

ST. MARK'S SR. SEC. PUBLIC SCHOOL, JANAKPURI
CLASS XII
SYLLABUS (2024-25)

ENGLISH

PERIODIC ASSESSMENT

READER (Flamingo)- L1-The Last Lesson; L2- Lost Spring

Poems – P1-My Mother at Sixty-Six; P3-Keeping Quiet

SUPPLEMENTARY READER (Vistas) – L1-The Third Level; L2-The Tiger King

READING SECTION- Comprehension Passage,

WRITING SKILLS- Notice; Invitation

MID TERM EXAMINATION

READER (Flamingo) – L1-The Last Lesson; L2-Lost Spring; L3-Deep Water; L4-The Rattrap; L5-Indigo; L8-Going Places

Poems – P1-My Mother at Sixty-Six; P3-Keeping Quiet; P4-A Thing of Beauty; P6-Aunt Jennifer's Tigers

SUPPLEMENTARY READER (Vistas) – L1-The Third Level; L2-The Tiger King; L3-Journey to the end of the Earth; L4-The Enemy

READING SECTION- Comprehension Passage,

WRITING SKILLS- Notice; Invitation; Report; Letter to Editor

PRE-BOARD EXAMINATION

READER (Flamingo) – L6-Poets and Pancakes; L7-The Interview

Poems – P5-A Roadside Stand

SUPPLEMENTARY READER (Vistas) - L6-On the Face of It; L8-Memories of Childhood

READING SECTION- Comprehension Passage,

WRITING SKILLS- Article; Job Application

***Entire syllabus to be tested.**

INTERNAL ASSESSMENT- Assessment of Listening & Speaking Skills + ALS Project Work

BIOLOGY

PERIODIC ASSESSMENT

Unit-VI Reproduction

Chapter-1: Sexual Reproduction in Flowering Plants- Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; out breeding devices; pollen-pistil interaction; double fertilization; post fertilization events - development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation.

Chapter-2: Human Reproduction- Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis -spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development up to blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).

MID TERM EXAMINATION

Chapter-1

Chapter-2

Chapter-3: Reproductive Health -Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (elementary idea for general awareness).

Unit-VII Genetics and Evolution

Chapter-4: Principles of Inheritance and Variation- Heredity and variation: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination - in humans, birds and honey bee; linkage and crossing over; sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans - thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.

Chapter-5: Molecular Basis of Inheritance -Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation - lac operon; Genome, Human and rice genome projects; DNA fingerprinting.

Chapter-6: Evolution- Origin of life; biological evolution and evidences for biological evolution (palaeontology, comparative anatomy, embryology and molecular evidences); Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; adaptive radiation; human evolution.

Unit-VIII Biology and Human Welfare

Chapter-7: Human Health and Diseases -Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse.

Chapter-8: Microbes in Human Welfare- Microbes in food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use.

PRE-BOARD EXAMINATION

Unit-IX Biotechnology and its Applications

Chapter-9: Biotechnology - Principles and Processes- Genetic Engineering (Recombinant DNA Technology).

Chapter-10: Biotechnology and its Applications- Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organisms - Bt crops; transgenic animals; biosafety issues, biopiracy and patents.

Unit-X Ecology and Environment

Chapter-11: Organisms and Populations- Population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution. (Topics excluded: Organism and its Environment, Major Abiotic Factors, Responses to Abiotic Factors, Adaptations)

Chapter-12: Ecosystem- Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy (Topics excluded: Ecological Succession and Nutrient Cycles)

Chapter-13: Biodiversity and its Conservation -Biodiversity-Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.
(INCLUDES -MIDTERM & PERIODIC ASSESSMENT SYLLABUS)

POLITICAL SCIENCE

PERIODIC ASSESSMENT

1. The End of Bipolarity
2. Contemporary Centres of Power
3. Contemporary South Asia

MID-TERM EXAMINATION

PART A : CONTEMPORARY WORLD POLITICS

Chapter 1- The End of Bipolarity

- a) The Soviet System
- b) Gorbachev and the disintegration
- c) Causes and consequences of disintegration of Soviet Union
- d) Shock therapy and its consequences
- e) New entities in world politics- Russia, Balkan States, Central Asian States
- f) India's relations with Russia and other post-communist countries

Chapter 2- Contemporary Centers of Power

- a) European Union
- b) Association of Southeast Asian Nations
- c) Rise of China as an economic power
- d) Japan and South Korea as emerging powers

Chapter 3- Contemporary South Asia

- a) Military and democracy in Pakistan and Bangladesh
- b) Monarchy and democracy in Nepal
- c) Ethnic conflict and democracy in Sri Lanka
- d) India-Pakistan conflicts
- e) India and its neighbours
- f) Peace and cooperation

Chapter 4- International Organizations

- a) Meaning and importance of international organizations
- b) Evolution of the UN
- c) Structure and function of international organizations
- d) Principal organs of the UN
- e) Reform of the UN after the Cold War
- f) Reform of structures, processes and jurisdiction of the UN
- g) India and the UN Reforms
- h) Key Agencies: IMF, World Bank, WTO, ILO, IAEA.

- i) NGO: Amnesty International, Human Rights Watch
- j) Implications and future of international organizations

Chapter 5- Security in the Contemporary World

- a) Meaning and types of security
- b) Traditional notions of security
- c) Non-traditional notions of security
- d) New sources of threats
- e) Cooperative security
- f) India's security strategy

Chapter 6- Environment and Natural Resources

- a) Environmental concerns
- b) Global Commons
- c) Common but differentiated responsibilities
- d) India's stand on environmental issues
- e) Environmental movements
- f) Resource geopolitics
- g) Rights of indigenous peoples

Chapter 7- Globalization

- a) Concept of globalization
- b) Causes and consequences of globalization
- c) India and globalization
- d) Resistance to globalization
- e) India and resistance to globalization

PART B : POLITICS IN INDIA SINCE INDEPENDENCE

Chapter 1- Challenges of Nation Building

- a) Challenges for the new nation: three challenges
- b) Partition: displacement and rehabilitation; consequences of Partition
- c) Integration of Princely States: the problem; government's approach; Hyderabad, Manipur
- d) Reorganization of states

Chapter 2- Era of One-Party Dominance

- a) Challenge of building democracy
- b) Congress dominance in the first three general elections: nature of Congress dominance; Congress as social and ideological coalition; tolerance and management of factions
- c) Emergence of opposition parties

Chapter 3- Politics of Planned Development

- a) Political contestation: ideas of development; planning; Planning Commission
- b) The early initiatives: the First Five Year Plan; rapid industrialization.

Class discussions on additional reference material provided in the curriculum 2024-25 + Project Work.

PRE-BOARD EXAMINATION

Chapter 4- India's External Relations

- a) International context
- b) The policy of non-alignment: Nehru's role; distance from two camps; Afro-Asian unity
- c) Peace and conflict with China: the Chinese invasion 1962; war and peace with Pakistan; Bangladesh War 1971
- d) India's nuclear policy

Chapter 5- Challenges to and Restoration of the Congress System

- a) Challenge of political succession: from Nehru to Shastri; From Shastri to Indira Gandhi
- b) Fourth general election 1967: context of the election; non Congressism; electoral verdict; coalitions and defections
- c) Split in the Congress: Indira vs the Syndicate; Presidential Election 1969
- d) The 1971 election and restoration of the Congress: the outcome and after; restoration?

Chapter 6- The Crisis of Democratic Order

- a) Background to Emergency: economic context; Gujarat and Bihar movements; conflict with Judiciary
- b) Declaration of Emergency: crisis and response; consequences
- c) Lessons of the Emergency
- d) Politics after Emergency: Lok Sabha Elections 1977; the Janata government; legacy

Chapter 7- Regional Aspirations

- a) Region and the nation: Indian approach; areas of tension; Jammu and Kashmir; roots of the problem; external and internal disputes; politics since 1948; insurgency and after; 2002 and beyond
- b) Punjab: political context; cycle of violence; road to peace
- c) The North-East: demand for autonomy; secessionist movements; movements against outsiders; accommodation and national integration

Chapter 8- Recent Developments in Indian Politics

- a) Context of 1990s
- b) Era of coalition; alliance politics
- c) Political rise of the backward classes: Mandal implemented; political fallouts
- d) Communalism, secularism and democracy: Ayodhya dispute; demolition and after
- e) Emergence of new consensus
- f) Lok Sabha Elections 2004
- g) Growing consensus

Class discussions on additional reference material provided in the curriculum 2024-25 + the entire syllabus of Mid-Term examination and assessment of Project Work.

PSYCHOLOGY

PERIODIC ASSESSMENT

Unit-1, Variations in Psychological Attributes

Unit-2, Self and Personality

MID-TERM EXAMINATION

Unit-1, Variations in Psychological Attributes

Unit-2, Self and Personality

Unit-3, Meeting Life Challenges

Unit-4, Psychological Disorders (till 'Schizophrenia spectrum and other psychotic disorders')

[Practical: Case Profile + Practical file]

PRE-BOARD EXAMINATION

Unit- 1 to 7 (Entire syllabus)

[Practical: Case Profile + Practical file]

ACCOUNTANCY

PERIODIC ASSESSMENT

Part A: Accounting for Partnership and Companies:

Chapter 1: Accounting for Partnership: Fundamentals, Chapter 2: Goodwill: Nature and Valuation

MID TERM EXAMINATION

Part A: Accounting for Partnership and Companies

Chapter 1: Accounting for Partnership: Fundamentals, Chapter 2: Goodwill: Nature and Valuation, Chapter 3:

Change in Profit-Sharing Ratio among the Existing Partners, Chapter 4: Admission of a Partner, Chapter 5:

Retirement of a Partner, Chapter 6: Death of a Partner

Part B: Financial Statement and Analysis

Chapter 1: Financial Statements of Company, Chapter 2: Financial Statements Analysis, Chapter 3:

Comparative & Common Size Statements, Chapter 4: Ratio Analysis

PART C: PROJECT WORK

PRE-BOARD EXAMINATION

Part A: Accounting for Partnership and Companies

Chapter 1: Accounting for Partnership: Fundamentals, Chapter 2: Goodwill: Nature and Valuation, Chapter 3:

Change in Profit-Sharing Ratio among the Existing Partners, Chapter 4: Admission of a Partner, Chapter 5:

Retirement of a Partner, Chapter 6: Death of a Partner, Chapter 7: Dissolution of Partnership, Chapter 8:

Company Accounts - Accounting for Share Capital, Chapter 9: Company Accounts - Accounting for

Debentures

Part B: Financial Statement and Analysis

Chapter 5: Cash Flow Statement and the entire syllabus of Mid-Term in Part B (Chapter 1 to Chapter 4)

PART C: PROJECT WORK

BUSINESS STUDIES

PERIODIC ASSESSMENT

Part A Principles and Functions of Management

Chapter 1- Nature and Significance of Management, Chapter 2- Principles of Management

Part B Business Finance and Marketing

Chapter 11- Marketing

MID TERM EXAMINATION

Part A Principles and Functions of Management

Chapter 1- Nature and Significance of Management, Chapter 2- Principles of Management, Chapter 3- Business Environment, Chapter 4- Planning, Chapter 5- Organising, Chapter 6- Staffing, Chapter 7- Directing, Chapter 8- Controlling

Part B Business Finance and Marketing

Chapter 11- Marketing Management

Part C Project Work

PRE-BOARD EXAMINATION

Part A Principles and Functions of Management

Chapter 1- Nature and Significance of Management, Chapter 2- Principles of Management, Chapter 3- Business Environment, Chapter 4- Planning, Chapter 5- Organising, Chapter 6- Staffing, Chapter 7- Directing, Chapter 8- Controlling

Part B Business Finance and Marketing

Chapter 9- Financial Management, Chapter 10- Financial Markets, Chapter 11- Marketing Management, Chapter 12- Consumer Protection

Part C Project Work

PHYSICS

PERIODIC ASSESSMENT

UNIT 1 :Electrostatics

Chapter–1: Electric Charges and Fields

Electric charges, Conservation of charge, Coulomb's law-force between two- point charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside).

Chapter–2: Electrostatic Potential and Capacitance

Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two-point charges and of electric dipole in an electrostatic field. Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarization, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor (no derivation, formulae only).

MID TERM EXAMINATION

ALL THE CHAPTERS COVERED IN PERIODIC ASSESSMENT and

Unit II: Current Electricity

Chapter–3: Current Electricity

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity, temperature dependence of resistance, Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel, Kirchhoff's rules, Wheatstone bridge.

Unit III: Magnetic Effects of Current and Magnetism

Chapter–4: Moving Charges and Magnetism

Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire. Straight solenoid (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields. Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors-definition of ampere, torque experienced by a current loop in uniform magnetic field; Current loop as a magnetic dipole and its magnetic dipole moment, moving coil galvanometer- its current sensitivity and conversion to ammeter and voltmeter.

Chapter–5: Magnetism and Matter

Bar magnet, bar magnet as an equivalent solenoid (qualitative treatment only), magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis (qualitative treatment only), torque on a magnetic dipole (bar magnet) in a uniform magnetic field (qualitative treatment only), magnetic field lines. Magnetic properties of materials- Para-, dia- and ferro - magnetic substances with examples, Magnetization of materials, effect of temperature on magnetic properties.

Unit IV: Electromagnetic Induction and Alternating Currents

Chapter–6: Electromagnetic Induction

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction.

Chapter–7: Alternating Current

Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LCR series circuit (phasors only), resonance, power in AC circuits, power factor, wattless current. AC generator, Transformer.

Unit V: Electromagnetic waves

Electromagnetic Waves

Basic idea of displacement current, Electromagnetic waves, their characteristics, their transverse nature (qualitative idea only). Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

Unit IX: Electronic Devices

Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits

Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Intrinsic and extrinsic semiconductors- p and n type, p-n junction. Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode - diode as a rectifier

PRE-BOARD EXAMINATION

Unit VI: Optics

Chapter–9: Ray Optics and Optical Instruments

Ray Optics: Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism. Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Chapter–10: Wave Optics

Wave optics: Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width (No derivation final expression only), coherent sources and sustained interference of light, diffraction due to a single slit, width of central maxima (qualitative treatment only).

Unit VII: Dual Nature of Radiation and Matter

Chapter–11: Dual Nature of Radiation and Matter

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Experimental study of photoelectric effect Matter waves-wave nature of particles, de-Broglie relation.

Unit VIII: Atoms and Nuclei

Chapter–12: Atoms

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model of hydrogen atom, Expression for radius of nth possible orbit, velocity and energy of electron in nth orbit, hydrogen line spectra (qualitative treatment only).

Chapter–13: Nuclei

Composition and size of nucleus, nuclear force Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

AND ALL THE CHAPTERS COVERED IN MIDTERM EXAMINATION

ECONOMICS

PERIODIC ASSESSMENT

MACRO ECONOMICS PART-A

Unit 2: Money and Banking

Money – meaning and functions, supply of money - Currency held by the public and net demand deposits held by commercial banks. Money creation by the commercial banking system. Central bank and its functions (example of the Reserve Bank of India): Bank of issue, Govt. Bank, Banker's Bank, Control of Credit through Bank Rate, Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

INDIAN ECONOMIC DEVELOPMENT PART-B

Unit 6: Development Experience (1947)

- 1) A brief introduction of the state of Indian economy on the eve of independence.
- 2) Indian Economy (1950-1990)

MID TERM EXAMINATION

Part A: Introductory Macroeconomics

Unit 1: National Income and Related Aggregates

What is Macroeconomics? Basic concepts in macroeconomics: consumption goods, capital goods, final goods, intermediate goods; stocks and flows; gross investment and depreciation. Circular flow of income (two sector model); Methods of calculating National Income - Value Added or Product method, Expenditure method, Income method. Aggregates related to National Income: Gross National Product (GNP), Net National Product (NNP), Gross Domestic Product (GDP) and Net Domestic Product (NDP) - at market price, at factor cost; Real and Nominal GDP GDP Deflator, GDP and Welfare

Unit 2: Money and Banking

Money – meaning and functions, supply of money - Currency held by the public and net demand deposits held by commercial banks. Money creation by the commercial banking system. Central bank and its functions (example of the Reserve Bank of India): Bank of issue, Govt. Bank, Banker's Bank, Control of Credit through Bank Rate, Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Unit 3: Determination of Income and Employment

Aggregate demand and its components. Propensity to consume and propensity to save (average and marginal). Short-run equilibrium output; investment multiplier and its mechanism. Meaning of full employment and involuntary unemployment. Problems of excess demand and deficient demand; measures to correct them - changes in government spending, taxes and money supply.

Unit 4: Government Budget and the Economy

Government budget - meaning, objectives and components. Classification of receipts - revenue receipts and capital receipts; Classification of expenditure – revenue expenditure and capital expenditure. Balanced, Surplus and Deficit Budget – measures of government deficit

Unit 5: Balance of Payments

Balance of payments account - meaning and components; Balance of payments – Surplus and Deficit Foreign exchange rate - meaning of fixed and flexible rates and managed floating. Determination of exchange rate in a free market, Merits and demerits of flexible and fixed exchange rate. Managed Floating exchange rate system

Part B: Indian Economic Development

Unit 6: Development Experience (1947-90) and Economic Reforms since 1991

A brief introduction of the state of Indian economy on the eve of independence.

Indian economic system and common goals of Five-Year Plans. Main features, problems and policies of agriculture (institutional aspects and new agricultural strategy), industry (IPR 1956; SSI – role & importance) and foreign trade.

Economic Reforms since 1991: Features and appraisals of liberalisation, globalisation and privatisation (LPG policy); Concepts of demonetization and GST

PART C- PROJECT WORK

PRE-BOARD EXAMINATION

Part B: Indian Economic Development

Unit 7: Current challenges facing Indian Economy

Human Capital Formation: How people become resource; Role of human capital in economic development; Growth of Education Sector in India

Rural development: Key issues - credit and marketing - role of cooperatives; agricultural diversification; alternative farming - organic farming

Employment: Growth and changes in work force participation rate in formal and informal sectors; problems and policies

Sustainable Economic Development: Meaning, Effects of Economic Development on Resources and Environment, including global warming

Unit 8: Development Experience of India: A comparison with neighbours India and Pakistan India and China Issues: economic growth, population, sectoral development and other Human Development Indicators

PREBOARD SYLLABUS ALSO INCLUDES ENTIRE SYLLABUS OF MID TERM EXAMINATION

Part C: Project in Economics (20 MARKS)

CHEMISTRY

PERIODIC ASSESSMENT

Unit X: Haloalkanes and Haloarenes.

Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions.

Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only).

Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Unit XI: Alcohols, Phenols and Ethers

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

MID TERM EXAMINATION

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Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions.

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Unit XI: Alcohols, Phenols and Ethers

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Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

Unit XII: Aldehydes, Ketones and Carboxylic Acids

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses.

Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Unit XIII: Amines

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

PRE-BOARD EXAMINATION

Unit II: Solutions

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.

Unit III: Electrochemistry

Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.

Unit IV: Chemical Kinetics

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation.

Unit VIII: d and f Block Elements

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$.

Lanthanoids - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences.

Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids.

Unit IX: Coordination Compounds

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).

Unit X: Haloalkanes and Haloarenes.

Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions.

Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only).

Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Unit XI: Alcohols, Phenols and Ethers

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration,

uses with special reference to methanol and ethanol.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

Unit XII: Aldehydes, Ketones and Carboxylic Acids

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses.

Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Unit XIII: Amines

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

Unit XIV: Biomolecules

Carbohydrates - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates.

Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure.

Vitamins - Classification and functions.

Nucleic Acids: DNA and RNA.

MATHEMATICS

PERIODIC ASSESSMENT

1. MATRICES

Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operations on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. Non[1]commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).

2. DETERMINANTS

Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

3. INVERSE TRIGONOMETRIC FUNCTIONS

Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions.

MID TERM EXAMINATION

1. RELATIONS AND FUNCTIONS

Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions.

2. INVERSE TRIGONOMETRIC FUNCTIONS

Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions.

3. MATRICES

Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operations on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. Non[1]commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).

4. DETERMINANTS

Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

5. CONTINUITY AND DIFFERENTIABILITY

Continuity and differentiability, chain rule, derivative of inverse trigonometric functions, derivative of implicit functions. Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives.

6. APPLICATIONS OF DERIVATIVES

Applications of derivatives: rate of change of quantities, increasing/decreasing functions, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real life situations).

7. INTEGRALS (Indefinite)

Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them.

$$\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}}$$

$$\int \frac{px + q}{ax^2 + bx + c} dx, \int \frac{px + q}{\sqrt{ax^2 + bx + c}} dx, \int \sqrt{a^2 \pm x^2} dx, \int \sqrt{x^2 - a^2} dx$$

$$\int \sqrt{ax^2 + bx + c} dx,$$

PRE-BOARD EXAMINATION

8. LINEAR PROGRAMMING

Introduction, related terminology such as constraints, objective function, optimization, graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

9. INTEGRALS

Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

10. APPLICATION OF THE INTEGRALS

Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)

11. DIFFERENTIAL EQUATIONS

Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables, solutions of homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type:

$$\frac{dy}{dx} + py = q, \text{ where } p \text{ and } q \text{ are functions of } x \text{ or constants.}$$

$$\frac{dx}{dy} + px = q, \text{ where } p \text{ and } q \text{ are functions of } y \text{ or constants.}$$

12. VECTORS

Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors.

13. **THREE- DIMENSIONAL GEOMETRY**

Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, skew lines, shortest distance between two lines. Angle between two lines.

14. **PROBABILITY**

Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean of random variable. And all the chapters from mid term examination.

INTERNAL ASSESSMENT 20 marks

Periodic Tests :10 Marks

Mathematics Activities : 10 marks

PHYSICAL EDUCATION

PERIODIC ASSESSMENT

- Unit-1 Management of Sporting Events
- Unit-2 Children and Women in Sports

MID TERM EXAMINATION

- Unit-1 Management of Sporting Events
- Unit-2 Children and Women in Sports
- Unit-3 Yoga as a Preventive measure for Lifestyle Disease
- Unit-4 Physical Education and Sports for CWSN
- Unit-5 Sports and Nutrition
- Unit-6 Test and Measurement in Sports

PRE-BOARD EXAMINATION

- Unit-7 Physiology and Injuries in Sports
- Unit-8 Biomechanics in sports
- Unit-9 Psychology and sports
- Unit-10 Training in Sports

+ Midterm Syllabus

Practical Exam-30 Marks

COMPUTER SCIENCE

PERIODIC ASSESSMENT

Unit 1: Computational Thinking and Programming – 2

- Revision of Python topics covered in Class XI.
- Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)
- Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file

MID TERM EXAMINATION

Unit 1: Computational Thinking and Programming – 2

- Revision of Python topics covered in Class XI.
- Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)
- Exception Handling: Introduction, handling exceptions using try-except-finally blocks ● Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths
- Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file

Unit 3: Database Management

- Database concepts: introduction to database concepts and its need
- Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)
- Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command, aggregate functions (max, min, avg, sum, count), group by, having clause, joins: cartesian product on two tables, equi-join and natural join

- Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using connect(), cursor(), execute(), commit(), fetchone(), fetchall(), rowcount, creating database connectivity applications, use of %s format specifier or format() to perform queries

PRE-BOARD EXAMINATION

ENTIRE SYLLABUS

INFORMATICS PRACTICES

PERIODIC ASSESSMENT

Database Query using SQL

Revision of database concepts and SQL commands covered in class XI

- Math functions: POWER (), ROUND (), MOD ().
- Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().
- Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME ().
- Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*).

Data Handling using Pandas -I

Revision of lists and Dictionary

- Introduction to Python libraries- Pandas, Matplotlib.
- Data structures in Pandas - Series.

Series: Creation of series from

dictionary, scalar value; mathematical operations; series attributes, head and tail functions;

selection, indexing and slicing.

MID TERM EXAMINATION

ENTIRE SYLLABUS OF PERIODIC

- Querying and manipulating data using Group by, Having, Order by. Working with two tables using equi-join
- Data Frames: creation of data frames from dictionary of series, list of dictionaries, text/CSV files, display, iteration. Operations on rows and columns: add (insert /append), select, delete (drop column and row), rename, Head and Tail functions, indexing using labels, Boolean indexing.

Importing and exporting data between CSV file and data frames.

Data Visualization

- Data Visualization Purpose of plotting; drawing and saving following types of plots using Matplotlib – line plot, bar graph, histogram Customizing plots: adding label, title, and legend in plots.

PRE-BOARD EXAMINATION

ENTIRE SYLLABUS OF PERIODIC AND MIDTERM

Introduction to Computer Networks

- Introduction to networks, Types of networks: LAN, MAN, WAN.
- Network Devices: modem, hub, switch, repeater, router, gateway.
- Network Topologies: Star, Bus, Tree, Mesh.
- Introduction to Internet, URL, WWW and its applications- Web, email, Chat, VoIP.
- Website: Introduction, difference between a website and webpage, static vs dynamic web page, web server and hosting of a website.
- Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.

Societal Impacts

- Digital footprint, net and communication etiquettes,
- Data protection, intellectual property rights (IPR), plagiarism, licensing and copyright,
- Free and open-source software (FOSS),
- Cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act.
- E-waste: hazards and management. Awareness about health concerns related to the usage of technology.

SOCIOLOGY

PERIODIC ASSESSMENT

Chapter-1 Structural change (Social Change and Development in India)

Chapter-2 The demographic structure of the Indian society (Indian Society)

MID TERM EXAMINATION

Book-Indian Society

Chapter-3 Social institution: Continuity and Change

Chapter-5 Patterns of social inequality and exclusion

Chapter-6 The challenges of cultural diversity

Book-Social Change and Development in India

Chapter-2 Cultural change

Chapter-4 Change and development in Rural society

MID TERM also includes periodic syllabus

PREBOARD EXAMINATION

Book- Indian Society

Chapter-2 The demographic structure of Indian society

Chapter-3 Social institution: continuity and change

Chapter-5 Patterns of social inequality and exclusion

Chapter-6 The challenges of cultural diversity

Book-Social Change and Development in India

Chapter-1 Structural change

Chapter-2 Cultural change

Chapter-4 Change and development in Rural society

Chapter-5 Change and development in Industrial society

Chapter-8 Social Movements.

+ PROJECT WORK

And all the chapters from Mid Term Examination.