrumental methods in Electrochemistry**, R. Greef, R. Peat, L.M. Peter, D. Pletcher and J. Robinson, Ellis Horwood, Chichester, 1985.
6. **Electrochemical methods,** Fundamentals and applications, A.J. Bard and L.R.Faulkner, J. Wiley and Sons, NY, 1980.
5. **Spectroscopy of organic compounds**, P.S. Kalsi, Wiley Eastern Ltd., Madras, 1995.
6. **Modern Electrochemistry,** J.O.M. Bockris and AKN Reddy, Plenum, 1970.
7. **Fundamentals of Analytical Chemistry,** D.A.Skoog and D.M.West Holt Rinehart and Winston Publications, IV Edn, 2004.
7. **NMR in Chemistry,** W. Kemp, MacMillan Ltd,1986.
8. **Spectroscopy in Inorganic Chemistry**, C.N.R.Rao, J.R.Ferraro, Methven Co., London, 1968.
9. **Basic Principles of Spectroscopy,** Raymond Chang, Mc Graw Hill Ltd., New York, 1993.
10. **Instrumental Analysis,** G. D. Christian and J.E.O Reilly, Allyn and Bacon Inc, II Edn., 1986.
11. **Structural methods in Inorganic Chemistry,** E.A.V. Ebsworth, D.WH. Rankine and S. Craddock, Black well Scientific Publ., 1987.

1.5 ORGANIC CHEMISTRY PRACTICAL

1. **Analysis of two-component mixtures:** Separation and characterization of components.
2. **About a dozen single stage preparation of organic compounds:** Preparations illustrating O-acylation, N-acylation, bromination, nitration, benzoylation, diazotization, rearrangements, hydrolysis, oxidation etc.

Reference books

1. **Vogel's Practical Organic Chemistry,** B.S.Furniss, A.J.Hannaford,, P.W.G.Smith and A.R.Tatchell, 5th edn. ELBS, 1989.
2. **Laboratory Manual of Organic Chemistry**, Raj K. Bansal, III Edn., New Age International (P) Ltd.1996.

1.6 ANALYTICAL CHEMISTRY PRACTICAL

1. **Quantitative estimations:** Quantitative estimation of aniline, phenol, ethylmethylketone, and glucose (by both Betrand`s and Lane and Eynon methods).
2. **Semi-micro qualitative analysis:** Analysis of mixtures containing two less familiar cations like W, Tl, Mo, Se, Te, Ce, Zr, Th, Ti, V, U and Li and two familiar cations like Pb, Cu, Bi, Cd, Mn, Ni, Co, Zn,Ca, Ba, Sr and Mg.

Reference Books

1. Laboratory Manual of Organic Chemistry, **Raj K. Bansal, III Edn., New Age International (P) Ltd.1996.**
2. Vogel's qualitative Inorganic analysis, G. Svehla, VI Edition, Orient Longman, 1987.
3. Inorganic Semimicro Qualitative analysis, **V.V. Ramanujam, National Publishing Co., 1971.**

2.1 ORGANIC CHEMISTRY – II

Unit – I

Molecular rearrangements: Mechanisms of Wagner – Meerwein, Demzonev, Wolff, Baeyer-Villiger, Stern and Favorskii rearrangements.

Oxidation: Oxidations using chromic acid, DMSO-DCC, Manganese dioxide, Selenium dioxide, lead tetraacetate and periodic acid - Oppenaur oxidation.

Reduction: Catalytic reduction - Birch, Wolff-Kishner and Clemmmensen reduction - MPV reduction.

Synthetic methods: Planning a synthesis - linear, convergent and relay approaches to total synthesis - Retrosynthetic analysis of simple organic compounds. Functional group interconversions. Use of activating and blocking groups in synthesis. Stereoselective problems of geometrical and optical isomerism. Umploung synthesis. Robinson annelation - schematic analysis of the total synthesis of 2,4-dimethyl-2-hydroxypentanoic acid and trans-9-methyl-1-decalone.

Unit – II

Optical isomerism: Elements of symmetry - projection formulas - chirality, Cahn–Prelog- Ingold nomenclature - Enantiotopic and diastereotopic atoms – atropisomerism - optical isomerism of compounds containing one and more than one asymmetric carbon - optical activity of biphenyl, allenes and spiranes – optical isomerism of nitrogen and sulphur compounds -stereospecific and stereoselective synthesis – Resolution, racemisation and asymmetyric synthesis – Cram's and Prelog's rules.

Geometrical isomerism: Carbon-Carbon double bonds, E,Z-nomenclature - Determination of configurations of geometrical isomers - Monocyclic systems.

Unit – III

Conformational analysis: Configuration and conformation - configuration in open chain systems - conformation and reactivity in acyclic compounds – examples of E2 elimination, neighboring group participation, intramolecular rearrangements and cis-elimination - oxidation and substitutions - conformation of cyclohexane and its mono and disubstituted cyclohexanes - conformation and reactivity of cyclohexane derivatives - conformations of decalins.

Free radical reactions: Formation, detection, stability and reactions of free radicals – radicals chain reactions - polymerization, substitution, additions and rearrangements – Barton, Gomberg, Sandmeyer, Ullmann, Pschorr and Hunsdiecker reactions.

Unit – IV

Photochemistry: Principles - excited states - Energy transfers - Jablonski diagram - sensitization, quenching and quantum efficiency - Norrish type I and type II reactions – Paterno-Buchi reaction – photoreduction – photooxidation - photochemical reactions of olefins - cis-trans isomerisation - di-π methane rearrangement**.**

Pericyclic reactions: Woodward-Hoffmann rules - Frontier molecular orbital theory -perturbation theory - electrocyclic reactions - cycloaddition reactions - chemotropic reaction -sigmatropic rearrangements.

Unit – V

Vitamins: Physiological importance of Vitamins - Structural elucidation and synthesis of Vitamin A, B_1 and B_2 - Structural elucidation of Vitamin D

Steroids: Structural elucidation of cholesterol (synthesis not required) - Structural elucidation and synthesis of Oestrone, Equilenin, Progesterone and Androsterone - biosynthesis of Cholesterol. Conformations of steroids.

Text books

1. **Stereochemistry of carbon compounds**, Ernest L. Eliel, T.M.H. Edn., Tata McGraw-Hill Publishing Company, 1962.
2. **Stereochemistry – Conformation and Mechanism**, P.S.Kalsi, New Age International (P) Ltd. VI Edn., 2005.
3. **Organic Photochemistry**, J.M.Coxon and B. Halton, Cambridge University Press 1974.
4. **Advanced Organic Chemistry** – **Reactions, Mechanisms and Structure,** Jerry March, IV Edn., John Wiley & Sons, 1992.
5. **Molecular Rearrangements, Vol.I, Vol. II**, Paul de Mayo, Interscience, NY, 1963.
6. **Organic Chemistry, Vol.II**, I.L. Finar**,** V Edn., First Indian reprint, Pearson Education Asia Pvt.Ltd., 2000.

Reference books

1. **Stereochemistry of Organic Compounds**, D.Nasipuri, New Age International Publishers, 1994.

2. **Stereochemistry**, V.M. Potapov, MIR Publishers, Moscow 1979.
3. **Conformational Analysis,** E.L.Eliel, N.C. Alliger, S.J.Angyal and G.A.Morrison, Interscience, NY 1965.
4. **Stereochemistry and Mechanism through solved problems**, P.S. Kalsi, Second Edition, New Age International Publishers, 1994.
5. **Molecular reactions and Photochemistry,** Charles A. Depuy and Orville L. Chapman, Prentice Hall of India Pvt. Ltd, 1972.
6. **Modern Molecular Photochemistry**, N.J.Turro, Benjamin/ Cummings, Menlo Park, California, 1978
7. **Organic Chemistry,** R.T. Morrison and R.N. Boyd, Allyn and Bacon Inc., 1983.
8. **Organic Chemistry,** S.H.Pine, J.B. Hendrickson, D.J.Cram and G.S.Hammond, IV Edn., McGraw-Hill Company 1980.
9. **Organic Reactions and Mechanisms**, P.S.Kalsi, II Edn. New Age International Publishers, 2000.
10. **Fundamentals of Organic Reaction Mechanisms**- J.M.Harris and C.C. Wamser, John Wiley & Sons, Inc. 1976.
11. **Principles of Organic Synthesis**, R.O.C. Norman, II Edn., Chapman and Hall, 1993.

2.2 INORGANIC CHEMISTRY – II

UNIT - I

Coordination Chemistry I: Nomenclature – geometrical and optical isomerisms in octahedral, square planar and tetrahedral complexes-CFT – Splitting in octahedral filed – CFSE - Strong field and weak field splitting-calculation of CFSE for d^n systems - splitting in tetrahedral complexes - only weak field splitting – reason - tetragonal symmetry - differences between tetrahedral and tetragonal symmetries - Jahn-Teller distortion - theorem – z-in and z-out distortions - square planar symmetry - factors affecting 10Dq - Jorgensen relation - evidences for CFSE – magnetic property – lattice energy-stability of particular oxidation state - site preferences in spinnels.

MOT - Octahedral, tetrahedral, square planar complexes-pi bonding and MOT ligands having empty, and filled pi orbitals – effect on 10Dq.

UNIT – II

Coordination Chemistry –II: Stability of coordination compounds - stability constants, stepwise and overall formation constants - pH metric, polarographic and Spectrophotometric methods of determining stability constants - chelate effect.

Kinetics and mechanisms of reactions in solution - labile and inert complexes - ligand displacement reactions - hydrolysis, anation, aquation in octahedral complexes - substitution reactions in square planar complexes – trans effect – electron transfer reactions - complementary and non-complementary reactions - inner sphere and outer sphere processes – isomerisation and racemisation - template effect and synthesis of macrocyclic ligands.

UNIT – III

Inorganic Spectroscopy and Magnetic properties: IR spectroscopy - effect of coordination on ligand vibrations - uses of group vibrations in the structural elucidation of metal complexes of urea, cyanide, nitrate, sulfate and dimethyl sulphoxide - effect of isotopic substitution on the vibrational spectra of molecules.

Electronic spectroscopy - difference between electronic configuration and terms – states –microstates - derivation of term symbols - spectroscopic terms - effect of Interelectronic repulsion and

spin-orbit coupling – Racah parameters B and C - selection rules and their break -down-splitting of orbitals in octahedral field-hole formalism - ground states of free ions for d^n systems - energy level diagrams for d^n systems-mixing of orbitals - Orgel, and Tanabe-Sugano diagrams - prediction and assignment of transitions for d^n systems.

Magnetic properties - para, dia, ferro, ferri, antiferro magnetisms - calculation of μ_{eff} values for complexes.EPR - basic principles - characteristics of 'g'-g_{II} and g_I- $g_I > g_{II}$ reason -selection rules – splitting in bis(salicylaldiminecopper (II)).

UNIT – IV

Organometallics: Definition – M- C – bond - Low oxidation state of metal – explanation - metal alkyls and aryls - Olefin and acetylene complexes - Dewar-Chatt approach to bonding in olefins - metallocenes – structure — comparison of ferrocene with other metallocenes with respect to their reactivity, magnetic property, stability etc, from MOT – preparation of ferrocene –properties - fluxional molecules. Catalysis involving organometallics - oxidative addition and reductive elimination, hydrogenation, isomerisation and hydroformylation - Ziegler-Natta polymerization.

UNIT – V

Bio-Inorganic Chemistry: Metalloporphyrins - Chlorophyll-hemoglobin and myoglobin structure and function of hemoglobin - cytochromes, enzyme action-inhibition and restoration – metalloenzymes – carboxy peptidase-A, Vitamin B_{12} and B_{12} coenzymes, non-heme iron proteins - rubridoxin – ferrodoxins - fixation of nitrogen - in vivo systems. Alkali and alkaline earth metal ions in biology - sodium ion pump. Copper containing oxidases - different types of copper proteins, catalytic properties of laccase - synthetic oxygen carriers - metal complexes of Schiff bases, Vaska`s compound - Metal poisons and chelating agents in medicine.

Text books

1. **Advanced Inorganic Chemistry**, F.A. Cotton and G. Wilkinson, Wiley Eastern (P) Ltd., 1988.
2. **Structural methods in Inorganic Chemistry,** E.A.V. Ebsworth, D.WH. Rankine and S. Craddock, Black well Scientific Publ., 1987.

3. **Physical Methods in Chemistry**, R.S. Drago, Reinhold, New York, 1968.
4. **Inorganic Solids,** D. M. Adams, John Wiley Sons, 1974.
5. **Principles of Bioinorganic Chemistry**, S.J. Lippard and Berg. Univ. Science Books 1994.

Reference books

1. Co-ordination Chemistry, D. Bannerjea, Tata-McGraw Hill, 1993.
2.Biocoordination Chemistry, D.E. Fenton, Oxford Science Publication 1995.
3.Inorganic Chemistry- Principles of structure and reactivity, J.E. Huheey, E.A. Keiter and R.L. Keiter, 4th edition, Pearson-Education, 2002.
4.Co-ordination compounds, S.F.A. Kettle, ELBS, 1973.
Theoretical Inorganic Chemistry, M.C. Day and J. Selbin, Van Nostrand Co., NY. 1974.
5.Inorganic Chemistry, K.F. Purcell and J.C. Kotz, WB. Sanders Co., USA 1977.
Inorganic Chemistry. D. F. Shriver, P. W. Atkins and C.H. Longford, ELBS, 2nd edition, 1994.
6.Spectroscopy in Inorganic Chemistry, C.N.R. Rao and J.R. Ferraro, Methven Co., London, 1968.
7.Physical Methods in Adv. Inorganic Chemistry, HAO. Hill and P. Day, John Wiley, 1986.
8.Spectroscopy and molecular structure, G.W. King, Holt Rienehart and Winston, 1964.
9.Solid state chemistry and its applications, A.R. West, Wiley, New York, 1984.
10.Inorganic biochemistry, J. A. Cowan, Wiley-VCH, New York, 1997.

2.3 PHYSICAL CHEMISTRY – II

UNIT - I

Statistical thermodynamics: Maxwell - Boltzmann distribution law of molecular energies - Negative absolute temperature - Entropy and probability, partition functions and thermodynamic functions, translational, rotational and vibrational partition functions entropies and energies - Equilibrium constant from partition function, Statistical interpretation of third law - Bose-Einstein distribution law - Application of the law to photon gas - Fermi-Dirac distribution law -Application of the law to electron gas - Heat capacities of solids: Einstein and Debye's models - Non equilibrium thermodynamics - Elementary treatment, Onsager reciprocal relations.

UNIT - II

Quantum chemistry – II: Application of wave mechanics to simple systems - One dimensional harmonic oscillator, rigid rotor and hydrogen atom and hydrogen like atoms - Pauli's exclusion principle and Slater determinant - Approximation methods – variation - time independent perturbation and SCF methods - Application of variation methods to hydrogen atom - Application of perturbation method to helium - HMO method – application to butadiene.

UNIT – III

Group theory and its applications: Symmetry elements and symmetry operations - Rules for forming a group, group multiplication table, group classification - Point groups and systematic assignment of point groups for molecules - Matrix representation theory - matrix multiplication, inverse of a matrix, matrix diagonalization and matrix representation for symmetry operations - Reducible and irreducible representations.

The great orthogonality theorem and character table - Direct product representation - Application of group theory to IR and Raman spectra - H_2O and NH_3 molecules - Application of group theory to electronic spectra (HCHO and C_2H_4)

UNIT – IV

Chemical kinetics – II Reactions in solution – factors which influence the reaction rates in solution. Application of ARRT to solution kinetics – Bronsted – Bjerrum equation, Primary salt effect, secondary salt effect - influence of internal pressure - effect of pressure and volume of activation. Effect of solvent: ion-ion and ion-dipole reactions- dielectric constant - Effect of substituents on reaction rates Hammett and Taft equations - Acid base catalysis-acidity functions – Bronsted relations -

Zucker Hammett hypothesis - Enzyme catalysis – Michaelis – Menton equation- Lineweaver- Burke equation – Effect of pH and temperature on enzyme catalyzed reactions.

UNIT -V

Surface phenomena: Adsorption of gases on solids - Physical and Chemical adsorption –Freundlich, Langmuir, Temkin and BET isotherms-Surface area determination - Mechanisms of uni and bimolecular surface reactions - Langmuir-Hinshelwood and Langmuir-Riedal mechanisms - Surface excess - Gibbs adsorption isotherm - spreading of a liquid on another - contact angle – surfactants - micelles and detergents.

Text Books

1. **Kinetics and Mechanism of Chemical Transformations**, J. Rajaram and J.C. Kuriacose, MacMillan India Ltd. 1993.
2. **Quantum Chemistry**, D.A. McQuarrie, University Science Books, Mill Valley, California, 1983.
3. **Group theory in Chemistry**, V. Ramakrishnan and M.S. Gopinathan, Vishal Publications,1988.
4. **Statistical Thermodynamics**, M.C. Gupta, Wiley Eastern, New Delhi,1990.
5. **Physical Chemistry of surfaces**, A.W.Adamson, 4th edn., Wiley - Interscience, Newyork, 1982.

Reference Books

1. **Quantum Chemistry**, I.N. Levine, Allyn and Bacon, Boston, 1983.
2. **Quantum Chemistry**, R.K.Prasad, Wiley Eastern, New Delhi,1992.
3. **Quantum Mechanics in Chemistry**, M.W.Hanna, W.A.Benjamin Inc. London, 1965.
4. **Chemical Application of Group Theory**, F.A. Cotton, John Wiley and Sons Inc. New York,1971.
5. **Group theory and its applications to Chemistry**, K.V. Raman, Tata McGraw-Hill Publishing Company,1990.
6. **Introduction to Statistical Thermodynamics**, R.P.H.Gasser and W.G.Richards, World Scientific, Singapore, 1995.
7. **Irreversible Thermodynamics,** J. Rajaram and J.C. Kuriacose, Lal Nagin Chand, New Delhi, 1989.
8. **Chemical Kinetics**, K.J.Laidler, Harper and Row, New York,1987.
9. **Kinetics and Mechanism**, R.G. Frost and Pearson, Wiley New York, 1961
10. **Kinetics and Mechanism**, W.J. Moore and R.G. Pearson, 1981.
11. **Physical Chemistry of Surfaces**, A.W.Anderson, Wiley - Interscience, Newyork, 1990.

2.4 APPLIED CHEMISTRY

UNIT-I

Environmental Chemistry: Hazardous materials and their ill effects**.** Acid rain, Ozone hole and green house effect. Types of pollution – air, water, land, pesticide, thermal and radioactive. Physicochemical and biological investigations of water - water quality.

Wastewater treatment methods: Pretreatment, preliminary treatment, secondary (or biological) methods of treatment and tertiary (or advanced) methods of wastewater treatment.

UNIT-II

Corrosion: Basic aspects of corrosion: Importance of corrosion studies – EMF and Galvanic series – classification of corrosion – corrosion kinetics – Pourbaix diagram for Fe- H_2O system – passivity – High temperature corrosion – Forms of corrosion. Chemical and Electrochemical methods of corrosion rate measurements methods. Corrosion control methods: General classification of corrosion control methods – Designing aspects in corrosion control – corrosion inhibitors – Electrochemical methods of protection such as anodic and cathodic protection.

Electroplating: Principles of electroplating – Metal deposition from solutions of simple salts and complex salts – measurement of current density, throwing power and current efficiency of electroplating bath – surface preparation for electroplating. Electroplating of nickel and copper, Electroforming – principle and applications, Alloy plating of Brass, Brush plating, Cladding and Vapour deposition, Electroless plating – principles, advantages and limitations of electroless plating – Composite coating - principle, mechanism and their applications. Anodizing – principle, types of anodizing bath – colouring of anodizing aluminium.

UNIT-III

Polymer chemistry: Definition, classification of polymers- addition polymerization – type of initiators – initiator efficiency – stepwise polymerization – Functionality of monomers and its significance – Degree of polymerization – Mechanism of free radical, cationic and anionic polymerization. Polymerization techniques: Various methods of polymerization – solution, bulk, emulsion and suspension

polymerization. Speciality polymers: Conducting polymers, polymer electrolyte, fire retardant, thermally stable and bio- degradable polymers.

UNIT-IV

Nanomaterials: Preparatory synthesis - Sol-gel thermolysis, combustion method, solvothermal method and microemulsion method. Physical methods – vacuum evaporation, sputtering, pulsed laser deposition. Chemical methods - CVD, chemical solution deposition, electrochemical deposition, spray pyrolysis deposition.

Characterization Techniques: Physical characterization techniques: XRD, XPS, FT-IR and Laser Raman spectroscopy. Microscopic techniques: SEM, AFM and TEM. Thermal analysis: TG/DTA and DSC.

UNIT –V

Computer applications in Chemistry: Calculation of pH, solubility product, calculation of bond energy using Born-Lande equation. Standard deviation and correlation coefficient. Internet: Introduction - Internet service providers, terms used in E-mail-search engines - chemistry databases- table of contents - source for list of journals - Chemical Abstracts Services by publishers - ACS, RSC, Elsevier, VCH etc. Terms used in internet - www, http, html, url, TCP/IP, band-width, dial-up service, ISDN.

Text books

1. **Environmental Chemistry,** Sharma & Kaur, Krishna Publishers, New Delhi, 2000.
2. **Text Book of Polymer Science**, F.W.Billmeyer Jr. 3rd edn., John Wiley & Sons, New York, 2003.
3. **Principles and prevention of corrosion**, D.Jones, Macmillan Publications New York, 1992.
4. **The Chemistry of nanomaterials; Synthesis, properties and applications**, C.N.R.Rao, Wiley-VCH Verlag Gmbh&Co, Weinheim, 2004.
5. **Computers in Chemistry,** K.V. Raman, Tata McGraw Hill, New Delhi, 1993.

Reference Books

1. **Environmental Chemistry**, S.E Manahan, Lewis Publishers, London, 2001.

2. **Environmental Chemistry,** S.K. Banerji, Prentice Hall of India, New Delhi, 2003.

3. **Wastewater treatment,** Ed. M.Henze, P.Harremoes, J.C.Jansen and E.Arvin, Springer Verlag, New York, 1995.

4. **Polymer Science**, V.R.Gowariker, N.V.Viswanathan and J. Sreedhar, New Age International, New Delhi, 2003.

5. **Contemporary Polymer Chemistry**, H.R.Alcock and F.W.Lamber, Prentice Hall,1981.

6. **Principles of polymer chemistry**, P.J.Flory, Cornell University press, Newe York, 1953.

7. **Cathodic Protection Theory and practice**, J.J.Meketta, Marcel Dekker Publication, NY, 1993.

8. **An introduction of corrosion and corrosion inhibition,** S.N.Banerjee, Oxonian Press Ltd., New Delhi.

9. **Modern Electroplating,** K.A Lowenheim, Second Edition, John Wiley & Sons, New York, 1963.

10. **BASIC Programming for Chemists,** P.C.Jurns, T.L. Isenhour and C.C. Wilkins, JW.& Sons 1987.

11. **Computers in Chemistry,** K.V. Raman, Tata McGraw Hill, New Delhi, 1993.

12. **Nanoscale materials in Chemsitry**, Kenneth J.Klabunde, John-Wiley & Sons, 2001.

2.5 INORGANIC CHEMISTRY PRACTICAL

1. **Quantitative analysis:** Separation and estimation of the following mixtures containing two components – the first by **volumetric method** and the other by **gravimetric method.**
   a) Cu^{2+} - Ni^{2+}
   b) Cu^{2+} - Ba^{2+}
   c) Cu^{2+} - Zn^{2+}
   d) Fe^{2+} - Ni^{2+}
   e) Fe^{2+} - Zn^{2+}
   f) Fe^{2+} - Cu^{2+}
2. **Complexometric estimation of binary mixture of cations:** Estimation of following mixtures using EDTA as a complexing agent by adopting any one of the techniques, like precipitation, pH variation, masking and demasking.
   a) Bi^{3+} - Pb^{2+}
   b) Pb^{2+} - Ca^{2+}
   c) Ni^{2+} - Cu^{2+}
   d) Fe^{2+} - Ni^{2+}
   e) Zn^{2+} - Cu^{2+}
   f) Co^{2+} - Cu^{2+}
   g) Zn^{2+} - Ca^{2+}

Reference Books

1.Vogel's qualitative Inorganic analysis**, G. Svehla, VI Edition, Orient Longman, 1987**.

2. Inorganic Semimicro Qualitative analysis, V.V. Ramanujam, National Publishing Co., 1971.

2.6 PHYSICAL CHEMISTRY PRACTICAL

1. **Partition coefficient: (i)** Iodine: water/CCl_4, (ii) Iodine: water/KI and (iii) Unknown KI.
2. **Conductometric titration: (i)** Acid Vs base, (ii) Precipitation [Mixed Halides, Simple Halides, Solublity Product, $BaCl_2$ Vs $MgSO_4$, $CuSO_4$ Vs NaOH].
3. **Potentiometric titration: (i)** FAS Vs $KMnO_4$, (ii) FAS Vs $K_2Cr_2O_7$, (iii) Acid Vs Base, (iv) Mixture of halides and (v) Simple Halides.
4. **Chemical Kinetics:** (i) Acid catalyzed hydrolysis of an ester (titration method), (ii) base catalyzed hydrolysis of an ester (conductometric method).
5. **Spectrophotometric method:** Determination of Fe^{3+}, Mn^{2+} and Cu^{2+}**.**

Reference books

1. **Findlay's Practical Physical Chemistry,** Revised and edited by B.P.Levitt, 9th edn., Longman, London,1985.
2. **Advanced Experimental Chemistry**, J.N.Gurtu and R.Kapoor, Vol.I, S.Chand & Co. Ltd., New Delhi (1980).

Course : M.Sc. (Botany (Specialization: Plant Biotechnology)

[2008-09 onwards]

Pattern : Annual pattern

Mode : Distance Education

Duration : Two years

Eligibility : Bachelor Degree in Botany, Plant Science, Plant Biotechnologyand triple major with Botany/Plant Science.

Medium : English only

PROGRAMME OF STUDY AND SCHEME OF EXAMINATION

Code No	**Name of the Course**	**Max. Mark**
I Year		
1.1	Plant Diversity	100
1.2	Plant Taxonomy	100
1.3	Anatomy & Embryology	100
1.4	Plant Tissue Culture	100
1.5	Plant Molecular Biology	100
1.6	Lab I (Plant Tissue Culture)	100
II Year		
2.1	Plant Physiology & Biochemistry	100
2.2	Cell Biology, Genetics & Plant Breeding	100
2.3	Biotechniques in Botany	100
2.4	Biodiversity Conservation & IPR	100
2.5	Plant Genetic Engineering	100
2.6	Lab II (Plant Biotechnology)	100
	Total Marks	**1200**

1.1 PLANT DIVERSITY

UNIT 1 : **Algae** : Definitions and concepts of plant diversity, Thallus organization, Reproduction and life cycle patterns in algae, Classification of algae (Smith), Reproduction and life cycles in *Cyanophyceae, Chlorophyceae, Phaeophyceae* and *Rhodophyceae* (Comparative study only), Culture of microalgae and mariculture.

UNIT 2 : Fungi : Classification of fungi (Alexopoulos and Mims, 1979) Thallus organization, Reproduction, Life cycle patterns in fungi (Phycomycetes to Deuteromycetes), Spores and spore dispersal mechanisms.

UNIT 3 : Lichens : General account, Structure and reproduction, Classification of lichens (Miller, 1984).

Bryophytes : Classification of bryophytes (Watson, 1964), Structural variations in the gametophytes and sporophytes of *Marchantiales, Sphaerocarpales, Jungermanniales, Calobryales, Anthocerotales, Sphagnales, Andreales* and *Bryales* (Comparative study only).

UNIT 4 : Pteridophytes : Classification of Pteridophytes (Reimers) General characteristics and life cycle patterns in *Psilopsida, Lycopsida, Sphenopsida* and *Pteropsida* , Study of fossils in Pteridophytes**.**

UNIT 5 : Gymnosperms : Classification (K.R.Sporne, 1967), General characteristics of *Cycadales, Ginkgoales, Coniferales* and *Gnetales* (Comparative study only). Study of fossil gymnosperms (*Medullosa, Cycadeoidea* and *Caytonia).*

REFERENCES

1**.** The algae (1960) V.J.Chapman and D.J. Chapman, ELBS &Macmillan, London.

2. Introduction to Phycology (1990) H.D.Kumar, Affliated East West Press, New Delhi.

3. Introduction to Mycology, Alexopoulos and Mims, East Wiley Ltd, New Delhi.

4. The Biology of Lichens (1983) M.E.Hale, Edward Arnold, Mayland.

5. Biology of Bryophytes (1988) R.N.Chopra and P.K.Kumar, Wiley Eastern Ltd, New Delhi.

6. The morphology of Pterdophytes (1985) K.R. Sporne, Hutchinson &Co, London.

7. Gymnosperms: Structure and Evolution (1986) C.J. Chamberlain, CBS Publishers, Delhi.

1.2 PLANT TAXONOMY

Unit I :

Scope and application, Species concept, Biotype, Ecad, Ecotype, Binomial System of Nomenclature, Theories of Biological Classification, Structural, biological and molecular systematics.

Unit II

Historical Background of Plant classification: Bentham and Hooker, Engler and Prantl, Takhtajan and Hutchinson.

Unit III

Taxonomic structure: Biosystematics, Chemotaxonomy, Numerical taxonomy, Plant Geography and floreistics. Modern inter-disciplinary approaches to Taxonomy.

Unit IV

Botanical Nomenclature: Need for scientific names, Principles of ICBN, Type method, author citation, Publication of names, rejection of names, principle of priority, limitations, conservation of names of species. Draft Biocode.

Unit V

Diagnostic features of following families: *Ranunculaceae, Rhamnaceae, Boraginaceae, Loranthaceae, Orchidaceae*.

REFERENCES

1. The Classification of Flowering plants Vol I and II (1979) Alfred Barton Rendle Vikas Publishing House P Ltd. Ghaziabad.
2. Numerical Taxonomy (1969) Cole, A.J. Academic Press, London.
3. Plant Systematics Theory and Practice (1999) Gurcharan Singh. Oxford and IBH Publishing Co Pvt. Ltd. New Delhi.
4. Modern Methods in Plant Taxonomy (1968) Heywood V.H. Academic Press, London.
5. Plant Systematics (1987) Jones and Luchsinger (2^{nd} ed) McGraw Hill International Editions. New York.
6. An Advanced Text Book on Biodiversity – Principles and Practice. (2004) K.V.Krishnamurthy, Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
7. Taxonomy of vascular plants (1969) Lawrence, Oxford an IBH Publishing Co, New Delhi.
8. A Text Book of Botany Angiosperms (1992) B.P.Pandey, S.Chand and Company Ltd.

1.3 ANATOMY & EMBRYOLOGY

Unit 1

General account and theories of organization of meristems, Light and Electron microscopic structure of cell walls, Structural diversity and phylogenetic specialization of xylem and phloem, Distribution, structure and significance of transfer cells, Vascular cambium – storied, nonstoried and the mode of activity.

Unit 2

Vascular differentiation in the primary body of stem, root and leaf, Root stem transition, Molecular aspects of developing vegetative organs, Cambial variants and floral vasculature.

Unit 3

Structure, identification, classification and uses of woods, Physical, chemical and mechanical properties of wood, Natural defects, knots, reaction wood, compression wood tension wood, Commercial woods of South India, Molecular aspects on wood differentiation.

Unit 4

Anther development, Pollen morphology, Pollen stigma compatibility, Megasporogenesis female gametopohyte, Nutrition of embryo sac, Endosperm types, Apomixis, Vegetative reproduction.

Unit 5

Agamospermy and apospory, Exploitation of polyembryony and apomixis in plant improvement progrmmes, Molecular aspects of higher plant reproduction.

REFERENCES

1. Plant Anatomy (1953) K.Easu, John Wiley &Sons Inc, N.Y.
2. Plant Anatomy (1978) G.Gutter, Edward Arnold Publicatio, Ltd, London.
3. Plant Anatomy (1989) A.Fahn, Maxwell, Macmillan, Singapore (P) Ltd.
4. Anatomy of Seed Plants (1987) Singh. V, Pandey P.C. and D.K. Jain.
5. A Text Book of Wood Technology .Vol I &2 (1974) H.J.Vaux (edn).
6. Embryology of Angiosperms (1981) S.S.Bhojwani &S.P.Bhatnagar
7. An introduction to Embryology of Angiosperms (1963) P.Maheswari.

1.4 PLANT TISSUE CULTURE

UNIT-1

Introduction to plant cell and tissue culture, Totipotency, Sterilization techniques, Nutrient media composition and preparation of solid and liquid cultures, Establishment and maintenance of callus and suspension cultures from representative monocot and dicot plants.

UNIT-2

Micropropagation – Introduction, stages and types of explants for commercial propagation, Virus elimination. Commercial importance and applications of micropropagation.

UNIT-3

Plant regeneration-Organogenesis and Somatic embryogenesis. Role of hormones in regeneration. Control of organogenesis and embryogenesis. Artificial seeds-Principle and method involved in the production, Embryo rescue and applications, Somoclonal variations-Significance, mechanism and applications.

UNIT-4

Anther and pollen culture techniques. Significance of haploid culture. Different types of organ culture (a) Root culture (b) Shoot tip culture (c) Meristem culture (d) Flower bud culture and ovule culture.

UNIT-5

Protoplast isolation - Principles and protocols, protoplast culture and fusion, Importance of protoplast fusion and applications. In vitro production of secondary plant products.

REFERENCES

1. Plant Tissue Culture: A Practical Approach (1985), Dixon R.A, IRL Press, Oxford, Washington DC.

2. Plant Tissue Culture: Theory and Practice (2004) S.S.Bhojwani and M.K.Razdan, Elsevier.

3. Plant Cell, Tissue and Organ Culture (1998), O.L.Gamborg and G.C.Philips, Narosha Publishing House.

4. Introduction to Plant Biotechnology (2001), H.S.Chawla, Oxford & IBH Publishing Co. Pvt. Ltd.

5. Plant Biotechnology: The Genetic Manipulation of Plants (2003) Adrian Slater, Nigel W.Scott and Mark R.Fowler, Oxford University Press.

1. 5 PLANT MOLECULAR BIOLOLOGY

UNIT-1

Plant genome organization – Nucleus, Chloroplast and Mitochondria, Structural features of a typical plant gene, Chromatin organization in plants, Nucleus-encoded and chloroplast-encoded genes for chloroplast proteins. Targeting of nuclear encoded cytoplasmic proteins to chloroplast compartments.

UNIT-2

Mitochondrial genome and Cytoplasmic male sterility, Seed storage proteins – Classification and functions, Regulation of gene expression in plant development. Plant hormones, Plant transposons.

UNIT-3

Agrobacterium tumefaciens and crown gall tumours, Mechanism of T-DNA transfer to plants, Types of Ti-plasmid based vectors (Co integrate and binary vectors) for plant transformation, Agro infection, Symbiotic nitrogen fixation in legumes by Rhizobia.

UNIT-4

Molecular biology of plant stress response-drought, salinity, dehydration, UV, and osmotic stress**.** Direct transformation of plants by physical methods (Biolistic ®gene transfer, Silicon carbide WHISKER®, microlaser and ultrasonication).

UNIT-5

Molecular pharming – Introduction, Transgenic plant derived products for commercial applications, Bioremediation through plants. Tagging, mapping and cloning of plant genes.

REFERENCES

1. Introduction to Plant Biotechnology (2001), H.S.Chawla, Oxford & IBH Publishing Co. Pvt. Ltd.

2. Plant Biotechnology & Molecular Biology (1999), Second Edition, Peter J.Lea, Richard C.Leegood, John Wiley &Sons.

3. Plant Biotechnology-New Products & Applications (2000). J. Hammond, P.McGarvey &V.Yusibov (Eds), Springer-Verlog.

4. Plants, Genes and Agriculture (2000). Maarten J.Chrispeels and David E.Sadava, Jones and Barlett Publishers.

5. Plant Biotechnology: The Genetic Manipulation of Plants (2003) Adrian Slater,
Nigel W.Scott and Mark R.Fowler, Oxford University Press.

1.6 LAB - I - PLANT TISSUE CULTURE

1. General introduction and laboratory organization
2. Tissue culture media (composition and preparation).
3. Role of plant hormones in tissue culture.
4. Surface sterilization of explants for culture initiation
5. Initiation and maintenance of callus and suspension culture
6. Estimation of growth kinetics of cultured cells
7. Micropropagation of economically and commercially important medicinal plants
8. Protoplast technology- isolation and culture
9. Transfer of *in vitro* regenerated plants to soil.
10. Artificial seed preparation from intact explants of medicinal plants and plant conversion.

REFERENCES

1. Plant Tissue Culture: A Practical Approach (1985), Dixon R.A, IRL Press, Oxford, Washington DC.
2. Plant Cell, Tissue and Organ Culture (1998), O.L.Gamborg and G.C.Philips, Narosha Publishing House.
3. Plant Biotechnology: The Genetic Manipulation of Plants (2003) Adrian Slater, Nigel W.Scott and Mark R.Fowler, Oxford University Press.
4. Plant Tissue Culture: Theory and Practice, Revised Edition (2004), S.S. Bhojwani and M.K. Razdan, Elsevier Publications, Netherlands.

PLANT PHYSSIOLOGY & BIOCEMISTRY

Unit 1

Plant water relations: Water transport process, diffusion, osmosis, water potential, Chemical potential, absorption of water, water transport through trachieds and xylem. Transpiration and its significance, factors affecting transpiration, mechanissm of stomatal movement, Water stress on crop production.

Unit 2

Photosynthesis: Ultra structure of photosynthetic apparatus, photochemical reaction, electron transport pathway in chloroplast membranes, photophosphorylation, C4 carbon cycle, Crassulacean acid metabolism, Photorespiration.

Unit 3

Glycolysis, TCA Cycle, electron transport in mitochondria, oxidative phosphorylation, pentose phosphate pathway, cyanide –resistant respiration, nutrient uptake and transport mechanism, Biological nitrogen fixation, Nitrate and ammonia assimilation.

Unit 4

Carbohydrates: Classification, Structure of mono, di and polysaccharides, stereoisomers, enatiomers and epimers. Amino acids and Proteins: Structure, characteristics and classification, aminoacid synthesis, peptide bond and polypeptide chain, primary, secondary, tertiary and quaternary structure of proteins.

Unit 5

Enzymes: General aspects (Classification and structure), allosteric mechanism, regulatory and active sites, isoenzymes, enzymatic catalysis, Michaelis-Menton equation and its significance. Lipids: Classification and structure, biosynthesis of fatty acids, Oxidation of fatty acids, Nucleic acids: Composition of nucleic acids and nucleotide synthesis.

REFERENCES:

1. Plant Physiology (1999) F.B.Salisbury and C.W.Ross, CPS Publishers &Printers, New Delhi.
2. Plant Physiology (1969), Holt Rinehart &Wintston&Affliated East West Press.
3. Plant Physiology (2000) K.M.Delvin, S.Chand &Co., New Delhi.
4. Understanding the chemistry of the cell (1969) G.Barker, Edward Arnold, London.
5. Plant metabolism (1990) H.D.Kumar &H. N. Singh.

2.2 CELL BIOLOGY, GENETICS &PLANT BREEDING

UNIT 1

Structure of Prokaryotic and Eukaryotic cell, Structure and function of Nucleus, Endoplasmic Reticulum, Golgi complex, Mitochondria, Chloroplast and Lysosomes. Organization of Nucleus and nuclear transport, Organization and functions of Cytoskeletons (Microfilaments, Intermediate filaments and Microtubules).

UNIT 2

Biological Membrane – Structure (lipid bilayer, membrane proteins), Assembly and basic functions, Transport of ions and molecules across the membranes, Protein sorting in mitochondria, chloroplast, endoplasmic reticulum and nucleus, Protein processing and trafficking from Endoplasmic reticulum to Golgi, Cell division and Cell cycle.

UNIT 3

Basic account on Mendelian Genetics and Gene intraction, Linkage, crossing over, Gene mapping, Sex linkage, Cytoplasmic inheritance, male sterility, Origin, induction and applications of prions.

UNIT 4

Polyploidy – Types, and their origin, Significance of polyploids, Basic account on mutation (Causative agents, induction and types), Basic account of population genetics (Hardey Weinberg's Law).

UNIT 5

Objectives of plant breeding, Genetic variability and its role in plant breeding, Breeding methods in self pollinated, cross pollinated, vegetatively propagated and apomictic plants, Inbreeding depression theories, Hybrid vigour in plant breeding, Mutation breeding and breeding for disease resistance and stress tolerance.

REFERENCES:

1. Molecular Biology of the Cell (2002), Fourth Edition, B. Alberts, A. Johnson, J.
2. Lewis, M. Raff, K. Roberts and P Walter, Garland Publishing (Taylor & Francis Group), New York.
3. Genes V111 (2004), B. Lewin, Pearson Prentice Hall.
4. Principles of Genetics (1972) E.J.Gardner, John Weily &Sons, N.Y.
5. Genetics (Second Edition), M.W.Strickberger, Macmillan Publishing House, N.Y.
6. Plant Breeding (1989) V.L.Chopra, Oxford IBH, New Delhi.
7. Plant Breeding Methodology (1988) N.F.Jenson, Wiley Inheritance Publications, N.Y.

a. BIOTECHNIQUES IN BOTANY

UNIT 1

PAGE, SDS – PAGE and Agarose gel electrophoresis. Isoelectric focusing. 2D Electrophoresis.

UNIT 2

Ultracentrifugation- SEM/TEM, Confocal Microscopy/ Phase Contrast Microscopy- HPLC, HPTLC, FPLC, GC, MS, MALDI Tof.

UNIT 3

Tracer techniques : Principles and applications of radioactive isotopes, Autoradiography and Liquid scintillation spectrometry.

UNIT 4

Blotting techniques -Principles and techniques of Southern, Northern and Western blotting techniques and hybridization. Principles and applications of PCR, RFLP, RAPD, AFLP and DNA fingerprinting. Principle and applications of DNA sequencing.

UNIT 5

DNA Microarray in plants, Bioinformative tools for analysis of plant genome, Relation between genome, transcriptome and proteomes of plants, Tracking gene exspression in plant cells.

REFERENCES:

1. Molecular Cloning-A laboratory Manual, 3 rd Edition, Vol.1, 2 and 3 (2001). Sambrrok, J. and Russell, D.W Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York.
2. Experiments for Instrumental methods- A laboratory manual, Charles N.Relly, Donald.T.Saweyerand Robert E. Krieger Huntington, New York.
3. Instrumental methods of Analysis, Hoburt.H.Willard; Lynme L.Meritt.J.R; A. Dean, John East West Press Pvt Ltd. PCR Technology – Current Innovations (2004). Thomas Weissensteiner *et al* CRC Press, Florida.
4. Basic measurement technique for light microscopy (1991). Savile Pradbury, Oxford University Press, Royal Microscopical Society, London.
5. Laboratory Manual in Biochemistry, J.Jayaraman, Wiley Eastrn Ltd., New Delhi.

BIODIVERSITY CONSERVATION & IPR

UNIT 1

Introduction to biodiversity, Types of biodiversity, Biodiversity concepts, Centres of diversity, Agro biodiversity, Values and uses of biodiversity, Loss of biodiversity, Biodiversity act of India 2002 and 2004.

UNIT 2

Phytogeographic zones, Vegetation types of India and Tamilnadu, Endemism, Wildlife Sanctuaries, National parks and Biosphere Reserves, Hotspot biodiversity areas in India, Red listed plants, Red Data Book, Threatened plants and animals of India, Patenting life forms and their impact on biodiversity.

UNIT 3

General overview of plant conservation, Conservation of biodiversity, Sustainable use of plant genetic resources, Biotechnology assisted plant conservation(*in situ* and *ex situ* conservation).

UNIT 4

General Agreement on Trade and Tariff (GATT) and World Trade Organization, Establishment and functions of GATT and WTO, Physical and Intellectual Property.

Different types of intellectual property rights (IPR) - Patents, Trade mark, Trade secret and Copy right. Plant biotechnological examples of patents, trademark, trade secret and copyright. Plant breeder's rights.

UNIT 5

Patent application. Rules governing patents. Flavr Savr™ tomato as a model case for GM food, Case studies on patents (Basmati rice and Turmeric,), General guidelines for research in transgenic plants, Good Laboratory Practices (GLP).

REFERENCES

1. Biodiversity and Conservation (2004). Joshi P.C. and Namita Joshi, APH publishing company, New Delhi.
2. An advanced text book of Biodiversity (2004). K.V.Krishnamoorthy, Oxford &IBH, New Delhi.
3. Plant Conservation Biotechnology (2003). Edited by Erica E.Bensen, Taylor &Francis Ltd, London.
4. Recombinant DNA safety guidelines (January1990), Department of Biotechnology, Ministry of Science & Technology, Government of India, New Delhi.
5. Patents (2003), N.Subbaram, Pharma Book Syndicate, Hyderabad.
6. Molecular Biotechnology (1998), Second Edition, Glick, B.R., and Pasternack, J.J., ASM Press, Washington, DC.

2.5 PLANT GENETIC ENGINEERING

UNIT- 1

Introduction to Plant Genetic Engineering, Historical perspectives, Tools of genetic engineering General Methodology, Plant Genome Projects.

UNIT- 2

Selectable markers – Types and their role in plant transformation, Antibiotic sensitivity assay, Reporter genes – Types and role in optimizing transformation, Promoters used in plant vectors.

UNIT - 3

Plant transformation techniques – Direct (chemical, mechanical and electrical) and Indirect methods (Agrobacterium mediated), Novel plant transformation approaches.

UNIT 4

Plant genetic engineering for herbicide resistance, Abiotic stress tolerance, Insect pest resistance (Bt and proteinase inhibitor), Cytoplasmic male-sterility, Virus resistance (Antisense RNA approach, Cross protection Satellite RNA, Ribozymes and Coat protein mediated protection), delays of fruit ripening and resistance to fungi and bacteria.

UNIT-5

Case studies - Golden rice, Flavr Savr®, Chloroplast engineering and Transplastomic plants, Molecular markers – STS, Microsatellites, SCAR (Sequence Characterized Amplified Region) and AFLP for genetic diversity.

REFERENCES

1. Introduction to Plant Biotechnology (2001), H.S.Chawla, Oxford & IBH Publishing Co. Pvt. Ltd.
2. Plant Biotechnology & Molecular Biology (1999), Second Edition, Peter J.Lea, Richard C.Leegood, John Wiley &Sons.
3. Plant Biotechnology-New Products & Applications (2000). J. Hammond, P.McGarvey &V.Yusibov (Eds), Springer-Verlog.
4. Plants, Genes and Agriculture (2000). Maarten J.Chrispeels and David E.Sadava, Jones and Barlett Publishers.
5. Plant Biotechnology: The Genetic Manipulation of Plants (2003) Adrian Slater, Nigel W.Scott and Mark R.Fowler, Oxford University Press.

2.6 LAB – II (Plant Biotechnology)

1. Genomic DNA isolation from representative monocot and dicot plants
2. Quality and Quantity checking of genomic DNA by UV Spectrophotometer
3. Quality and Quantity checking of genomic DNA by agarose gel
4. Isolation of Agrobacterium Ti plasmid DNA.
5. Agrobacterium mediated transformation of plants
6. Biolistic transformation
7. Analysis of transformants by histochemical GUS expression.
8. Antibiotic sensitivity assay
9. Southern hybridization (Demo)
10. PCR

REFERENCES

1. Plant Molecular Biology Manual (1991), S.B.Gelvin, R.A.Schilperoort and D.P.S.Verma (Eds.) Kluwer Academic publishers, Dordrect.
2. Methods in Plant Molecular Biology. A Laboratory Course Manual (1995) Pal Maliga Cold Spring Harbor Laboratory Press
3. Fundamentals of Plant Biotechnology (2001), Amla Batra, Capital Publishing Company.
4. Introduction to Plant Biotechnology (2001), H.S.Chawla, Oxford & IBH PublishingCo.Pvt.Ltd.
5. Plant Tissue Culture: Theory and Practice, Revised Edition (2004), S.S.Bhojwani and M.K. Razdan, Elsevier Publications, Netherlands.
6. Plant biotechnology: The genetic manipulation of plants (2003), A. Slater etal Oxford University Press, Oxford.

Course : M.Sc. Zoology - (2010-11 onwards)

Pattern : Annual pattern

Mode : Distance Education

Duration : Two years

Eligibility : Bachelor Degree in B.Sc Zoology/Animal Science/Biotechnology degree Examination with Chemistry/Biochemistry/Microbiology/Botany as one of the ancillary subjects.

Medium : English only

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Code No.	TITLE OF THE COURSE	Marks
	FIRST YEAR	
1.1	Animal Diversity	100
1.2	Cell and Molecular Biology	100
1.3	Genetics and Evolution	100
1.4	Biochemistry and Animal Physiology	100
1.5	Biophysics and Biostatistics	100
	PRACTICALS	
1.6	Lab- I - 1.1 & 1.2	50
1.7	Lab – II – 1.3, 1.4, & 1.5	50
	SECOND YEAR	
2.1	Environmental Biology	100
2.2	Developmental Biology	100
2.3	Microbiology and Immunology	100
2.4	Animal Biotechnology	100
2.5	Elective (Any one)	100
2.5.1	Fisheries & Aquaculture	
2.5.2	Parasitology	
	PRACTICALS	
2.6	Lab III – 2.1 to 2.4	50
	Optional (Any one)	50
2.7.1	Lab IV – 2.5.1	
2.7.2	Lab IV – 2.5.2	
	Total Marks	1200

1.1 ANIMAL DIVERSITY

UNIT – I

Animal Architecture: Hierarchical organization of animal complexity, Complexity of body and size, Extracellular components of the metazoan body, Types of tissues, Animal body plans.

Classification and Phylogeny of Animal: Linnaeus and the development of classification, Taxonomic characters and reconstruction of phylogeny, Theories of taxonomy, Species, Major divisions of life, Major sub-divisions of the animal kingdom.

UNIT - II

Protozoa and Porifera: Form and function. Cholorohyta, Euglenozoa, Ciliophora, Dinoflagellata and Amebas. Phylogeny and adaptive radiation.

Porifera: Ecological relationships, form and functions, brief survey of sponges, phylogeny and adaptive radiation.

Cnidaria and Ctenophora: Phylogeny and adaptive radiation.

Acelomates: Platyhelminthes, Nemertea and Gnathostomulida. Phylogeny and adaptive radiation.

Pseudocoelomate animals: Rotifera, Acanthocephala, Gastrotricha, Entroprocta, Nematoda. Phylogeny and adaptive radiation.

UNIT - III

Molluscs: Form and functions. Gastropoda, Bivalvia and Cephalopoda. Phylogeny and adaptive radiations.

Segmented Worms: Body plan. Polychaeta, Oligochaeta and Hirudinea. Phylogeny and adaptive radiation

Arthropoda: Trilobita, Chelicerata, Crustacea and Insecta. Phylogeny and adaptive radiation.

Lesser Protostomes: Pogonophora, Brachiopoda, Onychophora, Chaetognatha and their phylogeny.

Echinodermata, Hemichordata and their form, function and phylogeny.

UNIV - IV

The chordates: Ancestry and evolution of chordates.

Urochordata, Cephalochordata: Organization, phylogenetic considerations

Fishes: Ancestry and relationship of major groups of fishes. Agnatha: Jawles fishes, Cartilginous fishes. Class Chondrichthyes. Bony fishes: The Osteichthyes, origin, evolution, and diversity. Structural and functional adaptations of fishes.

UNIT- IV

Amphibians and Reptiles: Early evolution of terrestrial vertebrates, modern amphibians. Origin and adaptive radiations of reptilian groups, Characteristic features of reptiles. Natural history of reptilian orders.

Birds: Origin and relationships, adaptation of bird structure and function for flight. Migration and navigation, social behaviour and reproduction.

Mammals: origin and evolution. Structural, functional adaptations and human evolution.

Reference Books:

1. David Eisenhour, Allan Larson, Susan Keen, Larry Robers, Cleveland Hickman Jr. 2009. Animal Diversity. McGraw Hill International, Boston.
2. Barnes, R. D., 2008. Invertebrate Zoology, Cengage Learning (Thompson), USA
3. Jordan, E.L. and P.S.Verma, 2005. Invertebrate Zoology, S.Chand & co. India
4. Anderson, D.T., 2002. Invertebrate Zoology, Oxford University Press, USA.
5. Edward E. Ruppert, Robert D. Barnes, 1994. Invertebrate Zoology, Publishers: Harcourt Brace College Publishers, 6th edition, New York, USA.
6. Ekambaranatha Iyar, E. K.and T.N.Ananthakrishnan, 1992. A Manual of Zoology, Volume II Chordeta. Viswanathan & Co.
7. Russell- Hunter, W.D. (1979) Life of Invertebrates, Macmillan Publishing Company, New York.

1.2 CELL AND MOLECULAR BIOLOGY

UNIT- I

Cell Biology: Cell classification - Structural organization of prokaryotic and eukaryotic cells- Ultrastructure of cell membrane, nucleus, chromosomes, mitochondria, endoplasmic reticulum, Golgi apparatus, lysosomes, peroxisomes and their functions - The cytoskeleton – microtubules and microfilaments- Cell cycle- mitosis and meiosis.

UNIT- II

DNA Replication: Mechanism of replication, the replicon, origin, primosome & replisomes. Properties of prokaryotic and eukaryotic DNA polymerases, synthesis of leading and lagging strands, difference between prokaryotic and eukaryotic replication.

UNIT- III

Mechanisms of Transcription: Prokaryotic transcription: promoters, properties of bacterial RNA polymerase, steps: initiation, elongation and termination. Eukaryotic transcription: Promoters, enhancers, factors, properties of RNA polymerase I, II and III. Reverse transcription. Post transcriptional modifications in RNA.

UNIT- IV

Translation in Pro- and Eukaryotes: Ribosomes- structure, functional domain and sub-unit assembly. Cell free protein synthesis, protein synthesis, formation of initiation complex, chain elongation, translocation and termination. Comparison of protein biosynthesis in prokaryotes with eukaryotes. Post-translational modifications.

UNIT- V

Regulations of gene expression in Pro- and Eukaryotes: Concept of operon: lac, ara and trp operons, positive and negative control, repressor & inducer. Hormonal regulation of gene expression, transcription factors, steroid receptors. DNA binding motifs in pro- and eukaryotes.

REFERENCE BOOKS

1. Hunter, L. E. 2009. The Process of life- An Introduction to Molecular **B**iology, The MIT press, USA.
2. Weaver, R.F., 2008. Molecular biology, McGraw Hill higher education, USA.
3. Beaker, W, L. Kleinsmith, J. Hardin, and G. Bertoni, 2008. The world of the cell, Pearson Education, London.
4. Alberts, B., A. Johnson, J. Lewis, M. Raff, K. Roberts, and P.Walter, 2007. Molecular biology of the cell, Garland publishing Inc, New York.
5. Lodish, H, A. Berk, C.A. Kaiser, M. Krieger, M. P. Scott, A. Brtscher, H. Ploegh, and P. Matsudaria, 2007. Molecular cell biology, W. H. Freeman, USA.
6. Karp, G, 2007. Cell and molecular Biology- Concepts and Experiments, John Wiley and Sons, Inc. New York.
7. Freifelder, D, 2004. Essentials of Molecular Biology, Narosa Publishing House, New Delhi.

1.3 GENETICS AND EVOLUTION

UNIT – I

Basic concepts in genetics: Mendalian laws, gene interactions, multiple factor, multiple allelic inheritance. Linkage, crossing over and chromosome mapping: Drosophila as example. Numerical changes in chromosomes: Aneuploidy, euploidy, haploidy and polyploidy, with practical applications.

Human chromosome: Sex chromosome, heterochromatization, Barr bodies and chromosomal abnormalities.

UNIT – II

Mutations: Types of mutations, induced mutation, detection of mutation and significance. Inborn errors of metabolism.

Mutation at molecular level: Point mutations, frame-shift mutation, deletion, suppressor mutation and their consequence.

UNIT – III

Molecular genetics: Fine structure of gene – cistron, muton, recon, cis-trans complementation – Genetic regulation of development and differentiation – sequential expression of genes with examples from Drosophila, Coenorhabditis and Zebrafish

UNIT IV

Genetic theory of evolution: Genetic theory of natural selection – genetic and non-genetic variations - evidences for the role of natural selection - Polymorphism and selection. Neo – Lamarckism – present concept of recapitulation.

Evolution at population level: Evolution of races to species, adaptation pattern, behavioural adaptations and strategies, sexual competition and selection, isolating mechanisms, species concept, modes of speciation, evolutionary rate.

UNIT V

Molecular evolution: Gene evolution, evolution of gene families, molecular drive, assessment of molecular variation. Molecular phylogenies and evolution. Phylogenetic tree at molecular level and clustal analysis\

REFERENCE BOOKS

1. Benjamin Pierce (2007) Genetics a conceptual approach, W.H. Freeman & Company, USA.
2. Futuyma, D. J. (2006) Evolutionary biology, Palgrave publishers, USA
3. Hartwell, L. (2004) Genetics from genes to genomes, McGraw-hill, USA.
4. Gahalain, S. S. (2004) Fundamentals of Genetics, Anmol Publications Pvt, India.
5. Burton S. Guttman,Anthony Griffiths,David T. Suzuki (2002) Genetics : A Beginner's Guide, One world Publications Epz,

1.4 BIOCHEMISTRY AND ANIMAL PHYSIOLOGY

UNIT - I

Biomolecules: Carbohydrates, lipids & proteins: Structure, classification, properties and biological importance. Structure of nucleic acids. Vitamins: Structure and biochemical properties. Enzymes & coenzymes. General classification of hormones, chemistry and mechanisms of action.

UNIT - II

Metabolism: General scheme of metabolism: transamination, deamination, glycolysis, Krebs cycle, HMP shunt, phosphoketolase pathway, Cori cycle, gluconeogenesis, glycogenesis, glycogenolysis and their regulation. Beta oxidation pathway and regulation. Intermediatory metabolism.

Metabolic disorders: Diabetes mellitus, glycogen storage diseases, ketone bodies, obesity: Causes and consequencs

UNIT - III

Digestion, Respiration, Circulation & Excretion: **Digestion**: Digestion of carbohydrates, proteins and lipids – Absorption and assimilation of digested food materials- Gastrointestinal hormones- Control of digestion. **Respiration**: Respiratory pigments, transport and exchange of gases. **Circulation**: Heart beat and its regulation, cardiac ailments. **Excretion**: Classification of animals on the basis of excretory products- Ammonia toxicity – detoxification pathways – Ammonia metabolism- Mechanism of urine formation.

UNIT - IV

Muscular & Neurophysiology: **Muscular Physiology** : Types of muscles, ultrastructure of skeletal muscle, muscle proteins, mechanism and energetics of muscle contration. **Neurophysiology**: Ionic basis of excitability – resting membrane potential – electrogenesis- propagation of action potential – interneuron transmission – electrical synapses – chemical synapses – neurotransmitters. **Receptors:** Mechanoreceptors: Strech receptors, Pressure receptors – Gravity receptors – Phonoreception- Photoreception: Retinal pigments – Photochemistry of vision.

UNIT - V

Homeostatic Mechanisms: Thermoregulation in poikilotherms and homeotherms- Tolerance to high temperature, cold and freezing- Physiology of hibernation and aestivation. Osmotic and ionic regulation: Response to hyperosmotic and hypoosmotic media with reference to crustaceans and fish. Adaptation to pressure: High altitude-buoyancy.

Animal behaviour: Biological clock – endogenous rhythm – circadian rhythm – circannual and lunar periodicity – Zeitgeber – entrainment – Involvement of melatonin in circadian rhythm- Physiological basis of learning and memory.

REFERENCE BOOKS

1. Alacock, J, 2009. Animal behaviour: an evolutionary approach. Sinauer publications, USA.
2. Lehninger, A., Nelson, D. L., and M.M. Cox 2008. Lehninger Principles of Biochemistry, W.H. Freeman, USA.
3. Berg, J.M., J.L. Tomoczko, and L. Stryer, 2008. Biochemistry, W. H. Freeman publisher, USA.
4. Voet, D. J., J.G. Voet and C. W. Pratt, 2008. Fundamental of biochemistry: Life at molecular level, Wiley publishers, USA.
5. Mc Kee, T., J.R. Mc Kee, and P. De Pra, 2008. Biochemistry: The molecular basis of Life, Oxford University Presss.
6. Campbel, M.K., and S.O. Farrel, 2007. Biochemistry, Brooks Cole Publishers, USA.
7. Zubay, G. 2005. Biochemistry, Publisher**:** Addison-Wesley.
8. Delvin, T.M., 2005. Text Book of Biochemistry with clinical correlations, Willey-Liss Publishers, USA.
9. David Randall, 2009. Eckert Animal Physiology, W H Freeman & Co.
10. Nielsen, S, 2000. Animal Physiology, Cambridge Univ. Press, Cambridge.

1.5 BIOPHYSICS AND BIOSTATISTICS

UNIT-I

Scope of Biophysics in Biology – structure and properties of atoms and molecules – Formation of molecules from atoms – Bonds – types – properties – strength – atomic and molecular orbitals – X-ray diffraction – Polymerization of organic molecules. Energy sources – Principle and application of laws of thermodynamics – Free energy from electromagnetic waves.

UNIT II

Natural radiations – Properties of natural light. Photoelectric effect – Photodynamic sensitization – LASER – Hydrodynamic method; Effect of radiations on macromolecules –Delayed effects of radiation. Measurement of radio activity – Gieger Muller counter – Isotopes as tracers - Autoradiography.

Unit- III

Spectroscopy: Concepts of spectroscopy, Visible and UV spectroscopy - NMR and ESR spectroscopy.

Chromatography: Principles and applications of TLC, GLC and Column Chromotography

Electrophoresis: Native PAGE, SDS- PAGE, DNA agarose gel electrophoresis, Southern, Northern, Western transfers, Isoelectric focusing and 2D gel electrophoresis.

Unit-IV

Biostatistics: Primary and secondary data. Types of sampling: Random and stratified random sampling. Presentation of data: histogram, polygon, pie diagram. Types of variables: continuous and discontinuous variables, qualitative and quantitative variables.

UNIT-V

Measure of dispersion and Central tendency: Mean, Mode, Median – Dispersion: Range, variance, SD, SE and CV.

Common statistical tools: Chi-square,'t' test, – ANOVA, Correlation and Regression analysis.

REFERENCE BOOKS

1. Daniel, W. W. (2007) Biostatistics, Wiley publishers, USA
2. Zar (2006) Biostatistical analysis, Dorling Kindersley Pvt Ltd , India.
3. Nolting, B (2006) Methods in modern biophysics, Springer, Berlin
4. Agarwal, S. K. (2005) Advanced biophysics, APH Publishing Corporations, India
5. Daniel, M. (2004) Basic biophysics, Agrobios publications, India
6. Bailey, N.T.J. (1997), Statistical Methods in Biology, III Ed., Cam. University Press, N.Y.
7. Goutham, N, Pattabi, S. 2001. Biophysics, Narossa Publishing company, New Delhi.

PRACTICALS

1.6 ANIMAL DIVERSITY, CELL AND MOLECULAR BIOLOGY

Animal Diversity

1. Study of animals in their natural habitats in relation to morphological, ecological and evolutionary diversity.
2. Assigning animals to their respective taxonomic position up to order, based on morphological characters.
3. Mounting
   - Earthworm – Body and pineal setae
   - Honey bee – sting apparatus
   - Cockcroach – Mouth parts
   - Prawn – Appendages
   - Teleost fish– Scales
4. Dissections
   - Understanding the anatomy of frog using an appropriate software package (Carolina^{TM} Biolab^{R} – Frog)
   - Dissection of cockroach: Digestive, reproductive & nervous systems.
   - Dissection of available fish: General anatomy (Viscera)

CELL AND MOLECULAR BIOLOGY

1. Cell organelles from slide preparation/images
2. Onion root tip – Squash preparation and study of mitosis
3. Grasshopper testis - Squash preparation and study of meiosis
4. *Chironomous* larva - Squash preparation of giant chromosome
5. Buccal mucosal epithelium – Smear preparation to detect Barr bodies
6. Isolation and detection of DNA from gel electrophoresis

REFERENCE BOOKS

1. Lundblad, R. L. 2009. Practical Handbook of Biochemistry and Molecular Biology, CRC publications.
2. Barnes, R. D., 2008. Invertebrate Zoology, Cengage Learning (Thompson), USA
3. Sambrook, J.and David W. Rusell, 2001. Molecular Cloning: A Laboratory Manual Cold spring harbour laboratory press, U.S.A.
4. Pratt, H. S., 2008. A course in Vertebrate Zoology, Bibliolife
5. Hickman Cleveland P. Jr. Larry S. Roberts, Susan L. Kee (2006), Animal Diversity, MaCgraw-hill professional, USA

1.7 GENETICS, EVOLUTION, BIOCHEMISTRY, ANIMAL PHYSIOLOGY, BIOPHYSICS AND BIOSTATISTICS

GENETICS

1. Drosophila culture – Identifications of sex & mutants.
2. Pedigree analysis using charts and data.
3. Human karyotyping & chromosomal abnormalities.
4. Hardy Weinberg law & Calculation of gene frequencies for dominant, recessive & co-dominant traits and multiple alleles.

EVOLUTION

Animals of evolutionary importance – Analogous and homologous organs, fossils, mimicry, coloration.

BIOCHEMISTRY AND PHYSIOLOGY

1. Preparation of solutions – Molarity, Normality, Percentage-Buffer preparation – Determination of pH.
2. Estimation of salivary amylase activity.
3. Estimation of ammonia and urea.
4. Estimation of blood chloride.
5. Determination of glucose and glycogen
6. Determination of total proteins
7. Separation of proteins by electrophoresis –Native, PAGE.
8. Spotters: Observation and recording of different tissue types from prepated slides, smering of peripheral blood to identify cell types..

BIOPHYSICS AND BIOSTATISTICS

Spectrophotometer, pH meter, micrometer and electrophoretic unit as spotters.
Construction of graph and bar diagram. Calculation of mean, median, mode, variance, standard deviation and standard error. Chi-Square test.

REFERENCE BOOKS

1. Joe Sambrook, and David W. Rusell, 2001. Molecular Cloning: A Laboratory Manual Cold spring harbour laboratory press, U.S.A.
2. Lundblad, R. L. 2009. Practical Handbook of Biochemistry and Molecular Biology, CRC publications.
3. Keith Wilson and John Walker ,2000. Practical Biochemistry: Principles and techniques, Cambridge University Press, UK.
4. Baylis, W. M. 2009. An introduction to physiology with practical exercises, Cornell University press, USA.
5. Daniel, W. W. (2007) Biostatistics, Wiley publishers, USA
6. Zar (2006) Biostatistical analysis, Dorling Kindersley Pvt Ltd , India.

2.1 ENVIRONMENTAL BIOLOGY

UNIT-I

Ecosystem: The concept of ecosystem- Energy flow - Trophic structures in ecosystem. Ecological complexity and stability in food webs. Ecological pyramids - food chain and their significance. Limiting factor: Concept of limiting factors- Shelford's law of tolerance, Factor compensation and ecotypes.

UNIT-II

Bio-geochemical cycle: General account of complete and incomplete bio-geochemical cycles, sedimentary cycles in tropics. Cycling of non-essential elements and organic nutrients - Recycling pathway of elements.

UNIT-III

Population and community ecology: The population concept- Natality, mortality, growth rate, population density & age distribution, carrying capacity, fluctuation and regulation. Community structure - influence of competition - influence of predation and disturbance. Community succession, climax - Monoclimax and polyclimax theories.

UNIT-III

Habitat ecology and Resource ecology: Physical and biotic features of terrestrial, freshwater, estuarine, marine habitats. Unique features of Coral Reefs, Seaweeds, Seagrasses and Mangroves. Natural resources and their conservation.

UNIT-V

Environmental Pollution and Management: Types of environmental pollution and their biological effects (Air, Water, Soil, Noise). Effect of climate change, global warming and its effect on living organisms - Role of microbes in bioremediation. Environmental awareness. Organizations involved in environmental protection - Principles of conservation: Application of ecological principles - germplasm conservation. Environmental laws.

REFERENCE BOOKS

1. Henry, M., and H. Stevens, 2009. A Primer of Ecology with R (Use R), Springer
2. Odum EP,(2008) Fundamentals of Ecology, Cengage Learning (Thompson), USA.
3. Smith, T. M., and R. L. Smith, 2008. Elements of Ecology (7th Edition), Benjamin Cummings.
4. Krebs, C. J. 2008. Ecology: The Experimental Analysis of Distribution and Abundance (6th Edition), Benjamin Cummings.
5. Clark R.S. 2001. Marine Pollution, Clanderson Press Oxford, New York.

2.2. DEVELOPMENTAL BIOLOGY

Unit - I

Gametogenesis: Spermatogenesis and Oogenesis – Sperm structure and physiology, Classification of eggs -Polarity and symmetry – Maturation of egg- egg envelops – Vitellogeneiss, Types of eggs.

Unit - II

Fertilization & **Cleavage**: Egg recognition, gamete fusion and prevention of polyspermy, activation of egg metabolism- Types of cleavage - Factors affecting cleavage- Chemodifferentiation - Blastulation – Types of blastula – Presumptive organ forming areas in frog and chick –Fate maps.

Unit-III

Gastrulation: Gastrulation in frog and chick, epiboly, emboly. Germ cell determination and migration, morphogenetic movements, the cellular basis of morphogenesis, cell motility and differential cell affinity.

Unit - IV

Organogenesis: Concept of organizer, Embryonic induction – Development of eye and brain. Endoderm determination, mesoderm induction & ectoderm. Neurogenesis- Formation of muscle and neural crest - Foetal membranes in chick - Placentation: types of placenta in mammals.

Unit - V

Genes and development: Nuclear transplantation; Differential gene activation, Developmental genetic defects, Role of cell death in development, Factors involved in teratogenesis, Concept of Assisted Reproductive Technologies (ART), Gene knock out and knock in .

REFERENCE BOOK

1. Gilbert, S. F., and K. Knisely, 2009. Developmental Biology, Sinauer Associates Inc.
2. Minelli, A. 2009. Forms of Becoming: The Evolutionary Biology of Development, Princeton University Press.
3. Hodge, R., 2009. Developmental Biology (Genetics and Evolution). Facts on File.
4. Slack, J. M. W. 2005. Essential Developmental Biology, Wiley-Blackwell.
5. Hake S, and F. Wilt, 2003. Principles of Developmental Biology, W.W. Norton & Co.
6. Wolpert, L., R. Beddington, T. Jessell, P. Lawrence, E. Mayerowitz, and J. Smith, 2002. Principles of development, Oxford University Press, UK

2.3 MICROBIOLOGY AND IMMUNOLOGY

UNIT - I : History of Microbiology: Microbial diversity: Prokaryotes and Eukaryotes, Microalgae, Fungi, Bacteria and Viruses. Bacterial size, shapes and pattern of arrangement. Ultrastructure of bacteria-Gram-positive and Gram-negative bacteria.

Bacterial Growth and Nutrition: Growth curve of bacteria, Nutritional requirements. Nutritional types of bacteria, Types of culture media, Enumeration, Isolation, identification of microbes by biochemical and molecular tools. Storage of microbes.

Unit – II : Industrial Microbiology: Microbes of milk and food - methods of detection, Pasteurization and food poisoning; food preservation. Microbial growth kinetics - Batch culture and continuous culture - Biomass production. Isolation, preservation and strain improvement of industrially important microorganisms.

Medical Microbiology: Bacterial and viral infections with examples - Causative agents – Pathogenecity, Modes of transmission, Virulence & Pathogen establishment.

UNIT - III : Immune System: Cells, tissues and organs of immune system – Primary and secondary lymphoid organs – Structure and function. Molecules of immune system – antibodies, complements, cytokines, interferons – types, sources and functions.

Antigen: Classification, epitopes, antigen and antibody interaction.

UNIT – IV : Immune response: Primary and secondary – mechanism of humoral and cell mediated immune responses- immunity to infections – immunoprophylaxis, vaccines and immunization schedule.

Immunological Disorders: Hypersensitivity - Types I, II, III and IV; autoimmune disorder; immunodeficiency diseases. Tumor and transplantation Immunology - Major Histocompatibility Complex (MHC); Immunity to tumors.

UNIT – V : Immunological techniques: Agglutination test, Precipitation ring test, Immunodiffusion, Immunoelectrophoresis, Widal test, VDRL test, Acquired Immuno Deficiency Syndrome (AIDS) test, Hybridoma technology, Radioimmuno asaay, Enzyme linked Immunosorbent Assay (ELISA).

REFERENCE BOOKS:

1. Roitt, I., Delves,P., Martin, S., Burton, D (2006) Roitt's Essential Immunology, Wiley-Blackwell, UK
2. Brown, A., 2008. Benson's Microbiological Applications: Laboratory Manual in General Microbiology, Short Version, McGraw-Hill Science.
3. Roberts, J.C.E, 2008. Microbiology: A human perspective, Mc Graw Hill Publishers, USA.
4. Bauman, R.W, 2008. Microbiology with diseases by body system, Benjamin Cummings, USA.
5. Levinson, W, 2008. Review of Medical Microbiology and Immunology, Tenth Edition (LANGE Basic Science), McGraw-Hill Medical, USA
6. Delves P, Martin S, Burton D, and Roitt I, 2006. Roitt's Essential Immunology , Wiley-Blackwell, London.

2.4 ANIMAL BIOTECHNOLOGY

UNIT - I

Genetic Engineering: Basic principles of genetic engineering - Genetic engineering in animal systems- Vectors: Plasmid, Cosmid, Bacteriophage, Shuttle vectors, Yeast vectors, Minichromosomes, Artificial chromosomes. Expression vectors and expression systems. Enzyme systems: Gyrase, ligase, reverse transcriptases, polymerases. RFLP, RAPD, VNTR. PCR, DNA finger-printing, DNA sequencing- Human genome project.

UNIT - II

Animal cell and tissue culture: Media requirements, preparation of media and sterilization techniques. Natural and synthetic media. Culture methods: hanging drop, suspension and monolayer culture. Primary and established cell lines, characteristics of transformed cells. Methods of cell preservation- Applications of cell culture in product development and tissue repair- Bioreactors and scaling-up technologies.

UNIT - III

Vermiculture technology:

Earthworms – Taxonomic position and diversity; Types; Ecological roles and economic importance of earthworms – Need for earthworm culture. Vermiculture –common species for culture; environmental requirements; culture methods – wormery – breeding techniques; indoor and out door cultures - monoculture and polyculture – relative merits and demerits; Windows method- Process – advantages. Applications of vermiculture.

Sericulture technology:

Sericulture: Scope of sericulture- Mulbery cultivation – Environmental conditions for cultivation – Mulberry varieties in Tamil Nadu- Morphology of silkworm – larva and moth. Physiology of silk gland. Life cycle of *Bombyx mori*- Mounting of silkworm for spinning cocoons – Harvesting of cocoons- Quality of cocoons- Silk reeling industry and commercialization- Quality of silk- Silkworm larva as a bioreactor.

UNIT - IV

Biotechnology in medicine: Recombinant vaccines, subunit vaccines and live vaccines- Production of Insulin and Tissue Plasminogen Activator – Molecular diagnostics for detection of tumors – Therapeutic approaches to cancer – Bone marrow transplantation. Gene therapy: *Ex vivo* and *In vivo* gene therapy, Stem cells: embryonic and adult, hematopoietic, epithelial and mesenchymal- separation, culture and maintenance, applications.

UNIT - V

Bioinformatics tools in animal technology: Introduction to internet and use of the same for communication, searching of database, literature, references etc. Introduction to Bioinformatics- Databank search- Data mining, Data management and interpretation, BLAST, Multiple sequence alignment, Protein modeling, Protein structure analysis, Docking, Primer designing, Phylogenetic analysis.

REFERENCE BOOKS

1. Cartwright, T, 2009. Animal Cells as Bioreactors (Cambridge Studies in Biotechnology), Cambridge University Press, UK.
2. Castilho L. 2008. Animal Cell Technology: From Biopharmaceuticals to Gene Therapy, Taylor & Francis.
3. Freshney, I, 2006. Culture of Animal Cells, Publisher: John Wiley & Sons Inc (sea) Pte Ltd.
4. Brown, T.A, 2005. Gene cloning- An introduction, 2nd &3rd ed, Chapman &Hall. Publisher: Stanley Thornes Publishers Ltd.
5. Butler, M. 2004. Animal Cell Culture and Technology : The Basics, BIOS Scientific Publ, UK.
8. Primrose, S. B, Richard M, Twyman, R and W. Old, 2001. Principles of gene manipulation, (6th ed), Published by Wiley-Blackwell.
9. Tsai C.S, 2001. An introduction to Computational Biochemistry, Publishers: John Wiley and Sons, Inc.,
10. Sultan Ahmed Ismail, 2005. The Earthworm Book, Second Revised Edition. Other IndiaPress, Goa, India.
11. FAO, 1994. Sericulture manual – 2 . Oxford & IBH.

2.5.1 FISHERIES AND AQUACULTURE

UNIT –I : General Classification: General classification of fishes, economically important marine and freshwater fishes with regard to their fishery potential. Indigenous and modern craft and gears used for capture fisheries.

UNIT -II : Morphometric and meristic characters: Morphometric and meristic characters of fishes, food and feeding habits, age and growth, reproduction and spawning - Migration in fishes-Fishery by products: Fish liver oil, fish ensilage, isinglass, Chitin, Leather from shark skins and Masmin (Tunas) and value added fishery by products.

UNIT –III : Aquaculture: Definition – Cultivable organisms – Types of culture: Extensive, Semi intensive and Intensive - Farm design, structure and construction. Pond preparation and water quality management in aquaculture ponds. Hatchery technologies.

Feed: Artificial feed for fish and shrimps. Food Conversion Ratio (FCR), Feed cost. Live feed organisms: Artemia, rotifers, diatoms and their culture techniques.

UNIT IV : Composite fish culture: Paddy cum fish culture, integrated fish farming and race ways culture. Seeds transportation, stocking, harvesting and marketing. Common finfish and shell fishes disease and their control.

Mariculture: Shrimp culture, lobster culture, crab culture and pearl oyster culture. Seaweeds: Economic importance, classification and culture methods.

Mass production of seeds: Hypophysation techniques in fishes and induced breeding in shrimps.

UNIT – V : Fish processing: Physical and biochemical methods to examine freshness of fish - Processing methods: Freezing, canning, smoking, drying and irradiation methods of preservation of fish. Quality control: National and International standards (BIS & HACCP concepts).

REFERENCE BOOKS

1.Jean T. Nolan, 2009. Offshore Marine Aquaculture, Nova Science Pub Inc.

2.Michael King, 2007. Fisheries Biology, Assessment and Management, Wiley-Blackwell.

3.Pillay, T. V. R., and M. N. Kutty, 2005. Aquaculture: Principles and Practices, Wiley-Blackwell.

4.FAO, 2003. The State of World Fisheries and Aquaculture: 2002 (Manuals from the Fao Training), United Nations Publications.

5.K K. Balachandran, 2002. Post Harvest Technology of Fish and Fish Products, Daya Publishing House.

6.Bremner, H.A, 2002. Safety and Quality issues in fish processing, Publisher: CRC,(1st edition).

7.Simon Jennings, Michel Kaiser, and John D. Reynolds, 2001. Marine Fisheries Ecology, Wiley-Blackwell.

8.Chandran, K.K., 2000. Post harvest Technology of Fish and Fishery Products, Daya Publishing House, New Delhi.

2.5.2 PARASITOLOGY

UNIT - I:

Introduction to parasitology: Basic concepts, Classification of parasites: endo-, ecto-parasites, facultative and obligatory parasites, Major taxa of parasites of medical/veterinary importance; General patterns of parasite transmission, global burden of infectious diseases.

UNIT - II

Parasitic Protozoa: General characters and classification, Life cycle, diseases, diagnosis & treatment. Amoebic parasite: *Entomoeba histolytica* and human amoebiasis, Parasitic flagellate: *Giardia intestinalis* and *Trypanosoma*, Parasitic ciliate: *Balantidium coli*, Parasitic sporozoon: *Plasmodium* sp.

UNIT – III

Trematode, cestode & nematode parasites: General characters and classification, Liver fluke: *Fasciola hepatica*, Lung fluke: *Paragonimus westermani*, Blood fluke: Human Schistosomes, Intestinal tape worms: *Taenia saginata* & *Taenia solium*, Intestinal nematodes: *Ascaris lumbricoide*, Blood and tissue nematodes: Filariasis.

UNIT – IV

Medical Entomology: General characters, diseases caused and life cycle of the important insect vectors- Mosquito, Tsetse fly, Sand fly, Bed bug, Myiasis, Fleas, Lice; Arachnid parasites: Ticks and mites; Crustacea: Cyclops and its medical importance.

UNIT – V

Control of parasitic diseases: Chemotherapy of parasitic diseases- Antihelmintic drugs, Vaccines - Vector control - modern approaches. Zoonotic disease and its control - Molecular diagnostic methods in parasitology - RNAi technology in parasitology. Emerging diseases and bioterrorism.

REFERENCE BOOKS

1. Larry Roberts, Jr., and John Janovy, 2008. Foundations of Parasitology, McGraw-Hill.
2. Krasnov, B. R. 2008. Functional and Evolutionary Ecology of Fleas: A Model for Ecological Parasitology, Cambridge University Press, UK.
3. Hendrix, C. M. and Ed Robinson, 2006. Diagnostic Parasitology for Veterinary Technicians, Mosby publishers.
4. Lynne Shore Garcia, 2006. Diagnostic Medical Parasitology, ASM Press, USA.
5. Bogitsh, B. J., C. E. Carter, and T. N. Oeltmann, 2005. Human Parasitology, Academic Press, USA.
6. Heelan, J. S., F. W. Ingersoll, 2001. Essentials of Human Parasitology, Delmar Cengage Learning.

PRACTICALS

2.6. ENVIRONMENTAL BIOLOGY, DEVELOPMENTAL BIOLOGY, MICROBIOLOGY, IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

ENVIRONMENTAL BIOLOGY

1. Estimation of salinity
2. Estimation of dissolved oxygen
3. Mounting of plankton (fresh water / marine)
4. Animal associations
5. Intertidal fauna
6. Construction of a food web diagram
7. Measurement of light intensity in water bodies using Secchi disc.

DEVELOPMENTAL BIOLOGY

1. Examination of prepared microslides to study

a. Egg, cleavage, blastula and yolk plug stages in frog.

b. Egg, 24 hr, 36 hr, 48 hrs, 72 hr and 96 hr developmental stages in chick.

MICROBIOLOGY AND IMMUNOLOGY

1. Enumeration of bacteria, fungi and antibiotic susceptibility test. Hydrolysis of starch, gelatin and protein, Motility of Bacteria Gram Staining and Negative staining. Pure culture and Preservation of bacteria.
2. Identification of various immune cell types from peripheral human blood smear, ABO blood grouping and Rh typing
3. Immuno-electrophoresis (from images)
4. Double Immuno-Deficiency test

ANIMAL BIOTECHNOLOGY

1. Cloning vectors from images
2. Demonstration of ELISA.
3. Spotter: Models of PCR, Southern blotting.
4. Common species of earthworms for vermicomposting
5. Adult and post-embryonic developmental stages of silk worm moth
6. Sex identification of adult moth
7. Cocoons, silk and its quality,
8. Tools and utensils in sericulture

REFERENCE BOOKS

1. Bauman R. W, and N. Dolby, 2008. Microbiology Lab Manual (3rd Edition), Pearson Custom Publishing.

2. James G Cappucino, Natalie Sherman, 2007. Microbiology: A laboratory manual, Benjamin – Cummining publications, U.S.A.
3. Melissa Ann Gibbs, 2003. A Practical Guide to Developmental Biology, Oxford University Press, USA.

4. Turgeon, M. L. 2008. Immunology & Serology in Laboratory Medicine (Immunology & Serology in Laboratory Medicine (Turgeon)), Mosby publishers.

5. Talwar, G. P., 2006. A hand book of practical & clinical immunology, CBS publishers, New Delhi

6. Hay, F. C., O. M. R. Westwood, and P. N. Nelson, 2002. Practical Immunology, Wiley-blackwell, USA

2.7.1 FISHERIES AND AQUACULTURE

1. Identification of commercially important fin fishes, shell fishes, molluscs, lobsters and seaweed.
2. Physical, Biochemical and microbiological methods to examine freshness of fish.
3. Estimation of protein, lipid, carbohydrate and salt content in fishes.
4. Determination of stocking density and feed assessment.
5. Method of transportation of seeds
6. Modern crafts and gears

REFERENCE BOOKS

1. Moyle, P. B. and J. J. Cech, Jr., (1996) Fishes an introduction to Ichthyology, Prentice Hall, New Jersey.

2. Jean T. Nolan, 2009. Offshore Marine Aquaculture, Nova Science Pub Inc.

3. Michael King, 2007. Fisheries Biology, Assessment and Management, Wiley-Blackwell.

4. Laurence Hutchinson, 2006. Ecological Aquaculture: A Sustainable Solution Permanent Publications.

5. David Scarfe, Cheng-Sheng Lee, and Patricia J. O'Bryen, 2006. Aquaculture Biosecurity: Prevention, Control, and Eradication of Aquatic Animal Disease, Wiley-Blackwell.

6. Pillay, T. V. R., and M. N. Kutty, 2005. Aquaculture: Principles and Practices, Wiley-Blackwell.

2.7.2 PARASITOLOGY

1. Identification and description of common protozoon, helminth and crustacean parasites

2. Life cycle of vectors of diseases
   Mosquito, House fly, Tick

3. Identification of infectious agents
   Sputum analysis, Faeces analysis, Agglutination test (Widal test)

4. Enzyme linked immunosorbent assay (ELISA)

5. Application of DNA finger printing in parasitology

6. Isolation and identification of parasites from live situations

REFERENCE BOOKS

1. Garcia, L. S. 2009. Practical Guide to Diagnostic Parasitology, ASM Press, USA.

2. Hendrix, C. M. and Ed Robinson, 2006. Diagnostic Parasitology for Veterinary Technicians, Mosby publishers.

3. Lynne Shore Garcia, 2006. Diagnostic Medical Parasitology, ASM Press, USA.

4. Bogitsh, B. J., C. E. Carter, and T. N. Oeltmann, 2005. Human Parasitology, Academic Press, USA.

5. Baker, J.R. 2004. Advances in parasitology, Elsevier

Course	**:**	**P.G. Diploma in Personnel Management and Industrial Relations**
Mode	:	Distance Education
Duration	:	One year
Eligibility	:	Any degree from a recognised University
Medium	:	English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
1	Management Concepts	100
2	Principles of Personnel Management	100
3	Labour Legislations-I	100
4	Labour Legislations-II	100
5	Industrial Relations	100
	Total	**500**

Paper 1: MANAGEMENT CONCEPTS

UNIT I

Management: Definition – Nature – Scope and functions – Evaluation of management thought – Relevance of management to different types of organization like Hospitals, Universities, Hostels, Social Service organizations, etc.

UNIT II

Planning: Nature, importance and strategic considerations in planning – Planning premises – Components of planning as objectives, policies, strategies, procedures, methods, rules, projects and budgets – Making plans effective – Planning and decision making.

UNIT III

Organising: Nature, purpose and kinds of organization – Structure – Principles and theories of organization – Departmentation – Span of control – line and staff functions – Authority and responsibility – Centralization and decentralization – Delegation of authority – Committees – Informal organization.

UNIT IV

Staffing and directing: General principles, importance and techniques.

UNIT V

Controlling: Objectives and process of control – Devices of control – integrated control – Special control techniques – Co-ordination – Need and techniques.

UNIT VI

Recent trends and new perspectives in management: Strategic alliances –Core competence – Business process reengineering – TQM – Bench marking.

REFERENCE BOOKS:

1. Stoner and Wanker, Management, Prentice Hall.
2. Koontz and O'Donnel, Management, A Systems Approach, Tata McGraw Hill.
3. Weihrich and Koontz, Management – A Global Perspective, McGraw Hill.
4. John Argenti, Management Techniques – A Practical Guide.
5. Gene Burton & Manab Thakur, Management Today: Principles and Practice, TMH.

Paper 2: PRINCIPLES OF PERSONNEL MANAGEMENT

UNIT I

Personnel Management – Definition – Objectives and functions – Role and structure of personnel function in organizations – Personnel principles and policies.

UNIT II

Human Resource Planning – Characteristics – Need for planning – HRP process – Job analysis – Job design – Job description – Job specification.

UNIT III

The Selection Process – Placement and induction – Training and development – Promotion – Demotions – Transfer – Separation.

UNIT IV

Wage and salary administration – Factors – Principles – Compensation plan – Individual – Group – Incentives – Bonus – Fringe benefits – Job evaluation systems – Wage and salary administration in relation to personal taxation.

UNIT V

Employee maintenance and integration – Welfare and safety – Accident prevention – Administration of discipline – Employee motivation – Need and measures.

UNIT VI

Personnel Records/Reports – Personnel research and personnel audit – Objectives, scope and importance.

REFERENCE BOOKS:

5. Venkataratnam C S and Srivastava B K, Personnel Management and Human Resources, Tata McGraw Hill, 1991.
6. Arun Monappa, Industrial Relations, Tata McGraw Jill, 1987.
7. Dale Yodder, Paul and Standohar D, Personnel Management and Industrial Relations, Sterling Publishers, 1990.
8. David A Decenzo and Stephen, Robbins P, Personnel/Human Resource Management, Prentice Hall, 1955.

Paper 3: LABOUR LEGISLATIONS - 1

UNIT I

Factories Act, 1948: Provision's relating to health, safety, welfare, working hours, leave etc., of workers approval – Licensing and registration of factories, manager and occupier – Their obligations under the Act, powers of the authorities under the Act, Penalty provisions.

UNIT II

Workmen's Compensation Act, 1923: Employer's liability for compensation, amount of compensation method of calculating wages – Review – distribution of compensation – Remedies of employer against stranger – Returns as to compensation – Commission for workmen's compensation.

UNIT III

Industrial Dispute Act, 1947: Industrial dispute – Authorities for settlement of industrial disputes – Reference of industrial disputes – Procedures – Power and duties of authorities, settlement and strikes – Lock-out – Lay-off – Retrenchment – Transfer and closure – Unfair labour practices – Miscellaneous provision offences by companies, conditions of service to remain unchanged under certain circumstances, etc.

UNIT IV

Shops and Establishments Act, 1947: Definitions – Sailent provisions – Powers of the authorities.

UNIT V

Employee's State Insurance Act, 1948: Registration of Factories and Establishments, the employee's State Insurance Corporation, Standing Committee and Medical Benefit Council, provisions relating to contributions – Inspectors – Their functions and disputes and claims – Offences and penalties – Miscellaneous provisions.

UNIT VI

Employees Provident Fund and Msicellaneous Provisions Act, 1952: Employees provident fund and other schemes – Determination and recovery of money due from employer, appointment of inspectors and their duties – Provisions relating to transfer of accounts and liability in case of transfer of establishment exemption under the Act – Count's power under the act.

REFERENCE BOOKS:

1. Bare Acts
2. Kapoor N D, Industrial Law
3. Shukla M C, Industrial Law

Paper 4: LABOUR LEGISLATIONS - II

UNIT I

Computation of available surplus calculation of direct tax payable surplus calculation of direct tax payable by the employer, eligibility for bonus and payment of bonus – deduction from bonus payable – adjustment of customary of interim bonus payable, adjustment of customary or interim bonus linked with production or productivity – set on and set off allocable surplus, presumption about accuracy of balance sheet and profit and loss account.

UNIT II

Payment of Gratuity Act, 1972: Payment of Gratuity – exemption – nomination – determination and recovery of the amount of gratuity.

UNIT III

Payment of Wages Act, 1936: Objects, provisions relating to responsibility for payment of wages – fixation of wage periods, time of payment, deduction and fines – maintenance of records and registers, inspectors appointment of authorities and adjudication of claims.

UNIT IV

Minimum Wages Act, 1948: Objects, fixing of minimum rate or wages – procedure for fixing and receiving minimum wages – appointment of advisory board – payment of minimum wages, maintenance of registers and records contracting out – powers of appropriate government offences and penalties.

UNIT V

Industrial Employment(Standing Orders) Act, 1946: Provisions regarding certification and operating of standing orders – duration and modification of standing orders – power of certifying officer – interpretation of standing orders.

UNIT VI

Trade Union Act, 1926: Registration of Trade Unions, rights, and liabilities trade unions – procedure – penalties

REFERENCE BOOKS:

- Bare Acts
- Kapoor N D, Industrial Laws
- Shukla M C, Industrial Laws

Paper 5: INDUSTRIAL RELATIONS

UNIT I

Constitution of India – Salient features – Fundamental rights and directive principles of State policy – Labour movement – Concept of labour movement and Union Organization – Trade union movement and various phases of the movement – Trade unions and economic development.

UNIT II

Development of Trade Unionism in India – Historical retrospect – Central organization of workers in India – Role of internal trade union – Inter and intra union rivalries – Union recognition – International Labour Movement: ICFTU – WFTU – ILO – History, objective and functions – Convention and recommendations.

UNIT III

Concept of Industrial Relations – Social obligations of industry – Role of government employers and the unions in industrial relations – Industrial relations machinery – Joint consultation – Works committee – Negotiation: Types of Negotiations – Conciliations – Adjudication, voluntary arbitration – Workers participation in industry – Grievance procedure.

UNIT IV

Process of collective bargaining – Problems and prospects – Bipartism in agreements – Code of conduct and code of discipline – Wage boards – Reports of wage boards – Management of strikes and lockouts.

UNIT V

Employee safety programme – Types of safety organization – Safety committee – Ergonomics – Damage control and system, safety.

UNIT VI

Employee communication – House journals – Notice boards suggestion schemes – upward communication, personnel counselling and mental health – educational and social development – modern trends – employee education.

REFERENCE BOOKS:

4. Bhagoliwal T N, Personnel Management and Industrial Relations, Agra Publishers, Agra.
5. Arun Monappa, Industrial Relations, Tata McGraw Hill, New Delhi.
6. Michael V P,HRM and Human Relations,Himalaya Book House, Mumbai.

Course : **P.G. Diploma in Business Management**

Mode : Distance Education
Duration : One year
Eligibility : Any degree from a recognised University
Medium : English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
1	Management Concepts	100
2	Financial Management	100
3	Marketing Management	100
4	Principles of Personnel Management	100
5	Business Environment	100
	Total	**500**

Paper 1: MANAGEMENT CONCEPTS

UNIT I

Management: Definition – Nature – Scope and functions – Evaluation of management thought – Relevance of management to different types of organization like Hospitals, Universities, Hostels, Social Service organizations, etc.

UNIT II

Planning: Nature, importance and strategic considerations in planning – Planning premises – Components of planning as objectives, policies, strategies, procedures, methods, rules, projects and budgets – Making plans effective – Planning and decision making.

UNIT III

Organising: Nature, purpose and kinds of organization – Structure – Principles and theories of organization – Departmentation – Span of control – line and staff functions – Authority and responsibility – Centralization and decentralization – Delegation of authority – Committees – Informal organization.

UNIT IV

Staffing and directing: General principles, importance and techniques.

UNIT V

Controlling: Objectives and process of control – Devices of control – integrated control – Special control techniques – Co-ordination – Need and techniques.

UNIT VI

Recent trends and new perspectives in management: Strategic alliances –Core competence – Business process reengineering – TQM – Bench marking.

REFERENCE BOOKS:

1.Stoner and Wanker, Management, Prentice Hall.
2. Koontz and O'Donnel, Management, A Systems Approach, Tata McGraw Hill.
3. Weihrich and Koontz, Management – A Global Perspective, McGraw Hill.
4. John Argenti, Management Techniques – A Practical Guide.
5. Gene Burton & Manab Thakur, Management Today: Principles and Practice, TMH.

Paper 2: FINANCIAL MANAGEMENT

UNIT I

Financial Management: An introduction – Concept, nature, evaluation and significance – Finance functions – Managerial and operative – Investment – Function, meaning and scope – Financing function – Meaning and scope – Dividend function – Goals of Financial Management – Types – Maximisation of profit, profitability/ wealth/ liquidity/ solvency – Minimisation of risk, cost of capital, dilution of management control etc. – Risk – Return trade off – Maximisation and minimisation vs optimisation.

UNIT II

Long Term Capital Resources – Equity and debt sources – Equity share, preference shares and debentures as sources of long term capital – Relative merits, demerits and uses – Significance of convertible issues and right issues – Borrowings from term lending institutions – The institutional framework – Types of assistance – Public deposits.

UNIT III

Working Capital: Concept and types – Determinants – Financing approaches – Conservative – Aggressive and hedging approaches – Their risk – Return features and significance – Sources of working capital finance – Working capital financing by commercial banks.

UNIT IV

Capital Planning – Determinants of capital structure – Optimum capital structure – Capital structure theories – Net income and net operative income theories – M.M. Theory – Traditional theory – Their assumptions – Significance and limitations.

UNIT V

Cost of Capital Concept – Cost of debt, equity, preference share capital, retraining earning – Weighted average cost – Book weight, market weight – Marginal cost of capital use and computations.

Capital Budgeting: Concept – Significance – Methods of appraisal: Payback periods, ARR, IRR, NPV, Simulation and Certainty equivalent methods.

UNIT VI

Leasing: Concept – Types – Significance – General considerations – Economics of leasing – Evaluation – Present value and IRR methods – Leverage – Concept – Types – Degree of operative leverage – Financial leverage and total leverage – Implications of high and low degrees of leverages.

Dividend Theories: Valuation under Gorden and Walter theories – Dividend irrelevance under M.M. Theory – Assumptions – Limitations – Dividend policy – Different policies and practices – Factors affecting dividend decision.

REFERENCE BOOKS :

1. Prasanna Chandra : *Financial Management.*
2. Van Horne: *Financial Management.*
3. Khan and Jain: *Financial Management.*
4. Weston and Briham: *Managerial Finance.*

Paper 3: MARKETING MANAGEMENT

UNIT I

Marketing: Meaning – Scope – Importance – Approaches to the study of Marketing – Marketing Concept – Market Segmentation: Meaning – Bases for segmentation – Uses. Marketing Mix: Four P's in marketing – Marketing Planning – Importance – Types of planning.

UNIT II

Marketing Environment – External factors – Internal factors – Consumer Behaviour – Meaning and importance – Consumer buying process – Determinants of consumer behaviour — Theories and their relevance to marketing.

UNIT III

Product Mix Management: Product planning and development – New Product development – Product Life Cycle – Meaning – Stages –Managing PLC – Product positioning – Branding – Packaging.

UNIT IV

Price Mix Management: Factors affecting pricing – Pricing and pricing policies – Objectives – Procedures – Methods of price fixation – Administered and regulated prices.

Physical Distribution Mix: Distribution channel policy – Types – Factors determining choice of channel – Channel management – Middlemen functions.

UNIT V

Promotional Mix: Personal selling Vs Impersonal selling – Personal selling process – Steps in selling – Compensation plans – Evaluation of salesmen performance – Advertising: Importance – Objectives – Media planning and selection – Factors influencing selection – Advertising copy – Layout – Evaluation of advertising – Advertising budget – Sales Promotion methods – Publicity – Sales promotion tools.

UNIT VI

Marketing Research & Marketing Information System: Meaning – Scope – Need – Elements – Research Process – Steps involved – Consumerism: Meaning – Consumer rights – Consumer movement in India – Salient provisions of Consumer Protection Act.

REFERENCE BOOKS :

1. William Stanton: *Fundamentals of Marketing*, McGraw Hill.
2. Mamoria & Joshie: *Fundamentals of Marketing*.
3. Armstrong and Kotler: *Principles of Marketing.*

Paper 4: PRINCIPLES OF PERSONNEL MANAGEMENT

UNIT I

Personnel Management – Definition – Objectives and functions – Role and structure of personnel function in organizations – Personnel principles and policies.

UNIT II

Human Resource Planning – Characteristics – Need for planning – HRP process – Job analysis – Job design – Job description – Job specification.

UNIT III

The Selection Process – Placement and induction – Training and development – Promotion – Demotions – Transfer – Separation.

UNIT IV

Wage and salary administration – Factors – Principles – Compensation plan – Individual – Group – Incentives – Bonus – Fringe benefits – Job evaluation systems – Wage and salary administration in relation to personal taxation.

UNIT V

Employee maintenance and integration – Welfare and safety – Accident prevention – Administration of discipline – Employee motivation – Need and measures.

UNIT VI

Personnel Records/Reports – Personnel research and personnel audit – Objectives, scope and importance.

REFERENCE BOOKS:

1. Venkataratnam C S and Srivastava B K, Personnel Management and Human Resources, Tata McGraw Hill, 1991.
2. Arun Monappa, Industrial Relations, Tata McGraw Jill, 1987.
3. Dale Yodder, Paul and Standohar D, Personnel Management and Industrial Relations, Sterling Publishers, 1990.
4. David A Decenzo and Stephen, Robbins P, Personnel/Human Resource Management, Prentice Hall, 1955.

Paper 5: BUSINESS ENVIRONMENT

UNIT I

Business Environment: Concept – Significance – Factors – Environmental influence on business – Environmental Scanning for business planning.

UNIT II

Social and Cultural Environment: Demographic trend – Indian social structure – Caste and communal systems – Interplay of various systems.

UNIT III

Entrepreneurial Culture: Emerging entrepreneurial class – Ethos: Business ethics – Meaning – Need – Enforcing agencies – Social Responsibility: Responsibility towards various interest groups – Social cost benefit analysis.

UNIT IV

Political Environment: Fundamental rights – Directive principles of State Policy – Centre-State relations – Impact of political environment on business - Economic Environment: Basic economic systems – Capitalism, socialism, communism, mixed economy – Characteristics of Indian economic system.

UNIT V

State Policies: Monetary policy – Control of money supply and credit control impact on business – Fiscal Policy – Public debt, budgets, direct and indirect taxation impact on business – Industrial Policy – New industrial policy.

UNIT VI

Technological Environment: Choice of technology – Problems in selecting appropriate technology – Implications to business.

REFERENCE BOOKS :

1. Adhikary: *Business Environment.*
2. Dutt and Sundaram: *Indian Economy.*
3. Srinivasan N P and Gupta: *Enterepreneurship Development.*
4. Cherunilam: *Business and Government.*
5. Mamoria and Mamoria: *Business Planning and Policy.*

Course : **P.G. Diploma in Hospital Administration**

Mode : Distance Education

Duration : One year

Eligibility : Any degree from a recognised University

Medium : English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
1	Principles of Hospital Management	100
2	Hospital Office Management	100
3	Health Policy and Health Care System	100
4	Hospital Support Services	100
5	Human Resource Management in Hospitals	100
	Total	**500**

Paper 1: PRINCIPLES OF HOSPITAL MANAGEMENT

UNIT I

Hospital Management – Meaning – Importance – Hospital Planning – Meaning – Rationale – Types of plans – Planning process – Steps in hospital planning process – MBO in hospitals – Need – Process – Advantages and limitations – Decision-making – Meaning and importance – Types – Process.

UNIT II

Hospital Organisation – Meaning – Structures – Organisation Chart –Delegation Vs Decentralisation – Departmentation – Organisational competence – Core competence – Strategic alliances.

UNIT III

Direction – Meaning and significance – Principles of effective direction – Supervision – Leadership in hospitals – Meaning – Scope – Importance – Styles – Qualities of successful leader.

UNIT IV

Motivation in Hospitals – Meaning – Types – Motivational theories – Their impact on hospital management – Motivating the employees of hospitals.

UNIT V

Hospital Communications – Types – Barriers – Methods to overcome barriers – Principles of effective communication – Coordination – Importance of coordination in hospitals – Techniques of coordination.

UNIT VI

Performance of Evaluation – Methods of evaluation – Quality assurance – Total Quality Management (TQM) – Meaning –

Organising TQM – ISO Certification for hospitals – Hospital audit – Meaning and importance.

REFERENCE BOOKS:

1. Koontz and O'Donnel , Essentials of Management

2. Griffin, Management.

Paper 2: HOSPITAL OFFICE MANAGEMENT

UNIT I

Office management – Meaning – Importance of office in hospital management – Duties and responsibilities of hospital manager – Essential qualities.

UNIT II

Office Organisation: Principles – Organisation Charts – Office Supervisor – Office accommodation and layout – Office furniture – Physical conditions – Office Systems: Meaning – Purpose – Importance – Principles – Office procedure – Purchase related correspondence: Quotation, Order, Invoice, Despatch advice, Complaint and settlement – Mail Handling Systems: Handling inward mail and outward mail.

UNIT III

Front Office Management: Reception – Enquiries – Registration of Patients – Admission and discharge formalities – Billing.

UNIT IV

Records Management: Meaning – Importance – Medical records – Uses – Values – Forms and Design: Medical forms – Types, objects, control - Filing – Classification of files – Methods of Filing – Advantages – Essentials of a good filing system – Filing equipments – Indexing – Types of Index – Office Stationeries and Supplies: Types – Selection – Purchase – Regulating consumption.

UNIT V

Equipments and Machines: Office and medical equipments – Furniture – Office machines: Object, types – Mechanisation of office work – Types – Advantages – Safeguarding and maintaining equipments: Breakdown maintenance – Preventive maintenance.

UNIT VI

Human Relations in Hospitals: Need and importance – Maintaining cordial relations – Employees welfare – Discipline – Code of Discipline – Handling of grievances.

REFERENCE BOOKS:

1. Prasantha Ghosh K, 'Office Management', Sultan Chand and Sons, New Delhi, 1995.
2. Denyer JC and Josephine Shaw, 'Office Management', ELBS, London, 1982.
3. William H Leffingwell and Edwin M Robinson, 'Textbook of Office Management', TMH, New Delhi, ed.3, 1986.
4. Rajendra Pal and Korlahalli JS, 'Essentials of Business Communication', Sultan Chan and sons, New Delhi, 1999.

Paper 3: HEALTH POLICY AND HEALTH CARE SYSTEM

UNIT I

Demography Trends: World population trends – Indian population trends – Demographic structure and health implications.

UNIT II

Health Policy: Meaning – Need – National health policy – Features – National health programmes in India – Health planning – Planning under Five Year Plans – Plan outlays.

UNIT III

Health Care: Concept of health care – Levels – Health care system in India – Structure of Government Machinery – Private, Government, Corporate Hospitals.

UNIT IV

Organisations for Health: Voluntary health agencies in India – Indian Red Cross Society – Indian Council for child welfare – Tuberculosis Association of India – PAI – Rockfeller Foundation – Ford Foundation – CARE – International organisations – WHO – UNICEF – UNDP.

UNIT V

Health Economics: Role of economics in health sector – Linkages between health and development – Nature of demand and supply in health economics – Input and output in health economics – Issues in economics of health.

UNIT VI

Cost-Benefit Analysis: Cost-benefit analysis in health care services.

REFERENCE BOOKS:

1 Park K, Text Book on Hygiene and Preventive Medicine, Banarsidas, Bhanoy.
2 Francis CM & Mario Ode Sonza, Hospital Administration, Jaypee Bros, New Delhi.
3 Study material on Hospital Administration-Vol.II, Health Care Systems in India.
4 Study Material-Vol.III, Health and Family Welfare Management.

Paper 4: HOSPITAL SUPPORT SERVICES

UNIT I

Principles and methods of organizing – Clinical and support services for hospitals – Role of supportive services/ departments in the hospital management.

UNIT II

Nursing Care and Ward Management – Meaning – Importance – Duties and responsibilities – Documentation and records.

UNIT III

Emergency Services: Ambulance service – Meaning – Importance.

UNIT IV

Laboratories for Investigation: Laboratory rules – Conduct – Housekeeping – General rules of safety – Safety in the laboratory – Blood bank management.

UNIT V

Linen and Laundry: Meaning – Importance – Type of service – Laundry arrangements – Washing materials – Washing arrangements.

UNIT VI

Dietary Services and Hospital Diets: Important and functions – Equipment – Store – Day store – General kitchen – Special diet kitchen – Food distribution.

REFERENCE BOOKS:

1. Llewellyn Davies R, & Macaulay H.M.C, Hospital Planning and Administration, Monograph series, Geneva , W.H.O, Jaypee Brothers.
2. Park K, Text Book on Hygiene and Preventive medicine, Banarsidas Bhanot.
3. Francis CM & Mario C de. Souza, Hospital Administration, 3rd ed., Jaypee Brothers, N. Delhi.
4. George, MA, The Hospital Administrator, Jaypee Brothers, N.Delhi, 2003.
5. Hospital Medical International Pvt. Ltd., Hospital Administration, Office Journal of I.H.A
6. Kusum Samant, Hospital Ward Management, Vora Medical Publications, Mumbai.

Paper 5: HUMAN RESOURCE MANAGEMENT IN HOSPITALS

UNIT I

Human Resource Management: Definition – Nature and scope – Objectives – Functions – Role of HRM in hospitals - Human Resource Planning: Nature and scope – Objectives – Need and importance – Human Resource planning process –Job analysis – Job description – Job specification.

UNIT II

Recruitment and Selection of Employees: Recruitment policy – Sources, methods – Selection Process: Tests, Interviews, Kinds – Placement – Induction.

UNIT III

Training of Employees: Training needs – Identification – Training methods and evaluation of training – Promotions – Policy – Transfers – Types – Dismissals.

UNIT IV

Wage and Salary Administration: Meaning – Purpose – Developing wage and salary structure – Job evaluation – Working conditions – Safety – Welfare – Employees' health services.

UNIT V

Organisational Behaviour: Individual Behaviour – Personality – Learning – Attitudes – Perception – Motivation – Ability – Their relevance to organisational behaviour in hospital management – Group Behaviour – Group dynamics – Group norms – Group cohesiveness – Their relevance to organisational behaviour.

UNIT VI

Organisational culture – Meaning, significance – Organisational climate – Implications on organisational behaviour – Organisational Change – Need and nature – Causes of change – Resistance to change – Management of change in hospitals.

REFERENCE BOOKS:

4. Goel R.C, HRM in Hospitals, Prentice Hall of India.
5. Venkataraman C.S & Srivastava B.K, *Personnel Management and Human Resources*, Tata McGraw Hill, 1991.
6. Arun Monappa, *Industrial Relations*, Tata McGraw Hill, 1987.
7. Dale Yodder & Paul D Standohar, *Personnel Management and Industrial Relations*, Sterling Publishers, 1990.
8. Freud Luthans, Organisational Behaviour, McGraw Hill Book Co. 1995.
9. Keith Davis, Human Behaviour at Work, McGraw Hill Book Co. 1991.
10. Gregory Moorehead and R.S. Griffin, Organisational Behaviour: Manging People and Organisations, Jaico, 1994.

Course	**:**	**P.G. Diploma in Sports Management**
Mode	:	Distance Education
Duration	:	One year
Eligibility	:	Any degree from a recognised University
Medium	:	English

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Title	*Total Marks*
1	Theory and Principles of Sports Management	100
2	Human Resource Management	100
3	Management of Performance	100
4	Management of Finance, Facilities and Materials	100
	Total	**400**

Paper 1: THEORY AND PRINCIPLES OR SPORTS MANAGEMENT

UNIT I

The meaning of management, the functions of management, the skills of management, the roles of manager, the management process in overview, the universal nature of the management process – Management and administration.

UNIT II

Philosophy, principles and theories of management.

UNIT III

Functions of management, Planning, Steps in the planning process, Rationality in planning, Planning and Decision making, problem of organizational goals, Information and planning, Directional planning, planning and sports organization.

UNIT IV

Organization: Classical principles, Bureaucracy, criticisms of bureaucracy, bureaucracy in a democracy, bureaucracy in sports organizations, open systems perspectives, technical core in service organizations, structure of authority in service organizations.

UNIT V

The constitution of a national sports organizations – The office holders of an organization and their functions meetings, problem solving and decision making.

UNIT VI

Evaluation: The goals model of organizational effectiveness, the system resources model of organizational effectiveness, the process model of organizational effectiveness – Sample question for evaluating programs, facilities and organizational relationships.

REFERENCE BOOKS:

1. Bucher Charles A, Administration of Physical education and Athletic programs,(London: The C.V. Mosby Company, 1987).
2. Mason James G and Jimpaul, Modern Sports Administration, (Englewood cliffs, New Jersry, Prentice Hall, Inc., 1988).
3. Schular Randall S and Nicholas J, Personal Management, (New York, West Publishing Company, 1983).
4. Vandezwag Harold J, Sports Management (New York, Macmillan Publ. Co. 1984).
5. Government of India report, HRD annual reports, Department of Sports.
6. Chelladurai P, Sports Management Macro Perspectives, (Canada Sports Dynamics, 1985).

Paper 2: HUMAN RESOURCE MANAGEMENT

UNIT I

Introduction of Human Resource Management Definitions, objectives, and functions of HRM, Role and structure of Human Resource function in organizations.

UNIT II

A detailed of the meaning, objectives, functions and techniques/methods of

a) Job/Role Analysis
b) Human Resource Planning
c) Recruitment and selection

UNIT III

Man power requirement (key persons) – Planning, organization, development, recruitment, placement, training and monitoring.

UNIT IV

Behavioral Audit, Participation, Human Relations, Communication in personnel management, public relations.

UNIT V

Personal management and supervision, principles of personnel and supervisory management, qualities/qualifications of physical personnel, evaluation of physical educational personnel.

UNIT VI

Criteria of effective staff, student leadership – Leadership development and training, positions for student leaders.

REFERENCE BOOKS:

1. Bucher Charles A, Administration of Physical Education and Athletic Programmes (London: The C.V. Mosby Company) 1987.
2. Mason James G and Jimpaul Modern Sports Administration, (Englewood Cliffs, New Jeresy: Prentice Hall, Inc. 1988).
3. Schular Randall S and Nicholas J, Personal Management,(New York, Quest publishing Company, 1983).
4. Vanderzvag Harol J, Sports Management (New York: Mac Millan Publishing company, 1984).

Paper 3: MANAGEMENT OF SPORTS PERFORMANCE

UNIT I

Performance Dynamics and Performance Evaluation of Psycho-Dynamics and Sports: Meaning and need for Evaluation, Evaluation Techniques (latest) in Physical Fitness variables, (Speed, Strength, Agility, Endurance Power, Flexibility), physiological variables (vital capacity, Blood pressure, Resting, Pulse Rate, Respiratory Rate, Breath holding time), Psychological variables (Anxiety, Aggression, Tension, Intraversion Extraversion), Socio-logical varibales (Leadership, Co-operation, Group chosen.

UNIT II

Role of Bio-mechanics in Sports Performance: Principles of Equilibrium, Levers, Spin, Newton's laws, Friction force, Centrifugal force, Air and water resistance.

UNIT III

Sports Competitions: Structure and Dynamics – Prognostics and Selective Diagnostics.

UNIT IV

Preventive Maintenance: Break down maintenance, Sports Injury, Care and Prevention.

UNIT V

Ethics in Sports: Tean and Crowd behavior, Player – Coach relationship.

UNIT VI

Preparation: Psychological and Sociological preparation of sports personnel for performance.

REFERENCE BOOKS:

1. Grathy Bryant J, Movement Behavior and Motor Learning: Lea and Febiger.
2. Grathy Bryant Psychological and Physical activity Englewood clifts, New Jersey, Prentice hall inc.
3. Singer Rebert N, Motor learning and Human Performance Newyork, Mc.Millan Publishing Company, Inc.
4. James G. Hay, The Bio mechanics of Sports techniques.

Paper 4: MANAGEMENT OF FINANCE, FACILITIES AND MATERIAL

UNIT I

Financial administration in sports and physical education – sources of funds in sports – Funding agencies – Youth services – Voluntary agencies, Public, Private, Corporate.

UNIT II

Budget preparation in sports and games – Purpose – Principles of budgeting – Budgetary control – Accounts preparation – Preparation of receipts and payments accounts – Income and Expenditure account and Balance sheet.

UNIT III

Material management, Equipment, material, equipment needs in terms of objectives and activities – Purchasing, Policies, principle and procedures, consideration in selecting equipment.

UNIT IV

The care of equipment, storing (Indoors & Outdoors) Handing, Storing, Security. Issue, Inventories and Registers.

UNIT V

Improvisation, Modification and Standardization and modernization of equipment and material for various games and sports.

UNIT VI

Facilities management, need for infrastructural facilities, location, direction (outdoor indoor) playfield enquiry – basic concepts, planning, construction, upkeep and maintenance of playfield, indoor halls, gymnasium, swimming pools etc. multipurpose use of facilities – futuristic approach to facilities development.

REFERENCE BOOKS:

1. Bucher Charles A, Administration of Physical Education and Athletic Programs(London: The C.V. Mosby Company, 1987).
2. Mason James G and Jumpaul Modern Sports Administration, Englowwood Cliffs, New Jersey: Prentice Hall, Inc., 1988).
3. Schular Randall S and Michnals J, Personal Management, (New York: West Publishing Company, 1983).
4. Vanderzwag Harold J, Sports management (New York: Mac Millar Publishing Company, 1984).

Course : P.G.Diploma in Human Resource Management [2008-09 onwards]

Mode : Distance Education

Duration : One year

Eligibility : Any degree from a recognized University

Medium : English only.

COURSE OF STUDY & SCHEME OF EXAMINATIONS

Subject Code	Subject	Total Marks	Passing Minimum
1.1	Human Resource Management	100	50
1.2	Human Resource Economics	100	50
1.3	Labour Legislations-I	100	50
1.4	Labour Legislations-II	100	50
1.5	Industrail Relations Management	100	50
	Total	500	250

Paper 1.1: HUMAN RESOURCE MANAGEMENT

UNIT 1

Human Resource Management – Definition – Objectives and functions – Role and structure of personnel function in organisations – Personnel principles and policies.

UNIT 2

Human Resource Planning – Characteristics – Need for planning – HRP Process – Job analysis – Job design – Job description – Job specification.

UNIT 3

The Selection Process – Placement and induction – Training and development – Promotion – Demotions – Transfers – Separation.

UNIT 4

Wage and Salary Administration – Factors – Principles – Compensation plan – Individual – Group – Incentives – Bonus – Fringe benefits – Job evaluation systems – Wage and salary administration in relation to personal taxation.

UNIT 5

Employee Maintenance and Integration – Welfare and safety – Accident prevention – Administration of discipline – Employee motivation – Need and measures.

UNIT 6

Personnel Records/ Reports – Personnel research and personnel audit – Objectives – Scope and importance.

REFERENCES :

1. Venkataraman C.S & Srivastava B.K, *Personnel Management and Human Resources*, Tata McGraw Hill, 1991.
2. Arun Monappa, *Industrial Relations*, Tata McGraw Hill, 1987.
3. Dale Yodder & Paul D Standohar, *Personnel Management and Industrial Relations*, Sterling Publishers, 1990.

Paper 1.2: HUMAN RESOURCE ECONOMICS

UNIT 1

Nature and Scope of Human Resource Economics: Evaluation of the HR problem – HR problems of developing economy – Concept of labour force, structure, composition and extent of Indian Labour Force participation – Basics of labour market supply and demand.

UNIT 2

Employment: Economics of employment, theories of employment, full employment technology and employment- flexibilities and rigidities in the Indian Labour Market.

UNIT 3

Wages: Economics of wages, wage theories, methods, methods of wage payment, development of rational wage system, principles of wage policy for a developing economy.

UNIT 4

Dearness Allowance: Various schemes – Concept of cost of living and price indices for computing Dearness Allowance – Extent of neutralization – Case for full and partial neutralization – Productivity – Definition, measures and gins sharing.

UNIT 5

Employee migrations – Push and pull factors – Theories – Trend and impact.

UNIT 6

Labour absenteeism – Labour turnover – Rationalization and automation – Technology and labour – Gender and labour – Exit of industries and labour.

REFERENCE BOOKS:

3. Pramod Verma, Labour Economics and Industrial Relations.
4. Mcconnell & Campbell R, Contemproary Labour Economics.

Paper 1.3: LABOUR LEGISLATIONS - I

UNIT 1

Factories Act, 1948: Provision's relating to health, safety, welfare, working hours, leave etc., of workers approval – Licensing and registration of factories, manager and occupier – Their obligations under the Act, powers of the authorities under the Act, Penalty provisions.

UNIT 2

Workmen's Compensation Act, 1923: Employer's liability for compensation, amount of compensation method of calculating wages – Review – distribution of compensation – Remedies of employer against stranger – Returns as to compensation – Commission for workmen's compensation.

UNIT 3

Industrial Dispute Act, 1947: Industrial dispute – Authorities for settlement of industrial disputes – Reference of industrial disputes – Procedures – Power and duties of authorities, settlement and strikes – Lock-out – Lay-off – Retrenchment – Transfer and closure – Unfair labour practices – Miscellaneous provision offences by companies, conditions of service to remain unchanged under certain circumstances, etc.

UNIT 4

Shops and Establishments Act, 1947: Definitions – Sailent provisions – Powers of the authorities.

UNIT 5

Employee's State Insurance Act, 1948: Registration of Factories and Establishments, the employee's State Insurance Corporation, Standing Committee and Medical Benefit Council, provisions relating to contributions – Inspectors – Their functions and disputes and claims – Offences and penalties – Miscellaneous provisions.

UNIT 6

Employees Provident Fund and Msicellaneous Provisions Act, 1952: Employees provident fund and other schemes – Determination and recovery of money due from employer, appointment of inspectors and their duties – Provisions relating to transfer of accounts and liability in case of transfer of establishment exemption under the Act – Count's power under the act.

REFERENCE BOOKS:

1. Bare Acts
2. Kapoor N D, Industrial Law
3. Shukla M C, Industrial Law

Paper 1.4: LABOUR LEGISLATIONS - II

UNIT 1

Payment of Bonus Act: Computation of available surplus calculation of direct tax payable surplus calculation of direct tax payable by the employer, eligibility for bonus and payment of bonus – deduction from bonus payable – adjustment of customary of interim bonus payable, adjustment of customary or interim bonus linked with production or productivity – set on and set off allocable surplus, presumption about accuracy of balance sheet and profit and loss account.

UNIT 2

Payment of Gratuity Act, 1972: Payment of Gratuity – exemption – nomination – determination and recovery of the amount of gratuity.

UNIT 3

Payment of Wages Act, 1936: Objects, provisions relating to responsibility for payment of wages – fixation of wage periods, time of payment, deduction and fines – maintenance of records and registers, inspectors appointment of authorities and adjudication of claims.

UNIT 4

Minimum Wages Act, 1948: Objects, fixing of minimum rate or wages – procedure for fixing and receiving minimum wages – appointment of advisory board – payment of minimum wages, maintenance of registers and records contracting out – powers of appropriate government offences and penalties.

UNIT 5

Industrial Employment(Standing Orders) Act, 1946: Provisions regarding certification and operating of standing orders – duration and modification of standing orders – power of certifying officer – interpretation of standing orders.

UNIT 6

Trade Union Act, 1926: Registration of Trade Unions, rights, and liabilities trade unions – procedure – penalties

REFERENCE BOOKS:

1 Bare Acts
2 Kapoor N D, Industrial Laws
3 Shukla M C, Industrial Laws

Paper 1.5: INDUSTRIAL RELATIONS MANAGEMENT

UNIT 1

Constitution of India – Salient features – Fundamental rights and directive principles of State policy – Labour movement – Concept of labour movement and Union Organization – Trade union movement and various phases of the movement – Trade unions and economic development.

UNIT 2

Development of Trade Unionism in India – Historical retrospect – Central organization of workers in India – Role of internal trade union – Inter and intra union rivalries – Union recognition – International Labour Movement: ICFTU – WFTU – ILO – History, objective and functions – Convention and recommendations.

UNIT 3

Concept of Industrial Relations – Social obligations of industry – Role of government employers and the unions in industrial relations – Industrial relations machinery – Joint consultation – Works committee – Negotiation: Types of Negotiations – Conciliations – Adjudication, voluntary arbitration – Workers participation in industry – Grievance procedure.

UNIT 4

Process of collective bargaining – Problems and prospects – Bipartism in agreements – Code of conduct and code of discipline – Wage boards – Reports of wage boards – Management of strikes and lockouts.

UNIT 5

Employee safety programme – Types of safety organization – Safety committee – Ergonomics – Damage control and system, safety.

UNIT 6

Employee communication – House journals – Notice boards suggestion schemes – upward communication, personnel counselling and mental health – educational and social development – modern trends – employee education.

REFERENCE BOOKS:

1. Bhagoliwal T N, Personnel Management and Industrial Relations, Agra Publishers, Agra.
2. Arun Monappa, Industrial Relations, Tata McGraw Hill, New Delhi.
3. Michael V P,HRM and Human Relations, Himalaya Book House, Mumbai.

Course : P.G.. Diploma in Yoga Education [2010-11 on wards]

Eligibility **:** Any degree froma recognized University

Duration **:** One year

Medium **:** English

Aim **:** To promote knowledge and skills of the students in the field of physical education.

Non – semester

Code no.	Subjects	Max. M arks	Minimum pass mark
1	Historical development of yoga and yoga in phy. Edn.	100	50
2	Scientific approaches of yoga	100	50
3	Application of yoga therapy & teaching practice	100	50
4	Yogic practices and social values	100	50

Paper – 1: Historical Development of Yoga & Yoga in Physical Education

Unit-I

The origin of yoga-definition, meaning, need and scope of yoga-aims and objectives of yoga-misconceptions of yoga-messages from bhagavat gita, bible, kuran, buddhism-patanjalis' yoga sutra, thirumoolar thirumanthiram.

Unit-II

Paths of yoga-karma yoga-bhakti yoga-jnana yoga-raja yoga-hatha yoga-patanjalis eight limbs of yoga (yama, niyama, asana, pranayama, pratyahara, dharana, dhyana, samadhi).

Unit-III

Principles of yogic practices-application of yoga in physical education-importance of yoga in physical education & sports – differences between yogasanas and physical exercises methods of teaching yogic and techniques.

Unit-IV

Preparatory movements – exercise, the suryanamaskar-asanas-classification of asanas-pranayama-types of pranayama-mudras-bandhas-kriyas: precautions, methods and uses.

Unit-V

Meditation - concept of meditation benefits -different schools of meditation: brahma kumaris-sir aurobindo, vedathiri maharishi, vallalar, vipasana and tamil siddha meditation, transcendental meditation.

References

1. George feuerstein: the yoga tradition (it history, literature, philosophy and practice)
2. Swamy satyananda saraswathi: asana, pranayama, mudra, bandha (india: yoga publications trust, munger, bihar)
3. Swami sivananda practice of karma yoga (the divine life society, shivananda nagar, p.o., u.p. Himalayas. India)
4. Dr.nagendra hr. The art and sciences of pranayama (vivekananda kendra yoge prakashana, bangalore)
5. Dr.b.natarajan: thirumantiram (a tamil scriptural classic) (sri ramakrishna math, madras)
6. Dr.k.chandrasekaran, "sound health through yoga" (prem kalyan publications, sedapatti, madurai 1999)
7. Iyengar b.k.s (1989) light on yoga, london: unwin paper backs.
8. Thirumoolar (2006), thirumantiram, madras: sri ramakrishna math.
9. Satynanda saraswati swami (2007), meditations from the tantras, munger: yoga publications trust.
10. Sivananda yoga centre (2003), the sivananda companion to meditation, newyork: simen & schuster.

Paper – 2 : Scientific Approaches of Yoga

Unit-I

Cells-tissues-various organs-muscles-bones-joints-skin-influence of yoga on digestive and reproductive system.

Unit-II

Influence of yogic practices on -nervous-endocrine-sensory-renal system.

Unit-III

Physiological benefits of asanas and pranayama-chest cage-regulation of breathing-types of breathing- influence of yoga on respiratory system and circulating system.

Unit-IV

Physiological benefits of bandhas-mudras-kriyas-meditation-nadis-chakras-kundalini shakti-psycho-neuro-immunology.

Unit-V

psycho physiological - haematological bio-chemical- neurological-metabolic changes - research evidences from various journals.

Reference

1. Dr.krishna raman: a matter of health (integration of yoga and western medicine for prevention and cure) (chennai east west books (madras) pvt. Ltd., 1998)
2. Sri ananda: the complete book of yoga harmony of body and mind (orient paper backs: vision book pvt.ltd., 1892)
3. Dr.nagendra hr. The art and science of pranayama (vivekananda kenda yoga prakashana bangalore)
4. Swami sivananda: kundalini yoga (thye divine life society, p.o. Shivananda bagar., u.p.himalayas, india)
5. Dr.hr.nagendra: yoga research & applications (vivekananda kendar yoga prakashana, bangalore)
6. Evelyne & peace (1997) anatomy and physiology for nurses, new delhi: jaypee brothers.

Paper – 3 : Application Of Yoga Therapy & Teaching Practice

Unit-I : Yogic concepts of human body role of yogic practices on asthma, arthritis, back pain and menstrual disorder.

Unit-II : Impact of yogic practices on diabetes, hypertension, coronary heart diseases & obesity, yoga & diet.

Unit-III : Application of yogic techniques on: anxiety, depression, phobia, fatigue, nervousness, neurosis, insomnia.

Power of mind - conscious mind - subconscious mind- unconscious mind – super – consciousness – unfolding latent powers of mind.

Unit-IV : Methods & benefits of practicing asanas: sitting & standing- breathing practices-simplified physical exercises-body stretching practices-suryanamaskar-basic asanas. **Standing asanas:** tadasana, ardhakatichakrasana, padahastasana, ardhachakrasana, uttkatasana, ekapada asana, parivritta trikonasana, parsvottanasana, natarajasana and parivritta parsvakonasana. **Sitting:** padmasana, paschimotanasana,vajrasana, ushtrasana, gomukhasana and ardhamatsyendrasana.

Unit-V : Prone: makarasana, bhujangasana, salabasana and dhanurasana. **Supine:** navasana, , matsyasana, halasana, sarvangasana, chakrasana, and shavasana.

References

1. Dr.krishna raman: a matter of health (integration of yoga and western medicine for prevention and cure) (chennai east west books (madras) pvt. Ltd., 1998)
2. Sri ananda: the complete book of yoga harmony of body and mind (orient paper backs: vision book pvt. Ltd., 1892)
3. Dr.nagendra hr. The art and sciences of pranayama (vivekananda kendra yoga prakashana bangalore0
4. Swami sivananda: practice of yoga (the divine life society, shivananda nagar p.o., u.p. Himalayas, india)

5. Swami satyananda saraswathi; asana, pranayama, mudra, bandha (india: yoga publications trust, munger, bihar)
6. Dr.j.p.n.mishra: yoga for common ailments (b.,jainpublishers. Pvt. Ltd., new delhi)
7. Practical guide to applied spirituality (brahma kumaris, mount abu, rajasthan)
8. Building a value based peaceful and prosperous society (om shanti press, gyanamritt bhavan, shantivan, mount abu, rajasthan)
9. Vicente heo chin, jr: notes of self transformation. (philippine thesosphical institute, philippines.)
10. Dr.jeetendra adhia: spring of inspiration(alpha international, gujarat.)
11. G.ravindran: management science conflict (manivasakar publication, chidambaram).
12. Iyengar b.k.s. (1976) light on yoga, london: unwin paper backs.
13. Karmanada swami (2008), yogic management of common diseases, munger: yoga publications trust.

Paper – 4 : Yogic practices and social values

Unit-I : Karna pidasana, ardha baddha padma paschimothanasana, marichyasana and prasarita padottasnasana. Sethu bandha sarvangasana, paryankasana, poorna ustrasana and eka pada chakrasana. Vatayanasana, garudasana, bharatvaja asana and parivritta janu sirasasana. Padma mayurasana, utthitha padmasana, bakasana and urdhva mukha paschimottanasana

Unit-II : pranayama: kapalabhathi-sectional breathing-suryabhedana pranayama, chandrabhedana pranayama, nadishudhi pranayama, sadanta pranayama, ujjayi pranayama & brahmari pranayama.**kriyas:** kapalabhati, trataka, neti, dhouti, nauli & basthi.**mudras:** chin mudra, chinmaya mudra, adi mudra, brahma mudra maha mudra, aswini mudra & yoga mudra.**bandhas:** jalandhara bandha, uddiyana bandha & mula bandha.

Unit-III : Meditation: practice of different schools of meditation - saguna meditation- nirguna meditation - yoga meditation - silent meditation and introspection – lesson plan – parts of lesson plan, preparation of lesson plan for yogic practices.

Unit-IV : Interpersonal skills-drills: holistic health care positive thinking-verbal-non-verbal communication-empathy-ability to understand-stress management-conflict resolution - perception- anger management, assertiveness, dialogue process, different ways of conflict resolutions-leadership skills.

Unit-V : Inculcation of living values-co-operation, freedom, responsibility-happiness, love & peace-humility, respect, honesty-simplicity, tolerance and unity.

References

1. Yoga-asana, pranayama, mudras, bandha (vivekananda kendar yoga prakashana, bangalore).
2. Swami satyananda saraswathi: asana, pranayama, mudra, bandha (yoga publications trust, munger, bihar, india).
3. Yogiraj vethathri maharishi: simplified physical exercises, (vedathiri publications, gandhiji road, erode-1, tamil nadu).
4. B.k.s. Iyenkar: the light on yoga (haper collins publications india pvt.ltd., new delhi).
5. Dr.k.chandrasekaran, "sound health through yoga" (prem kalyan publications, sedapatti, madurai 1999).
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9. Prajapita brahma kumares (2009), moral valnes, attitudes and modes, mount abn: prajapita brahma kumares ishwariya vishwa – vidyalaya.

Jagdish chander (2000), building value based peaceful and prosperons society, mount abn: prajapita brahma kumares ishwariya vishwa – vidyalaya.