PHYSICS SYLLABUS_ACHIEVER PLUS (session 2025-26)			
Subject	**Class**	**Unit**	**Chapter's Name**
PHYSICS	XI	**KINEMATICS**	The frame of reference, motion in a straight line. Position- time graph. Speed and velocity; Uniform and non-uniform motion. Average speed and instantaneous velocity; uniform accelerated motion. Velocity-time, position-time graph, and relations for uniformly accelerated motion. Relative Velocity. Motion in a plane; Projectile Motion and Uniform Circular Motion.
PHYSICS	XI	**LAWS OF MOTION**	Force and inertia, Newton's First law of motion; Momentum, Newton's Second Law of motion, Impulse: Newton's Third Law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces. Static and Kinetic friction, laws of friction, rolling friction. Dynamics of uniform circular motion; centripetal force and its applications; vehicle on a level circular road; vehicle on a banked road.
PHYSICS	XI	**WORK, ENERGY AND POWER**	Work done by a constant force and variable force; kinetic and potential energy, work-energy theorem, power. The potential energy of spring; conservation of mechanical energy; conservative and non-conservative forces; motion in a vertical circle; Elastic and inelastic collisions in one and two dimensions.
PHYSICS	XI	**ROTATIONAL MOTION**	Centre of mass of a two-particle system, Centre of the mass of a rigid body: Basic concepts of rotational motion; moment of a force; torque, angular momentum, conservation of angular momentum and its applications; The moment of inertia, the radius of gyration, values of moments of inertia for simple geometrical objects, parallel and perpendicular axes theorems and their applications. Equilibrium of rigid bodies, Rigid body rotation and equations of rotational motion; comparison of linear and rotational motion.

PHYSICS	XI	**PROPERTIES OF SOLIDS AND LIQUIDS**	Elastic behaviour, Stress-strain relationship. Hooke's law, Young's modulus, bulk modulus, modulus of rigidity, Pressure due to a fluid column; Pascal's law and its applications. Effect of gravity on fluid pressure. Viscosity, Stoke's law, terminal velocity, streamline, and turbulent flow, Critical velocity, Bernoulli's theorem and its applications. Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension - drops, bubbles, and capillary rise.
PHYSICS	XI	**OSCILLATIONS AND WAVES**	Oscillations and periodic motion - time period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (S.H.M.) and its equation; phase; oscillation of a spring- restoring force and force constant; energy in S.H.M. - Kinetic and potential energies; Simple pendulum and derivation of expression for its time period. Wave motion. Longitudinal and transverse waves, speed of travelling wave. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics; Beats.
PHYSICS	XII	**ELECTROSTATICS**	Electric charges: conservation of charge. Coulomb's law-forces 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 a uniform electric field. Electric flux, Gauss's law and its applications to find field due to infinitely long uniformly charged straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell. Electric potential and its calculation for a point charge, electric dipole and system of charges potential difference, Equipotential surfaces, Electrical

PHYSICS	XII	**ELECTROSTATICS**	potential energy of a system of two point charges and of electric dipole in an electrostatic field. Conductors and insulators, Dielectrics and electric polarization, capacitors and capacitance, The 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.
PHYSICS	XII	**CURRENT ELECTRICITY**	Electric current. Drift velocity, mobility and their relation with electric current. Ohm's law. Electrical resistance. V-I characteristics of ohmic and non-ohmic conductors. Electrical energy and power. Electrical resistivity and conductivity. Series and parallel combinations of resistors; Temperature dependence of resistance. Internal resistance, potential difference and emf of a cell, a combination of cells in series and parallel. Kirchhoff's laws and their applications. Wheatstone bridge; Metre Bridge.
PHYSICS	XII	**MAGNETIC ETFECTS OF CURRENT AND MAGNETISM**	Biot - Savart law and its application to current carrying circular loop. Ampere's law and it's applications in infinitely long current carrying straight wire and solenoid. Force on a moving charge in uniform magnetic and electric fields. Force on a current-carrying conductor in a uniform magnetic field. The force between two parallel currents carrying conductors definition of ampere. Torque experienced by a current loop in a uniform magnetic field: Moving coil galvanometer, its sensitivity, and conversion to ammeter and voltmeter. Current loop as a magnetic dipole and its magnetic dipole moment. Bar magnet as an equivalent solenoid. Magnetic field lines; Magnetic field due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole in a uniform magnetic field. Paramagnetic, diamagnetic and ferromagnetic substances with examples, effect of temperature on magnetic properties

PHYSICS	XII	**ELECTROMAGNETIC INDUCTION AND ALTERNATING CURRENTS**	Electromagnetic induction; Faraday's law, induced emf and current; Lenz's Law, Eddy currents. Self and mutual inductance. Alternating currents, peak and rms value of alternating current/voltage; reactance and impedance; LCR series circuit, resonance; power in AC circuits, wattless current. AC generator and transformer.
PHYSICS	XII	**OPTICS**	Reflection of light, spherical mirrors, mirror formula. Refraction of light at plane and spherical surfaces, thin lens formula and lens maker formula. Total internal reflection and its applications. Magnification. Power of a Lens. Combination of thin lenses in contact. Refraction of light through a prism. Microscope and Astronomical Telescope (reflecting and refracting) and their magnifying powers. Wave front and Huygens' principle. Laws of reflection and refraction using Huygens principle. Interference, Young's double-slit experiment and expression for fringe width, coherent sources, and sustained interference of light. Diffraction due to a single slit, width of central maximum. Polarization, plane-polarized light; Brewster's law, uses of plane-polarized light and Polaroid.
PHYSICS	XII	**DUAL NATURE OF MATTER AND RADIATION**	Dual nature of radiation; Photoelectric effect; Hertz and Lenard's observations; Einstein's photoelectric equation; particle nature of light. Matter waves; wave nature of particle, de Broglie relation.
PHYSICS	XII	**ATOMS AND NUCLEI**	Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum. Composition and size of nucleus, atomic masses, Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number, nuclear fission, and fusion.

PHYSICS	XII	**ELECTRONIC DEVICES**	Semiconductors; semiconductor diode: I-V characteristics in forward and reverse bias; diode as a rectifier; I-V characteristics of LED; photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Logic gates (OR, AND, NOT, NAND and NOR).

CHEMISTRY SYLLABUS_ACHIEVER PLUS (session 2025-2026)

Subject	Class	Unit	Chapter's Name
CHEMISTRY	XI	CHEMICAL THERMODYNAMICS	Fundamentals of thermodynamics: System and surroundings, extensive and intensive properties, state functions, types of processes. The first law of thermodynamics - Concept of work, heat internal energy and enthalpy, heat capacity, molar heat capacity; Hess's law of constant heat summation; Enthalpies of bond dissociation, combustion, formation, atomization, sublimation, phase transition, hydration ionization and solution. The second law of thermodynamics –Spontaneity of processes: ΔS of the universe and ΔG of the system as criteria for spontaneity. ΔG° (Standard Gibbs energy change) and equilibrium constant.
CHEMISTRY	XII	SOLUTIONS	Different methods for expressing the concentration of solution – molality, molarity, mole fraction. percentage (by volume and mass both), the vapour pressure of solutions and Raoult's law - Ideal and non-ideal solutions, vapour pressure-composition, plots for ideal and non-ideal solutions ; Colligative properties of dilute solutions – a relative lowering of vapour pressure, depression of freezing point, the elevation of boiling point and osmotic pressure ; Determination of molecular mass using colligative properties ; Abnormal value of molar mass, van't Hoff factor and its significance.
CHEMISTRY	XI	EQUILIBRIUM (Ionic Equilibrium)	Weak and strong electrolytes, ionization of electrolytes, various concepts of acids and bases (Arrhenius, Bronsted - Lowry and Lewis) and their ionization, acid-base equilibria (including multistage ionization) and ionization constants, ionization of water. pH scale, common ion effect, hydrolysis of salts and pH of their solutions,

			the solubility of sparingly soluble salts and solubility products, buffer solution.
CHEMISTRY	XII	ELECTROCHEMISTRY	Electrolytic and metallic conduction, conductance in electrolytic solution, molar conductivities and their variation with concentration : Kohlrausch's law and its application. Electrochemical cells – Electrolytic and Galvanic cells, different types of electrodes, electrode potentials including standard electrode potential, half-cell and cell reactions, emf of a Galvanic cell and its measurement; Nernst equation and its application ; Relationship between cell potential and Gibb's energy change ; Dry cell and lead accumulator ; Fuel cells.
CHEMISTRY	XII	CHEMICAL KINETICS	Rate of a chemical reaction, factors affecting the rate of reactions : concentration, temperature, pressure and catalyst ; elementary and complex reactions, order and molecularity of reaction, rate law, rate constant and its units, differential and integral forms of zero and first-order reactions, their characteristics and half-lives, the effect of temperature on the rate of reactions. Arrhenius theory, activation energy and its calculation, collision theory of bimolecular gaseous reactions (no derivation).
CHEMISTRY	XI	CHEMICAL BONDING AND MOLECULAR STRUCTURE	Kossel - Lewis approach to chemical bond formation, the concept of ionic and covalent bonds. Ionic Bonding: Formation of ionic bonds, factors affecting the formation of ionic bonds ; calculation of lattice enthalpy. Covalent Bonding: Concept of electronegativity. Fajan's rule, dipole moment: Valence Shell Electron Pair Repulsion (VSEPR) theory and shapes of simple molecules. Quantum mechanical approach to covalent bonding: Valence bond theory - its important features, the concept of hybridization involving s, p, and d orbitals; Resonance. Molecular Orbital Theory - Its important features. LCAOs, types of molecular orbitals (bonding, antibonding). sigma and pi-bonds, molecular orbital electronic configurations of homonuclear diatomic molecules, the concept of bond order, bond length, and bond energy. Elementary idea of metallic bonding. Hydrogen bonding and its applications.

CHEMISTRY	XII	P- BLOCK ELEMENTS	Group -13 to Group 18 Elements General Introduction : Electronic configuration and general trends in physical and chemical properties of elements across the periods and down the groups; unique behaviour of the first element in each group.
CHEMISTRY	XII	d and f BLOCK ELEMENTS	Transition Elements General introduction, electronic configuration, occurrence and characteristics, general trends in properties of the first-row transition elements - physical properties, ionization enthalpy, oxidation states, atomic radii, colour, catalytic behaviour, magnetic properties, complex formation, interstitial compounds, alloy formation; Preparation, properties, and uses of $K_2Cr_2O_7$ AND $KMnO_4$. Inner Transition Elements Lanthanoids - Electronic configuration, oxidation states, and lanthanoid contraction. Actinoids - Electronic configuration and oxidation states."
CHEMISTRY	XII	CO-ORDINATION COMPOUNDS	Introduction to coordination compounds. Werner's theory; ligands, coordination number, denticity, chelation, IUPAC nomenclature of mononuclear co-ordination compounds, isomerism: Bonding-Valence bond approach and basic ideas of Crystal field theory, colour and magnetic properties; Importance of coordination compounds (in qualitative analysis, extraction ol metals and in biological systems).
CHEMISTRY	XII	PRINCIPLES RELATED TO PRACTICAL CHEMISTRY (SALT ANALYSIS)	Chemical principles involved in the qualitative salt analysis: Cations -Pb^{2+}, Cu^{2+}, Al^{3+}, Fe^{3+}, Zn^{2+}, Ni^{2+}, Ca^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+ Anions CO_3^{2-}, S^{2-}, SO_4^{2-}, NO_3^-, NO_2^-, Cl^-, Br^-, I^- (Insoluble salts excluded)."
CHEMISTRY	XI	SOME BASIC PRINCIPLES OF ORGANIC CHEMISTRY	Electronic displacement in a covalent bond Inductive effect, electromeric effect, resonance, and hyperconjugation. Common types of organic reactions - Substitution, addition, elimination, and rearrangement.
CHEMISTRY	XI	HYDROCARBONS	General methods of preparation, properties and reactions. Alkanes - Conformations: Sawhorse and Newman projections (of ethane): Mechanism of halogenation of alkanes.

			Alkenes - Geometrical isomerism: Mechanism of electrophilic addition: addition of hydrogen, halogens, water, hydrogen halides (Markownikoffs and peroxide effect) ; Ozonolysis and polymerization. Alkynes - Acidic character: Addition of hydrogen, halogens, water and hydrogen haliides ; Polymerization. Aromatic hydrocarbons - Nomenclature. benzene - structure and aromaticity : Mechanism of electrophilic substitution: halogenation, nitration. Friedel - craft's alkylation and acylation, directive influence of the functional group in mono-substituted benzene.
CHEMISTRY	XII	ORGANIC COMPOUNDS CONTAINING HALOGENS	General methods of preparation, properties, and reactions; Nature of C-X bond: Mechanisms ol substitution reactions. Uses; Environmental effects of chloroform, iodoform, freons and DDT
CHEMISTRY	XII	ORGANIC COMPOUNDS CONTAINING OXYGEN	General methods of preparation, properties, reactions, and uses. ALCOHOLS, PHENOLS AND ETHERS Alcohols: Identification of primary, secondary, and tertiary alcohols: mechanism of dehydration. Phenols: Acidic nature, electrophilic substitution reactions: halogenation. nitration and sulphonation. Reimer - Tiemann reaction. Ethers: Structure. Aldehyde and Ketones: Nature of carbonyl group; Nucleophilic addition to >C=O group, relative reactivities of aldehydes and ketones; Important reactions such as - Nucleophilic addition reactions (addition of HCN. NH_3, and its derivatives), Grignard reagent: oxidation: reduction (Wolf Kishner and Clemmensen); the acidity of α-hydrogen. aldol condensation, Cannizzaro reaction. Haloform reaction, Chemical tests to distinguish between aldehydes and Ketones. Carboxylic Acids Acidic strength and factors affecting it,
CHEMISTRY	XII	ORGANIC COMPOUNDS CONTAINING NITROGEN	General methods of preparation. Properties, reactions, and uses. Amines: Nomenclature, classification structure, basic character, and identification of primary, secondary, and tertiary amines and their basic character. Diazonium Salts: Importance in synthetic organic chemistry.

BIOLOGY SYLLABUS_ACHIEVER PLUS (Session 2025-26)			
Subject	Class	Unit	Chapter's Name
BIOLOGY	XI	UNIT l: Diversity in Living World	**What is living? ; Biodiversity**; Need for classification;; Taxonomy & Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature;
			Five kingdom classification: salient features and classification of Monera; Protista and Fungi into major groups: Lichens, Viruses and Viroids. .
			Salient features and classification of plants into major groups-Algae, Bryophytes, Pteridophytes, Gymnosperms (three to five salient and distinguishing features and at least two examples of each category);
			Salient features and classification of animals- nonchordate up to phyla level and chordate up to classes level (three to five salient features and at least two examples).
BIOLOGY	XI	UNIT 2: Structural Organisation in Plants	**Morphology and modifications**; Tissues; **Anatomy** and functions of different parts of flowering plants: Root, stem, leaf, inflorescence- cymose and recemose, flower, fruit, seed and Family (malvaceae, Cruciferae, leguminoceae, compositae, graminae).
BIOLOGY	XI	UNIT 3: Cell Structure and Function	**Cell theory and cell as the basic unit of life** ; Structure of prokaryotic and eukaryotic cell; 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, micro bodies; Cytoskeleton, cilia, flagella, centrioles (ultra-structure and function); Nucleus-nuclear membrane, chromatin, nucleolus.
			Chemical constituents of living cells: **Biomolecules** - structure and function of proteins, carbohydrates. lipids, nucleic acids; **Enzymes** - types, properties, enzyme action, classification and nomenclature of enzymes.
			Cell division: Cell cycle, mitosis, meiosis and their significance.
			Photosynthesis: Photosynthesis as a means of Autotrophic nutrition; Site of photosynthesis take place; pigments involved in Photosynthesis (Elementary-.idea); Photochemical and biosynthetic phases of photosynthesis; Cyclic and non cyclic and photophosphorylation; chemiosmotic hypothesis; photorespiration C3 and C4 pathways; Factors affecting photosynthesis.

BIOLOGY	XI	UNIT 4: Plant Physiology	**Respiration**: Exchange gases; cellular respiration-glycolysis. fermentation (anaerobic), TCA cycle and electron transport system (aerobic); Energy relations- Number of ATP molecules generated; Amphibolic pathways; Respiratory quotient.
			Plant growth and development: Seed germination; phases of plant growth and plant growth rate; Conditions of growth; Differentiation, dedifferentiation and redifferentiation; Sequence of developmental process in a plant cell; Growth regulators, auxin, gibberellin, cytokinin, ethylene, ABA;
BIOLOGY	XII	UNIT 6: Reproduction	**Sexual reproduction in flowering plants** - Flower structure; Development of male and female gametophytes; Pollination-types, agencies and examples; Outbreeding devices; Pollen-Pistil interaction; Double fertilization; Post fertilization events- Development of endosperm and embryo, Development of seed and formation of fruit; Special modesapomixis, parthenocarpy, polyembryony; Significance of seed and fruit formation.
			Human Reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis-spermatogenesis & oogenesis; Menstrual cycle; Fertilisation, embryo development upto blastocyst formation, implantation: Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea).
			Reproductive health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control-Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; lnfertility and assisted reproductive technologies - IVF, ZIFT, GIFT (Elementary idea for general awareness).
BIOLOGY	XII	UNIT 7: Genetics and Evolution	Heredity and variation: **Mendelian lnheritance**; 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-ln humans, birds, 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.
			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 and human genome project; DNA finger printing, protein biosynthesis.

			Evolution: Origin of life; Biological evolution and evidences for biological evolution from Paleontology, comparative anatomy, embryology and molecular evidence; 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.
BIOLOGY	XII	UNIT 8: Biology and Human Welfare	**Health and Disease**; Pathogens; parasites causing human diseases (Malaria, Filariasis, Ascariasis. Typhoid, Pneumonia, common cold, amoebiasis, ring worm, dengue, chikungunya); Basic concepts of immunology-vaccines; Cancer, HIV and AIDS; Adolescence, drug and alcohol abuse.Tobacco abuse
			Microbes in human welfare: In household food processing, industrial production, sewage treatment, energy generation and as biocontrol agents and biofertilizers.
BIOLOGY	XII	UNIT 9: Biotechnology and its Applications	**Principles and process of Biotechnology**: Genetic engineering (Recombinant DNA technology).
			Application of Biotechnology in health and agriculture: Human insulin and vaccine production, gene therapy Genetically modified : organisms-Bt crops: Transgenic Animals; Biosafety issues-Biopiracy and patents
BIOLOGY	XII	UNIT l0: Ecology and Environment	**Organisms and environment** Population interactions-mutualism, competition.predation, parasitism Population attributes-growth. birth rate and death rate, age distribution.
			Ecosystem: Patterns, components; productivity and decomposition: Energy flow: Pyramids of number, biomass. energy
			Biodiversity and its conservation: concept of Biodiversity; patterns of Biodiversity: Importance of Biodiversity; Loss of Biodiversity, Biodiversity conservation; Hotspots, endangered organisms. extinction; Red Data Book. biosphere reserves, National parks and sanctuaries, Sacred Groves.