THE LEXICON SCHOOLS

(Wagholi ● Hadapsar ● Kalyani Nagar)

Curriculum 2023-24

Class XI

Subject: Mathematics Subject Code: 401

Term	Month	Portion to be covered
TERM I	June	Chapter 1 - Sets Deletions: Power Set
	July	Chapter 2 - Relations & Functions Chapter 3-Trigonometric Functions Deletions: General solution of trigonometric equations
	August	Chapter 5 - Complex Numbers and Quadratic Equations Deletions: • Polar representation of complex numbers • Fundamental Theorem of Algebra • Solution of quadratic equations (with real coefficients) in the complex number system. • Square root of a complex number. Chapter 6 - Linear Inequalities Deletions: • Graphical solution of linear inequalities in two variables. • Graphical method of finding a solution of system of linear inequalities in two variables
	September	Chapter 7 - Permutations and Combinations Revision of the portion done so far
Term II	October	Chapter 8 - Binomial theorem Deletions: General and middle term in binomial expansion Chapter 9-Sequence and Series Deletions: • Arithmetic Progression (A. P.) • Special Series
	November	Chapter 10 - Straight Lines Deletions: • Shifting of origin • Normal form • General equation of a line. • Equation of family of lines passing through the point of intersection of two lines. Chapter 11 - Conic Sections Chapter 12 - Introduction to 3-Dimensional Geometry Deletions: Section Formula
	December	Chapter 13 - Limits and Derivatives Deletions: First Principle of derivatives
	January	Chapter 15 - Statistics Deletions: Coefficient of variation Chapter 16 - Probability

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Curriculum 2023-24

Class XI

Subject: Applied Mathematics Subject Code: 241

Term	Month	Portion to be covered
Term I	June	Unit 1. Numbers and Quantification 1.2 Binary Numbers 1.4 Indices, Logarithm and Antilogarithm 1.5 Laws and properties of logarithms 1.6 Simple applications of logarithm and antilogarithm
	July	Unit 1. Numerical Applications 1.7 Averages 1.8 Clock 1.9 Calendar 1.10 Time, Work and Distance 1.11 Mensuration 1.12 Seating arrangement UNIT – 2 ALGEBRA Sets 2.1 Introduction to sets – definition 2.2 Representation of sets 2.4 Subsets 2.5 Intervals 2.7 Operations on sets
	August	UNIT – 2 Relations 2.8 Ordered pairs Cartesian product of two sets 2.9 Relations Sequences and Series 2.11 Sequence and Series 2.12 Arithmetic Progression 2.14 Applications of AP and GP
	September	UNIT 2 Permutations and Combinations 2.15 Factorial 2.16 Fundamental Principle of Counting 2.17 Permutations 2.20 Combinations UNIT 3 Mathematical Reasoning 3.2 Logical reasoning
	October	UNIT – 4 CALCULUS 4.1 Functions 4.2 Domain and Range of a function 4.3 Types of functions 4.4 Graphical representation of functions 4.5 Concepts of limits and continuity of a function

Term II		4.6 Instantaneous rate of change 4.7 Differentiation as a process of finding derivative 4.8 Derivatives of algebraic functions using Chain Rule
	November	UNIT – 5 PROBABILITY 5.1 Introduction 5.2 Random experiment and sample space 5.3 Event 5.4 Conditional Probability 5.5 Total Probability 5.6 Bayes' Theorem UNIT- 6 DESCRIPTIVE STATISTICS 6.4 Data Interpretation Measure of Dispersion Skewness and Kurtosis 6.5 Percentile rank and Quartile rank 6.6 Correlation
	December	UNIT – 7 FINANCIAL MATHEMATICS 7.1 Interest and Interest Rates 7.2 Accumulation with simple and compound interest 7.3 Simple and compound interest rates with equivalency 7.4 Effective rate of interest 7.5 Present value, net present value and future value 7.6 Annuities, Calculating value of Regular Annuity 7.7 Simple applications of regular annuities (upto 3 period) 7.8 Tax, calculation of tax, simple applications of tax calculation in Goods and service tax, Income Tax 7.9 Bills, tariff rates, fixed charge, surcharge, service charge 7.10 Calculation and interpretation of electricity bill, water supply bill and other supply bills
	January	UNIT – 8 COORDINATE GEOMETRY 8.1 Straight line 8.2 Circle 8.3 Parabola

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Curriculum 2023-24

Class XI

Subject: Chemistry Subject Code: 043

Term	Month	
Term I	June	Unit I: Some Basic Concepts of Chemistry: General Introduction: Importance and scope of Chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry. Unit II: Structure of Atom: Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells. Practical: Determination of melting point of an organic compound.
	July	Unit II: Structure of Atom: dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals. Unit III: Classification of Elements and Periodicity in Properties: Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, Periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100. Practical: Determination of boiling point of an organic compound.
	August	Unit IV: Chemical Bonding and Molecular Structure: Valence electrons, ionic bond, covalent bond, bond parameters, Lewis's structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), Hydrogen bond. Practical: Determination of pH of some solutions obtained from fruit juices, solution of known and varied concentrations of acids, bases and salts using pH paper or universal indicator.
	September	Revision of the Portion done so far
	October	Unit VI: Chemical Thermodynamics: Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics -internal energy and enthalpy, heat

Term II		capacity and specific heat, measurement of ΔU and ΔH, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium. Third law of thermodynamics (brief introduction). Practicals : 1. Preparation of standard solution of Oxalic acid. 2. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.
	November	Unit VII: Equilibrium: Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of polybasic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples). Unit VIII: Redox Reactions: Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions. Practicals: 1. Preparation of standard solution of Sodium carbonate. 2. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.
	December	Unit XII: Organic Chemistry -Some Basic Principles and Techniques: General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electrometric effect, resonance and hyperconjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions. Practical: Determination of one anion and one cation in a given salt
	January	Unit XIII: Hydrocarbons: Classification of Hydrocarbons Aliphatic Hydrocarbons: Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, the structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes - Nomenclature, the structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water. Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of the functional group in monosubstituted benzene. Carcinogenicity and toxicity. Practical: Determination of one anion and one cation in a given salt

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Curriculum 2023-24

Class XI

Subject: Physics Subject Code: 042

Term	Month	Portion to be covered
Term I	June	Chapter 1: Physical World and Measurement Chapter 2: Units and Measurements Practical: Experiment 1: To measure the diameter of a small spherical/cylindrical body and to measure the internal diameter and depth of a given beaker/calorimeter using Vernier Calipers and hence find its volume.
	July	Chapter-3: Motion in a Straight Line Chapter-4: Motion in a Plane Practical: Experiment 2: To measure the diameter of a given wire and the thickness of a given sheet using a screw gauge. Activity 1: To make a paper scale of given least count, e.g., 0.2cm, 0.5 cm.
	August	Chapter-5: Laws of Motion Practical: Experiment 3: To determine the radius of curvature of a given spherical surface by a spherometer. Experiment 4: To find the weight of a given body using the parallelogram law of vectors. Activity 2: To plot a graph for a given set of data, with proper choice of scales and error bars.
	September	Chapter-6: Work, Energy and Power Practical: Experiment 5: Using a simple pendulum, plot its L-T 2 graph and use it to find the effective length of the second's pendulum
	October	Chapter-7: System of Particles and Rotational Motion Chapter-8: Gravitation Practical: Experiment 6: To determine the coefficient of viscosity of a given viscous liquid by measuring the terminal velocity of a given spherical body. Activity 3: Study the variation in the range of a projectile with the angle of projection. Experiment 7: To study the relation between the length of a given wire and tension for constant frequency using a sonometer.

Term II		Activity 4: To study the effect of detergent on the surface tension of water by observing capillary rise.
	November	Chapter–9: Mechanical Properties of Solids Chapter–10: Mechanical Properties of Fluids Chapter–11: Thermal Properties of Matter Practical: Activity 5: To study the factors affecting the rate of loss of heat of a liquid. Activity 6: To study the effect of load on depression of a suitably clamped metre scale loaded at (i) its end (ii) in the middle.
	December	Chapter–12: Thermodynamics Chapter 13: Kinetic Theory Practical: Experiment 8: To study the relationship between the temperature of a hot body and time by plotting a cooling curve. Experiment 9: To study the relation between the frequency and length of a given wire under constant tension using a sonometer. Submission of journals and Project Reports.
	January	Chapter–14: Oscillations Chapter–15: Waves Practical: Revision

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Class XI

Subject: Biology Subject Code: 044

Term	Month	Portion to be covered
Term I	June	Unit-I Diversity of Living Organisms Chapter-1: The Living World Biodiversity Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature Chapter-2: Biological Classification. Five kingdom classifications; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids. Chapter-3: Plant Kingdom Classification of plants into major groups Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyte, Gymnospermae (Topics excluded – Angiosperms, Plant Life Cycle and Alternation of Generations) Practical: 1. Study and describe a locally available common flowering plant, from any one family: Solanaceae or Liliaceae (Poaceae, Asteraceae or Brassicaceae can be substituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show the number of chambers (floral formulae and floral diagrams).
	July	Chapter-4: Animal Kingdom Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level Unit-II Structural Organization in Animals and Plant Chapter-5: Morphology of Flowering Plants Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of the family Solanaceae Chapter-6: Anatomy of Flowering Plants Anatomy and functions of tissue systems in dicots and monocots. Chapter-7: Structural Organisation in Animals Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frogs.

	August	Unit-III Cell: Structure and Function Chapter-8: Cell-The Unit of Life Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus. Chapter-9: Biomolecules Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzyme - types, properties, enzyme action. Chapter-10: Cell Cycle and Cell Division Cell cycle, mitosis, meiosis and their significance Practical: 2. Study of osmosis by Potato osmometer.
	September	Revision of the Portion done so far
Term II	October	Unit-IV Plant Physiology Chapter-13: Photosynthesis in Higher Plants Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis. Chapter-14: Respiration in Plants Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient. Chapter-15: Plant - Growth and Development Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA Practical: 3. Separation of plant pigments through paper chromatography. 4. Study of distribution of stomata in the upper and lower surfaces of leaves. 5. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds
	November	Unit-V Human Physiology Chapter-17: Breathing and Exchange of Gases Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders

		related to respiration - asthma, emphysema, occupational respiratory disorders. Chapter-18: Body Fluids and Circulation Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.
	December	Chapter-19: Excretory Products and their Elimination Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function – renin-angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; the role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant. Chapter-20: Locomotion and Movement Types of movement - ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout. Practicals: 6. Test for the presence of sugar in the urine. 7. Test for the presence of albumin in urine.
	January	Chapter-21: Neural Control and Coordination Neuron and nerves; Nervous system in humans - central nervous system; the peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse Chapter-22: Chemical Coordination and Integration Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); the role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease. Spotting: 3. Virtual specimens/slides/models and identifying features of - Amoeba, Hydra, liver fluke, Ascaris, leech, earthworm, prawn, silkworm, honey bee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit. 4. Mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides. 5. Different types of inflorescence (cymose and racemose). 6. Human skeleton and different types of joints with the help of virtual images/models only.