

NEET Syllabus 2024: Subject-wise

NEET Physics Syllabus:

Chapter Name	Topics	Weightage
Physics and Measurements	• Physics: Scope and excitement; nature of physical laws; Physics, technology, and society. • Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass, and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures. • Dimensions of physical quantities, dimensional analysis, and its applications.	2%

Kinematics	● A frame of reference, Motion in a straight line; Position-time graph, speed, and velocity. Uniform and non-uniform motion, average speed, and instantaneous velocity. Uniformly accelerated motion, velocity-time, and position-time graphs, for uniformly accelerated motion (graphical treatment). ● Elementary concepts of differentiation and integration for describing motion. Scalar and vector quantities: Position and displacement vectors, general vectors, general vectors and notation, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Relative velocity. ● Unit vectors. Resolution of a vector in a plane-rectangular component. ● Scalar and Vector products of Vectors. Motion in a plane. Cases of uniform velocity and uniform acceleration- projectile motion. Uniform circular motion.	3%
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Laws of Motion	● Intuitive concept of force. Inertia, Newton's first law of motion; momentum and 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, lubrication. ● Dynamics of uniform circular motion. Centripetal force, examples of circular motion (vehicle on level circular road, vehicle on banked road).	3%
Work, Energy and Power	● Work done by a constant force and variable force; kinetic energy, work-energy theorem, power. ● Notion of potential energy, the potential energy of a spring, conservative forces; conservation of mechanical energy (kinetic and potential energies); nonconservative forces; motion in a vertical circle, elastic and inelastic collisions in one and two dimensions.	4%

Rotational Motion	● Centre of mass of a two-particle system, momentum conservation, and centre of mass motion. Centre of mass of a rigid body; centre of mass of uniform rod. ● Moment of a force, -torque, angular momentum, conservation of angular momentum with some examples. ● Equilibrium of rigid bodies, rigid body rotation, and equation of rotational motion, comparison of linear and rotational motions; the moment of inertia, the radius of gyration. Values of M.I. for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.	4%
Gravitation	● Kepler's laws of planetary motion. The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. ● Gravitational potential energy; gravitational potential. Escape velocity, orbital velocity of a satellite. Geostationary satellites.	2%

Properties Of Solids and Liquids	• Elastic behavior, Stress-strain relationship. Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity, poisson's ratio; elastic energy. • Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow. Critical velocity, Bernoulli's theorem and its applications. • Surface energy and surface tension, angle of contact, excess of pressure, application of surface tension ideas to drops, bubbles and capillary rise. • Heat, temperature, thermal expansion; thermal expansion of solids, liquids, and gases. Anomalous expansion. Specific heat capacity: C_p, C_v- calorimetry; change of state – latent heat. • Heat transfer- conduction and thermal conductivity, convection and radiation. Qualitative ideas of Black Body Radiation, Wein's displacement law, and Green House effect. • Newton's law of cooling and Stefan's law.	3%
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Thermodynamics	● Thermal equilibrium and definition of temperature (zeroth law of Thermodynamics). Heat, work and internal energy. First law of thermodynamics. Isothermal and adiabatic processes. ● Second law of the thermodynamics: Reversible and irreversible processes. Heat engines and refrigerators.	9%
Kinetic Theory of Gases	● Equation of state of a perfect gas, work done on compressing a gas. ● Kinetic theory of gases: Assumptions, concept of pressure. Kinetic energy and temperature; degrees of freedom, law of equipartition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path.	3%
Oscillation and Waves	● Periodic motion-period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion(SHM) and its equation; phase; oscillations of a spring-restoring force and force constant; energy in SHM –Kinetic and potential energies; simple pendulum-derivation of expression for its time period; free, forced and damped oscillations (qualitative ideas only), resonance. ● Wave motion. Longitudinal and transverse waves, speed of wave motion. Displacement relation for a progressive wave. Principle of superposition of waves, reflection of waves,	3%

	standing waves in strings and organ pipes, fundamental mode and harmonics. Beats. Doppler effect.	
Electrostatics	• Electric charges and their conservation. 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 a 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) • 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 dipoles 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,	9%

	energy stored in a capacitor, Van de Graaff generator.	
Current Electricity	• Electric current, the flow of electric charges in a metallic conductor, drift velocity and mobility, and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity, and conductivity. • Carbon resistors, color code for carbon resistors; series and parallel combinations of resistors; 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 laws and simple applications. Wheatstone bridge, metre bridge. • Potentiometer-principle and applications to measure potential difference, and for comparing emf of two cells; measurement of internal resistance of a cell.	8%
Magnetic effects of Current 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 and toroidal solenoids. Force on a moving charge	5%

	in uniform magnetic and electric fields. Cyclotron. • 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 a magnetic field; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter. • Current loop as a magnetic dipole and its magnetic dipole moment. Magnetic dipole moment of a revolving electron. Magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; Earth's magnetic field and magnetic elements. • Para-, dia-and ferro-magnetic substances, with examples. • Electromagnetic and factors affecting their strengths. Permanent magnets	
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; LC oscillations (qualitative	8%

	treatment only), LCR series circuit, resonance; power in AC circuits, wattles current. AC generator and transformer.	
Electromagnetic Waves	- Need for displacement current. - Electromagnetic waves and their characteristics (qualitative ideas only). Transverse nature of electromagnetic waves. - Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, x-rays, gamma rays) including elementary facts about their uses.	1%
Optics	- Reflection of light, spherical mirrors, mirror formula. Refraction of light, total internal reflection and its applications optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lensmaker's formula. Magnification, power of a lens, combination of thin lenses in contact combination of a lens and a mirror. Refraction and dispersion of light through a prism. - Scattering of light- blue colour of the sky and reddish appearance of the sun at sunrise and sunset. - Optical instruments: Human eye, image formation and accommodation, correction	9%

	of eye defects (myopia and hypermetropia) using lenses. • Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers. • Wave optics: Wavefront and Huygens' principle, reflection and refraction of plane wave at a plane surface using wavefronts. • Proof of laws of reflection and refraction using Huygens' principle. • Interference, Young's double hole experiment and expression for fringe width, coherent sources and sustained interference of light. • Diffraction due to a single slit, width of central maximum. • Resolving power of microscopes and astronomical telescopes. Polarisation, plane polarized light; Brewster's law, uses of plane polarized light and Polaroids.	
Dual Nature of Matter and Radiation	• Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation- particle nature of light. • Matter waves- wave nature of particles, de Broglie relation. Davisson-Germer experiment (experimental details should be omitted; only conclusion should be explained).	3%

Atoms and Nuclei	● Alpha- particle scattering experiments; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum. Composition and size of nucleus, atomic masses, isotopes, isobars; isotones. ● Radioactivity- alpha, beta and gamma particles/ rays and their properties decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number, nuclear fission and fusion.	4%
Electronic Devices	● Energy bands in solids (qualitative ideas only), conductors, insulators and semiconductors; semiconductor diode- I-V characteristics in forward and reverse bias, diode as a rectifier; I-V characteristics of LED, diode, solar cell, and Zener diode; Zener diode as a voltage regulator. ● Junction transistor, transistor action, characteristics of a transistor; transistor as an amplifier (common emitter configuration) and oscillator. ● Logic gates (OR, AND, NOT, NAND and NOR). ● Transistor as a switch.	4%

Experimental Skills	Familiarity with the basic approach and observations of the experiments and activities: • Vernier calipers-its use to measure the internal and external diameter and depth of a vessel. • Screw gauge-its use to determine thickness diameter of thin sheet/wire. • Simple pendulum-dissipation of energy by plotting a graph between the square of amplitude and time. • Metre Scale - the mass of a given object by the principle of moments. • Young's modulus of elasticity of the material of a metallic wire. • Surface tension of water by capillary rise and effect of detergents. • Co-efficient of Viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body. • Speed of sound in air at room temperature using a resonance tube. • Specific heat capacity of a given (i) solid and (ii) liquid by method of mixtures. • The resistivity of the material of a given wire using a metre bridge. • The resistance of a given wire using Ohm's law. • Resistance and figure of merit of a galvanometer by half deflection method. • The focal length of; (i) Convex mirror (ii) Concave mirror, and	3%
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	(iii) Convex lens, using the parallax method. • The plot of the angle of deviation vs angle of incidence for a triangular prism. • Refractive index of a glass slab using a travelling microscope. • Characteristic curves of a p-n junction diode in forward and reverse bias. • Characteristic curves of a Zener diode and finding reverse breakdown voltage. • Identification of Diode, LED, Resistor, A capacitor from a mixed collection of such item	
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NEET Chemistry Syllabus:

Chapter Name	Topics	Weightage
Section B - Physical Chemistry		
Some Basic Concepts in Chemistry	• Matter and its nature, Dalton's atomic theory: Concept of Atom, Element, Molecule and Compound:: Laws of Chemical Combination; Atomic molecular masses, Mole concept, Molar mass, Percentage composition, Empirical molecular formulae, Chemical equations and stoichiometry.	2%

Atomic Structure	● Nature of electromagnetic radiation, Photoelectric effect; Spectrum of the hydrogen atom, Bohr model of a hydrogen atom, it's postulates, Derivation of the relations for the energy of the electron and Radii of the different orbits, Limitations of Bohr's model; Dual nature of matter, de Broglie's relationship. ● Heisenberg uncertainty principle. ● Elementary ideas of quantum mechanics (quantum mechanics, the quantum mechanical model of the atom) its important features. ● Concept of atomic orbitals as one-electron wave functions: Variation of ψ and ψ^2 with r for 1s and 2s orbitals: Various quantum numbers (principal, angular momentum, and magnetic quantum numbers) and their significance; Shapes of s, p, and d - orbitals, electron spin and spin quantum number: Rules for filling electrons in orbitals - Aufbau principle. ● Pauli's exclusion principle and Hund's rule, Electronic configuration of elements, extra stability of half-filled and completely filled orbitals'.	3%
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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 configuration of homonuclear diatomic molecules, The concept of bond order, bond length, and bond energy' Elementary idea of metallic bonding. ● Hydrogen bonding and its applications.	4%
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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.	4%
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 or mass freezing point the elevation of boiling point an Osmotic pressure, Determination of molecular significance.	4%

	Using colligative properties; Abnormal value of molar mass, Van't Hoff factor and its significance	
Equilibrium	- Meaning of equilibrium, The concept of dynamic equilibrium. - Equilibria involving physical processes: Solid-liquid, liquid - gas and solid-gas equilibria, Henry's law. - General characteristics of equilibrium involving physical processes. - Equilibrium involving chemical processes: Law of chemical equilibrium, equilibrium constants (K_p and K_c) and their significance, The significance of ΔG and ΔG° in chemical equilibrium, Factors affecting equilibrium concentration, pressure, temperature, the effect of catalyst; Le Chatelier's principle. - 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 multi stage 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 solutions.	3%

Redox Reactions and Electrochemistry	• Electronic concepts of oxidation and reduction, Redox reaction, Oxidation number, rules for assigning oxidation number, balancing of redox reactions. • Electrolytic and metallic conduction, conductance in electrolytic solutions, molar conductivities and their variation with concentration: Kohlrausch's law and its applications. • Electrochemical cells - Electrolysis and Galvanic cells, different types and electrodes, electrode potentials including standard electrode potential, half-cell and cell reactions, emf of a Galvanic cell and its measurements: Nernst equation and its applications; Relationship between cell potential and Gibbs energy change: Dry cell and lead accumulator; Fuel cells.	4%
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 reactions, 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 reaction (no derivation)	2%

Section B - Inorganic Chemistry		
Classification of Elements and Periodicity in Properties	● Modern periodic law and present form of the periodic table, s, p, d and f block elements, Periodic trends in properties of elements atomic and ionic radii, ionization enthalpy, electron gain enthalpy, valence, oxidation states, and chemical reactivity.	3%
P Block Elements	● General Introduction: Electronic configuration and general trends in physical and chemical properties of elements across the periods and down the groups; Unique behavior of the first element in each group.	5%
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 state, 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 - Lanthanoides - Electronic configuration, oxidation state, and lanthanoid contraction. ● Actinoids - Electronic configuration and oxidation state.	4%

Coordination Compounds	● Introduction to coordination compounds. ● Werner's theory; ligands, coordination number, denticity. ● Chelation; IUPAC nomenclature of mononuclear coordination compounds, isomerism; Bonding-Valence bond approach and basic ideas of Crystal field theory, Colour and magnetic properties; ● Importance of co-ordination compounds (in qualitative analysis, extraction of metals and in biological systems).	4%
Section C - Organic Chemistry		
Purification and Characterisation of Organic Compounds	● Purification- Crystallization, sublimation, distillation, differential extraction, and chromatography- principles and their applications. ● Qualitative analysis- Detection of nitrogen, sulphur, phosphorus and halogens. ● Quantitative analysis (basic principle only) - Estimation of carbon, hydrogen, nitrogen, halogens, sulphur, phosphorus. ● Calculations of empirical formulae and molecular formulae: Numerical problems in organic quantitative analysis.	4%

Some Principles of Organic Chemistry	● Tetravalency of carbon: Shapes of simple molecules - hybridization (s and p): Classification of organic compounds based on functional groups: and those containing halogens, oxygen nitrogen, and sulphur, Homologous series: Isomerism - structural and stereoisomerism. ● Nomenclature (Trivial and IUPAC) Covalent bond fission - Homolytic and heterolytic: free radicals, carbocations, and carbanions; stability of carbocation and free radicals, electrophiles, and nucleophiles. ● Electronic displacement in a covalent bond - Inductive effect, electromeric effect, resonance, and hyperconjugation. ● Common types of organic reactions - Substitution, addition, elimination, and rearrangement.	3%
Hydrocarbons	● Classification, isomerism. IUPAC nomenclature, 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	4%

	peroxide effect): "Ozonolysis and polymerization. - Alkynes - Acidic character: Addition of hydrogen, halogens, water, and hydrogen halides: 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.	
Organic Compounds Containing Halogens	- General methods of preparation, properties, and reactions; Nature of C-X bond: Mechanisms of substitution reactions. - Uses; Environmental effects of chloroform, iodoform freons, and DDT.	2%
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.	3%

	● 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 cr.-hydrogen. aldol condensation cannizzaro reaction. Haloform reaction, Chemical tests to distinguish between aldehydes and Ketones' Carboxylic Acids, Acidic strength and factors affecting it.	
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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.	2%
Biomolecules	● General introduction and importance of biomolecules. ● CARBOHYDRATES - classification; aldoses and ketoses: monosaccharides (glucose and fructose) and constituent monosaccharides of oligosaccharides (sucrose, lactose, and maltose) ● PROTEINS- Elementary idea of amino acids. peptide bond, polypeptides. Proteins: primary, secondary, tertiary, and quaternary structure (qualitative idea only), denaturation of proteins, enzymes. ● VITAMINS - Classification and functions.	4%

	● NUCLEIC ACIDS - Chemical constitution of DNA and RNA. ● Biological functions of nucleic acids' ● Hormones (General introduction)	
Principles Related to Practical Chemistry Important Questions	● Detection Of Extra Elements (Nitrogen, sulphur, halogens) inorganic compounds; ● Detection Of the following functional group., hydroxyl (alcoholic and phenolic), carbonyl (aldehyde and ketones) carboxyl, and amino groups in organic compounds. ● The chemistry involved in the preparation of the following: Inorganic compounds: Mohr's salt. potash alum. ● Organic compounds: Acetanilide. p-nitro acetanilide' aniline yellow" iodoform. ● The chemistry involved in the titrimetric exercises - Acids. bases and the use of indicators. oxalic acid vs KMnO_4. Mohr's salt vs KMnO_4. ● 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^- (	2%

	Insoluble salts excluded). Chemical principles involved in the following experiments: 1. Enthalpy of solution of CuSO_4, 2. Enthalpy of neutralization of strong acid and strong base. 3. Preparation of lyophilic and lyophobic sols. 4. Kinetic study of the reaction of iodide ions with hydrogen peroxide at room temperature.	
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NEET Biology Syllabus:

Chapter Name	Topics	Weightage
Diversity in Living World	• What is living?; Biodiversity; Need for classification; Taxonomy and Systematics; Concept of species and taxonomical hierarchy; Binomial nomenclature. • Five kingdom classifications; 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 2 examples of each category)	8%

	Salient features and classification of animals-nonchordate up to phyla level and chordate up to classes level (3-5 salient features and at least 2 examples)	
Structural Organisation In Animals and Plants	- Morphology and modifications; Tissues; Anatomy and functions of different parts of flowering plants: Root, Stem, Leaf, inflorescence- cymose and racemose, flower, fruit and seed (To be dealt along with the relevant practical of the Practical Syllabus) - Family (malvaceae, Cruciferae, leguminosae, compositae, gramineae).	8%
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.	11%

	- 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. - B Cell division: Cell cycle, mitosis, and their significance.	
Plant Physiology	- Photosynthesis as a means of Autotrophic nutrition; Site of photosynthesis take place; pigment 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. - Respiration: Exchange gasses; 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 development process in a plant cell; Growth regulators-auxin, gibberellin, cytokinin, ethylene, ABA.	12%

Human Physiology	- Breathing and respiratory organs in animals (recall only); Respiratory system in humans; Mechanism of breathing and its regulation in human-exchange of gasses, transport of gasses and regulation of respiration Respiratory volumes; Disorders related to respiratory-Asthma, Emphysema, Occupational respiratory disorders. - 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. - 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; Role of other organs in excretion; Disorders- Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney. - Locomotion and Movement: Types of movement- ciliary, flagellar, muscular;	13%
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	Skeletal muscle- contractile proteins and muscle contraction; ● Skeletal system and its functions (To be dealt with the relevant practical of Practice syllabus); Joints ● Disorders of muscular and skeletal system-Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout. ● Neural control and coordination: Neuron and nerves; Nervous system in humans central nervous system, peripheral nervous system and visceral nervous system; Peripheral nervous system and visceral nervous system; ● Generation and conduction of nerve impulse; Chemical coordination and regulation: Endocrine glands and hormones: Human endocrine system-Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary idea); ● Role of hormones as messengers and regulators, Hypo- and Hyperactivity and related disorders (common disorders e.g. Dwarfism, Acromegaly, Cretinism, Goiter, Exophthalmic goiter, diabetes, Addison's disease.) *Disease and disorders mentioned above to be dealt in brief*	
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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 event-development of endosperm and embryo, Development of seed and formation of fruit; Special modes- apomixis, parthenocarpy, polyembryony; Significance of seed and fruit formation. - Human reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis - spermatogenesis and oogenesis; Menstrual cycle; Fertilization, embryo development up to 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); Aminocentesis; Infertility and assisted reproductive technologies- IVF, ZIFT, GIFT (Elementary idea for general awareness).	8%
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Genetics and Evolution	● Heredity and variation: Mendelian inheritance; Deviations from Mendelism- incomplete dominance, Multiple alleles and inheritance of blood groups, Pleiotropy; Elementary idea of polygenic inheritance; Chromosome theory of inheritance; Chromosome and genes; Sex determination-in humans, birds, honey bee; Linkage and crossing over; Sex linked inheritance-Haemophilia, Colour blindness; Mendelian disorders in human-Thalassemia; Chromosomal disorders in human; 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; Packaging; DNA replication; Central dogma; Transcription, genetic code, translation; Gene expression and regulation- Lac Operon; Genome and human genome project; DNA fingerprinting, protein biosynthesis. ● Evolution: Origin of life: Biological evolution and evidence for biological evolution from Paleontology, comparative anatomy, embryology and molecular evidence); Darwin's contribution, Modern Synthetic theory of Evolution; Mechanism of evolution-Variation 9/Mutation and Recombination) and Natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy-Weinberg's	12%
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	principle; Adaptive Radiation; Human evolution.	
Biology and Human Welfare	- Health and Diseases; Pathogens; Parasites causing human diseases (Malaria, Filariasis, Ascariasis. Typhoid, Pneumonia, common cold, amoebiasis, ringworm, 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.	8%
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.	10%
Ecology and Environment	Organisms and environment population interactions-mutualism, competition, predation, parasitism; Population attributes-growth, birth rate and death rate, age distribution.	12%

	● 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, Nation parks and sanctuaries, Sacred Groves.	
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