ST. JOHN'S COLLEGE AGRA

NAAC Accredited Grade "A"

Subject wise syllabus of Screening Test for the post of Assistant Professor at St. John's College Agra

BOTANY

LIFE SCIENCES

1. Molecules and their Interaction Relevant to Biology
2. Cellular Organization
3. Fundamental Processes
4. Cell Communication and Cell Signaling
5. Developmental Biology
6. System Physiology – Plant
7. System Physiology – Animal
8. Inheritance Biology
9. Diversity of Life Forms
10. Ecological Principles
11. Evolution and Behavior
12. Applied Biology
13. Methods in Biology

1. MOLECULES AND THEIR INTERACTION RELAVENT TO BIOLOGY

A. Structure of atoms, molecules and chemical bonds.
B Composition, structure and function of biomolecules (carbohydrates, lipids, proteins, nucleic acids and vitamins).
C. Stablizing interactions (Van der Waals, electrostatic, hydrogen bonding, hydrophobic interaction, etc.).
D Principles of biophysical chemistry (pH, buffer, reaction kinetics, thermodynamics, colligative properties).
E. Bioenergetics, glycolysis, oxidative phosphorylation, coupled reaction, group transfer, biological energy transducers.
F. Principles of catalysis, enzymes and enzyme kinetics, enzyme regulation, mechanism of enzyme catalysis, isozymes
G. Conformation of proteins (Ramachandran plot, secondary structure, domains, motif and folds).
H. Conformation of nucleic acids (helix (A, B, Z), t-RNA, micro-RNA).
I. Stability of proteins and nucleic acids.
J. Metabolism of carbohydrates, lipids, amino acids nucleotides and vitamins.

2. CELLULAR ORGANIZATION

A) **Membrane structure and function**
(Structure of model membrane, lipid bilayer and membrane protein diffusion, osmosis, ion channels, active transport, membrane pumps, mechanism of sorting and regulation of intracellular transport,electrical properties of membranes).

B) **Structural organization and function of intracellular organelles** (Cell wall, nucleus, mitochondria, Golgi bodies, lysosomes, endoplasmic reticulum, peroxisomes, plastids, vacuoles, chloroplast, structure & function of cytoskeleton and its role in motility).

C) **Organization of genes and chromosomes (**Operon, unique and repetitive DNA, interrupted genes, gene families, structure of chromatin and chromosomes, heterochromatin, euchromatin, transposons).

D) **Cell division and cell cycle** (Mitosis and meiosis, their regulation, steps in cell cycle, regulation and control of cell cycle).

E) **Microbial Physiology** (Growth yield and characteristics, strategies of cell division, stress response)

3. FUNDAMENTAL PROCESSES

A) **DNA replication, repair and recombination** (Unit of replication, enzymes involved, replication origin and replication fork, fidelity of replication, extrachromosomal replicons, DNA damage and repair mechanisms, homologous and site-specific recombination).

B) **RNA synthesis and processing** (transcription factors and machinery, formation of initiation complex, transcription activator and repressor, RNA polymerases, capping,

elongation, and termination, RNA processing, RNA editing, splicing, and polyadenylation, structure and function of different types of RNA, RNA transport).

C) **Protein synthesis and processing** (Ribosome, formation of initiation complex, initiation factors and their regulation, elongation and elongation factors, termination, genetic code, aminoacylation of tRNA, tRNA-identity, aminoacyl tRNA synthetase, and translational proof-reading, translational inhibitors, Post- translational modification of proteins).

D) **Control of gene expression at transcription and translation level** (regulating the expression of phages, viruses, prokaryotic and eukaryotic genes, role of chromatin in gene expression and gene silencing).

4. Cell communication and cell signaling

A) **Host parasite interaction** Recognition and entry processes of different pathogens like bacteria, viruses into animal and plant host cells, alteration of host cell behavior by pathogens, virus-induced cell transformation, pathogen-induced diseases in animals and plants, cell-cell fusion in both normal and abnormal cells.

B) **Cell signaling** Hormones and their receptors, cell surface receptor, signaling through G-protein coupled receptors, signal transduction pathways, second messengers, regulation of signaling pathways, bacterial and plant two-component systems, light signaling in plants, bacterial chemotaxis and quorum sensing.

C) **Cellular communication** Regulation of hematopoiesis, general principles of cell communication, cell adhesion and roles of different adhesion molecules, gap junctions, extracellular matrix, integrins, neurotransmission and its regulation.

D) **Cancer**
Genetic rearrangements in progenitor cells, oncogenes, tumor suppressor genes, cancer and the cell cycle, virus-induced cancer, metastasis, interaction of cancer cells with normal cells, apoptosis, therapeutic interventions of uncontrolled cell growth.

E) **Innate and adaptive immune system** Cells and molecules involved in innate and adaptive immunity, antigens, antigenicity and immunogenicity. B and T cell epitopes, structure and function of antibody molecules. generation of antibody diversity, monoclonal antibodies, antibody engineering, antigen-antibody interactions, MHC molecules, antigen processing and presentation, activation and differentiation of B and T cells, B and T cell receptors, humoral and cell-mediated immune responses, primary and secondary immune modulation, the complement system, Toll-like receptors, cell-mediated effector functions, inflammation, hypersensitivity and autoimmunity, immune response during bacterial (tuberculosis), parasitic (malaria) and viral (HIV) infections, congenital and acquired immunodeficiencies, vaccines.

5. DEVELOPMENTAL BIOLOGY

A) Basic concepts of development : Potency, commitment, specification, induction, competence, determination and differentiation; morphogenetic gradients; cell fate and cell lineages; stem cells; genomic equivalence and the cytoplasmic determinants; imprinting; mutants and transgenics in analysis of development

B) Gametogenesis, fertilization and early development: Production of gametes, cell surface molecules in sperm-egg recognition in animals; embryo sac development and double fertilization in plants; zygote formation, cleavage, blastula formation, embryonic fields, gastrulation and formation of germ layers in animals; embryogenesis, establishment of symmetry in plants; seed formation and germination.

C) Morphogenesis and organogenesis in animals : Cell aggregation and differentiation in *Dictyostelium*; axes and pattern formation in *Drosophila*, amphibia and chick; organogenesis – vulva formation in *Caenorhabditis elegans*, eye lens induction, limb development and regeneration in vertebrates; differentiation of neurons, post embryonic development- larval formation, metamorphosis; environmental regulation of normal development; sex determination.

D) Morphogenesis and organogenesis in plants: Organization of shoot and root apical meristem; shoot and root development; leaf development and phyllotaxy; transition to flowering, floral meristems and floral development in *Arabidopsis* and *Antirrhinum*

E) Programmed cell death, aging and senescence

6. SYSTEM PHYSIOLOGY - PLANT

A. Photosynthesis - Light harvesting complexes; mechanisms of electron transport; photoprotective mechanisms; CO_2 fixation-C_3, C_4 and CAM pathways.

B. Respiration and photorespiration – Citric acid cycle; plant mitochondrial electron transport and ATP synthesis; alternate oxidase; photorespiratory pathway.

C. Nitrogen metabolism - Nitrate and ammonium assimilation; amino acid biosynthesis.

D. Plant hormones – Biosynthesis, storage, breakdown and transport; physiological effects and mechanisms of action.

E. Sensory photobiology - Structure, function and mechanisms of action of phytochromes, cryptochromes and phototropins; stomatal movement; photoperiodism and biological clocks.

F. **Solute transport and photoassimilate translocation –** uptake, transport and translocation of water, ions, solutes and macromolecules from soil, through cells, across membranes, through xylem and phloem; transpiration; mechanisms of loading and unloading of photoassimilates.

G. **Secondary metabolites** - Biosynthesis of terpenes, phenols and nitrogenous compounds and their roles.

H. **Stress physiology** – Responses of plants to biotic (pathogen and insects) and abiotic (water, temperature and salt) stresses.

7. **SYSTEM PHYSIOLOGY - ANIMAL**

A. **Blood and circulation** - Blood corpuscles, haemopoiesis and formed elements, plasma function, blood volume, blood volume regulation, blood groups, haemoglobin, immunity, haemostasis.

B. **Cardiovascular System:** Comparative anatomy of heart structure, myogenic heart, specialized tissue, ECG – its principle and significance, cardiac cycle, heart as a pump, blood pressure, neural and chemical regulation of all above.

C. **Respiratory system** - Comparison of respiration in different species, anatomical considerations, transport of gases, exchange of gases, waste elimination, neural and chemical regulation of respiration.

D. **Nervous system** - Neurons, action potential, gross neuroanatomy of the brain and spinal cord, central and peripheral nervous system, neural control of muscle tone and posture.

E. **Sense organs** - Vision, hearing and tactile response.

F. **Excretory system** - Comparative physiology of excretion, kidney, urine formation, urine concentration, waste elimination, micturition, regulation of water balance, blood volume, blood pressure, electrolyte balance, acid-base balance.

G. **Thermoregulation** - Comfort zone, body temperature – physical, chemical, neural regulation, acclimatization.

H. **Stress and adaptation**

I. **Digestive system** - Digestion, absorption, energy balance, BMR.

J. **Endocrinology and reproduction** - Endocrine glands, basic mechanism of hormone action, hormones and diseases; reproductive processes, gametogenesis, ovulation, neuroendocrine regulation

8. INHERITANCE BIOLOGY

A) Mendelian principles : Dominance, segregation, independent assortment.

B) Concept of gene : Allele, multiple alleles, pseudoallele, complementation tests

C) Extensions of Mendelian principles : Codominance, incomplete dominance, gene interactions, pleiotropy, genomic imprinting, penetrance and expressivity, phenocopy, linkage and crossing over, sex linkage, sex limited and sex influenced characters.

D) Gene mapping methods : Linkage maps, tetrad analysis, mapping with molecular markers, mapping by using somatic cell hybrids, development of mapping population in plants.

E) Extra chromosomal inheritance : Inheritance of Mitochondrial and chloroplast genes, maternal inheritance.

F) Microbial genetics : Methods of genetic transfers – transformation, conjugation, transduction and sex-duction, mapping genes by interrupted mating, fine structure analysis of genes.

G) Human genetics : Pedigree analysis, lod score for linkage testing, karyotypes, genetic disorders.

H) Quantitative genetics : Polygenic inheritance, heritability and its measurements, QTL mapping.

I) Mutation : Types, causes and detection, mutant types – lethal, conditional, biochemical, loss of function, gain of function, germinal verses somatic mutants, insertional mutagenesis.

J) Structural and numerical alterations of chromosomes : Deletion, duplication, inversion, translocation, ploidy and their genetic implications.

K) Recombination : Homologous and non-homologous recombination including transposition.

9. DIVERSITY OF LIFE FORMS:

A. Principles & methods of taxonomy:

Concepts of species and hierarchical taxa, biological nomenclature, classical & quantititative methods of taxonomy of plants, animals and microorganisms.

B. Levels of structural organization:

Unicellular, colonial and multicellular forms. Levels of organization of tissues, organs & systems. Comparative anatomy, adaptive radiation, adaptive modifications.

C. **Outline classification of plants, animals & microorganisms:**
Important criteria used for classification in each taxon. Classification of plants, animals and microorganisms. Evolutionary relationships among taxa.

D. **Natural history of Indian subcontinent:**
Major habitat types of the subcontinent, geographic origins and migrations of species. Comman Indian mammals, birds. Seasonality and phenology of the subcontinent.

E. **Organisms of health & agricultural importance:**
Common parasites and pathogens of humans, domestic animals and crops.

F. **Organisms of conservation concern:**

Rare, endangered species. Conservation strategies.

10. ECOLOGICAL PRINCIPLES

The Environment: Physical environment; biotic environment; biotic and abiotic interactions.

Habitat and Niche: Concept of habitat and niche; niche width and overlap; fundamental and realized niche; resource partitioning; character displacement.

Population Ecology: Characteristics of a population; population growth curves; population regulation; life history strategies (*r* and *K* selection); concept of metapopulation – demes and dispersal, interdemic extinctions, age structured populations.

Species Interactions: Types of interactions, interspecific competition, herbivory, carnivory, pollination, symbiosis.

Community Ecology: Nature of communities; community structure and attributes; levels of species diversity and its measurement; edges and ecotones.

Ecological Succession: Types; mechanisms; changes involved in succession; concept of climax.

Ecosystem Ecology: Ecosystem structure; ecosystem function; energy flow and mineral cycling (C,N,P); primary production and decomposition; structure and function of some Indian ecosystems: terrestrial (forest, grassland) and aquatic (fresh water, marine, eustarine).

Biogeography: Major terrestrial biomes; theory of island biogeography; biogeographical zones of India.

Applied Ecology: Environmental pollution; global environmental change; biodiversity: status, monitoring and documentation; major drivers of biodiversity change; biodiversity management approaches.

Conservation Biology: Principles of conservation, major approaches to management, Indian case studies on conservation/management strategy (Project Tiger, Biosphere reserves).

11. EVOLUTION AND BEHAVIOUR

A. Emergence of evolutionary thoughts

Lamarck; Darwin–concepts of variation, adaptation, struggle, fitness and natural selection; Mendelism; Spontaneity of mutations; The evolutionary synthesis.

B. Origin of cells and unicellular evolution:

Origin of basic biological molecules; Abiotic synthesis of organic monomers and polymers; Concept of Oparin and Haldane; Experiement of Miller (1953); The first cell; Evolution of prokaryotes; Origin of eukaryotic cells; Evolution of unicellular eukaryotes; Anaerobic metabolism, photosynthesis and aerobic metabolism.

C. Paleontology and Evolutionary History:

The evolutionary time scale; Eras, periods and epoch; Major events in the evolutionary time scale; Origins of unicellular and multi cellular organisms; Major groups of plants and animals; Stages in primate evolution including Homo.

D. Molecular Evolution:

Concepts of neutral evolution, molecular divergence and molecular clocks; Molecular tools in phylogeny, classification and identification; Protein and nucleotide sequence analysis; origin of new genes and proteins; Gene duplication and divergence.

E. The Mechanisms:

Population genetics – Populations, Gene pool, Gene frequency; Hardy-Weinberg Law; concepts and rate of change in gene frequency through natural selection, migration and random genetic drift; Adaptive radiation; Isolating mechanisms; Speciation; Allopatricity and Sympatricity; Convergent evolution; Sexual selection; Co-evolution.

F. Brain, Behavior and Evolution:

Approaches and methods in study of behavior; Proximate and ultimate causation; Altruism and evolution-Group selection, Kin selection, Reciprocal altruism; Neural basis

of learning, memory, cognition, sleep and arousal; Biological clocks; Development of behavior; Social communication; Social dominance; Use of space and territoriality; Mating systems, Parental investment and Reproductive success; Parental care; Aggressive behavior; Habitat selection and optimality in foraging; Migration, orientation and navigation; Domestication and behavioral changes.

12. **APPLIED BIOLOGY:**

A. Microbial fermentation and production of small and macro molecules.

B. Application of immunological principles, vaccines, diagnostics. Tissue and cell culture methods for plants and animals.

C. Transgenic animals and plants, molecular approaches to diagnosis and strain identification.

D. Genomics and its application to health and agriculture, including gene therapy.

E. Bioresource and uses of biodiversity.

F. Breeding in plants and animals, including marker – assisted selection

G. Bioremediation and phytoremediation

H. Biosensors

13. METHODS IN BIOLOGY

A. Molecular Biology and Recombinant DNA methods:

Isolation and purification of RNA , DNA (genomic and plasmid) and proteins, different separation methods.
Analysis of RNA, DNA and proteins by one and two dimensional gel electrophoresis, Isoelectric focusing gels.
Molecular cloning of DNA or RNA fragments in bacterial and eukaryotic systems.
Expression of recombinant proteins using bacterial, animal and plant vectors.
Isolation of specific nucleic acid sequences
Generation of genomic and cDNA libraries in plasmid, phage, cosmid, BAC and YAC vectors.
In vitro mutagenesis and deletion techniques, gene knock out in bacterial and eukaryotic organisms.
Protein sequencing methods, detection of post translation modification of proteins.
DNA sequencing methods, strategies for genome sequencing.
Methods for analysis of gene expression at RNA and protein level, large scale expression, such as micro array based techniques
Isolation, separation and analysis of carbohydrate and lipid molecules
RFLP, RAPD and AFLP techniques

B. Histochemical and Immunotechniques

Antibody generation, Detection of molecules using ELISA, RIA, western blot, immunoprecipitation, fluocytometry and immunofluorescence microscopy, detection of molecules in living cells, in situ localization by techniques such as FISH and GISH.

C Biophysical Method:

Molecular analysis using UV/visible, fluorescence, circular dichroism, NMR and ESR spectroscopy Molecular structure determination using X-ray diffraction and NMR, Molecular analysis using light scattering, different types of mass spectrometry and surface plasma resonance methods.

D Statisitcal Methods:

Measures of central tendency and dispersal; probability distributions (Binomial, Poisson and normal); Sampling distribution; Difference between parametric and non-parametric statistics; Confidence Interval; Errors; Levels of significance; Regression and Correlation; t-test; Analysis of variance; X^2 test;; Basic introduction to Muetrovariate statistics, etc.

E. **Radiolabeling techniques:**

Detection and measurement of different types of radioisotopes normally used in biology, incorporation of radioisotopes in biological tissues and cells, molecular imaging of radioactive material, safety guidelines.

F. **Microscopic techniques:**

Visulization of cells and subcellular components by light microscopy, resolving powers of different microscopes, microscopy of living cells, scanning and transmission microscopes, different fixation and staining techniques for EM, freeze-etch and freeze-fracture methods for EM, image processing methods in microscopy.

G. **Electrophysiological methods:**

Single neuron recording, patch-clamp recording, ECG, Brain activity recording, lesion and stimulation of brain, pharmacological testing, PET, MRI, fMRI, CAT .

H. **Methods in field biology:**

Methods of estimating population density of animals and plants, ranging patterns through direct, indirect and remote observations, sampling methods in the study of behavior, habitat characterization: ground and remote sensing methods..

CHEMISTRY

CHEMICAL SCIENCES

Inorganic Chemistry

1. Chemical periodicity
2. Structure and bonding in homo- and heteronuclear molecules, including shapes of molecules (VSEPR Theory).
3. Concepts of acids and bases, Hard-Soft acid base concept, Non-aqueous solvents.
4. Main group elements and their compounds: Allotropy, synthesis, structure and bonding, industrial importance of the compounds.
5. Transition elements and coordination compounds: structure, bonding theories, spectral and magnetic properties, reaction mechanisms.
6. Inner transition elements: spectral and magnetic properties, redox chemistry, analytical applications.
7. Organometallic compounds: synthesis, bonding and structure, and reactivity. Organometallics in homogeneous catalysis.
8. Cages and metal clusters.
9. Analytical chemistry- separation, spectroscopic, electro- and thermoanalytical methods.
10. Bioinorganic chemistry: photosystems, porphyrins, metalloenzymes, oxygen transport, electron- transfer reactions; nitrogen fixation, metal complexes in medicine.
11. Characterisation of inorganic compounds by IR, Raman, NMR, EPR, Mössbauer, UV-vis, NQR, MS, electron spectroscopy and microscopic techniques.
12. Nuclear chemistry: nuclear reactions, fission and fusion, radio-analytical techniques and activation analysis.

Physical Chemistry:

1. Basic principles of quantum mechanics: Postulates; operator algebra; exactly-solvable systems: particle-in-a-box, harmonic oscillator and the hydrogen atom, including shapes of atomic orbitals; orbital and spin angular momenta; tunneling.

2. Approximate methods of quantum mechanics: Variational principle; perturbation theory up to second order in energy; applications.

3. Atomic structure and spectroscopy; term symbols; many-electron systems and antisymmetry principle.

4. Chemical bonding in diatomics; elementary concepts of MO and VB theories; Huckel theory for conjugated π-electron systems.

5. Chemical applications of group theory; symmetry elements; point groups; character tables; selection rules.

6. Molecular spectroscopy: Rotational and vibrational spectra of diatomic molecules; electronic spectra; IR and Raman activities – selection rules; basic principles of magnetic resonance.

7. Chemical thermodynamics: Laws, state and path functions and their applications; thermodynamic description of various types of processes; Maxwell's relations; spontaneity and equilibria; temperature and pressure dependence of thermodynamic quantities; Le Chatelier principle; elementary description of phase transitions; phase equilibria and phase rule; thermodynamics of ideal and non-ideal gases, and solutions.

8. Statistical thermodynamics: Boltzmann distribution; kinetic theory of gases; partition functions and their relation to thermodynamic quantities – calculations for model systems.

9. Electrochemistry: Nernst equation, redox systems, electrochemical cells; Debye-Huckel theory; electrolytic conductance – Kohlrausch's law and its applications; ionic equilibria; conductometric and potentiometric titrations.

10. Chemical kinetics: Empirical rate laws and temperature dependence; complex reactions; steady state approximation; determination of reaction mechanisms; collision and transition state theories of rate constants; unimolecular reactions; enzyme kinetics; salt effects; homogeneous catalysis; photochemical reactions.

11. Colloids and surfaces: Stability and properties of colloids; isotherms and surface area; heterogeneous catalysis.

12. Solid state: Crystal structures; Bragg's law and applications; band structure of solids.

13. Polymer chemistry: Molar masses; kinetics of polymerization.

14. Data analysis: Mean and standard deviation; absolute and relative errors; linear regression; covariance and correlation coefficient.

Organic Chemistry

1. IUPAC nomenclature of organic molecules including regio- and stereoisomers.

2. Principles of stereochemistry: Configurational and conformational isomerism in acyclic and cyclic compounds; stereogenicity, stereoselectivity, enantioselectivity, diastereoselectivity and asymmetric induction.

3. Aromaticity: Benzenoid and non-benzenoid compounds – generation and reactions.

4. Organic reactive intermediates: Generation, stability and reactivity of carbocations, carbanions, free radicals, carbenes, benzynes and nitrenes.

5. Organic reaction mechanisms involving addition, elimination and substitution reactions with electrophilic, nucleophilic or radical species. Determination of reaction pathways.

6. Common named reactions and rearrangements – applications in organic synthesis.

7. Organic transformations and reagents: Functional group interconversion including oxidations and reductions; common catalysts and reagents (organic, inorganic, organometallic and enzymatic). Chemo, regio and stereoselective transformations.

8. Concepts in organic synthesis: Retrosynthesis, disconnection, synthons, linear and convergent synthesis, umpolung of reactivity and protecting groups.

9. Asymmetric synthesis: Chiral auxiliaries, methods of asymmetric induction – substrate, reagent and catalyst controlled reactions; determination of enantiomeric and diastereomeric excess; enantio-discrimination. Resolution – optical and kinetic.

10. Pericyclic reactions – electrocyclisation, cycloaddition, sigmatropic rearrangements and other related concerted reactions. Principles and applications of photochemical reactions in organic chemistry.

11. Synthesis and reactivity of common heterocyclic compounds containing one or two heteroatoms (O, N, S).

12. Chemistry of natural products: Carbohydrates, proteins and peptides, fatty acids, nucleic acids, terpenes, steroids and alkaloids. Biogenesis of terpenoids and alkaloids.

13. Structure determination of organic compounds by IR, UV-Vis, ^{1}H & ^{13}C NMR and Mass spectroscopic techniques.

Interdisciplinary topics

1. Chemistry in nanoscience and technology.
2. Catalysis and green chemistry.
3. Medicinal chemistry.
4. Supramolecular chemistry.
5. Environmental chemistry.

COMMERCE

Subject: Commerce

Unit 1: Business Environment and International Business
Unit 2: Accounting and Auditing
Unit 3: Business Economics
Unit 4: Business Finance
Unit 5: Business Statistics and Research Methods
Unit 6: Business Management and Human Resource Management
Unit 7: Banking and Financial Institutions
Unit 8: Marketing Management
Unit 9: Legal Aspects of Business
Unit 10: Income-tax and Corporate Tax Planning

Unit 1: Business Environment and International Business

- Concepts and elements of business environment: Economic environment- Economic systems, Economic policies(Monetary and fiscal policies); Political environment- Role of government in business; Legal environment- Consumer Protection Act, FEMA; Socio-cultural factors and their influence on business; Corporate Social Responsibility (CSR)
- Scope and importance of international business; Globalization and its drivers; Modes of entry into international business
- Theories of international trade; Government intervention in international trade; Tariff and non-tariff barriers; India's foreign trade policy

- Foreign direct investment (FDI) and Foreign portfolio investment (FPI); Types of FDI, Costs and benefits of FDI to home and host countries; Trends in FDI; India's FDI policy
- Balance of payments (BOP): Importance and components of BOP
- Regional Economic Integration: Levels of Regional Economic Integration; Trade creation and diversion effects; Regional Trade Agreements: European Union (EU), ASEAN, SAARC, NAFTA
- International Economic institutions: IMF, World Bank, UNCTAD
- World Trade Organisation (WTO): Functions and objectives of WTO; Agriculture Agreement; GATS; TRIPS; TRIMS

Unit 2: Accounting and Auditing

- Basic accounting principles; concepts and postulates
- Partnership Accounts: Admission, Retirement, Death, Dissolution and Insolvency of partnership firms
- Corporate Accounting: Issue, forfeiture and reissue of shares; Liquidation of companies; Acquisition, merger, amalgamation and reconstruction of companies
- Holding company accounts
- Cost and Management Accounting: Marginal costing and Break-even analysis; Standard costing; Budgetary control; Process costing; Activity Based Costing (ABC); Costing for decision-making; Life cycle costing, Target costing, Kaizen costing and JIT
- Financial Statements Analysis: Ratio analysis; Funds flow Analysis; Cash flow analysis
- Human Resources Accounting; Inflation Accounting; Environmental Accounting
- Indian Accounting Standards and IFRS
- Auditing: Independent financial audit; Vouching; Verification ad valuation of assets and liabilities; Audit of financial statements and audit report; Cost audit
- Recent Trends in Auditing: Management audit; Energy audit; Environment audit; Systems audit; Safety audit

Unit 3: Business Economics

- Meaning and scope of business economics
- Objectives of business firms
- Demand analysis: Law of demand; Elasticity of demand and its measurement; Relationship between AR and MR
- Consumer behavior: Utility analysis; Indifference curve analysis
- Law of Variable Proportions: Law of Returns to Scale

- Theory of cost: Short-run and long-run cost curves
- Price determination under different market forms: Perfect competition; Monopolistic competition; Oligopoly- Price leadership model; Monopoly; Price discrimination
- Pricing strategies: Price skimming; Price penetration; Peak load pricing

Unit 4: Business Finance

- Scope and sources of finance; Lease financing
- Cost of capital and time value of money
- Capital structure
- Capital budgeting decisions: Conventional and scientific techniques of capital budgeting analysis
- Working capital management; Dividend decision: Theories and policies
- Risk and return analysis; Asset securitization
- International monetary system
- Foreign exchange market; Exchange rate risk and hedging techniques
- International financial markets and instruments: Euro currency; GDRs; ADRs
- International arbitrage; Multinational capital budgeting

Unit 5: Business Statistics and Research Methods

- Measures of central tendency
- Measures of dispersion
- Measures of skewness
- Correlation and regression of two variables
- Probability: Approaches to probability; Bayes' theorem
- Probability distributions: Binomial, poisson and normal distributions
- Research: Concept and types; Research designs
- Data: Collection and classification of data
- Sampling and estimation: Concepts; Methods of sampling - probability and non-probability methods; Sampling distribution; Central limit theorem; Standard error; Statistical estimation
- Hypothesis testing: z-test; t-test; ANOVA; Chi–square test; Mann-Whitney test (U-test); Kruskal-Wallis test (H-test); Rank correlation test
- Report writing

Unit 6: Business Management and Human Resource Management

- Principles and functions of management

- Organization structure: Formal and informal organizations; Span of control
- Responsibility and authority: Delegation of authority and decentralization
- Motivation and leadership: Concept and theories
- Corporate governance and business ethics
- Human resource management: Concept, role and functions of HRM; Human resource planning; Recruitment and selection; Training and development; Succession planning
- Compensation management: Job evaluation; Incentives and fringe benefits
- Performance appraisal including 360 degree performance appraisal
- Collective bargaining and workers' participation in management
- Personality: Perception; Attitudes; Emotions; Group dynamics; Power and politics; Conflict and negotiation; Stress management
- Organizational Culture: Organizational development and organizational change

Unit 7: Banking and Financial Institutions

- Overview of Indian financial system
- Types of banks: Commercial banks; Regional Rural Banks (RRBs); Foreign banks; Cooperative banks
- Reserve Bank of India: Functions; Role and monetary policy management
- Banking sector reforms in India: Basel norms; Risk management; NPA management
- Financial markets: Money market; Capital market; Government securities market
- Financial Institutions: Development Finance Institutions (DFIs); Non-Banking Financial Companies (NBFCs); Mutual Funds; Pension Funds
- Financial Regulators in India
- Financial sector reforms including financial inclusion
- Digitisation of banking and other financial services: Internet banking; mobile banking; Digital payments systems
- Insurance: Types of insurance- Life and Non-life insurance; Risk classification and management; Factors limiting the insurability of risk; Re-insurance; Regulatory framework of insurance- IRDA and its role

Unit 8: Marketing Management

- Marketing: Concept and approaches; Marketing channels; Marketing mix; Strategic marketing planning; Market segmentation, targeting and positioning
- Product decisions: Concept; Product line; Product mix decisions; Product life cycle; New product development
- Pricing decisions: Factors affecting price determination; Pricing policies and strategies

- Promotion decisions: Role of promotion in marketing; Promotion methods - Advertising; Personal selling; Publicity; Sales promotion tools and techniques; Promotion mix
- Distribution decisions: Channels of distribution; Channel management
- Consumer Behaviour; Consumer buying process; factors influencing consumer buying decisions
- Service marketing
- Trends in marketing: Social marketing; Online marketing; Green marketing; Direct marketing; Rural marketing; CRM
- Logistics management

Unit 9: Legal Aspects of Business

- Indian Contract Act, 1872: Elements of a valid contract; Capacity of parties; Free consent; Discharge of a contract; Breach of contract and remedies against breach; Quasi contracts;
- Special contracts: Contracts of indemnity and guarantee; contracts of bailment and pledge; Contracts of agency
- Sale of Goods Act, 1930: Sale and agreement to sell; Doctrine of Caveat Emptor; Rights of unpaid seller and rights of buyer
- Negotiable Instruments Act, 1881: Types of negotiable instruments; Negotiation and assignment; Dishonour and discharge of negotiable instruments
- The Companies Act, 2013: Nature and kinds of companies; Company formation; Management, meetings and winding up of a joint stock company
- Limited Liability Partnership: Structure and procedure of formation of LLP in India
- The Competition Act, 2002: Objectives and main provisions
- The Information Technology Act, 2000: Objectives and main provisions; Cyber crimes and penalties
- The RTI Act, 2005: Objectives and main provisions
- Intellectual Property Rights (IPRs) : Patents, trademarks and copyrights; Emerging issues in intellectual property
- Goods and Services Tax (GST): Objectives and main provisions; Benefits of GST; Implementation mechanism; Working of dual GST

Unit 10: Income-tax and Corporate Tax Planning

- Income-tax: Basic concepts; Residential status and tax incidence; Exempted incomes; Agricultural income; Computation of taxable income under various heads; Deductions from Gross total income; Assessment of Individuals; Clubbing of incomes
- International Taxation: Double taxation and its avoidance mechanism; Transfer pricing

- Corporate Tax Planning: Concepts and significance of corporate tax planning; Tax avoidance versus tax evasion; Techniques of corporate tax planning; Tax considerations in specific business situations: Make or buy decisions; Own or lease an asset; Retain; Renewal or replacement of asset; Shut down or continue operations
- Deduction and collection of tax at source; Advance payment of tax; E-filing of income-tax returns

ECONOMICS

Subject: ECONOMICS

Unit-1 : Micro Economics

- Theory of Consumer Behaviour
- Theory of Production and Costs
- Decision making under uncertainty Attitude towards Risk
- Game Theory – Non Cooperative games
- Market Structures, competitive and non-competitive equilibria and their efficiency properties
- Factor Pricing
- General Equilibrium Analysis
- Efficiency Criteria: Pareto-Optimality, Kaldor – Hicks and Wealth Maximization
- Welfare Economics: Fundamental Theorems , Social Welfare Function
- Asymmetric Information: Adverse Selection and Moral Hazard

Unit-2 : Macro Economics

- National Income: Concepts and Measurement
- Determination of output and employment: Classical & Keynesian Approach
- Consumption Function
- Investment Function
- Multiplier and Accelerator
- Demand for Money
- Supply of Money
- IS – LM Model Approach

- Inflation and Phillips Curve Analysis
- Business Cycles
- Monetary and Fiscal Policy
- Rational Expectation Hypothesis and its critique
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Unit- 3 : Statistics and Econometrics

- Probability Theory: Concepts of probability, Distributions, Moments, Central Limit theorem
- Descriptive Statistics – Measures of Central tendency & dispersions, Correlation, Index Numbers
- Sampling methods & Sampling Distribution
- Statistical Inferences, Hypothesis testing
- Linear Regression Models and their properties – BLUE
- Identification Problem
- Simultaneous Equation Models – recursive and non-recursive
- Discrete choice models
- Time Series Analysis

Unit-4 : Mathematical Economics

- Sets, functions and continuity, sequence, series
- Differential Calculus and its Applications
- Linear Algebra – Matrices, Vector Spaces
- Static Optimization Problems and their applications
- Input-Output Model, Linear Programming
- Difference and Differential equations with applications

Unit-5 : International Economics

- International Trade: Basic concepts and analytical tools
- Theories of International Trade
- International Trade under imperfect competition
- Balance of Payments: Composition, Equilibrium and Disequilibrium and Adjustment Mechanisms
- Exchange Rate: Concepts and Theories
- Foreign Exchange Market and Arbitrage
- Gains from Trade, Terms of Trade, Trade Multiplier

- Tariff and Non-Tariff barriers to trade; Dumping
- GATT, WTO and Regional Trade Blocks; Trade Policy Issues
- IMF & World Bank

Unit-6 : Public Economics

- Market Failure and Remedial Measures: Asymmetric Information, Public Goods, Externality
- Regulation of Market – Collusion and Consumers' Welfare
- Public Revenue: Tax & Non-Tax Revenue, Direct & Indirect Taxes, Progressive and non-Progressive Taxation, Incidence and Effects of Taxation
- Public expenditure
- Public Debt and its management
- Public Budget and Budget Multiplier
- Fiscal Policy and its implications

Unit-7 : Money and Banking

- Components of Money Supply
- Central Bank
- Commercial Banking
- Instruments and Working of Monetary Policy
- Non-banking Financial Institutions
- Capital Market and its Regulation

Unit-8 : Growth and Development Economics

- Economic Growth and Economic Development
- Theories of Economic Development: Adam Smith, Ricardo, Marx, Schumpeter, Rostow, Balanced & Unbalanced growth, Big Push approach.
- Models of Economic Growth: Harrod-Domar, Solow, Robinson, Kaldor
- Technical progress – Disembodied & embodied; endogenous growth
- Indicators of Economic Development: PQLI, HDI, SDGs
- Poverty and Inequalities – Concepts and Measurement
- Social Sector Development: Health, Education, Gender

Unit-9 : Environmental Economics and Demography

- Environment as a Public Good
- Market Failure
- Coase Theorem
- Cost-Benefit Analysis and Compensation Criteria
- Valuation of Environmental Goods
- Theories of Population
- Concepts and Measures: Fertility, Morbidity, Mortality
- Age Structure, Demographic Dividend
- Life Table
- Migration

Unit-10 : Indian Economy

- Economic Growth in India: Pattern and Structure
- Agriculture: Pattern & Structure of Growth, Major Challenges, Policy Responses
- Industry: Pattern & Structure of Growth, Major Challenges, Policy Responses
- Services: Pattern & Structure of Growth, Major Challenges, Policy Responses
- Rural Development – Issues, Challenges & Policy Responses
- Urban Development – Issues, Challenges and Policy Responses.
- Foreign Trade: Structure and Direction, BOP, Flow of Foreign Capital, Trade Policies
- Infrastructure Development: Physical and Social; Public-Private Partnerships
- Reforms in Land, Labour and Capital Markets
- Centre-State Financial Relations and Finance Commissions of India; FRBM
- Poverty, Inequality & Unemployment

ENGLISH

Subject: English

Unit –I : Drama

Unit –II : Poetry

Unit –III : Fiction, short story

Unit –IV : Non-Fictional Prose

Unit –V : Language: Basic concepts, theories and pedagogy. English in Use.

Unit –VI : English in India: history, evolution and futures

Unit –VII : Cultural Studies

Unit –VIII : Literary Criticism

Unit –IX : Literary Theory post World War II

Unit –X : Research Methods and Materials in English

GEOGRAPHY

Subject : GEOGRAPHY

Unit I - Geomorphology

Unit II - Climatology

Unit III- Oceanography

Unit IV- Geography of Environment

Unit V - Population and Settlement Geography

Unit VI- Geography of Economic Activities and Regional Development

Unit VII - Cultural, Social and Political Geography

Unit VIII - Geographic Thought

Unit IX - Geographical Techniques

Unit X- Geography of India

UNIT-I

Geomorphology

Continental Drift, Plate Tectonics, Endogenetic and Exogenetic forces. Denudation and Weathering, Geomorphic Cycle (Davis and Penck), Theories and Process of Slope Development, Earth Movements (seismicity, folding, faulting and vulcanicity), Landform Occurrence and Causes of Geomorphic Hazards (earthquakes, volcanoes, landslides and avalanches)

UNIT –II

Climatology

Composition and Structure of Atmosphere; Insolation, Heat Budget of Earth, Temperature, Pressure and Winds, Atmospheric Circulation (air-masses, fronts and upper air circulation, cyclones and anticyclones (tropical and temperate), Climatic Classification of Koppen & Thornthwaite, ENSO Events (El Nino, La Nina and Southern Oscillations), Meteorological Hazards and Disasters (Cyclones, Thunderstorms, Tornadoes, Hailstorms, Heat and Cold waves Drought and Cloudburst , Glacial Lake Outburst (GLOF), Climate Change: Evidences and Causes of Climatic Change in the past, Human impact on Global Climate.

UNIT-III

Oceanography

Relief of Oceans, Composition: Temperature, Density and Salinity, Circulation: Warm and Cold Currents, Waves, Tides, Sea Level Changes, Hazards: Tsunami and Cyclone

UNIT –IV

Geography of Environment

Components: Ecosystem (Geographic Classification) and Human Ecology, Functions: Trophic Levels, Energy Flows, Cycles (geo-chemical, carbon, nitrogen and oxygen), Food Chain, Food Web and Ecological Pyramid, Human Interaction and Impacts, Environmental Ethics and Deep Ecology, Environmental Hazards and Disasters (Global Warming, Urban Heat Island, Atmospheric Pollution, Water Pollution, Land Degradation), National Programmes and Policies: Legal Framework, Environmental Policy, International Treaties, International Programmes and Polices (Brundtland Commission, Kyoto Protocol, Agenda 21, Sustainable Development Goals, Paris Agreement)

UNIT –V

Population and Settlement Geography

Population Geography

Sources of population data (census, sample surveys and vital statistics, data reliability and errors). World Population Distribution (measures, patterns and determinants), World Population Growth (prehistoric to modern period). Demographic Transition, Theories of Population Growth (Malthus, Sadler, and Ricardo). Fertility and Mortality Analysis (indices, determinants and world patterns). Migration (types, causes and consequences and models), Population Composition and Characteristics (age, sex, rural-urban, occupational structure and educational levels), Population Policies in Developed and Developing Countries.

Settlement Geography

Rural Settlements (types, patterns and distribution), Contemporary Problems of Rural Settlements (rural-urban migration; land use changes; land acquisition and transactions), Theories of Origin of Towns (Gordon Childe, Henri Pirenne, Lewis Mumford), Characteristics and Processes of Urbanization in Developed and Developing Countries (factors of urban growth, trends of urbanisation, size, structure and functions of urban areas). Urban Systems (the law of the primate city and rank size rule) Central Place Theories (Christaller and Losch), Internal Structure of the City, Models of Urban Land Use (Burgess, Harris and Ullman , and Hoyt), Concepts of Megacities, Global Cities and Edge Cities, Changing Urban Forms (peri-urban areas, rural-urban fringe, suburban , ring and satellite towns), Social Segregation in the City, Urban Social Area Analysis, Manifestation of Poverty in the City (slums, informal sector growth, crime and social exclusion).

Unit–VI:

Geography of Economic Activities and Regional Development

Economic Geography

Factors affecting spatial organisation of economic activities (primary, secondary, tertiary and quarternary), Natural Resources (classification, distribution and associated problems), Natural Resources Management. World Energy Crises in Developed and Developing Countries.

Agricultural Geography
Land capability classification and Land Use Planning, Cropping Pattern: Methods of delineating crop combination regions (Weaver, Doi and Rafiullah), Crop diversification, Von Thunen's Model of Land Use Planning. Measurement and Determinants of Agricultural Productivity, Regional variations in Agricultural Productivity, Agricultural Systems of the World.

Industrial Geography
Classification of Industries, Factors of Industrial Location; Theories of Industrial Location (A. Weber, E. M. Hoover, August Losch, A. Pred and D. M. Smith). World Industrial Regions, Impact of Globalisation on manufacturing sector in Less Developed Countries, Tourism Industry, World distribution and growth of Information And Communication Technology (ICT) and Knowledge Production (Education and R & D) Industries.

Geography of Transport and Trade
Theories and Models of spatial interaction (Edward Ullman and M. E. Hurst) Measures and Indices of connectivity and accessibility; Spatial Flow Models: Gravity Model and its variants, World Trade Organisation, Globalisation and Liberalisation and World Trade Patterns. Problems and Prospects of Inter and Intra Regional Cooperation and Trade.

Regional Development
Typology of Regions, Formal and Fictional Regions, World Regional Disparities, Theories of Regional Development(Albert O. Hirschman, Gunnar Myrdal, John Friedman, Dependency theory of Underdevelopment, Global Economic Blocks, Regional Development and Social Movements in India

Unit – VII: Cultural, Social and Political Geography

Cultural and Social Geography
Concept of Culture, Cultural Complexes, Areas and Region, Cultural Heritage, Cultural Ecology. Cultural Convergence, Social Structure and Processes, Social Well-being and Quality of Life, Social Exclusion, Spatial distribution of social groups in India (Tribe, Caste, Religion and Language), Environment and Human Health, Diseases Ecology, Nutritional Status (etiological conditions, classification and spatial and seasonal distributional patterns with special reference to India) Health Care Planning and Policies in India, Medical Tourism in India.

Political Geography

Boundaries and Frontiers (with special reference to India), Heartland and Rimland Theories. Trends and Developments in Political Geography, Geography of Federalism, Electoral Reforms in India, Determinants of Electoral Behaviour, Geopolitics of Climate Change, Geopolitics of World Resources, Geo-politics of India Ocean, Regional Organisations of Cooperation (SAARC, ASEAN, OPEC, EU). Neopolitics of World Natural Resources.

Unit VIII: Geographic Thought

Contributions of Greek, Roman, Arab, Chinese and Indian Scholars, Contributions of Geographers (Bernhardus Varenius, Immanuel Kant, Alexander von Humboldt, Carl Ritter, Scheafer & Hartshorne), Impact of Darwinian Theory on Geographical Thought. Contemporary trends in Indian Geography: Cartography, Thematic and Methodological contributions. Major Geographic Traditions (Earth Science, man-environment relationship, area studies and spatial analysis), Dualisms in Geographic Studies (physical vs. human, regional vs. systematic, qualitative vs. quantitative, ideographic vs. nomothetic), Paradigm Shift, Perspectives in Geography (Positivism, Behaviouralism, Humanism, Structuralism, Feminism and Postmodernism).

Unit IX: Geographical Techniques

Sources of Geographic Information and Data (spatial and non-spatial), Types of Maps, Techniques of Map Making (Choropleth, Isarithmic, Dasymetric, Chorochromatic, Flow Maps) Data Representation on Maps (Pie diagrams, Bar diagrams and Line Graph, GIS Database (raster and vector data formats and attribute data formats). Functions of GIS (conversion, editing and analysis), Digital Elevation Model (DEM), Georeferencing (coordinate system and map projections and Datum), GIS Applications (thematic cartography, spatial decision support system), Basics of Remote Sensing (Electromagnetic Spectrum, Sensors and Platforms, Resolution and Types, Elements of Air Photo and Satellite Image Interpretation and Photogrammetry), Types of Aerial Photographs, Digital Image Processing: Developments in Remote Sensing Technology and Big Data Sharing and its applications in Natural Resources Management in India, GPS Components (space, ground control and receiver segments) and Applications, Applications of Measures of Central Tendency, Dispersion and Inequalities, Sampling, Sampling Procedure and Hypothesis Testing (*chi* square test, *t* test, ANOVA), Time Series Analysis, Correlation and Regression Analysis, Measurement of Indices, Making

Indicators Scale Free, Computation of Composite Index, Principal Component Analysis and Cluster Analysis, Morphometric Analysis: Ordering of Streams, Bifurcation Ratio, Drainage Density and Drainage Frequency, Basin Circularity Ratio and Form Factor, Profiles, Slope Analysis, Clinographic Curve, Hypsographic Curve and Altimetric Frequency Graph.

Unit – X: Geography of India

Major Physiographic Regions and their Characteristics; Drainage System (Himalayan and Peninsular), Climate: Seasonal Weather Characteristics, Climatic Divisions, Indian Monsoon (mechanism and characteristics), Jet Streams and Himalayan Cryosphere, Types and Distribution of Natural Resources: Soil, Vegetation, Water, Mineral and Marine Resources. Population Characteristics (spatial patterns of distribution), Growth and Composition (rural-urban, age, sex, occupational, educational, ethnic and religious), Determinants of Population, Population Policies in India, Agriculture (Production, Productivity and Yield of Major Food Crops), Major Crop Regions, Regional Variations in Agricultural Development, Environmental, Technological and Institutional Factors affecting Indian Agriculture; Agro-Climatic Zones, Green Revolution, Food Security and Right to Food. Industrial Development since Independence, Industrial Regions and their characteristics, Industrial Policies in India. Development and Patterns of Transport Networks (railways, roadways, waterways, airways and pipelines), Internal and External Trade (trend, composition and directions), Regional Development Planning in India, Globalisation and its impact on Indian Economy, Natural Disasters in India (Earthquake, Drought, Flood, Cyclone, Tsunami, Himalayan Highland Hazards and Disasters.)

HINDI

विषय - हिन्दी

पाठ्यक्रम

इकाई - I

हिन्दी भाषा और उसका विकास।

हिन्दी की ऐतिहासिक पृष्ठभूमि : प्राचीन भारतीय आर्य भाषाएं, मध्यकालीन भारतीय आर्य भाषाएं– पालि, प्राकृत – शौरसेनी, अर्द्धमागधी, मागधी, अपभ्रंश और उनकी विशेषताएं, अपभ्रंश अवहठ, और पुरानी हिन्दी का संबंध, आधुनिक भारतीय आर्य भाषाएं और उनका वर्गीकरण। हिन्दी का भौगोलिक विस्तार : हिन्दी की उपभाषाएं, पश्चिमी हिन्दी, पूर्वी हिन्दी, राजस्थानी, बिहारी तथा पहाड़ी वर्ग और उनकी बोलियां। खड़ीबोली, ब्रज और अवधी की विशेषताएं। हिन्दी के विविध रूप : हिन्दी, उर्दू, दक्खिनी, हिन्दुस्तानी। हिन्दी का भाषिक स्वरूप : हिन्दी की स्वनिम व्यवस्था – खंड्य और खंड्येतर, हिन्दी ध्वनियों के वर्गीकरण का आधार, हिन्दी शब्द रचना –उपसर्ग, प्रत्यय, समास, हिन्दी की रूप रचना – लिंग, वचन और कारक व्यवस्था के सन्दर्भ में संज्ञा, सर्वनाम, विशेषण और क्रिया रुप, हिन्दी – वाक्य – रचना। हिन्दी भाषा – प्रयोग के विविध रूप : बोली, मानक भाषा, राजभाषा, राष्ट्रभाषा और सम्पर्क भाषा। संचार माध्यम और हिन्दी, कम्पूटर और हिन्दी, हिन्दी की संवैधानिक स्थिति। देवानागरी लिपि : विशेषताएं और मानकीकरण।

इकाई – II

हिन्दी साहित्य का इतिहास

हिन्दी साहित्येतिहास दर्शन

हिन्दी साहित्य के इतिहास लेखन की पद्धतियां

हिन्दी साहित्य का कालविभाजन और नामकरण, आदिकाल की विशेषताएं एवं साहित्यिक प्रवृतियां, रासो-साहित्य, आदिकालीन हिन्दी का जैन साहित्य, सिद्ध और नाथ साहित्य, अमीर खुसरो की हिन्दी कविता, विद्यापति और उनकी पदावली तथा लौकिक साहित्य

भक्तिकाल

भक्ति-आंदोलन के उदय के सामाजिक-सांस्कृतिक कारण, भक्ति-आंदोलन का अखिल भारतीय स्वरुप और उसका अन्तःप्रादेशिक वैशिष्ट्य।

भक्ति काव्य की सामाजिक-सांस्कृतिक पृष्ठभूमि, आलवार सन्त। भक्ति काव्य के प्रमुख सम्प्रदाय और उनका वैचारिक आधार। निर्गुण-सुगण कवि और उनका काव्य।

रीतिकाल

सामाजिक-सांस्कृतिक पृष्टभूमि, रीतिकाल की प्रमुख प्रवृत्तियां (रीतिबद्ध, रीतिसिद्ध, रीतिमुक्त) रीतिकवियों का आचार्यत्व।

रीतिकाल के प्रमुख कवि और उनका काव्य

आधुनिक काल

हिन्दी गद्य का उद्भव और विकास। भारतेन्दु पूर्व हिन्दी गद्य, 1857 की क्रान्ति और सांस्कृतिक पुनर्जागरण, भारतेन्दु और उनका युग, पत्रकारिता का आरम्भ और 19वीं शताब्दी की हिन्दी पत्रकारिता, आधुनिकता की अवधारणा।

द्विवेदी युग : महावीर प्रसाद द्विवेदी और उनका युग, हिन्दी नवजागरण और सरस्वती, राष्ट्रीय काव्य धारा के प्रमुख कवि, स्वछन्दतावाद और उसके प्रमुख कवि।

छायावाद : छायावादी काव्य की प्रमुख विशेषताएं, छायावाद के प्रमुख कवि, प्रगतिवाद की अवधारणा, प्रगतिवादी काव्य और उसके प्रमुख कवि, प्रयोगवाद और नई कविता, नई कविता के कवि, समकालीन कविता (वर्ष 2000 तक) समकालीन साहित्यिक पत्रकारिता।

हिन्दी साहित्य की गद्य विधाएं

हिन्दी उपन्यास :भारतीय उपन्यास की अवधारणा।
प्रेमचन्द पूर्व उपन्यास, प्रेमचन्द और उनका युग।
प्रेमचन्द के परवर्ती उपन्यासकार (वर्ष 2000 तक)।

हिन्दी कहानी : हिन्दी कहानी का उद्भव और विकास, 20वीं सदी की हिन्दी कहानी और प्रमुख कहानी आंदोलन एवं प्रमुख कहानीकार।

हिन्दी नाटक : हिन्दी नाटक और रंगमंच, विकास के चरण, भारतेन्दुयुग, प्रसाद युग,प्रसादोत्तर युग, स्वातंत्र्योत्तर युग, साठोत्तर युग और नया नाटक
प्रमुख नाट्यकृतियाँ, प्रमुख नाटककार (वर्ष 2000 तक)।
हिन्दी एकांकी । हिन्दी रंगमंच और विकास के चरण, हिन्दी का लोक रंगमंच। नुक्कड़ नाटक ।

हिन्दी निबंध : हिन्दी निबन्ध का उद्भव और विकास, हिन्दी निबंध के प्रकार और प्रमुख निबंधकार।

हिन्दी आलोचना– हिन्दी आलोचना का उद्भव और विकास। समकालीन हिन्दी आलोचना एवं उसके विविध प्रकार। प्रमुख आलोचक।

हिन्दी की अन्य गद्य विधाएँ : रेखाचित्र, संस्मरण, यात्रा साहित्य, आत्मकथा, जीवनी और रिपोर्ताज, डायरी।

हिन्दी का प्रवासी साहित्य : अवधारणा एवं प्रमुख साहित्यकार।

इकाई – III

साहित्यशास्त्र

काव्य के लक्षण, काव्य हेतु और काव्य प्रयोजन।

प्रमुख संप्रदाय और सिद्धान्त – रस, अलंकार, रीति, ध्वनि, वक्रोक्ति और औचित्य।

रस निष्पत्ति, साधारणीकरण।

शब्दशक्ति, काव्यगुण, काव्य दोष

प्लेटो के काव्य सिद्धान्त।

अरस्तू : अनुकरण सिद्धान्त, त्रासदी विवेचन, विरेचन सिद्धान्त।

वर्ड्सवर्थ का काव्यभाषा सिद्धान्त।

कॉलरिज : कल्पना और फैंटेसी।

टी.एस.इलिएट : निर्वैयक्तिकता का सिद्धान्त, परम्परा की अवधारणा।

आई.ए.रिचर्ड्स : मूल्य सिद्धान्त, संप्रेषण सिद्धान्त तथा काव्य-भाषा सिद्धान्त। रूसी रुपवाद। नयी समीक्षा। मिथक, फन्तासी, कल्पना, प्रतीक, बिम्ब।

इकाई – IV

वैचारिक पृष्ठभूमि

भारतीय नवजागरण और स्वाधीनता आन्दोलन की वैचारिक पृष्ठभूमि

हिन्दी नवजागरण । खड़ीबोली आन्दोलन। फोर्ट विलियम कॉलेज

भारतेन्दु और हिन्दी नवजागरण,

महावीर प्रसाद द्विवेदी और हिन्दी नवजागरण

गांधीवादी दर्शन

अम्बेडकर दर्शन

लोहिया दर्शन

मार्क्सवाद, मनोविश्लेषणवाद, अस्तित्ववाद, उत्तर आधुनिकतावाद, अस्मितामूलक विमर्श (दलित, स्त्री, आदिवासी एवं अल्पसंख्यक)

इकाई – V

हिन्दी कविता

पृथ्वीराज रासो – रेवा तट

अमीरखुसरो – खुसरों की पहेलियाँ और मुकरियाँ

विद्यापति की पदावली (संपादक – डॉ. नरेन्द्र झा) – पद संख्या 1 - 25

कबीर – (सं.- हजारी प्रसाद द्विवेदी) – पद संख्या – 160 - 209

जायसी ग्रंथावली – (सं. राम चन्द्र शुक्ल) – नागमती वियोग खण्ड

सूरदास – भ्रमरगीत सार – (सं.- राम चन्द्र शुक्ल) – पद संख्या 21 से 70

तुलसीदास – रामचरितमानस, उत्तर काण्ड

बिहारी सतसई – (सं.- जगन्नाथ दास रत्नाकर) – दोहा संख्या 1 – 50

घनानन्द कवित्त – (सं.- विश्वनाथ मिश्र) – कवित्त संख्या 1 – 30

मीरा – (सं.- विश्वनाथ त्रिपाठी) – प्रारम्भ से 20 पद

अयोध्या सिंह उपाध्याय हरिऔध – प्रियप्रवास

मैथिलीशरण गुप्त – भारत भारती, साकेत (नवम् सर्ग)

जयशंकर प्रसाद – आंसू, कामायनी (श्रद्धा, लज्जा, इड़ा)

निराला - जुही की कली, जागो फिर एक बार, सरोजस्मृति, राम की शक्तिपूजा, कुकरमुत्ता, बाँधो न नाव इस ठाँव बंधु।

सुमित्रानंदन पंत – परिवर्तन, प्रथम रश्मि

महादेवी वर्मा – बीन भी हूँ मैं तुम्हारी रागिनी भी हूँ, मै नीर भरी दुख की बदली, फिर विकल है प्राण मेरे, यह मन्दिर का दीप इसे नीरव जलने दो, द्रुत झरो जगत के जीर्ण पत्र

रामधारी सिंह दिनकर – उर्वशी (तृतीय अंक), रश्मिरथी

नागार्जुन – कालिदास, बादल को घिरते देखा है, अकाल और उसके बाद, खुरदरे पैर, शासन की बंदूक, मनुष्य हूँ।

सच्चिदानंद हीरानन्द वात्स्यायन अज्ञेय – कलगी बाजरे की, यह दीप अकेला, हरी घास पर क्षण भर, असाध्यवीणा, कितनी नावों में कितनी बार

भवानीप्रसाद मिश्र – गीत फरोश, सतपुड़ा के जगल

मुक्तिबोध – भूल गलती, ब्रह्मराक्षस, अंधेरे में

धूमिल – नक्सलवाड़ी, मोचीराम, अकाल दर्शन, रोटी और संसद

इकाई –VI

हिन्दी उपन्यास

पं. गौरीदत्त – देवरानी जेठानी की कहानी

लाला श्रीनिवास दास – परीक्षा गुरू

प्रेमचन्द – गोदान

अज्ञेय – शेखर एक जीवनी (भाग – 1)

हजारी प्रसाद द्विवेदी – बाणभट्ट की आत्मकथा

फणीश्वर नाथ रेणु – मैला आंचल

यशपाल – झूठा सच

अमृत लाल नागर – मानस का हंस

भीष्म साहनी – तमस

श्रीलाल शुक्ल – राग दरबारी

कृष्णा सोबती – जिन्दगी नामा

मन्नू भंडारी – आपका बंटी

जगदीश चन्द्र – धरती धन न अपना

इकाई –VII

हिन्दी कहानी

राजेन्द्र बाला घोष (बंग महिला) - चन्द्रदेव से मेरी बातें, दुलाईवाली

माधवराव सप्रे – एक टोकरी भर मिट्टी

सुभद्रा कुमारी चौहान – राही

प्रेमचंद – ईदगाह, दुनिया का अनमोल रतन

राजा राधिकारमण प्रसाद सिंह – कानों में कंगना

चन्द्रधर शर्मा गुलेरी – उसने कहा था

जयशंकर प्रसाद – आकाशदीप

जैनेन्द्र – अपना–अपना भाग्य

फणीश्वरनाथ रेणु – तीसरी कसम, लाल पान की बेगम

अज्ञेय - गैंग्रीन

शेखर जोशी – कोसी का घटवार

भीष्म साहनी – अमृतसर आ गया है, चीफ की दावत

कृष्णा सोबती – सिक्का बदल गया

हरिशंकर परसाई – इस्पेक्टर मातादीन चांद पर

ज्ञानरंजन – पिता

कमलेश्वर – राजा निरबंसिया

निर्मल वर्मा - परिंदे

इकाई –VIII

हिन्दी नाटक

भारतेन्दु – अंधेर नगरी, भारत दुर्दशा

जयशंकर प्रसाद – चन्द्रगुप्त, स्कंदगुप्त, ध्रुवस्वामिनी

धर्मवीरभारती – अंधायुग

लक्ष्मीनारायण लाल – सिंदूर की होली

मोहन राकेश – आधे-अधूरे, आषाढ़ का एक दिन

हबीब तनवीर – आगरा बाज़ार

सर्वेश्वरदयाल सक्सेना – बकरी

शंकरशेष – एक और द्रोणाचार्य

उपेन्द्रनाथ अश्क – अंजो दीदी

मन्नू भंडारी – महाभोज

इकाई –IX

हिन्दी निबंध

भारतेन्दु – दिल्ली दरबार दर्पण, भारतवर्षोन्नति कैसे हो सकती है

प्रताप नारायण मिश्र - शिवमूर्त्ति

बाल कृष्ण भट्ट – शिवशंभु के चिट्ठे

रामचन्द्र शुक्ल – कविता क्या है

हजारी प्रसाद द्विवेदी - नाखून क्यों बढ़ते हैं

विद्यानिवास मिश्र – मेरे राम का मुकुट भीग रहा है

अध्यापक पूर्ण सिंह - मजदूरी और प्रेम

कुबेरनाथ राय – उत्तराफाल्गुनी के आस-पास

विवेकी राय – उठ जाग मुसाफिर

नामवर सिंह – संस्कृति और सौंदर्य

इकाई –X

आत्मकथा, जीवनी तथा अन्य गद्य विधाएं

रामवृक्ष बेनीपुरी – माटी की मूरतें

महादेवी वर्मा – ठकुरी बाबा

तुलसीराम – मुर्दहिया

शिवरानी देवी – प्रेमचन्द घर में

मन्नू भंडारी – एक कहानी यह भी

विष्णु प्रभाकर - आवारा मसीहा

हरिवंशराय बच्चन – क्या भूलूँ क्या याद करूँ

रमणिका गुप्ता – आपहुदरी

हरिशंकर परसाई – भोलाराम का जीव

कृष्ण चन्दर – जामुन का पेड़

दिनकर – संस्कृति के चार अध्याय

मुक्तिबोध – एक लेखक की डायरी

राहुल सांकृत्यायन – मेरी तिब्बत यात्रा

अज्ञेय – अरे यायावर रहेगा याद

HISTORY

Subject: HISTORY

SYLLABUS

The History paper consists of all the aspects of Indian History, Pre-history, Ancient period, Medieval Indian history and Modern India including National Movement and post independent phase. It also consists of Historical Method, Research Methodology and Historiography. Since, the subject and the boundaries of Indian history are vast and comprehensive, it has been systematically analysed and synthesized into **Ten Units**. However, the concepts, the ideas and the terms given here would specify the extent the subject included though it is not mentioned in the units. It is to make the student realize the comprehension of the syllabus prepared.

Concepts, Ideas and Terms

Bharatvarsha
Sabha and Samiti
Varnasrama
Vedanta
Purusharthas
Rina
Samskaras
Yajna
Ganarajya
Janapada
Doctrine of Karma
Dandaniti / Arthasastra / Saptanga
Dharmavijaya
Stupa / Chaitya/ Vihara
Nagara / Dravida / Vesara
Bodhisattva / Tirthankara
Alvars / Nayanars
Sreni
Bhumi-chidra-vidhana-nyaya
Kara-bhoga-bhaga
Vishti
Stridhana
Memorial Stones
Agraharas

Khilafat
Sulah-i-kul
Turkan-i-Chahlghani
Watan
Baluta
Taquavi
Iqta
Jaziya
Zakat
Madad-i-maash
Amaram
Raya-Rekho
Jangama / Dasa
Madarasa / Maqtab
Chauth / Sardeshmukhi
Sarai
Polygars
Jagir / Shariyat
Dastur
Mansab (Rank)
Deshmukh
Nadu / Ur
Ulema
Firman

Ain-i-Dashsalah
Pargana
Shahna-i-Mandi
Mahalwari
Hind Swaraj
Mercantilism
Economic Nationalism
Indian Renaissance
Economic Drain
Colonialism
Paramountcy
Dyarchy
Federalism
Utilitarianism
Filtration Theory
Forward Policy
Doctrine of Lapse
Satyagraha
Swadeshi
Revivalism
Communalism
Orientalism
Oriental Despotism
De-Industrialisation
Subsidiary Alliance
Evangelicalism
Bhudan
Panchsheel
Mixed Economy
Socialism
Hindu Code Bill
Historical Methods
Plagiarism
Ethics and Morality in History Writing

Unit – I

Negotiating the Sources: Archaeological sources: Exploration, Excavation, Epigraphy and Numismatics. Dating of Archaeological Sites. Literary Sources: Indigenous Literature: Primary and Secondary: problem of dating Religious and Secular Literature, Myths, Legends, etc. Foreign Accounts: Greek, Chinese and Arabic.

Pastoralism and Food production: Neolithic and Chalcolithic Phase: Settlement, distribution, tools and patterns of exchange.

Indus/Harappa Civilization: Origin, extent, major sites, settlement pattern, craft specialization, religion, society and polity, Decline of Indus Civilization, Internal and external trade, First urbanization in India.

Vedic and later Vedic periods; Aryan debates, Political and Social Institutions, State Structure and Theories of State; Emergence of Varnas and Social Stratification, Religious and Philosophical Ideas. Introduction of Iron Technology, Megaliths of South India.

Expansion of State system: Mahajanapadas, Monarchical and Republican States, Economic and Social Developments and Emergence of Second Urbanization in 6^{th} century BCE; Emergence of heterodox sects-Jainism, Buddhism and Ajivikas.

Unit – II

From State to Empire: Rise of Magadha, Greek invasion under Alexander and its effects, Mauryan expansion, Mauryan polity, society, economy, Asoka's Dhamma and its Nature, Decline and Disintegration of the Mauryan Empire, Mauyan art and architecture, Asokan edicts: language and script.

Dissolution of Empire and Emergence of Regional Powers: Indo-Greeks, Sungas, Satavahanas, Kushanas and Saka-Ksatrapas, Sangam literature, polity and society in South India as reflected in Sangam literature. Trade and commerce from 2nd century BCE to 3rd century CE, Trade with the Roman World, Emergence of Mahayana Buddhism, Kharavela and Jainism, Post-Mauryan art and Architecture. Gandhara, Mathura and Amaravati schools.

Gupta Vakataka age: Polity and Society, Agrarian Economy, Land Grants, Land Revenue and Land Rights, Gupta Coins, Beginning of Temple Architecture, Emergence of Puranic Hinduism, Development of Sanskrit Language and Literature. Developments in Science Technology, Astronomy, Mathematics and Medicine.

Harsha and his Times: Administration and Religion.

Salankayanas and Visnukundins in Andhradesa.

Unit – III

Emergence of Regional Kingdoms: Kingdoms in Deccan: Gangas, Kadmabas, Western and Eastern Chalukyas, Rashtrakutas, Kalyani Chalukyas, Kakatiyas, Hoysalas and Yadavas.

Kingdoms in South India: Pallavas, Ceras, Colas and Pandyas,

Kingdoms in Eastern India: Palas and Senas of Bengal, Varmans of Kamarupa, Bhaumakaras and Somavamsis of Odisha.

Kingdoms in Western India: Maitrakas of Vallabhi and Chalukyas of Gujarat.

Kingdoms in North India: Gurjara-Pratiharas, Kalacuri-Chedis, Gahadavalas and Paramaras.

Characteristics of Early Medieval India: Administration and Political Structure Legitimation of Kingship.

Agrarian economy; land grants, changing production relations; graded land rights and peasantry, water resources, taxation system, coins and currency system;

Trade and urbanization: patterns of trade, and urban settlements, ports and trade routes, merchandise and exchange, trade guilds; trade and colonization in south-east Asia.

Growth of Brahminical religions: Vaisnavism and Saivism; Temples; Patronage and Regional Ramification; Temple Architecture and Regional Styles. Dana, Tirtha and Bhakti, Tamil Bhakti movement - Shankara, Madhava and Ramanujacharya.

Society: Varna, Jati and Proliferation of Castes, Position of women; Gender, marriage and property relations; Women in public life. Tribes as peasants and their place in Varna order. Untouchability.

Education and Educational Institutions: Agraharas, Mathas and Mahaviharas as Centres of Education. Growth of Regional Languages.

Debates of state formation in early medieval India: A) Feudal model; B) Segmentary model; C) Integrative model

Arab contracts: Suleiman Ghaznavid conquests. Alberuni's Accounts.

Unit – IV

Source of Medieval Indian History: Archaeological, Epigraphic and Numismatic sources, Material evidences and Monuments; Chronicles; Literary sources – Persian, Sanskrit and Regional languages; Daftar Khannas: Firmans, Bahis / Pothis / Akhbarat; Foreign Travellers' Accounts – Persian and Arabic.

Political Developments – The Delhi Sultanate – the Ghorids, the Turks, the Khaljis, the Tughlaqs, theSayyids and the Lodis. Decline of Delhi Sultanate.

Foundation of the Mughal Empire – Babur, Humayun and the Suris ; Expansion and Consolidation from Akbar to Aurangzeb. Decline of the Mughal Empire.

Later Mughals and Disintegration of the Mughal Empire.

The Vijayanagara and the Bahmanis - Deccan Sultanate; Bijapur, Golkonda, Bidar, Berar and Ahmadnagar – Rise, Expansion and Disintegration; Eastern Gangas and Suryavamshi Gajapatis.

Rise of the Marathas & the foundation of Swaraj by Shivaji ; its expansion under the Peshwas ; Mughal – Maratha relations, Maratha Confederacy, Causes of Decline.

Unit – V

Administration & Economy**:** Administration under the Sultanate, Nature of State – Theocratic and Theocentric, Central, Provincial and Local Administration, Law of succession.

Sher Shah's Administrative Reforms ; Mughal Administration – Central, Provincial and Local : Mansabdari and Jagirdari Systems.

Administrative System in the Deccan – The Vijayanagara State & Polity, Bahamani Administrative System; Maratha Administration – Asta Pradhan.

Frontier Policies under Delhi Sultanate and Mughals.

Inter-State Relations during the Sultanate and the Mughals.

Agricultural Production and Irrigation System, Village Economy, Peasantry, Grants and Agricultural Loans, Urbanization and Demographic Structure.

Industries – Cotton Textiles, Handicrafts, Agro-Based industries, Organisation, Factories & Technology.

Trade and Commerce – State Policies, Internal and External Trade: European Trade, Trade Centres and Ports, Transport and Communication.

Hundi (Bills of Exchange) and Insurance, State Income and Expenditure, Currency, Mint System; Famines and Peasant Revolts.

Unit – VI

Society and Culture: Social Organisation and Social Structure.

The Sufis – Their Orders, Beliefs and Practices, the leading Sufi Saints, Social Synchronization.

Bhakti Movement – Shaivism; Vaishnavism, Shaktism.

The Saints of the Medieval Period – North and South – their impact on Socio-Political and Religious Life – Women Saints of Medieval India.

The Sikh Movement – Guru Nanak Dev: his teachings and practices, Adi Granth; the Khalsa.

Social Classification**:** Ruling Class, Major Religious Groups, the Ulemas, the Mercantile and Professional Classes – Rajput Society.

Rural society – Petty Chieftains, Village Officials, Cultivators and Non-Cultivating Classes, Artisans.

Position of Women – Zanana System – Devadasi System.

Development of Education, Centres of Education and Curriculum, Madarasa Education.

Fine Arts – Major Schools of Painting – Mughal, Rajasthani, Pahari, Garhwali; Development of Music.

Art and Architecture, Indo-Islamic Architecture, Mughal Architecture, Regional Styles.

Indo-Arabic Architecture, Mughal Gardens, Maratha Forts, Shrines and Temples.

Unit –VII

Sources of Modern Indian History: Archieval Materials, Biographies and Memoirs, Newspapers, Oral Evidence, Creative Literature and Painting, Monuments, Coins.

Rise of British Power: European Traders in India in the 16^{th} to 18^{th} Centuries – Portuguese, Dutch, French and the British.

Establishment and Expansion of British Dominion in India.

British Relations with Principal Indian States – Bengal, Oudh, Hyderabad, Mysore, Carnatic and Punjab.

Revolt of 1857, Causes, Nature and Impact.

Administration of the Company and the Crown; Evolution of Central and Provincial Structure under East India Company.

Paramountcy, Civil Service, Judiciary, Police and the Army under the Company; British Policy and Paramountcy in the Princely States under the Crown.

Local Self-Government.

Constitutional Changes, 1909 – 1935.

Unit – VIII

Colonial Economy: Changing Composition, Volume and Direction of Trade.

Expansion and Commercialization of Agriculture, Land Rights, Land Settlements, Rural Indebtedness, Landless Labour, Irrigation and Canal System.

Decline of Industries – Changing Socio-Economic Conditions of Artisans; De-urbanisation; Economic Drain; World Wars and Economy.

British Industrial Policy; Major Modern Industries; Nature of Factory Legislation; Labour and Trade Union Movements.

Monetary Policy, Banking, Currency and Exchange, Railways and Road Transport, Communications – Post & Telegraph.

Growth of New Urban Centres; New Features of Town Planning and Architecture, Urban Society and Urban Problems.

Famines, Epidemics and the Government Policy.

Tribal and Peasant Movements.

Indian Society in Transition: Contact with Christianity – the Missions and Missionaries; Critique of Indian Social and Economic Practices and Religious Beliefs; Educational and Other Activities.

The New Education – Government Policy; Levels and Contents; English Language; Development of Science, Technology, Public Health & Medicine – Towads Modernism.

Indian Renaissance – Socio-Religious Reforms; Emergence of Middle Class; Caste Associations and Caste Mobility.

Women's Question – Nationalist Discourse; Women's Organisations; British Legislation concerning Women, Gender Identity & Constitutional Position.

The Printing Press – Journalistic Activity and the Public opinion.

Modernisation of Indian Languages and Literary Forms – Reorientation in Painting, Music and Performing Arts.

Unit – IX

Rise of Indian Nationalism: Social and Economic basis of Nationalism.

Birth of Indian National Congress; Ideologies and Programmes of the Indian National Congress, 1885-1920: Early Nationalists, Assertive Nationalists and Revolutionaries.

Swadeshi and Swaraj.

Gandhian Mass Movements; Subas Chandra Bose and INA; Role of Middle Class in National Movement; Women Participation in National Movement.

Left Wing Politics.

Depressed Class Movement.

Communal Politics; Muslim League and Genesis of Pakistan.

Towards Independence and Partition.

India after Independence: Challenges of Partition; Integration of the Indian Princely States; Kashmir, Hyderabad & Junagarh.

B.R. Ambedkar – The making of the Indian Constitution, its Features.

The Structure of Bureaucracy.

New Education Policy.

Economic Policies and the Planning process; Development, Displacement and Tribal Issues.

Linguistic Reorganisation of States; Centre-State Relations.

Foreign Policy Initiatives – Panchsheel; Dynamics of Indian Politics-Emergency; Liberalisation, Privatisation & Globalisation of Indian Economy.

Unit – X

Historical Method, Research, Methodology and Historiography:

Scope and Importance of History
Objectivity and Bias in History
Heuristics Operation, Criticism in History, Synthesis and Presentation
History and its Auxiliary Sciences
History a Science, Arts or a Social Science
Causation and Imagination in History
Significance of Regional History
Recent Trends of Indian History
Research Methodology
Hypothesis in History
Area of Proposed Research
Sources – Data Collection, Primary / Secondary, Original and Transit Sources
Trends in Historical Research
Recent Indian Historiography
Selection of Topic in History
Notes Taking, References, Footnotes and Bibliography
Thesis and Assignment Writing
Plagiarism, Intellectual Dishonesty and History Writing
Beginnings of Historical Writings – Greek, Roman and Church Historiography
Renaissance and its Impact on History Writing
Negative and Positive Schools of Historical Writing
Berlin Revolution in History Writing – Von Ranke
Marxist Philosophy of History – Scientific Materialism
Cyclical Theory of History – Oswald Spengler
Challenge and Response Theory – Arnold Joseph Toynbee
Post – Modernism in History

LIBRARY SCIENCE

Subject: Library and Information Science

Unit – I

1. Data, Information, Knowledge and Wisdom.
2. Information Life Cycle - Generation, Collection, Storage and Dissemination.
3. Role of Information in Planning, Management, Socio-economic, Cultural, Educational and Technological Development.
4. Information Science - Relationship with other subjects, Information Society and Knowledge Society.
5. Communication – Concept, Types, Theories, Models, Channels and Barriers; Trends in Scholarly Communication.
6. Information Industry - Generators, Providers and Intermediaries.
7. IPR and Legal Issues - Categories, Conventions, Treaties, Laws.
8. Plagiarism: Concept and Types.
9. Right to Information Act (RTI); Information Technology Act.
10. National Knowledge Commission; National Mission on Libraries.

Unit – II

1. Historical Development of Libraries in India; Committees and Commissions on Libraries in India.
2. Types of Libraries – Academic, Public, Special and National.
3. Library Legislation and Library Acts in Indian States; The Press and Registration of Books Act; The Delivery of Books and Newspapers (Public Libraries) Act.
4. Laws of Library Science.
5. Library and Information Science Profession - Librarianship as a Profession, Professional Skills and Competences; Professional Ethics.
6. Professional Associations - National – ILA, IASLIC, IATLIS; International – IFLA, ALA, CILIP, ASLIB, SLA; Role of UGC, RRRLF and UNESCO in Promotion and Development of Libraries.
7. Library and Information Science Education in India.
8. Library Public Relations and Extension Activities.
9. Type of Users - User Studies, User Education.

10. Information Literacy - Areas, Standards, Types and Models; Trends in Information Literacy.

Unit – III

1. Information Sources - Nature, Characteristics, Types and Formats.
2. Sources of Information - Primary, Secondary and Tertiary; Documentary and Non-Documentary.
3. Primary Information Sources (Print and Electronic) - Journals, Conference Proceedings, Patents, Standards, Theses & Dissertations, Trade Literature.
4. Secondary Information Sources (Print and Electronic) - Dictionaries, Encyclopedias, Bibliographies, Indexing & Abstracting, Statistical sources, Handbooks and Manuals.
5. Tertiary Information Sources (Print and Electronic)- Directories, Year Books, Almanacs.
6. Reference Sources - Bibliographical, Biographical, Educational, Language and Geographical.
7. Electronic Information Resources - Subject Gateways, Web Portals, Bulletin Boards, Discussion Forums /Groups.
8. Databases: Bibliographic, Numeric, Full text, Multimedia; Open Access Databases.
9. Institutional and Human Resources.
10. Evaluation of Reference Sources and Web Resources.

Unit - IV

1. Community Information Services.
2. Reference Service – Concept and Types; Referral Services
3. Alerting Services - CAS, SDI, Inter Library Loan and Document Delivery.
4. Mobile based Library Services and Tools – Mobile OPAC, Mobile Databases, Mobile Library Website, Library Apps, Mobile Library Instructions, Augmented Reality, SMS Alerts, Geo-Location, Reference Enquiry.
5. Web 2.0 and 3.0 - Library 2.0- Concept, Characteristics, Components; Instant Messaging, RSS Feeds, Podcasts, Vodcasts, Ask a Librarian
6. Collaborative Services- Social Networks, Academics Social Networks, Social Tagging, Social Bookmarking.
7. Web – Scale Discovery Services
8. National Information Systems and Networks: NISCAIR, DESIDOC, SENDOC, ENVIS, INFLIBNET, DELNET, NICNET, ERNET, National Knowledge Network (NKN), Biotechnology Information System Network
9. International Information Systems and Networks: INIS, AGRIS, INSPEC, MEDLARS, BIOSIS, ERIC, Patent Information System (PIS), Biotechnology Information System (BIS).
10. Library Resource Sharing and Library Consortia – National and International.

Unit - V

1. Universe of Knowledge - Nature and Attributes; Modes of Formation of Subjects.
2. Knowledge Organisation - Classification – Theories, Cannons, and Principles; Simple Knowledge Organisation System (SKOS), Taxonomies, Folksonomy, Trends in Classification.
3. Mapping of Subjects in Library Classification Schemes – DDC, UDC and CC.
4. Knowledge Organisation: Cataloguing - Cannons and Principles; Centralized and Co-operative Catalogue; Library Cataloguing Codes: CCC and AACR - II.
5. Standards of Bibliographic Record Formats and Description – ISBD, MARC 21, CCF, RDA, FRBR, Bibframe.
6. Standards for Bibliographic Information Interchange & Communication – ISO 2709, Z39.50, Z39.71.
7. Metadata Standards: Dublin Core; MARC21, METS, MODES, EAD.
8. Indexing Systems and Techniques: Assigned - Pre-coordinate; Post-Coordinate; Derived- Title-based; Vocabulary Control.
9. Abstracting – Types and Guidelines.
10. Information Retrieval System – Features, Components, Models and Evaluation.

Unit - VI

1. Management - Principles, Functions and Schools of thought.
2. Library and Information Centers Management - Book Selection Tools and Principles; Library Acquisition, Technical Processing, Circulation, Serial Control, Maintenance and Stock Verification; Preservation and Conservation; Hazards and Control Measures of Library Materials.
3. Human Resource Management – Planning, Job Analysis, Job Description, Job Evaluation, Selection, Recruitment, Motivation, Training and Development, Performance Appraisal; Staff Manual.
4. Financial Management in Libraries - Sources of Finance, Resource Mobilisation, Budgeting Methods; Cost Effective and Cost Benefit Analysis, Annual Reports & Statistics; Library Authority and Committee.
5. Project Management - SWOT, PEST, PERT / CPM.
6. Total Quality Management (TQM) - Concepts, Principles and Techniques, Six Sigma; Evaluation of Services of Libraries and Information Centers.
7. Library Building, Furniture and Equipments; Green Library Building; Information Commons; Makers Space; Security and Safety.
8. Management Information System (MIS), MBO, Change Management, Disaster Management, Crisis Management.
9. Knowledge Management – Principles, Tools, Components and Architecture.
10. Marketing of Library Products and Services – Plan, Research, Strategies, Mix, Segmentation, Pricing and Advertising; Management Consultancy.

Unit - VII

1. Computer Technology - Character Representation (ASCII, ISCII, Unicode); Computer Hardware, Software; Storage Devices; Input and Output Devices.
2. Types of Software - System Software, Application Software.
3. Programming Languages – Object Oriented, Procedural, High Level, Scripting; Web Languages.
4. Telecommunication - Transmission Channels, Mode, and Media, ISDN, PSDN, Multiplexing, Modulation, Standards and Protocols.
5. Wireless Communication – Media, Wi-fi, Li-fi, Satellite Communication, Mobile Communication.
6. Computer Networks - Topologies, Types of Networks – LAN, MAN, WAN.
7. Internet - Web browsers, WWW, E-mail; Search Engines, Meta and Entity Search engines.
8. Internet Protocols and Standards – HTTP, SHTTP, FTP, SMTP, TCP/IP, URI, URL.
9. Hypertext, Hypermedia, Multimedia, Video conferencing, Virtual Reality, Augmented Technologies.
10. Data Security, Network Security, Firewalls, Cryptographic Techniques, Anti-virus software, Anti-spyware, Intrusion Detection System.

Unit – VIII

1. Library Automation – Areas, Planning, Selection of Hardware and Software, Implementation and Evaluation; Standards for Library Automation.
2. Barcode, RFID, QR Code, Biometric, Smartcard: Features and Applications.
3. Digitization – Planning, Selection of Materials, Hardware, Software, Process, Issues.
4. Digital Library: Genesis, Characteristics, Types, Architecture; Standards, Formats and Protocols, DOI.
5. Digital Preservation - Need, Purpose, Standards, Methods, Techniques, Projects (National and International).
6. Digital Library Initiatives – National and International.
7. Institutional Repositories - Need, Purpose, Types and Tools; Institutional Repositories in India; ROAR, DOAR, SHARPA-ROMIO.
8. Content Management Systems – Architecture, Data Integration, CMS Software – Selection, Implementation and Evaluation.
9. Application of Artificial Intelligence, Expert Systems and Robotics in Libraries; Social Mobile Analytics Cloud (SMAC); Cloud Computing.
10. Ontology – Tools (RDF, RDFS, Potege); Semantic Web, Linked Data, Big Data, Data Mining, Data Harvesting.

Unit – IX

1. Research - Concept, Purpose, Functions, Scope and Ethics; Types of Research – Basic and Applied, Interdisciplinary and Multidisciplinary.
2. Research Methods: Historical, Descriptive, Experimental and Delphi.
3. Research Design - Selection of Research Problem, Review of Literature; Formulation of Research Problem; Hypothesis – Formulation, Types and Testing; Sampling Techniques.
4. Methods of Data Collection: Questionnaire, Interview, Observation, Library Records, Scales and Checklist.
5. Data Analysis and Interpretation - Presentation of Data; Statistical Methods/ Techniques.
6. Statistical Packages – Spreadsheet, SPSS, Bibexcel, 'R' Statistics.
7. Research Report Writing and Citation Tools – Structure, Style, Contents, Guidelines; Style Manuals; Online Citation Tools; Reference Style Management Tools; Anti-plagiarism Tools; Evaluation of Research Report.
8. Metric Studies in LIS - Bibliometrics, Scientometric, Webometrics, Altmetrics;
9. Impact Factors – Journal, Institutional and Authors; h-Index, g-Index, i10 Index.
10. Trends in Library and Information Science Research.

Unit –X

1. Academic Library and Information System.
2. Public Library and Information System.
3. Special Library and Information System.
4. Health Science Library and Information System.
5. Corporate Library and Information System.
6. Agricultural Library and Information System.
7. Engineering and Technological Library and Information System.
8. Archive, Museums and Oriental Libraries.
9. Community Information System.
10. Information Services and System for Persons with Disability, Children and Women.

MATHEMATICS

MATHEMATICAL SCIENCES
UNIT – 1

Analysis: Elementary set theory, finite, countable and uncountable sets, Real number system as a complete ordered field, Archimedean property, supremum, infimum.

Sequences and series, convergence, limsup, liminf.

Bolzano Weierstrass theorem, Heine Borel theorem.

Continuity, uniform continuity, differentiability, mean value theorem.

Sequences and series of functions, uniform convergence.

Riemann sums and Riemann integral, Improper Integrals.

Monotonic functions, types of discontinuity, functions of bounded variation, Lebesgue measure, Lebesgue integral.

Functions of several variables, directional derivative, partial derivative, derivative as a linear transformation, inverse and implicit function theorems.

Metric spaces, compactness, connectedness. Normed linear Spaces. Spaces of continuous functions as examples.

Linear Algebra: Vector spaces, subspaces, linear dependence, basis, dimension, algebra of linear transformations.

Algebra of matrices, rank and determinant of matrices, linear equations.

Eigenvalues and eigenvectors, Cayley-Hamilton theorem.

Matrix representation of linear transformations. Change of basis, canonical forms, diagonal forms, triangular forms, Jordan forms.

Inner product spaces, orthonormal basis.

Quadratic forms, reduction and classification of quadratic forms

UNIT – 2

Complex Analysis: Algebra of complex numbers, the complex plane, polynomials, power series, transcendental functions such as exponential, trigonometric and hyperbolic functions.
Analytic functions, Cauchy-Riemann equations.

Contour integral, Cauchy's theorem, Cauchy's integral formula, Liouville's theorem, Maximum modulus principle, Schwarz lemma, Open mapping theorem.

Taylor series, Laurent series, calculus of residues.

Conformal mappings, Mobius transformations.

Algebra: Permutations, combinations, pigeon-hole principle, inclusion-exclusion principle, derangements.

Fundamental theorem of arithmetic, divisibility in Z, congruences, Chinese Remainder Theorem, Euler's Ø- function, primitive roots.

Groups, subgroups, normal subgroups, quotient groups, homomorphisms, cyclic groups, permutation groups, Cayley's theorem, class equations, Sylow theorems.

Rings, ideals, prime and maximal ideals, quotient rings, unique factorization domain, principal ideal domain, Euclidean domain.

Polynomial rings and irreducibility criteria.

Fields, finite fields, field extensions, Galois Theory.

Topology: basis, dense sets, subspace and product topology, separation axioms, connectedness and compactness.

UNIT – 3

Ordinary Differential Equations (ODEs):

Existence and uniqueness of solutions of initial value problems for first order ordinary differential equations, singular solutions of first order ODEs, system of first order ODEs.

General theory of homogenous and non-homogeneous linear ODEs, variation of parameters, Sturm-Liouville boundary value problem, Green's function.

Partial Differential Equations (PDEs):

Lagrange and Charpit methods for solving first order PDEs, Cauchy problem for first order PDEs.

Classification of second order PDEs, General solution of higher order PDEs with constant coefficients, Method of separation of variables for Laplace, Heat and Wave equations.

Numerical Analysis :

Numerical solutions of algebraic equations, Method of iteration and Newton-Raphson method, Rate of convergence, Solution of systems of linear algebraic equations using Gauss elimination and Gauss-Seidel methods, Finite differences, Lagrange, Hermite and spline interpolation, Numerical differentiation and integration, Numerical solutions of ODEs using Picard, Euler, modified Euler and

Runge-Kutta methods.

Calculus of Variations:

Variation of a functional, Euler-Lagrange equation, Necessary and sufficient conditions for extrema. Variational methods for boundary value problems in ordinary and partial differential equations.

Linear Integral Equations:

Linear integral equation of the first and second kind of Fredholm and Volterra type, Solutions with separable kernels. Characteristic numbers and eigenfunctions, resolvent kernel.

Classical Mechanics:

Generalized coordinates, Lagrange's equations, Hamilton's canonical equations, Hamilton's principle and principle of least action, Two-dimensional motion of rigid bodies, Euler's dynamical equations for the motion of a rigid body about an axis, theory of small oscillations.

UNIT – 4

Descriptive statistics, exploratory data analysis

Sample space, discrete probability, independent events, Bayes theorem. Random variables and distribution functions (univariate and multivariate); expectation and moments. Independent random variables, marginal and conditional distributions. Characteristic functions. Probability inequalities (Tchebyshef, Markov, Jensen). Modes of convergence, weak and strong laws of large numbers, Central Limit theorems (i.i.d. case).
Markov chains with finite and countable state space, classification of states, limiting behaviour of n-step transition probabilities, stationary distribution, Poisson and birth-and-death processes.

Standard discrete and continuous univariate distributions. sampling distributions, standard errors and asymptotic distributions, distribution of order statistics and range.

Methods of estimation, properties of estimators, confidence intervals. Tests of hypotheses: most powerful and uniformly most powerful tests, likelihood ratio tests. Analysis of discrete data and chi-square test of goodness of fit. Large sample tests.

Simple nonparametric tests for one and two sample problems, rank correlation and test for independence. Elementary Bayesian inference.

Gauss-Markov models, estimability of parameters, best linear unbiased estimators, confidence intervals, tests for linear hypotheses. Analysis of variance and covariance. Fixed, random and mixed effects models. Simple and multiple linear regression. Elementary regression diagnostics. Logistic regression.

Multivariate normal distribution, Wishart distribution and their properties. Distribution of quadratic forms. Inference for parameters, partial and multiple correlation coefficients and related tests. Data reduction techniques: Principle component analysis, Discriminant analysis, Cluster analysis, Canonical correlation.

Simple random sampling, stratified sampling and systematic sampling. Probability proportional to size sampling. Ratio and regression methods.

Completely randomized designs, randomized block designs and Latin-square designs. Connectedness and orthogonality of block designs, BIBD. 2^{K} factorial experiments: confounding and construction.

Hazard function and failure rates, censoring and life testing, series and parallel systems.

Linear programming problem, simplex methods, duality. Elementary queuing and inventory models. Steady-state solutions of Markovian queuing models: M/M/1, M/M/1 with limited waiting space, M/M/C, M/M/C with limited waiting space, M/G/1.

POLITICAL SCIENCE

Subject : POLITICAL SCIENCE

SYLLABUS

Unit - 1 : Political Theory

Concepts
Liberty, Equality, Justice, Rights, Democracy, Power, Citizenship,

Political Traditions
Liberalism
Conservatism
Socialism
Marxism
Feminism
Ecologism
Multiculturalism
Postmodernism

Unit - 2 : Political Thought

Confucius, Plato, Aristotle, Machiavelli, Hobbes, Locke, Rousseau, Hegel, Mary Wollstonecraft, John Stuart Mill, Karl Marx, Gramsci, Hannah Arendt, Frantz Fanon, Mao Zedong, John Rawls

Unit - 3 : Indian Political Thought

Dharamshastra, Kautilya, Aggannasutta, Barani, Kabir, Pandita Ramabai, Bal Gangadhar Tilak, Swami Vivekanand, Rabindranath Tagore, M.K Gandhi, Sri Aurobindo, Periyar E. V. Ramasamy, Muhammad Iqbal, M.N.Roy, V D Savarkar, Dr. B.R.Ambedkar, J L Nehru, Ram Manohar Lohia, Jaya Prakash Narayan, Deendayal Upadhyaya

Unit - 4 : Comparative Political Analysis

Approaches: Institutional, Political Culture, Political Economy and New Institutionalism; Comparative Methods

Colonialism and decolonization: forms of colonialism, anti-colonial struggles and decolonization

Nationalism: European and non-European.

State theory: debate over the nature of state in capitalist and socialist societies; post-colonial state; welfare state; globalization and nations-states

Political regimes: democratic (Electoral, Liberal, Majoritarian and Participatory) and non-democratic regimes (Patrimonialism, Bureaucratic authoritarianism, Military dictatorship, Totalitarianism, and fascist).

Constitutions and Constitutionalism: forms of constitutions, rule of law, judicial independence and liberal constitutionalism; emergency powers and crisis of constitutionalism.

Democratisation: democratic transition and consolidation.

Development: Underdevelopment, Dependency, Modernization, World Systems Theory, development and democracy.

Structures of Power: ruling class, power elites, democratic elitism

Actor and Processes: Electoral Systems, Political Parties and Party System, Interest groups, Social movements, new social movements, Non Governmental Organisations (NGOs) and civil society campaigns; Revolutions.

Unit - 5 : International Relations

Approaches to the study of International relations: Idealism, Realism, Structural Marxism, Neoliberalism, Neorealism, Social Constructivism, Critical International Theory, Feminism, Postmodernism.

Concepts: State, state system and non-state actors, Power, Sovereignty, Security: traditional and non- traditional.

Conflict and Peace: Changing Nature of Warfare; Weapons of mass destruction; deterrence; conflict resolution, conflict transformation.

United Nations: Aims, Objectives, Structure and Evaluation of the Working of UN; Peace and Development perspectives; Humanitarian intervention. International law; International Criminal Court

Political Economy of IR; Globalisation; Global governance and Bretton Woods system, North-South Dialogue, WTO, G-20, BRICS.

Regional Organisations: European Union, African Union, Shanghai Cooperation Organisation, ASEAN.

Contemporary Challenges: International terrorism, Climate change and Environmental Concerns, Human Rights, Migration and Refugees; Poverty and Development; Role of Religion, Culture and Identity Politics.

Unit - 6 : India's Foreign Policy

Perspectives on India's Foreign Policy: India's Identity as postcolonial, development, rising power and as emerging political economy

Continuity and change in India's Foreign Policy: Principles and determinants; Non-Alignment movement: historical background and relevance of Non Aligned Movement; India's Nuclear Policy

India's relations with major powers: USA, USSR/Russia, People's Republic of China

India's Engagement with multipolar world: India's relations with European Union, BRICS, ASEAN, Shanghai Cooperation Organisation, African Union, Southern African Development Community, Gulf Cooperation Council

India's relations with neighbourhood: SAARC, Gujaral doctrine, Look Eas t/ Act East, Look West.

India's Negotiation Strategies in International Regimes: The United Nations, World Trade Organisation, International Monetary Fund, Intergovernmental Panel on Climate Change

Contemporary challenges: maritime security, energy security, environmental security, migrants and refugees, water resources, international terrorism, cyber security

Unit - 7 : Political Institutions in India

Making of the Indian Constitution: Colonialism heritage and the contribution Indian National Movement to the making of the Indian Constitution

Constituent Assembly: Composition, Ideological Moorings, Constitutional Debates

Philosophy of the Constitution: Preamble, Fundamental Rights, Directive Principles

Constitutionalism in India: Democracy, Social Change, National Unity, Checks and Balances, Basic Structure Debate, Constitutional Amendments

Union Executive: President, Prime Minister and Council of Ministers

Union Parliament: Structure, Role and Functioning, Parliamentary Committees

Judiciary: Supreme Court, High Court, Judicial Review, Judicial Activism, Judicial Reform.

Executive and Legislature in the States: Governor, Chief Minister, State Legislature

Federalism in India: Strong Centre Framework, Asymmetrical Federal Provisions and Adaption, Role of Intergovernmental Coordination Mechanisms, Inter-State Council, Emerging Trends.

Electoral Process and Election Commission of India: Conduct of Elections, Rules, Electoral Reforms.

Local Government Institutions: Functioning and reforms.

Constitutional and Statutory Bodies: Comptroller and Auditor General, National Commission for Scheduled Castes, National Commission for Scheduled Tribes, National Commission for Human Rights, National Commission for Women, National Commission for Minorities.

Unit - 8 : Political Processes in India

State, Economy and Development: Nature of Indian State, Development Planning model, New Economic Policy, Growth and Human Development.

Process of globalisation: social and economic implications.

Identity Politics: Religion, Tribe, Caste, Region, Language.

Social Movements: Dalit, Tribal, Women, Farmers, labour

Civil Society Groups: Non-Party Social Formations, Non-Governmental Organisations, Social Action Groups.

Regionalisation of Indian Politics: Reorganisation of Indian States, States as Political and Economic Units, Sub-State Regions, Regional disparities, Demand for New States,

Gender and Politics in India: Issues of Equality and Representation.

Ideology and Social basis of Political Parties: National Parties, State Parties.

Electoral Politics: Participation, Contestation, Representation, Emerging trends.

Unit - 9 : Public Administration

Public Administration: meaning and evolution; public and private administration Approaches: System Theory, Decision Making, Ecological Approach

Public administration theories and concepts: Scientific Management Theory, Rational Choice theory, New Public Administration, Development Administration,

Comparative Public Administration, New Public Management, changing nature of Public Administration in the era of liberalisation and Globalisation

Theories and Principles of Organization: Scientific Management Theory, Bureaucratic Theory, Human Relations Theory

Managing the organization: Theories of leadership and motivation.

Organisational Communication: Theories and Principles, Chester Bernard Principles of Communication, Information Management in the organization

Managing Conflict in the Organization: Mary Parker Follett

Management by Objectives- Peter Drucker

Unit – 10 : Governance and Public Policy in India

Governance, good governance and democratic governance, role of state, civil society and individuals.

Accountability and control: Institutional mechanism for checks and balances, legislative control over executive, administrative and budgetary control, control through parliamentary committees, judicial control over legislature and executive, administrative culture, corruption and administrative reforms

Institutional mechanisms for good governance: Right to Information, Consumer Protection Act, Citizen Charter; Grievance redress system: Ombudsman, Lokpal, Lokayukta

Grassroots Governance: Panchayati Raj Institutions and their functioning

Planning and Development: Decentralised planning, planning for development, sustainable development, participatory development, e-governance; NITI Aayog

Public policy as an instrument of socio-economic development: public policies with special reference to housing, health, drinking water, food security, MNREGA, NHRM, RTE

Monitoring and evaluation of public policy; mechanisms of making governance process accountable: jansunwai, social audit.

PSYCHOLOGY

Subject: PSYCHOLOGY

SYLLABUS

1. Emergence of Psychology

Psychological thought in some major Eastern Systems: Bhagavad Gita, Buddhism, Sufism and Integral Yoga. Academic psychology in India: Pre-independence era; post-independence era; 1970s: The move to addressing social issues; 1980s: Indigenization; 1990s: Paradigmatic concerns, disciplinary identity crisis; 2000s: Emergence of Indian psychology in academia. Issues: The colonial encounter; Post colonialism and psychology; Lack of distinct disciplinary identity.

Western: Greek heritage, medieval period and modern period. Structuralism, Functionalism, Psychoanalytical, Gestalt, Behaviorism, Humanistic-Existential, Transpersonal, Cognitive revolution, Multiculturalism. Four founding paths of academic psychology - Wundt, Freud, James, Dilthey. Issues: Crisis in psychology due to strict adherence to experimental-analytical paradigm (logical empiricism). Indic influences on modern psychology.

Essential aspects of knowledge paradigms: Ontology, epistemology, and methodology. Paradigms of Western Psychology: Positivism, Post-Positivism, Critical perspective, Social Constructionism, Existential Phenomenology, and Co-operative Enquiry. Paradigmatic Controversies. Significant Indian paradigms on psychological knowledge: Yoga, Bhagavad Gita, Buddhism, Sufism, and Integral Yoga. Science and spirituality (*avidya* and *vidya*). The primacy of self-knowledge in Indian psychology.

2. Research Methodology and Statistics

Research: Meaning, Purpose, and Dimensions.
Research problems, Variables and Operational Definitions, Hypothesis, Sampling.
Ethics in conducting and reporting research

Paradigms of research: Quantitative, Qualitative, Mixed methods approach
Methods of research: Observation, Survey [Interview, Questionnaires], Experimental, Quasi-experimental, Field studies, Cross-Cultural Studies, Phenomenology, Grounded theory, Focus groups, Narratives, Case studies, Ethnography

Statistics in Psychology: Measures of Central Tendency and Dispersion. Normal Probability Curve. Parametric [t-test] and Non-parametric tests [Sign Test, Wilcoxon Signed rank test, Mann-Whitney test, Kruskal-Wallis test, Friedman]. Power analysis. Effect size.

Correlational Analysis: Correlation [Product Moment, Rank Order], Partial correlation, multiple correlation.
Special Correlation Methods: Biserial, Point biserial, tetrachoric, phi coefficient.
Regression: Simple linear regression, Multiple regression.
Factor analysis: Assumptions, Methods, Rotation and Interpretation.

Experimental Designs: ANOVA [One-way, Factorial], Randomized Block Designs, Repeated Measures Design, Latin Square, Cohort studies, Time series, MANOVA, ANCOVA. Single-subject designs.

3. Psychological testing

Types of tests
Test construction: Item writing, item analysis

Test standardization: Reliability, validity and Norms

Areas of testing: Intelligence, creativity, neuropsychological tests, aptitude, Personality assessment, interest inventories

Attitude scales – Semantic differential, Staples, Likert scale.
Computer-based psychological testing

Applications of psychological testing in various settings: Clinical, Organizational and business, Education, Counseling, Military. Career guidance.

4. Biological basis of behavior

Sensory systems: General and specific sensations, receptors and processes

Neurons: Structure, functions, types, neural impulse, synaptic transmission. Neurotransmitters.

The Central and Peripheral Nervous Systems – Structure and functions. Neuroplasticity.

Methods of Physiological Psychology: Invasive methods – Anatomical methods, degeneration techniques, lesion techniques, chemical methods, microelectrode studies. Non-invasive methods – EEG, Scanning methods.

Muscular and Glandular system: Types and functions
Biological basis of Motivation: Hunger, Thirst, Sleep and Sex.
Biological basis of emotion: The Limbic system, Hormonal regulation of behavior.
Genetics and behavior: Chromosomal anomalies; Nature-Nurture controversy [Twin studies and adoption studies]

5. Attention, Perception, Learning, Memory and Forgetting

Attention: Forms of attention, Models of attention

Perception:
Approaches to the Study of Perception: Gestalt and physiological approaches
Perceptual Organization: Gestalt, Figure and Ground, Law of Organization
Perceptual Constancy: Size, Shape, and Color; Illusions
Perception of Form, Depth and Movement
Role of motivation and learning in perception

Signal detection theory: Assumptions and applications
Subliminal perception and related factors, information processing approach to perception, culture and perception, perceptual styles, Pattern recognition, Ecological perspective on perception.

Learning Process:
Fundamental theories: Thorndike, Guthrie, Hull
Classical Conditioning: Procedure, phenomena and related issues
Instrumental learning: Phenomena, Paradigms and theoretical issues; Reinforcement: Basic variables and schedules; Behaviour modification and its applications
Cognitive approaches in learning: Latent learning, observational learning.
Verbal learning and Discrimination learning
Recent trends in learning: Neurophysiology of learning

Memory and Forgetting
Memory processes: Encoding, Storage, Retrieval
Stages of memory: Sensory memory, Short-term memory (Working memory), Long-term Memory (Declarative – Episodic and Semantic; Procedural)

Theories of Forgetting: Interference, Retrieval Failure, Decay, Motivated forgetting

6. Thinking, Intelligence and Creativity

Theoretical perspectives on thought processes: Associationism, Gestalt, Information processing, Feature integration model
Concept formation: Rules, Types, and Strategies; Role of concepts in thinking
Types of Reasoning
Language and thought

Problem solving: Type, Strategies, and Obstacles
Decision-making: Types and models

Metacognition: Metacognitive knowledge and Metacognitive regulation

Intelligence: Spearman; Thurstone; Jensen; Cattell; Gardner; Stenberg; Goleman; Das, Kar & Parrila

Creativity: Torrance, Getzels & Jackson, Guilford, Wallach & Kogan
Relationship between Intelligence and Creativity

7. Personality, Motivation, emotion, stress and coping

Determinants of personality: Biological and socio-cultural
Approaches to the study of personality: Psychoanalytical, Neo-Freudian, Social learning, Trait and Type, Cognitive, Humanistic, Existential, Transpersonal psychology.
Other theories: Rotter's Locus of Control, Seligman's Explanatory styles, Kohlberg's theory of Moral development.

Basic motivational concepts: Instincts, Needs, Drives, Arousal, Incentives, Motivational Cycle.
Approaches to the study of motivation: Psychoanalytical, Ethological, S-R Cognitive, Humanistic

Exploratory behavior and curiosity
Zuckerman's Sensation seeking
Achievement, Affiliation and Power
Motivational Competence
Self-regulation
Flow

Emotions: Physiological correlates
Theories of emotions: James-Lange, Canon-Bard, Schachter and Singer, Lazarus, Lindsley.

Emotion regulation

Conflicts: Sources and types
Stress and Coping: Concept, Models, Type A, B, C, D behaviors, Stress management strategies [Biofeedback, Music therapy, Breathing exercises, Progressive Muscular Relaxation, Guided Imagery, Mindfulness, Meditation, Yogasana, Stress Inoculation Training].

8. Social Psychology

Nature, scope and history of social psychology

Traditional theoretical perspectives: Field theory, Cognitive Dissonance, Sociobiology, Psychodynamic Approaches, Social Cognition.

Social perception [Communication, Attributions]; attitude and its change within cultural context; prosocial behavior

Group and Social influence [Social Facilitation; Social loafing]; Social influence [Conformity, Peer Pressure, Persuasion, Compliance, Obedience, Social Power, Reactance]. Aggression. Group dynamics, leadership style and effectiveness. Theories of intergroup relations [Minimal Group Experiment and Social Identity Theory, Relative Deprivation Theory, Realistic Conflict Theory, Balance Theories, Equity Theory, Social Exchange Theory]

Applied social psychology: Health, Environment and Law; Personal space, crowding, and territoriality.

9. Human Development and Interventions

Developmental processes: Nature, Principles, Factors in development, Stages of Development. Successful aging.
Theories of development: Psychoanalytical, Behavioristic, and Cognitive
Various aspects of development: Sensory-motor, cognitive, language, emotional, social and moral.

Psychopathology: Concept, Mental Status Examination, Classification, Causes

Psychotherapies: Psychoanalysis, Person-centered, Gestalt, Existential, Acceptance Commitment Therapy, Behavior therapy, REBT, CBT, MBCT, Play therapy, Positive psychotherapy, Transactional Analysis, Dialectic behavior therapy, Art therapy, Performing Art Therapy, Family therapy.

Applications of theories of motivation and learning in School
Factors in educational achievement
Teacher effectiveness
Guidance in schools: Needs, organizational set up and techniques

Counselling: Process, skills, and techniques

10. Emerging Areas

Issues of Gender, Poverty, Disability, and Migration: Cultural bias and discrimination. Stigma, Marginalization, and Social Suffering; Child Abuse and Domestic violence.

Peace psychology: Violence, non-violence, conflict resolution at macro level, role of media in conflict resolution.

Wellbeing and self-growth: Types of wellbeing [Hedonic and Eudemonic], Character strengths, Resilience and Post-Traumatic Growth.

Health: Health promoting and health compromising behaviors, Life style and Chronic diseases [Diabetes, Hypertension, Coronary Heart Disease], Psychoneuroimmunology [Cancer, HIV/AIDS]

Psychology and technology interface: Digital learning; Digital etiquette: Cyber bullying; Cyber pornography: Consumption, implications; Parental mediation of Digital Usage.

SANSKRIT

Unit - I

Vedic-Literature

(a) General Introduction of Vedic Literature:

- Main theories regarding the Vedās : Maxmüller; A.Weber; Jacobi ; Balgangadhar Tilak; M.Winternitz ; Indian traditional views.
- Saṁhitā Literature
- Dialogue Hymns: Pururavā-Urvaśī; Yama-yamī; Saramā-Paṇi ; Viśvāmitra-Nadī
- Brāhamaṇa-Literature
- Āraṇyaka Literature
- Vedāṅgas: Śikṣā; Kalpa; Vyākaraṇa; Nirukta; Chandas; Jyotiṣa

Unit - II

(b) Specific Study of Vedic Literature:

- Study of the following hymns:
    - Ṛgveda : Agni (1.1); Varuṇa (1.25); Sūrya (1.125); Indra (2.12); Uṣas (3.61); Parjanya (5.83); Kitava (10.34); Jñāna (10.71); Puruṣa (10.90); Hiraṇyagarbha (10.121); Vāk (10.125); Nāsadīya (10.129);
    - Śuklayajurveda : Śivasaṁkalpa , Chapter-34 (1-6)
    - Prajāpati-Chapter-23 (1-5)
    - Atharvaveda : Rāṣṭrābhivardhanam (1.29); Kāla (10.53); Prithivī (12.1)
- Brāhmaṇa Literature
    - Subject-matter; Vidhi and its types; Agnihotra; Agniṣṭoma; Darśapūrṇamāsa ; Yaj̃ña; Pañcamahāyajña; Akhyāna (Śunahśepa , Vāṅmanas)
- Upaniṣad Literature:
    - Subject-matter and main concepts with special reference to the following Upaniṣads ;
    - Īśa; Kaṭha; Kena; Bṛhadārṇyaka ; Taittirīya; Śvetāśvatara
- Vedic Grammar**;** Nirukta and Vedic interpretation
- Ṛkprātiśākhya : Definitions of Samānākṣara ; Sandhyakṣara; Aghoṣa; Soṣman; Svarabhakti ; Yama ; Rakta; Saṁyoga; Pragṛhya ; Riphita
- Nirukta (Chapters-I & 2)
- Four-fold division of Padas-Concept of Nāma; Concept of Ākhyāta ; Meaning of Upasargas; Categories of Nipātas.
- Purposes of the study of Nirukta
- Principles of Etymology
- Etymology of the following words:

    Āchārya; Vīra; Hrada; Go; Samudra; Vṛtra; Āditya; Uṣas; Megha; Vāk; Udak; Nadī; Aśva; Agni; Jātavedas; Vaiśvānara; Nighaṇtu

    Nirukta (Chapter-7; Daivatakāṇḍa)
    Vedic Accent- Udātta, Anudātta and Svarita

Unit - III

(c) Darśana:

- General Introduction of major schools of Darśana with special reference to the following :

  Pramāṇamīmānsā ; Tattvamīmānsā ; Ācāramīmānsā (Cārvāka , Jaina, Bauddha) Nyāya, Sāṁkhya, Yoga, Nyāya, Vaiśeṣika, mīmānsā

Unit - IV

(d) Darśana Literature: Special Study:

- Īśvarakṛṣna : Sāṁkhyakārikā - Satkāryavāda, Puruṣasvarūpa, Prakṛtisvarūpa, Sṛṣtikrama, Pratyaysarga, Kaivalya.
- Sadānanda : Vedāntasāra - Anubandha-catuṣṭaya, Ajñāna, Adhyāropa-Apavāda, Lingaśarīrotpatti, Pañcīkaraṇa, Vivarta, Jīvanmukti
- Annambhaṭṭa, Tarkasaṁgraha / Keśavamiśra; Tarkabhāṣā : Padārtha; Kāraṇa; Pramāṇa; (Pratyakṣa; Anumāna; Upamāna; Śabda), Prāmāṇyavāda, Prameya .
- Laugākṣibhāskara ; Arthasaṁgraha.
- Patañjali ; Yogasūtra - (Vyāsabhāṣya) : Cittabhūmi, Cittavṛttis ; Concept of Īśvara; Yogāṅgas; Samādhi ; Kaivalya
- Bādarāyaṇa ; Brahmasūtra 1.1 (Śānkarabhāṣya)
- Viśvanāthapañcānana ; Nyāyasidhāntamuktāvalī (Anumāna Khaṇḍa)
- Sarvadarśana-Saṁgraha ; Jainism ; Buddhism

Unit - V

(e) Grammar and Linguistics:

- General Introduction of the following grammarians:

  Pāṇini , Kātyāyana , Patañjali , Bhartṛhari , Vāmanajayāditya , Bhaṭṭojidīkṣita , Nāgeśabhaṭṭa , Kaiyyaṭa , Jainendra , Śākaṭāyana , Hemacandrasūri , Sārasvatavyākaraṇakāra.

  Pāṇinīya Śikṣā.

  Linguistics:

  Definition of Language, Geneological and Morphological classification of Languages, Speech Mechanism and classification of sounds: Stops, Fricatives, Semi-Vowels and vowels (with special reference to Sanskrit sounds).

  Phonetic Laws (Grimm, Grassman, Verner).

  Directions of semantic change and reasons of change.

  Definition of Vākya and its types

  General introduction of Indo-European family of Languages

  Difference between Vedic Sanskrit and Classical Sanskrit

  Difference between Bhāṣā and Vāk

  Difference between language and dialect

Unit - VI

(f) Specific Study of Grammar

- Definition : Saṁhitā, Saṁyoga Guṇa, Vṛddhi, Prātipadika, Nadī , Ghi, Upadhā, Apṛkta, Gati, Pada, Vibhāṣā , Savarṇa, Ṭi, Pragṛhya, Sarvanāmasthāna, Bha , Sarvanāma, Niṣṭhā .
- Sandhi - Ac sandhi, Hal sandhi, Visarga sandhi (according to laghusiddhāntakaumudī)
- Subanta – Ajanta - Rāma , Sarva (in all genders) , Viśvapā, Hari , Tri (in all genders) , Sakhi , Sudhī , Guru , Pitṛ , Gau , Ramā , Mati , Nadī , Dhenu , Mātṛ , Jñāna , Vāri , Madhu .
- Halanta - Lih , Viśvavāh , Catur (in all genders) , Idam, Kim, Tad (in all genders), Rājan , Maghavan , Pathin , Vidvas , Asmad , Yuṣmad .
- Samāsa - Avyayībhāva , Tatpuruṣa , Bahuvrīhi , Dvandva (according to laghusiddhāntakaumudī)
- Taddhita - Apatyārthaka and Matvarthīya (According to Siddāntakaumudī),
- Tiṅanta - Bhū , Edh , Ad , Us, Hu , Div , Ṣuñ , Tud , Tan, Kṛ , Rudh , Krīñ, Cur .
- Prayayānta - Nijant, Sannanta , Yaṅanta , Yaṅluganta , Nāmdhātu.
- Kṛdanta - Tavya / Tavyat , Anīyar , Yat , Ṇyat , Kyap , Śatṛ , Śānac , Ktvā , Kta , Ktavatu , Tumun , Ṇamul .
- Strīpratyaya - According to Laghusiddhāntakaumudī.
- Kāraka Prakarana - According to Siddāntakaumudī .
- Parasmaipada and Ātmanepada Vidhāna - According to Siddāntakaumudī .
- Mahābhāṣya (Paspaśāhnika)- Definition of Śabda, Relation between Śabda and Artha, Purposes of the study of grammar, Definition of Vyākaraṇa, Result of the proper use of word , Method of grammar .
- Vākyapadīyam (Brahmakāṇḍa) - Nature of Sphoṭa, Nature of Śabda-Brahma, Powers of Śabda-Brahma, Relation between Sphoṭa and Dhvani , Relation between Śabda and Artha, Types of Dhvani, Levels of Language.

Unit - VII

Sanskrit Literature, Poetics and Prosody

(a) General Introduction of following

- Bhāsa, Aśvaghośa , kālidāsa, Śūdraka, Viśākhadatta, Bhāravi, Māgha, Harṣa, Bāṇabhaṭṭa, Daṇḍin, Bhavabhūti, Bhaṭṭanārāyaṇa, Bhilhaṇa, Shrīharṣa, Ambikādatta vyāsa, Panditā Kṣamārao, V. Raghavan, Shri Dhar Bhaskar Varnekar
- Schools of Sanskrit Poetics – Rasa, Alaṅkāra, Rīti, Dhwani, Vakrokti, Aucitya,
- Western Poetics – Aristotle, Longinus, Croche

Unit - VIII

(b) Specific study of the following

- Poetry: Buddhacaritam (First Canto), Raghuvaṁśam (First Canto), Kirātārjunīyam (First Canto), Śiśupālavadham (First Canto), Naiṣadhīyacaritam (First Canto)
- Drama: Svapnavāsavadattām, Abhijñānaśākuntalam, Mṛcchakaṭikam, Uttararāmacaritam, Mudrārākṣasam, Uttararāmacaritam, Ratnāvalī
- Prose: Daśakumāracaritam (viii Ucchvāsa), Harṣacaritam (V Ucchvāsa), Kādambarī (Śukanāsopadeśa)
- Campū Kāvya - Nala Campū (I Ucchvāsa)
- Sāhityadarpaṇaḥ:

  Definition of Kāvya, Refutation of other definitions of Kāvya, Śabdaśakti - Saṅketagraha; Abhidhā; Lakṣanā; Vyanjanā, Kāvyabheda (Chapter Fourth), Śravyakāvya (prose poetry and mix)
- Kāvyaprakaśa –

  Kāvyalakṣhṇa, Kāvyaprayojana, Kāvyahetu, Kāvyabheda, Śabdaśakti, Abhihitānvayavāda, Anvitābhidhānvayavāda, concept of Rasa, discussion of Rasasūtra, Rasadoṣa, Kāvyaguṇa, Vyanjanāvriti (Fifth Chapter)

- Alaṁkāras –

  Vakrokti; Anuprāsa, Yamaka, Śleṣa, Upamā, Rūpaka, Utprekṣā, Samāsokti, Apahnuti, Nidarśanā, Arthāntaranyāsa, Dṛṣṭānta, Vibhāvanā, Viśeṣokti, Svabhāvokti, Virodhābhāsa, Saṅkara, Sansṛṣṭi
- Dhvanyāloka (I Udyota)
- Vakroktijīvitam (I Unmeṣa)
- Bharata – Nāṭyaśāstram (First and Sixth Chapter)
- Daśarūpakam (First and Third Prakāśa)
- Chanda –

  Āryā, Anuṣṭup, Indravajrā, Upendravajrā, Vasantatilakā, Upajāti, Vaṁśastha, Drutavilambita, Śālinī, Mālinī, Śikharṇī, Mandākrāntā, Hariṇī, Śārdūlavikrīḍita, Sragdharā

Unit - IX

Purāṇetihāsa, Dharmaśāstra and Epigraphy

(a) General introduction of the followings:

- Rāmāyaṇa –

  Subject matter, age, society in the Rāmāyaṇa, Rāmāyaṇa as a source of later Sanskrit works and literal value of the Rāmāyaṇa, legends in the Rāmāyaṇa

- Mahābhārata –

  Subject matter, age, society in the Mahābhārata, Mahābhārata as a source of later Sanskrit works and literal value of the Mahābhārata, legends in the Mahābhārata

- Purāṇa –

  Definition of Purāṇa, maha Purāṇa and Upa Purāṇas, Purāṇic cosmology and Purāṇic legends
- General introduction of main Smṛitis.
- General introduction Kauṭilīya Arthaśāstra
- Paleography –

  History of the decipherment of Brāhmī script, Theories of the origin of Brāhmī Script
- Inscriptions - General introduction

Unit - X

(b) Specific study of the following

- Kauṭilīya arthaśātra (First – Vinayadikarika)
- Manusmṛti (I, II and VII Adhyāyas)
- Yājñavalkyasmṛti (Vyavahārādhyaya only)
- Paleography and Inscriptions –
  - Brahmi Script of Mauryan and Gupta periods
  - Inscription of Ashoka – Major Rock Edicts, Major Pillar Edicts
  - Post – Mauryan inscriptions –

    Sāranātha Buddhist Image Inscription of Kaniṣka's regal – year, 3,
    Girnār Rock Inscription of Rudradāman,

    Hāthīgumphā inscription of Khāravela

  - Gupta and Post-Gupta inscriptions –

    Allahabad Pillar Inscriptions of Samudragupta,
    Mandasor Pillar Inscription of Yasodharman,
    Banāskherā Copper Plate Inscription of Harṣa,
    Aihole Stone Inscription of Pulakeśīn II

विषयः संस्कृत

पाठ्यक्रम

इकाई-I

वैदिक-साहित्य

(क) वैदिक-साहित्य का सामान्य परिचय :-

- वेदों का काल : मैक्समूलर, ए.वेबर, जैकोबी, बालगंगाधर तिलक, एम.विन्टरनिट्ज, भारतीय परम्परागत विचार
- संहिता साहित्य
- संवाद सूक्त : पुरुरवा-उर्वशी, यम-यमी, सरमा-पणि, विश्वामित्र- नदी
- ब्राह्मण साहित्य
- आरण्यक साहित्य
- वेदांग : शिक्षा, कल्प, व्याकरण, निरुक्त, छन्द, ज्योतिष

इकाई-II

(ख) वैदिक साहित्य का विशिष्ट अध्ययन :-

1. निम्नलिखित सूक्तों का अध्ययन :-

- **ऋग्वेद**: - अग्नि (1.1), वरुण (1.25), सूर्य (1.125), इन्द्र (2.12), उषस् (3.61), पर्जन्य (5.83), अक्ष (10.34), ज्ञान (10.71), पुरुष (10.90), हिरण्यगर्भ (10.121), वाक् (10.125), नासदीय (10.129)

- **शुक्लयजुर्वेद**: - शिवसंकल्प, अध्याय - 34 (1-6),

  प्रजापति, अध्याय - 23 (1-5)
- **अथर्ववेद**: - राष्ट्राभिवर्धनम् (1.29), काल (10.53), पृथिवी (12.1)

2. **ब्राह्मण-साहित्य** : प्रतिपाद्य विषय, विधि एवं उसके प्रकार, अग्निहोत्र, अग्निष्टोम, दर्शपूर्णमास यज्ञ, पंचमहायज्ञ, आख्यान (शुन:शेप, वाङ्मनस्)।
3. **उपनिषद्-साहित्य** : निम्नलिखित उपनिषदों की विषयवस्तु तथा प्रमुख अवधारणाओं का अध्ययन : ईश, कठ, केन, बृहदारण्यक, तैत्तिरीय, श्वेताश्वतर ।
4. **वैदिक व्याकरण, निरुक्त एवं वैदिक व्याख्या पद्धति** :
   - **ऋक्प्रातिशाख्य** : निम्नलिखित परिभाषाएँ –

     समानाक्षर, सन्ध्यक्षर, अघोष, सोष्म, स्वरभक्ति, यम, रक्त, संयोग, प्रगृह्य, रिफित ।
   - निरुक्त (अध्याय 1 तथा 2)

     चार पद – नाम विचार, आख्यात विचार, उपसर्गों का अर्थ, निपात की कोटियाँ,
   - निरुक्त अध्ययन के प्रयोजन
   - निर्वचन के सिद्धान्त
   - निम्नलिखित शब्दों की व्युत्पत्ति :

     आचार्य, वीर, ह्रद, गो, समुद्र, वृत्र, आदित्य, उषस्, मेघ, वाक्, उदक, नदी, अश्व, अग्नि, जातवेदस्, वैश्वानर, निघण्टु।
   - निरुक्त (अध्याय 7 दैवत काण्ड)
   - वैदिक स्वर : उदात्त, अनुदात्त तथा स्वरित।
   - वैदिक व्याख्या पद्धति : प्राचीन एवं अर्वाचीन

इकाई-III

दर्शन-साहित्य

(क) प्रमुख भारतीय दर्शनों का सामान्य परिचय :

प्रमाणमीमांसा, तत्त्वमीमांसा, आचारमीमांसा
(चार्वाक, जैन, बौद्ध, न्याय, सांख्य, योग, न्याय, वैशेषिक, मीमांसा के संदर्भ में)

इकाई-IV

(ख) दर्शन-साहित्य का विशिष्ट अध्ययन :

- ईश्वरकृष्ण; सांख्यकारिका - सत्कार्यवाद, पुरुषस्वरूप, प्रकृतिस्वरूप, सृष्टिक्रम, प्रत्ययसर्ग, कैवल्य।
- सदानन्द; वेदान्तसार : अनुबन्ध-चतुष्ट्य, अज्ञान, अध्यारोप-अपवाद, लिंगशरीरोत्पात्ति, पंचीकरण, विवर्त, महावाक्य, जीवन्मुक्ति।
- अन्नंभट्ट; तर्कसंग्रह/ केशव मिश्र; तर्कभाषा : पदार्थ, कारण, प्रमाण (प्रत्यक्ष, अनुमान, उपमान, शब्द), प्रामाण्यवाद, प्रमेय।

1. लौगाक्षिभास्कर; अर्थसंग्रह
2. पतंजलि; योगसूत्र, - (व्यासभाष्य) : चित्तभूमि, चित्तवृत्तियाँ, ईश्वर का स्वरूप, योगाङ्ग, समाधि, कैवल्य।
3. बादरायण; ब्रह्मसूत्र 1.1 (शांकरभाष्य)
4. विश्वनाथपंचानन; न्यायसिद्धान्तमुक्तावली (अनुमानखण्ड)
5. सर्वदर्शनसंग्रह; जैनमत, बौद्धमत

इकाई-V

व्याकरण एवं भाषाविज्ञान

(क) **सामान्य-परिचय : निम्नलिखित आचार्यों का परिचय -**

- पाणिनि, कात्यायन, पतंजलि, भर्तृहरि, वामनजयादित्य, भट्टोजिदीक्षित, नागेशभट्ट, जैनेन्द्र, कैय्यट, शाकटायन, हेमचन्द्रसूरि, सारस्वतव्याकरणकार।
- पाणिनीय शिक्षा
- भाषाविज्ञान :

  भाषा की परिभाषा, भाषा का वर्गीकरण (आकृतिमूलक एवं पारिवारिक), ध्वनियों का वर्गीकरण : स्पर्श, संघर्षी, अर्धस्वर, स्वर (संस्कृत ध्वनियों के विशेष संदर्भ में), मानवीय ध्वनियंत्र, ध्वनि परिवर्तन के कारण, ध्वनि नियम (ग्रिम, ग्रासमान, वर्नर)

अर्थ परिवर्तन की दिशाएँ एवं कारण, वाक्य का लक्षण व भेद, भारोपीय परिवार का सामान्य परिचय, वैदिक संस्कृत एवं लौकिक संस्कृत में अन्तर, भाषा तथा वाक् में अन्तर, भाषा तथा बोली में अन्तर।

इकाई-VI

(ख) व्याकरण का विशिष्ट अध्ययन :

- **परिभाषाएँ** – संहिता, संयोग, गुण, वृद्धि, प्रातिपदिक, नदी, घि, उपधा, अपृक्त, गति, पद, विभाषा, सवर्ण, टि, प्रगृह्य, सर्वनामस्थान, भ, सर्वनाम, निष्ठा।
- **सन्धि** - अच् सन्धि, हल् सन्धि, विसर्ग सन्धि (लघुसिद्धान्तकौमुदी के अनुसार)
- **सुबन्त** - अजन्त – राम, सर्व (तीनों लिंगों में), विश्वपा, हरि, त्रि (तीनों लिंगों में), सखि, सुधी, गुरु, पितृ, गौ, रमा, मति, नदी, धेनु, मातृ, ज्ञान, वारि, मधु।

  हलन्त – लिह्, विश्ववाह्, चतुर् (तीनों लिंगों में), इदम्(तीनों लिंगों में), किम्(तीनों लिंगों में), तत्(तीनों लिंगों में), राजन्, मघवन्, पथिन्, विद्वस्, अस्मद्, युष्मद्।
- **समास** – अव्ययीभाव, तत्पुरुष, बहुव्रीहि, द्वन्द्व, (लघुसिद्धान्तकौमुदी के अनुसार)
- **तद्धित** - अपत्यार्थक एवं मत्वर्थीय (सिद्धान्तकौमुदी के अनुसार)
- **तिङन्त** – भू, एध्, अद्, अस्, हु, दिव्, षुञ्, तुद्, तन्, कृ, रुध्, क्रीञ्, चुर् ।
- **प्रत्ययान्त** - णिजन्त; सन्नन्त; यङन्त; यङ्लुगन्त; नामधातु।
- **कृदन्त** – तव्य / तव्यत्; अनीयर्; यत्; ण्यत्; क्यप्; शतृ; शानच्; क्त्वा; क्त; क्तवतु; तुमुन्; णमुल्।
- **स्त्रीप्रत्यय** - लघुसिद्धान्त कौमुदी के अनुसार
- **कारक प्रकरण** - सिद्धान्तकौमुदी के अनुसार
- **परस्मैपद एवं आत्मनेपद विधान** - सिद्धान्तकौमुदी के अनुसार
- **महाभाष्य (पस्पशाह्निक)** – शब्दपरिभाषा, शब्द एवं अर्थ संबंध, व्याकरण अध्ययन के उद्देश्य, व्याकरण की परिभाषा, साधु शब्द के प्रयोग का परिणाम, व्याकरण पद्धति।
- **वाक्यपदीयम् (ब्रह्मकाण्ड)** – स्फोट का स्वरूप, शब्द-ब्रह्म का स्वरूप, शब्द-ब्रह्म की शक्तियाँ, स्फोट एवं ध्वनि का संबंध, शब्द-अर्थ संबंध, ध्वनि के प्रकार, भाषा के स्तर।

इकाई-VII

संस्कृत-साहित्य, काव्यशास्त्र एवं छन्दपरिचय :

(क) निम्नलिखित का सामान्य परिचय :

• भास, अश्वघोष, कालिदास, शूद्रक, विशाखदत्त, भारवि, माघ, हर्ष, बाणभट्ट, दण्डी, भवभूति, भट्टनारायण, बिल्हण, श्रीहर्ष, अम्बिकादत्तव्यास, पंडिता क्षमाराव, वी. राघवन्, श्रीधरभास्कर वर्णेकर ।

• काव्यशास्त्र : रससम्प्रदाय, अलंकारसम्प्रदाय, रीतिसम्प्रदाय, ध्वनिसम्प्रदाय, व्रकोक्तिसम्प्रदाय, औचित्यसम्प्रदाय ।

• पाश्चात्य काव्यशास्त्र : अरस्तू, लॉन्जाइनस, क्रोचे ।

इकाई-VIII

(ख) निम्नलिखित का विशिष्ट अध्ययन :

- **पद्य** : बुद्धचरितम् (प्रथम) रघुवंशम् (प्रथमसर्ग), किरातार्जुनीयम् (प्रथमसर्ग), शिशुपालवधम्, (प्रथमसर्ग), नैषधीयचरितम् (प्रथमसर्ग)
- **नाट्य** : स्वप्नवासवदत्तम्, अभिज्ञानशाकुन्तलम्, वेणीसंहारम्, मुद्राराक्षसम्, उत्तररामचरितम्, रत्नावली, मृच्छकटिकम्।
- **गद्य** : दशकुमारचरितम् (अष्टम-उच्छवास), हर्षचरितम् (पञ्चम-उच्छवास), कादम्बरी (शुकनासोपदेश)
- **चम्पूकाव्य** : नलचम्पू: (प्रथम-उच्छवास)
- **साहित्यदर्पण**:

  काव्यपरिभाषा, काव्य की अन्य परिभाषाओं का खण्डन, शब्दशक्ति – (संकेतग्रह, अभिधा, लक्षणा, व्यंजना), काव्यभेद (चतुर्थ परिच्छेद) श्रव्यकाव्य (गद्य, पद्य, मिश्र काव्य-लक्षण)
- **काव्यप्रकाश**:

  काव्यलक्षण, काव्यप्रयोजन, काव्यहेतु, काव्यभेद, शब्दशक्ति, अभिहितान्वयवाद, अन्विताभिधानवाद, रसस्वरूप एवं रससूत्र विमर्श, रसदोष, काव्यगुण, व्यंजनावृत्ति की स्थापना (पञ्चम उल्लास)

  अंलकार:-

  वक्रोक्ति, अनुप्रास, यमक, श्लेष, उपमा, रूपक, उत्प्रेक्षा, समासोक्ति, अपह्नुति, निदर्शना, अर्थान्तरन्यास, दृष्टान्त, विभावना, विशेषोक्ति, स्वभावोक्ति, विरोधाभास, सकंर, संसृष्टि।
- **ध्वन्यालोक: (प्रथम उद्योत)**
- **वक्रोक्तिजीवितम् (प्रथम उन्मेष)**
- **भरत-नाट्यशास्त्रम् (द्वितीय एवं षष्ठ अध्याय)**
- **दशरूपकम् (प्रथम तथा तृतीय प्रकाश)**
- **छन्द परिचय –**

आर्या, अनुष्टुप्, इन्द्रवज्रा, उपेन्द्रवज्रा, वसन्ततिलका, उपजाति, वंशस्थ, द्रुतविलम्बित, शालिनी, मालिनी, शिखरिणी, मन्दाक्रान्ता, हरिणी, शार्दूलविक्रीडित, स्रग्धरा।

इकाई-IX

पुराणेतिहास, धर्मशास्त्र एवं अभिलेखशास्त्र

(क) निम्नलिखित का सामान्य परिचयः

- **रामायण** – विषयवस्तु, काल, रामायणकालीन समाज, परवर्ती ग्रन्थों के लिए प्रेरणास्रोत, साहित्यिक महत्त्व, रामायण में आख्यान
- **महाभारत** – विषयवस्तु, काल महाभारतकालीन समाज, परवर्ती ग्रन्थों के लिए प्रेरणास्रोत, साहित्यिक महत्त्व, महाभारत में आख्यान।
- **पुराण** – पुराण की परिभाषा, महापुराण – उपपुराण, पौराणिक सृष्टि-विज्ञान, पौराणिक आख्यान।
- **प्रमुख स्मृतियों का सामान्य परिचय।**
- **अर्थशास्त्र का सामान्य परिचय।**
- **लिपि :** ब्राह्मी लिपि का इतिहास एवं उत्पत्ति के सिद्धान्त।
- **अभिलेख का सामान्य परिचय**

इकाई-X

(ख) निम्नलिखित ग्रन्थों का विशिष्ट अध्ययन

- कौटिलीय-अर्थशास्त्रम् (प्रथम-विनयाधिकारिक)
- मनुस्मृतिः - (प्रथम, द्वितीय तथा सप्तम अध्याय)
- याज्ञवल्क्यस्मृतिः - (व्यवहाराध्याय)
- लिपि तथा अभिलेख -
  - गुप्तकालीन तथा अशोककालीन ब्राह्मी लिपि।
  - अशोक के अभिलेख - प्रमुख शिलालेख, प्रमुख स्तम्भलेख
  - मौर्योत्तरकालीन अभिलेख – कनिष्क के शासन वर्ष 3 का सारनाथ बौद्ध प्रतिमा लेख, रुद्रदामन् का गिरनार शिलालेख, खारवेल का हाथीगुम्फा अभिलेख
  - गुप्तकालीन एवं गुप्तोत्तरकालीन अभिलेख – समुद्रगुप्त का इलाहाबाद स्तम्भलेख, यशोधर्मन् का मन्दसौर

शिलालेख, हर्ष का बांसखेड़ा ताम्रपट्ट
अभिलेख, पुलकेशिन् द्वितीय का ऐहोल
शिलालेख

URDU

Subject: URDU

SYLLABUS

UNIT - 1

تاریخ زبان اردو

۱۔ ہند آریائی کی مختصر تاریخ

۲۔ پراکرت، اپ بھرنش

۳۔ کھڑی بولی کے اوصاف

۴۔ اردو کی ابتدا کے بارے میں مختلف نظریات

(محمد حسین آزاد، محمود شیرانی، نصیر الدین ہاشمی، مسعود حسین خاں، سید سلیمان ندوی، شوکت سبزواری)

۵۔ اردو کا ابتدائی زمانہ

۶۔ اردو ساخت کے بنیادی عناصر

۷۔ دکنی اردو کی لسانی خصوصیات

(سب رس، قطب مشتری، قلی قطب شاہ، ولی، سراج اورنگ آبادی)

۸۔ اردو اور اس کی اہم بولیاں (Dialects)

۹۔ اردو کی لسانی انفرادیت

۱۰۔ اردو صوتیات / فونیمیات

۱۱۔ اردو مارفیمیات

۱۲۔ اردو نحویات

۱۳۔ اردو معنیات

UNIT - 2

اردو کی شعری اصناف

۱۔ قصیدہ:

قصیدہ کا فن اور ارتقا

اردو کے اہم قصیدہ گو اور ان کے قصائد

مرزا محمد رفیع سوداؔ : ہوا جب کفر ثابت ہے وہ تمغائے مسلمانی، تضحیک روزگار

شیخ محمد ابراہیم ذوقؔ: زہے نشاط اگر کیجیے اسے تحریر، ہیں مری آنکھ میں اشکوں کے تماشا گوہر

۲۔ مثنوی:

مثنوی کا فن اور ارتقا

اردو کے اہم مثنوی نگار اور ان کی مثنویاں

نظامی بیدری: کدم راؤ پدم راؤ

ملا وجہی : قطب مشتری

ابن نشاطی: پھول بن

افضل جھنجھانوی: بکٹ کہانی

میر حسن: سحر البیان

دیا شنکر نسیم: گلزار نسیم

۳۔ مرثیہ:

مرثیے کا فن اور اس کا ارتقا

اردو کے اہم مرثیہ نگار اور ان کے مرثیے

مرزا ببر علی انیس : نمک خوان تکلم ہے فصاحت میری

مرزا سلامت علی دبیر: ضیغم ڈکارتا ہوا نکلا کچھار سے

مرزا غالب : مرثیۂ عارف

جمیل مظہری : جنبش سے میرے خامۂ افسوں طراز کی

UNIT - 3

اردو غزل

۱۔ غزل کا فن اور ارتقا

۲۔ اردو کے اہم غزل گو شعرا اور ان کی شاعری

ولی: ''کلیات ولی'' (ردیف الف، ب اوری/ یے کی ابتدائی پانچ پانچ غزلیں)

میر: ''انتخاب میر'' از مولوی عبدالحق (ابتدائی بیس غزلیں)

غالب: ''دیوان غالب''، مطبوعہ غالب انسٹی ٹیوٹ (ردیف الف، ر، ن اوری/ یے کی ابتدائی پانچ پانچ غزلیں)

مومن: ''دیوان مومن'' (ردیف الف، اور یے کی ابتدائی پانچ پانچ غزلیں)

شاد عظیم آبادی: ''کلیات شاد''، بہار اردو اکادمی، پٹنہ (ردیف الف، ب اوری/ یے کی ابتدائی پانچ پانچ غزلیں)

حسرت موہانی: ''کلیات حسرت'' (ردیف الف، م اوری/ یے کی ابتدائی پانچ پانچ غزلیں)

فانی بدایونی: ''کلام فانی''، ناشر، مشورہ بک ڈپو، گاندھی نگر، دہلی (ابتدائی دس غزلیں)

جگر مرادآبادی: ''آتش گل'' کی ابتدائی دس غزلیں

اصغر گونڈوی: ''نشاط روح'' کی ابتدائی دس غزلیں

یگانہ چنگیزی: ''آیات وجدانی'' کی ابتدائی دس غزلیں

فراق گورکھپوری: ''گل نغمہ'' کی ابتدائی دس غزلیں

مجروح سلطان پوری: ''غزل'' کی ابتدائی پانچ غزلیں

کلیم عاجز: ''وہ جو شاعری کا سبب ہوا'' کی ابتدائی پانچ غزلیں

شہریار: ''اسم اعظم'' کی ابتدائی پانچ غزلیں

عرفان صدیقی: ''عشق نامہ'' کی ابتدائی پانچ غزلیں

UNIT - 4

اردو نظم

۱۔ نظم کی صنفی شناخت

۲۔ اردو میں نظم نگاری کا آغاز وارتقا

۳۔ اردو کے اہم نظم نگار اور ان کی نظمیں:

نظیر اکبر آبادی: مفلسی، آدمی نامہ، بنجارہ نامہ

محمد حسین آزاد: شب قدر، صبح امید

الطاف حسین حالی: نشاط امید، برکھارت، مناجات بیوہ

اسمٰعیل میرٹھی: خدا کی صنعت، آثار سلف

اکبر الہ آبادی: فرضی لطیفہ، برق کلیسا، دربار دہلی

برج نرائن چکبست: رامائن کا آخری سین، خاک ہند، حب وطن

علامہ اقبال: لالہ صحرائی، شعاع امید، ساقی نامہ، ذوق وشوق، لینن خدا کے حضور میں

جوش ملیح آبادی: کسان، جنگل کی شہزادی، شکست زنداں کا خواب

میراجی: کلرک کا نغمہ محبت، جاتری، سمندر کا بلاوا

فیض احمد فیض: تنہائی، صبح آزادی، مجھ سے پہلی سی محبت۔۔۔۔۔۔

اختر الایمان: ایک لڑکا، پگ ڈنڈی، باز آمد

مخدوم محی الدین: چاند تاروں کا بن، حویلی، انقلاب

ن م راشد: حسن کوزہ گر (مکمل)

ساحر لدھیانوی: چکلے، تاج محل، گریز

شفیق فاطمہ شعریٰ: بازیابی، بازگشت

UNIT - 5

اردو داستان اور ڈراما

۱۔ داستان کا فن اور روایت

۲۔ اردو کے اہم داستان گو اور داستانیں:

ملا وجہی :	سب رس
فضل علی خاں فضلی:	کربل کتھا
انشا اللہ خاں انشا:	رانی کیتکی کی کہانی
میر امن :	باغ و بہار
رجب علی بیگ سرور:	فسانہ عجائب
میر محمد تقی خیال:	بوستان خیال

۳۔ ڈرامے کا فن اور اس کا آغاز و ارتقا

۴۔ اردو کے اہم ڈراما نگار اور ان کے ڈرامے

امانت لکھنوی:	اندر سبھا
آغا حشر کاشمیری:	یہودی کی لڑکی
امتیاز علی تاج:	انار کلی
حبیب تنویر:	آگرہ بازار
محمد حسن:	ضحاک

UNIT - 6

ناول اور افسانہ

۱۔ ناول کا فن اور اس کا آغاز وارتقا

۲۔ اردو کے اہم ناول نگار اور ان کے ناول:

پنڈت رتن ناتھ سرشار:	فسانہ آزاد
ڈپٹی نذیر احمد:	توبتہ النصوح
عبدالحلیم شرر:	فردوس بریں
مرزا ہادی رسوا:	امراؤ جان ادا
پریم چند:	گئودان
عصمت چغتائی:	ٹیڑھی لکیر
راجندر سنگھ بیدی:	ایک چادر میلی سی
قرۃ العین حیدر:	آگ کا دریا
شوکت صدیقی:	خدا کی بستی
عبداللہ حسین:	اداس نسلیں
انتظار حسین:	بستی
الیاس احمد گدی:	فائر ایریا

۳۔ افسانے کا فن اور اس کا آغاز وارتقا

۴۔ اردو کے اہم افسانہ نگار اور ان کے افسانے

پریم چند:	واردات (افسانوی مجموعہ)
سعادت حسن منٹو:	ٹھنڈا گوشت (افسانوی مجموعہ)
کرشن چندر:	ہم وحشی ہیں (افسانوی مجموعہ)
راجندر سنگھ بیدی:	اپنے دکھ مجھے دے دو (افسانوی مجموعہ)

عصمت چغتائی:	چوٹیں (افسانوی مجموعہ)
خواجہ احمد عباس:	ایک لڑکی (افسانوی مجموعہ)
قرۃ العین حیدر:	روشنی کی رفتار (افسانوی مجموعہ)
سہیل عظیم آبادی:	الاؤ (افسانوی مجموعہ)
جیلانی بانو:	راستہ بند ہے (افسانوی مجموعہ)
سریندر پرکاش:	بجوکا (افسانوی مجموعہ)
غیاث احمد گدی:	بابا لوگ (افسانوی مجموعہ)
اقبال مجید:	تماشا گھر (افسانوی مجموعہ)

UNIT - 7

تنقید و تحقیق

۱۔ تنقید کی تعریف اور اس کی اہمیت

۲۔ تذکروں کی تنقیدی اہمیت

۳۔ مشرقی تصور تنقید:

عربی شعریات: سلام العجمی، ابن قتیبہ، قدامہ ابن جعفر، ابن رشیق، ابن خلدون، عبدالقاہر جرجانی

فارسی شعریات: امیر کیکاؤس ابن اسکندر ابن قابوس، رشید الدین وطواط، شمس قیس رازی، عروضی سمرقندی

سنسکرت شعریات: بھرت منی، ابھینو گپت، آنندوردھن، اچاریہ شنکک

۴۔ مغربی تصور نقد:

افلاطون، ارسطو، لان جائنس، آئی اے رچرڈس، میتھیو آرنلڈ، ٹی ایس ایلیٹ

۵۔ دبستان تنقید:

تاثراتی، مارکسی، جمالیاتی، نفسیاتی، سائنٹفک، متنی، ہیئتی، اسلوبیاتی

۶۔ اردو کے اہم ناقدین:

محمد حسین آزاد، حالی، امداد امام اثر، شبلی، احتشام حسین، کلیم الدین احمد، آل احمد سرور، محمد حسن، شمس الرحمن فاروقی، گوپی چند نارنگ، شکیل الرحمن، وزیر آغا، مجنوں گورکھپوری، شبیہ الحسن

۷۔ تحقیق کی اہمیت

۸۔ تحقیق اور تنقید کا باہمی رشتہ

۹۔ اصول تحقیق اور طریقہ کار

۱۰۔ اردو کے اہم محققین:

محی الدین قادری زور، قاضی عبدالودود، مولوی عبدالحق، امتیاز علی عرشی، رشید حسن خاں، گیان چند جین، جمیل جالبی

UNIT - 8

غیر افسانوی نثر

۱۔ سوانح اور خودنوشت سوانح نگاری کا فن اور اس کا آغاز وارتقا

۲۔ اردو کے اہم سوانح نگار اور ان کے سوانح:

الطاف حسین حالی: حیات جاوید

علامہ شبلی نعمانی: الفاروق

۳۔ اردو کے اہم خودنوشت سوانح نگار:

اختر الایمان: اس آباد خرابے میں

آل احمد سرور: خواب باقی ہیں

مسعود حسین خاں: ورود مسعود

۴۔ اردو میں مکتوب نگاری کا فن اور اس کا آغاز وارتقا

۵۔ اردو کے اہم مکتوب نگار:

مرزا غالب: اردوئے معلیٰ

مولانا ابوالکلام آزاد غبار خاطر

۶۔ اردو میں مضمون نگاری: آغاز وارتقا

۷۔ اردو کے اہم مضمون نگار: سرسید احمد خاں: مضامین سرسید

۸۔ اردو میں انشائیہ نگاری کا فن اور اس کا آغاز وارتقا

۹۔ اردو کے اہم انشائیہ نگار اور ان کے انشائیے:

سجاد حیدر یلدرم: مجھے میرے دوستوں سے بچاؤ

کنہیالال کپور: غالب جدید شعرا کی محفل میں، چینی شاعر

رشید احمد صدیقی: چارپائی، وکیل صاحب

پطرس بخاری: لاہور کا جغرافیہ، سائکل کی سواری

احمد جمال پاشا: کپور کا فن، شامت اعمال

مشتاق احمد یوسفی: جنونِ لطیفہ، گھر میں آنا مرغیوں کا

۱۰۔ اردو میں خاکہ نگاری کا فن اور اس کا آغاز وارتقا

۱۱۔ اردو کے اہم خاکہ نگار اور ان کے خاکے

مولوی عبدالحق: نام دیو مالی

رشید احمد صدیقی: کندن

فرحت اللہ بیگ: نذیر احمد کی کہانی: کچھ ان کی کچھ میری زبانی

۱۲۔ اردو میں سفرنامہ کا آغاز وارتقا

۱۳۔ اردو کے اہم سفرنامہ نگار اور ان کے سفرنامے:

سرسید احمد خاں: مسافران لندن

شبلی نعمانی: سفرنامہ روم ومصر وشام

ابن انشائ: ابن بطوطہ کے تعاقب میں

مجتبیٰ حسین: جاپان چلو جاپان چلو

UNIT - 9

اردو کے ادبی دبستان، ادارے اور تحریکات ورجحانات

۱۔ دبستان دہلی

۲۔ دبستان لکھنو

۳۔ فورٹ ولیم کالج

۴۔ دلی کالج

۵۔ دارالترجمہ عثمانیہ

۶۔ اردو میں اصلاح زبان کی روایت

۷۔ اردو میں ایہام گوئی

۸۔ اردو ادب میں رومانی تحریک

۹۔ علی گڑھ تحریک

۱۰۔ ترقی پسند ادبی تحریک

۱۱۔ حلقہ ارباب ذوق

۱۲۔ جدیدیت

۱۳۔ مابعد جدیدیت

UNIT - 10

اردو کی دیگر شعری اور نثری اصناف اور ہئیتیں

رباعی، قطعہ، شہرآشوب، ریختی، واسوخت، تضمین، مستزاد، مثلث، مربع،مخمس،
مسدس، مثمط، مثمن، گیت، چہاربیت، ہائکو، ترائلے، ثلاثی
تبصرہ، رپورتاژ، پیروڈی

ترجمہ اور ذرائع ابلاغ:

ترجمہ:فن اور روایت
ریڈیو فیچر، اداریہ نگاری، کالم نگاری، منظرنامہ (اسکرپٹ رائٹنگ)، کمنٹری

ZOOLOGY

LIFE SCIENCES

1. Molecules and their Interaction Relevant to Biology
2. Cellular Organization
3. Fundamental Processes
4. Cell Communication and Cell Signaling
5. Developmental Biology
6. System Physiology – Plant
7. System Physiology – Animal
8. Inheritance Biology
9. Diversity of Life Forms
10. Ecological Principles
11. Evolution and Behavior
12. Applied Biology
13. Methods in Biology

1. MOLECULES AND THEIR INTERACTION RELAVENT TO BIOLOGY

A. Structure of atoms, molecules and chemical bonds.
B Composition, structure and function of biomolecules (carbohydrates, lipids, proteins, nucleic acids and vitamins).
C. Stablizing interactions (Van der Waals, electrostatic, hydrogen bonding, hydrophobic interaction, etc.).
D Principles of biophysical chemistry (pH, buffer, reaction kinetics, thermodynamics, colligative properties).
E. Bioenergetics, glycolysis, oxidative phosphorylation, coupled reaction, group transfer, biological energy transducers.
F. Principles of catalysis, enzymes and enzyme kinetics, enzyme regulation, mechanism of enzyme catalysis, isozymes
G. Conformation of proteins (Ramachandran plot, secondary structure, domains, motif and folds).
H. Conformation of nucleic acids (helix (A, B, Z), t-RNA, micro-RNA).
I. Stability of proteins and nucleic acids.
J. Metabolism of carbohydrates, lipids, amino acids nucleotides and vitamins.

2. CELLULAR ORGANIZATION

A) **Membrane structure and function**
(Structure of model membrane, lipid bilayer and membrane protein diffusion, osmosis, ion channels, active transport, membrane pumps, mechanism of sorting and regulation of intracellular transport,electrical properties of membranes).

B) **Structural organization and function of intracellular organelles** (Cell wall, nucleus, mitochondria, Golgi bodies, lysosomes, endoplasmic reticulum, peroxisomes, plastids, vacuoles, chloroplast, structure & function of cytoskeleton and its role in motility).

C) **Organization of genes and chromosomes (**Operon, unique and repetitive DNA, interrupted genes, gene families, structure of chromatin and chromosomes, heterochromatin, euchromatin, transposons).

D) **Cell division and cell cycle** (Mitosis and meiosis, their regulation, steps in cell cycle, regulation and control of cell cycle).

E) **Microbial Physiology** (Growth yield and characteristics, strategies of cell division, stress response)

3. FUNDAMENTAL PROCESSES

A) **DNA replication, repair and recombination** (Unit of replication, enzymes involved, replication origin and replication fork, fidelity of replication, extrachromosomal replicons, DNA damage and repair mechanisms, homologous and site-specific recombination).

B) **RNA synthesis and processing** (transcription factors and machinery, formation of initiation complex, transcription activator and repressor, RNA polymerases, capping,

elongation, and termination, RNA processing, RNA editing, splicing, and polyadenylation, structure and function of different types of RNA, RNA transport).

C) **Protein synthesis and processing** (Ribosome, formation of initiation complex, initiation factors and their regulation, elongation and elongation factors, termination, genetic code, aminoacylation of tRNA, tRNA-identity, aminoacyl tRNA synthetase, and translational proof-reading, translational inhibitors, Post- translational modification of proteins).

D) **Control of gene expression at transcription and translation level** (regulating the expression of phages, viruses, prokaryotic and eukaryotic genes, role of chromatin in gene expression and gene silencing).

4. Cell communication and cell signaling

A) **Host parasite interaction** Recognition and entry processes of different pathogens like bacteria, viruses into animal and plant host cells, alteration of host cell behavior by pathogens, virus-induced cell transformation, pathogen-induced diseases in animals and plants, cell-cell fusion in both normal and abnormal cells.

B) **Cell signaling** Hormones and their receptors, cell surface receptor, signaling through G-protein coupled receptors, signal transduction pathways, second messengers, regulation of signaling pathways, bacterial and plant two-component systems, light signaling in plants, bacterial chemotaxis and quorum sensing.

C) **Cellular communication** Regulation of hematopoiesis, general principles of cell communication, cell adhesion and roles of different adhesion molecules, gap junctions, extracellular matrix, integrins, neurotransmission and its regulation.

D) **Cancer**
Genetic rearrangements in progenitor cells, oncogenes, tumor suppressor genes, cancer and the cell cycle, virus-induced cancer, metastasis, interaction of cancer cells with normal cells, apoptosis, therapeutic interventions of uncontrolled cell growth.

E) **Innate and adaptive immune system** Cells and molecules involved in innate and adaptive immunity, antigens, antigenicity and immunogenicity. B and T cell epitopes, structure and function of antibody molecules. generation of antibody diversity, monoclonal antibodies, antibody engineering, antigen-antibody interactions, MHC molecules, antigen processing and presentation, activation and differentiation of B and T cells, B and T cell receptors, humoral and cell-mediated immune responses, primary and secondary immune modulation, the complement system, Toll-like receptors, cell-mediated effector functions, inflammation, hypersensitivity and autoimmunity, immune response during bacterial (tuberculosis), parasitic (malaria) and viral (HIV) infections, congenital and acquired immunodeficiencies, vaccines.

5. DEVELOPMENTAL BIOLOGY

A) Basic concepts of development : Potency, commitment, specification, induction, competence, determination and differentiation; morphogenetic gradients; cell fate and cell lineages; stem cells; genomic equivalence and the cytoplasmic determinants; imprinting; mutants and transgenics in analysis of development

B) Gametogenesis, fertilization and early development: Production of gametes, cell surface molecules in sperm-egg recognition in animals; embryo sac development and double fertilization in plants; zygote formation, cleavage, blastula formation, embryonic fields, gastrulation and formation of germ layers in animals; embryogenesis, establishment of symmetry in plants; seed formation and germination.

C) Morphogenesis and organogenesis in animals : Cell aggregation and differentiation in *Dictyostelium*; axes and pattern formation in *Drosophila*, amphibia and chick; organogenesis – vulva formation in *Caenorhabditis elegans*, eye lens induction, limb development and regeneration in vertebrates; differentiation of neurons, post embryonic development- larval formation, metamorphosis; environmental regulation of normal development; sex determination.

D) Morphogenesis and organogenesis in plants: Organization of shoot and root apical meristem; shoot and root development; leaf development and phyllotaxy; transition to flowering, floral meristems and floral development in *Arabidopsis* and *Antirrhinum*

E) Programmed cell death, aging and senescence

6. SYSTEM PHYSIOLOGY - PLANT

A. Photosynthesis - Light harvesting complexes; mechanisms of electron transport; photoprotective mechanisms; CO_2 fixation-C_3, C_4 and CAM pathways.

B. Respiration and photorespiration – Citric acid cycle; plant mitochondrial electron transport and ATP synthesis; alternate oxidase; photorespiratory pathway.

C. Nitrogen metabolism - Nitrate and ammonium assimilation; amino acid biosynthesis.

D. Plant hormones – Biosynthesis, storage, breakdown and transport; physiological effects and mechanisms of action.

E. Sensory photobiology - Structure, function and mechanisms of action of phytochromes, cryptochromes and phototropins; stomatal movement; photoperiodism and biological clocks.

F. **Solute transport and photoassimilate translocation –** uptake, transport and translocation of water, ions, solutes and macromolecules from soil, through cells, across membranes, through xylem and phloem; transpiration; mechanisms of loading and unloading of photoassimilates.

G. **Secondary metabolites** - Biosynthesis of terpenes, phenols and nitrogenous compounds and their roles.

H. **Stress physiology** – Responses of plants to biotic (pathogen and insects) and abiotic (water, temperature and salt) stresses.

7. **SYSTEM PHYSIOLOGY - ANIMAL**

A. **Blood and circulation** - Blood corpuscles, haemopoiesis and formed elements, plasma function, blood volume, blood volume regulation, blood groups, haemoglobin, immunity, haemostasis.

B. **Cardiovascular System:** Comparative anatomy of heart structure, myogenic heart, specialized tissue, ECG – its principle and significance, cardiac cycle, heart as a pump, blood pressure, neural and chemical regulation of all above.

C. **Respiratory system** - Comparison of respiration in different species, anatomical considerations, transport of gases, exchange of gases, waste elimination, neural and chemical regulation of respiration.

D. **Nervous system** - Neurons, action potential, gross neuroanatomy of the brain and spinal cord, central and peripheral nervous system, neural control of muscle tone and posture.

E. **Sense organs** - Vision, hearing and tactile response.

F. **Excretory system** - Comparative physiology of excretion, kidney, urine formation, urine concentration, waste elimination, micturition, regulation of water balance, blood volume, blood pressure, electrolyte balance, acid-base balance.

G. **Thermoregulation** - Comfort zone, body temperature – physical, chemical, neural regulation, acclimatization.

H. **Stress and adaptation**

I. **Digestive system** - Digestion, absorption, energy balance, BMR.

J. **Endocrinology and reproduction** - Endocrine glands, basic mechanism of hormone action, hormones and diseases; reproductive processes, gametogenesis, ovulation, neuroendocrine regulation

8. INHERITANCE BIOLOGY

A) Mendelian principles : Dominance, segregation, independent assortment.

B) Concept of gene : Allele, multiple alleles, pseudoallele, complementation tests

C) Extensions of Mendelian principles : Codominance, incomplete dominance, gene interactions, pleiotropy, genomic imprinting, penetrance and expressivity, phenocopy, linkage and crossing over, sex linkage, sex limited and sex influenced characters.

D) Gene mapping methods : Linkage maps, tetrad analysis, mapping with molecular markers, mapping by using somatic cell hybrids, development of mapping population in plants.

E) Extra chromosomal inheritance : Inheritance of Mitochondrial and chloroplast genes, maternal inheritance.

F) Microbial genetics : Methods of genetic transfers – transformation, conjugation, transduction and sex-duction, mapping genes by interrupted mating, fine structure analysis of genes.

G) Human genetics : Pedigree analysis, lod score for linkage testing, karyotypes, genetic disorders.

H) Quantitative genetics : Polygenic inheritance, heritability and its measurements, QTL mapping.

I) Mutation : Types, causes and detection, mutant types – lethal, conditional, biochemical, loss of function, gain of function, germinal verses somatic mutants, insertional mutagenesis.

J) Structural and numerical alterations of chromosomes : Deletion, duplication, inversion, translocation, ploidy and their genetic implications.

K) Recombination : Homologous and non-homologous recombination including transposition.

9. DIVERSITY OF LIFE FORMS:

A. Principles & methods of taxonomy:

Concepts of species and hierarchical taxa, biological nomenclature, classical & quantititative methods of taxonomy of plants, animals and microorganisms.

B. Levels of structural organization:

Unicellular, colonial and multicellular forms. Levels of organization of tissues, organs & systems. Comparative anatomy, adaptive radiation, adaptive modifications.

C. **Outline classification of plants, animals & microorganisms:**
Important criteria used for classification in each taxon. Classification of plants, animals and microorganisms. Evolutionary relationships among taxa.

D. **Natural history of Indian subcontinent:**
Major habitat types of the subcontinent, geographic origins and migrations of species. Comman Indian mammals, birds. Seasonality and phenology of the subcontinent.

E. **Organisms of health & agricultural importance:**
Common parasites and pathogens of humans, domestic animals and crops.

F. **Organisms of conservation concern:**

Rare, endangered species. Conservation strategies.

10. ECOLOGICAL PRINCIPLES

The Environment: Physical environment; biotic environment; biotic and abiotic interactions.

Habitat and Niche: Concept of habitat and niche; niche width and overlap; fundamental and realized niche; resource partitioning; character displacement.

Population Ecology: Characteristics of a population; population growth curves; population regulation; life history strategies (*r* and *K* selection); concept of metapopulation – demes and dispersal, interdemic extinctions, age structured populations.

Species Interactions: Types of interactions, interspecific competition, herbivory, carnivory, pollination, symbiosis.

Community Ecology: Nature of communities; community structure and attributes; levels of species diversity and its measurement; edges and ecotones.

Ecological Succession: Types; mechanisms; changes involved in succession; concept of climax.

Ecosystem Ecology: Ecosystem structure; ecosystem function; energy flow and mineral cycling (C,N,P); primary production and decomposition; structure and function of some Indian ecosystems: terrestrial (forest, grassland) and aquatic (fresh water, marine, eustarine).

Biogeography: Major terrestrial biomes; theory of island biogeography; biogeographical zones of India.

Applied Ecology: Environmental pollution; global environmental change; biodiversity: status, monitoring and documentation; major drivers of biodiversity change; biodiversity management approaches.

Conservation Biology: Principles of conservation, major approaches to management, Indian case studies on conservation/management strategy (Project Tiger, Biosphere reserves).

11. EVOLUTION AND BEHAVIOUR

A. Emergence of evolutionary thoughts

Lamarck; Darwin–concepts of variation, adaptation, struggle, fitness and natural selection; Mendelism; Spontaneity of mutations; The evolutionary synthesis.

B. Origin of cells and unicellular evolution:

Origin of basic biological molecules; Abiotic synthesis of organic monomers and polymers; Concept of Oparin and Haldane; Experiement of Miller (1953); The first cell; Evolution of prokaryotes; Origin of eukaryotic cells; Evolution of unicellular eukaryotes; Anaerobic metabolism, photosynthesis and aerobic metabolism.

C. Paleontology and Evolutionary History:

The evolutionary time scale; Eras, periods and epoch; Major events in the evolutionary time scale; Origins of unicellular and multi cellular organisms; Major groups of plants and animals; Stages in primate evolution including Homo.

D. Molecular Evolution:

Concepts of neutral evolution, molecular divergence and molecular clocks; Molecular tools in phylogeny, classification and identification; Protein and nucleotide sequence analysis; origin of new genes and proteins; Gene duplication and divergence.

E. The Mechanisms:

Population genetics – Populations, Gene pool, Gene frequency; Hardy-Weinberg Law; concepts and rate of change in gene frequency through natural selection, migration and random genetic drift; Adaptive radiation; Isolating mechanisms; Speciation; Allopatricity and Sympatricity; Convergent evolution; Sexual selection; Co-evolution.

F. Brain, Behavior and Evolution:

Approaches and methods in study of behavior; Proximate and ultimate causation; Altruism and evolution-Group selection, Kin selection, Reciprocal altruism; Neural basis

of learning, memory, cognition, sleep and arousal; Biological clocks; Development of behavior; Social communication; Social dominance; Use of space and territoriality; Mating systems, Parental investment and Reproductive success; Parental care; Aggressive behavior; Habitat selection and optimality in foraging; Migration, orientation and navigation; Domestication and behavioral changes.

12. **APPLIED BIOLOGY:**

A. Microbial fermentation and production of small and macro molecules.

B. Application of immunological principles, vaccines, diagnostics. Tissue and cell culture methods for plants and animals.

C. Transgenic animals and plants, molecular approaches to diagnosis and strain identification.

D. Genomics and its application to health and agriculture, including gene therapy.

E. Bioresource and uses of biodiversity.

F. Breeding in plants and animals, including marker – assisted selection

G. Bioremediation and phytoremediation

H. Biosensors

13. METHODS IN BIOLOGY

A. Molecular Biology and Recombinant DNA methods:

Isolation and purification of RNA , DNA (genomic and plasmid) and proteins, different separation methods.
Analysis of RNA, DNA and proteins by one and two dimensional gel electrophoresis, Isoelectric focusing gels.
Molecular cloning of DNA or RNA fragments in bacterial and eukaryotic systems.
Expression of recombinant proteins using bacterial, animal and plant vectors.
Isolation of specific nucleic acid sequences
Generation of genomic and cDNA libraries in plasmid, phage, cosmid, BAC and YAC vectors.
In vitro mutagenesis and deletion techniques, gene knock out in bacterial and eukaryotic organisms.
Protein sequencing methods, detection of post translation modification of proteins.
DNA sequencing methods, strategies for genome sequencing.
Methods for analysis of gene expression at RNA and protein level, large scale expression, such as micro array based techniques
Isolation, separation and analysis of carbohydrate and lipid molecules
RFLP, RAPD and AFLP techniques

B. Histochemical and Immunotechniques

Antibody generation, Detection of molecules using ELISA, RIA, western blot, immunoprecipitation, fluocytometry and immunofluorescence microscopy, detection of molecules in living cells, in situ localization by techniques such as FISH and GISH.

C Biophysical Method:

Molecular analysis using UV/visible, fluorescence, circular dichroism, NMR and ESR spectroscopy Molecular structure determination using X-ray diffraction and NMR, Molecular analysis using light scattering, different types of mass spectrometry and surface plasma resonance methods.

D Statisitcal Methods:

Measures of central tendency and dispersal; probability distributions (Binomial, Poisson and normal); Sampling distribution; Difference between parametric and non-parametric statistics; Confidence Interval; Errors; Levels of significance; Regression and Correlation; t-test; Analysis of variance; X^2 test;; Basic introduction to Muetrovariate statistics, etc.

E. **Radiolabeling techniques:**

Detection and measurement of different types of radioisotopes normally used in biology, incorporation of radioisotopes in biological tissues and cells, molecular imaging of radioactive material, safety guidelines.

F. **Microscopic techniques:**

Visulization of cells and subcellular components by light microscopy, resolving powers of different microscopes, microscopy of living cells, scanning and transmission microscopes, different fixation and staining techniques for EM, freeze-etch and freeze-fracture methods for EM, image processing methods in microscopy.

G. **Electrophysiological methods:**

Single neuron recording, patch-clamp recording, ECG, Brain activity recording, lesion and stimulation of brain, pharmacological testing, PET, MRI, fMRI, CAT .

H. **Methods in field biology:**

Methods of estimating population density of animals and plants, ranging patterns through direct, indirect and remote observations, sampling methods in the study of behavior, habitat characterization: ground and remote sensing methods..