THE LEXICON SCHOOLS

(Wagholi ● Hadapsar ● Kalyani Nagar)

Curriculum 2023-24

Class XII

Subject: Mathematics Subject Code: 401

Term	Month	Portion to be covered
	April	NCERT Textbook 1. Relations and Functions **Deletions:** • Composite functions • Inverse of a function 2. Inverse Trigonometric Functions **Deletions:** Elementary properties of inverse trigonometric functions. 3. Matrices Deletions: Elementary row and column operations
TERM I	June	4. Determinants **Deletions:** Properties of determinants
	July	5. Continuity and Differentiability **Deletions:** • Derivative of composite functions • Rolle's and Lagrange's Mean Value Theorems 6. Applications of Derivatives **Deletions:** • Tangents and normal • Use of derivatives in approximation 7. Integrals **Deletions:** • $\int linear \int quadratic$ (Supplementary exercise) • Definite integrals as a limit of a sum
	August	8. Applications of the Integrals **Deletions:** Area between two curves 9. Differential Equations **Deletions:** Formation of differential equation
	September	10. Vectors **Deletions:** Scalar triple product of vectors REVISION
	October	11. Three - dimensional Geometry **Deletions:** • Plane in space • Coplanar lines 12. Linear Programming **Deletions:** Different types of linear programming (L.P.) problems, mathematical formulation of L.P. problems

Term II	November	13. Probability **Deletions:** • Variance of random variable • Binomial distribution
	December	Revision Preboard I
	January	Revision Preboard II

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Curriculum 2023-24

Class XII

Subject: Applied Mathematics Subject Code: 241

Term	Month	Portion to be covered
Term I	April	(CBSE Student support Material) Unit-1: Numbers, Quantification and Numerical Applications 1.1 Modulo Arithmetic 1.2 Congruence Modulo 1.4 Alligation and Mixture 1.5 Numerical Problems Boats and Streams (upstream and downstream) Pipes and Cisterns Races and Games 1.6 Numerical Inequalities Unit-2: Algebra : Matrices 2.1 Matrices and types of matrices 2.2 Equality of matrices, ranspose of a matrix, Symmetric and Skew symmetric matrix 2.3 Algebra of Matrices 2.4 Determinants 2.5 Inverse of a matrix 2.6 Solving system of simultaneous equations using matrix method and Cramer's rule
	June	(CBSE Student support Material) Unit-3: Calculus - Differentiation and its Applications 3.1 Higher Order Derivatives 3.2 Application of Derivatives 3.3 Marginal Cost and Marginal Revenue using derivatives 3.4 Increasing /Decreasing Functions 3.5 Maxima and Minima
	July	(CBSE Student support Material) **Unit-3:** Calculus - Integration and its Applications 3.6 Integration 3.7 Indefinite Integrals as family of curves 3.8 Definite Integrals as area under the curve 3.9 Application of Integration **Unit-3:** Differential Equations and Modeling 3.10 Differential Equations 3.11 Formulating and Solving Differential Equations 3.12 Application of Differential Equations

	August	(CBSE Student support Material) **Unit-4:** Probability 4.1 Probability Distribution 4.2 Mathematical Expectation 4.3 Variance 4.4 Binomial Distribution 4.5 Poison Distribution 4.6 Normal Distribution **Unit-5:** Inferential Statistics 5.1 Population and Sample 5.2 Parameter and Statistics and Statistical Interferences 5.3 t-Test (one sample t-test and two independent groups t-test)
	September	(CBSE Student support Material) **Unit-6:** Index numbers and Time based data 6.4 Time Series 6.5 Components of Time Series 6.6 Time Series analysis for univariate data 6.7 Secular Trend 6.8 Methods of Measuring trend
Term II	October	(CBSE Student support Material) **Unit-7:** Financial Mathematics 7.1 Perpetuity, Sinking Funds 7.3 Calculation of EMI 7.4 Calculation of Returns, Nominal Rate of Return 7.5 Compound Annual Growth Rate 7.7 Linear method of Depreciation
	November	(CBSE Student support Material) **Unit-8:** Linear Programming 8.1 Introduction and related terminology 8.2 Mathematical formulation of Linear Programming Problem 8.3 Different types of Linear Programming Problems 8.4 Graphical method of solution for problems in two variables 8.5 Feasible and Infeasible Regions 8.6 Feasible and infeasible solutions, optimal feasible solution
	December	Revision Preboard I
	January	Revision Preboard II

THE LEXICON SCHOOLS

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Curriculum 2023-24

Class XII

Subject: Chemistry Subject Code: 043

Term	Month	Portion to be covered
Term I	April	**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.
	June	**Unit III: Electrochemistry** 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. **Practicals:** 1. Preparation of one lyophilic and one lyophobic sol 2. Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
	July	**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 K2Cr2O7 and KMnO4. **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. **Practicals** 1. Preparation of double salt of Ferrous Ammonium Sulphate 2. Preparation of Potash Alum
	August	**Unit IX: Coordination Compounds** Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, the 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. **Practicals:** Tests for the functional groups present in organic compounds:
	September	**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. **Practicals:** Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.
Term II	October	**Unit XII: Aldehydes, Ketones and Carboxylic Acids** **Aldehydes and Ketones:** Nomenclature, nature of carbonyl group, methods of preparation, physical properties, 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. **Practicals:** Determination of concentration/ molarity of KMnO4 solution by titrating it against a standard solution of: (a) Oxalic acid (b) Ferrous Ammonium Sulphate

	November	**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. **Practicals:** 1. Determination of one anion and one cation in a given salt 2. Determination of one anion and one cation in a given salt 3. Determination of one anion and one cation in a given salt
	December	**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 **Practicals:** 1. Determination of one anion and one cation in a given salt 2. Determination of one anion and one cation in a given salt 3. Determination of one anion and one cation in a given salt
	January	Revision

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Curriculum 2023-24

Class XII

Subject: Physics Subject Code: 041

Term	Month	Portion to be covered
Term I	April	**Electric Charges and Fields Practical** - To assemble a household circuit comprising three bulbs, three (on/off) switches, a fuse and a power source. Electrostatic Potential and Capacitance
	June	**Current Electricity Practical**- To determine the resistivity of two / three wires by plotting a graph for potential difference versus current.
	July	Moving Charges and Magnetism Magnetism and Matter Practical- To find resistance of a given wire / standard resistor using metre bridge. Practical- To verify the laws of combination (series) of resistances using a metre bridge. OR To verify the laws of combination (parallel) of resistances using a metre bridge.
	August	Electromagnetic Induction Alternating Current **Practical-** To determine resistance of a galvanometer by half-deflection method and to find its figure of merit
	September	Electromagnetic Waves Ray Optics and Optical Instruments **Practical-** To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
Term II	October	Wave Optics Dual Nature of Radiation and Matter Practical- To find the focal length of a convex lens by plotting graphs between u and v or between 1/u and 1/v. **Practical-** To find the refractive index of a liquid using the convex lens and plane mirror.
	November	Atoms Nuclei Semiconductor Electronics: Materials, Devices and Simple Circuits **Practical-** To draw the I-V characteristic curve for a p-n junction diode in forward and reverse bias.
	December	Revision
	January	Revision

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Class XII

Subject: Biology | Subject Code: 044

Term	Month	Portion to be covered
Term I	April	**Unit-VI Reproduction** **Chapter - 2: 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 - 3: Human Reproduction** Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis -spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation; parturition; lactation
	June	**Chapter-4: 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-5: 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. **Practicals:** 1. Prepare a temporary mount to observe pollen germination. 2. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.
	July	**Chapter-6: 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-7: 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. **Practicals for Spotting:** 1. Mendelian inheritance using seeds of different colour/sizes of any plant. 2. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness.
	August	**Unit-VIII Biology and Human Welfare** Chapter-8: 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-10: 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. **Practicals:** 3. Prepare a temporary mount of onion root tip to study mitosis. 4.Study the plant population density by quadrat method. 5. Study the plant population frequency by quadrat method. **Spotting:** 3.Common disease causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing ringworm through permanent slides, models or virtual images or specimens. Comment on symptoms of diseases that they cause.
	September	Revision of the Portion done so far
	October	Unit - IX Biotechnology and its Applications Chapter - 11: Biotechnology - Principles and Processes Genetic Engineering (Recombinant DNA Technology). Chapter - 12: 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. **Spotting:** 4. Flowers adapted to pollination by different agencies (wind, insects, birds). 5. Pollen germination on stigma through a permanent slide or scanning electron

Term II		micrograph. 6. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice). 7. Meiosis in onion bud cell or grasshopper testis through permanent slides. 8. T.S. of blastula through permanent slides (Mammalian)
	November	Unit 12: Consumer Protection: Concept and importance of consumer protection The Consumer Protection Act, 2019: **Source:** http://egazette.nic.in/WriteReadData/2019/210422.pdf • Meaning of consumer • Rights and responsibilities of consumers • Who can file a complaint? • Redressal machinery • Remedies available, Consumer awareness - Role of consumer • organizations and Non-Governmental • Organizations (NGOs).
	December	Chapter -15: 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.
	January	Chapter-15: 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.