Comprehensive Six-Month Curriculum and Pedagogical Framework for NEET UG Preparation

The National Eligibility cum Entrance Test (Undergraduate), administered by the National Testing Agency under directives from the National Medical Commission and the Under Graduate Medical Education Board, evaluates candidates on conceptual understanding, numerical proficiency, and empirical recall across Physics, Chemistry, and Biology[1]. The examination consists of 180 compulsory multiple-choice questions carrying a maximum score of 720 marks within an uninterrupted duration of 180 minutes, following a marking scheme of four marks for a correct response, a penalty of one mark for an incorrect response, and zero marks for unattempted items[2]. Following the removal of optional questions previously offered in Section B, candidates must achieve full syllabus coverage, making targeted omissions tactically unviable[3].

Structuring a six-month (24-week) preparation roadmap requires balancing initial knowledge acquisition with spaced revision cycles and timed simulations[6]. The preparation lifecycle is structured into three sequential instructional phases:

The initial operational phase spans Weeks 1 through 17 and is dedicated to foundational syllabus mastery[6]. During this seventeen-week span, candidates deconstruct the complete Class 11 and Class 12 curricula across all three subjects[6]. The daily schedule balances line-by-line textual deconstruction of NCERT textbooks with formal mathematical derivations and timed question sets[6]. This approach ensures that theoretical principles are paired with numerical and situational problem-solving from the outset[8].

The second phase encompasses Weeks 18 through 20 and concentrates on applied consolidation, cross-topical synthesis, and experimental methodologies[1]. This phase directly addresses the practical components introduced in the updated regulatory curriculum, specifically Experimental Skills in Physics (Unit 20) and Principles Related to Practical Chemistry (Unit 20), alongside morphological and anatomical additions in Biology such as the frog and specific angiosperm families[1]. During this stage, students connect conceptual theory with empirical laboratory techniques, error analysis, and structural identification[1].

The concluding phase occupies Weeks 21 through 24 and shifts into full-scale examination simulation and high-velocity revision[7]. Candidates transition from topic-focused study to full-syllabus integration, taking timed mock examinations under conditions matching the actual test environment[7]. Daily activity during this month emphasizes diagnosing error logs, reviewing formula sheets, and running rapid flashcard recall sessions to minimize reaction latency, stabilize testing temperament, and reduce unforced errors[8].

Macro-Architectural Time Allocation and Daily

Operational Structure

Securing an elite percentile on the NEET UG examination requires an intensive self-study commitment ranging between 10 and 12 hours daily[8]. Cognitive endurance and retention depend on matching tasks to natural variations in alertness throughout the day[6]. Theoretical subjects that place heavy demands on verbal memory and factual recall are scheduled during early morning hours when cognitive interference is lowest[9].

Midday and afternoon blocks are reserved for quantitative derivations and analytical problem-solving, which benefit from active scratchpad work[10]. Evenings are dedicated to mixed-subject problem sets that simulate the rapid cognitive shifts required during the official examination[8].

Time Slot	Primary Operational Focus	Strategic Pedagogical Objective
06:30 – 09:30 (3.0 hrs)	Biology NCERT Deconstruction & Active Retrieval	Line-by-line reading of NCERT prose, mental recall of physiological pathways, and annotation of morphological figures[9].
09:30 – 10:15 (0.75 hr)	Nutritional Reset & Cognitive Recovery	Complete dissociation from academic materials to facilitate consolidation of short-term memory[10].
10:15 – 13:15 (3.0 hrs)	Physics Conceptual Derivations & Quantitative Problem-Solving	Deconstructing underlying physical laws, deriving boundary conditions, and executing 35 to 45 timed numerical problems[6].
13:15 – 14:30 (1.25 hrs)	Midday Meal, Rest, and Decompression	Systematic physical and cognitive decompression to avoid attention fatigue during later sessions.
14:30 – 17:30 (3.0 hrs)	Chemistry Theoretical & Practical Modular Study	Rotating between Physical Chemistry numericals, Inorganic trends and coordination stereochemistry, and

		Organic mechanisms.
17:30 – 18:00 (0.5 hr)	Physical Mobility & Aerobic Reset	Light physical movement or outdoor walking to stimulate cerebral circulation and alleviate postural strain[10].
18:00 – 19:30 (1.5 hrs)	Mixed-Discipline Timed MCQ Problem Set	Executing 60 mixed questions (15 Physics, 15 Chemistry, 30 Biology) under strict stopwatch timing to build rapid cognitive agility[8].
19:30 – 20:30 (1.0 hr)	Evening Meal & Mental Transition	Personal maintenance, dinner, and low-stimulus relaxation.
20:30 – 22:00 (1.5 hrs)	Error Log Analysis & Formula / Reagent Review	Documenting and categorizing daily errors in an analytical logbook, reviewing formula sheets, and running rapid flashcard recall.

Physics: 24-Week Comprehensive Curriculum

Physics in the NEET UG examination measures a candidate's ability to translate physical principles into rigorous mathematical frameworks, interpret graphs under pressure, and manage unit conversions accurately[8]. Under current NMC regulatory frameworks, experimental physics skills (Unit 20) are formally tested, requiring direct familiarity with instrument zero errors, calibration mechanics, and error propagation alongside the standard theoretical curriculum[1].

Week Number	Topics for That Week	Daily Work to be Done	Assignment for That Week	Milestone of the Topics Covered for That Week
Week 1	**Units & Measurements and Mathematical Foundations** SI base and derived units,	Derive formulas; practice vectors.	Units and dimensional analysis.	Dimensional analysis mastered.

	system of units, least count mechanics, significant figure conventions, absolute, relative, and percentage errors, dimensional formulas, applications of dimensional analysis. Core mathematical prerequisites: elementary differential calculus ($\frac{dy}{}$), integral calculus ($\int y\,dx$), vectors (resolution, scalar/vector dot and cross products)[1].			
Week 2	**Kinematics: Rectilinear & Planar Motion** Frames of reference, position-time, velocity-time, and acceleration-time graphs; kinematics of uniformly accelerated motion ($v = u +$, $s = ut +$, $v^2 - u^2 =$); relative velocity formulations in one and two dimensions; projectile motion (time of flight, maximum elevation, horizontal range, equation of trajectory); uniform circular motion kinematics[1].	Analyze kinematic graphs daily.	Kinematics and planar motion.	Kinematic equations mastered.
Week 3	**Laws of Motion & Friction Mechanics** Inertia, Newton's three laws of motion, momentum conservation, impulse-momentum	Draw free-body diagrams daily.	Laws of motion; friction.	Force balances mastered.

	theorem, free-body diagrams for complex connected masses, smooth and rough pulley-mass systems; static, kinetic, and rolling friction, laws of friction, angle of repose; dynamics of uniform circular motion: centripetal acceleration and force, vehicle dynamics on flat and banked roads, conical pendulum[1].			
Week 4	**Work, Energy, and Power** Work by constant and variable force fields ($W = \int F \cdot$); work-energy theorem; kinetic and potential energy functions, conservative versus non-conservative forces, potential energy of an ideal spring ($U =$); conservation of mechanical energy; vertical circular motion dynamics; elastic and inelastic collisions in one and two dimensions, coefficient of restitution (e)[1].	Energy conservation; collision review.	Work, energy, power, collisions.	Work-energy theorem mastered.
Week 5	**System of Particles & Rotational Dynamics** Center of mass of discrete and continuous distributions, center of mass motion; torque ($\tau = r \times$), angular momentum (	Inertia calculations; torque balance.	Rotational dynamics and rolling.	Rolling dynamics mastered.

	$L = r \times$), law of conservation of angular momentum and its physical applications; moment of inertia (I), radius of gyration, parallel and perpendicular axis theorems, moments of inertia for regular geometric bodies; rotational equilibrium, equations of rotational motion, pure rolling on horizontal and inclined planes[1].			
Week 6	**Universal Gravitation** Kepler's laws of planetary motion; Newton's universal law of gravitation; acceleration due to gravity (g) and its variation with altitude, depth, and earth's rotation; gravitational field intensity and gravitational potential; gravitational potential energy; escape velocity ($v_e =$); satellite orbital mechanics, orbital velocity (v_o), orbital time period, binding energy, and total energy relations ($E = -K =$)[1].	Kepler laws; orbital potential.	Gravitation and orbital mechanics.	Satellite mechanics mastered.
Week 7	**Mechanical Properties of Solids & Fluids** Elastic behavior, stress-strain relationship, Hooke's law, Young's	Fluid pressure; capillary problems.	Solids and fluid properties.	Fluid mechanics mastered.

	modulus, bulk modulus, modulus of rigidity, elastic potential energy density; fluid statics: pressure, Pascal's law and hydraulic applications, effect of gravity on fluid pressure, Archimedes' principle; fluid dynamics: streamline and turbulent flow, equation of continuity, critical velocity, Bernoulli's principle and applications (Torricelli's law, venturimeter); viscosity, Stokes' law, terminal velocity; surface tension, surface energy, angle of contact, excess pressure, capillary rise[1].			
Week 8	**Thermal Physics & Thermodynamics** Thermal expansion of solids, liquids, and gases; calorimetry, specific heat capacity, latent heat; mechanisms of heat transfer: conduction, thermal conductivity, convection, radiation, Stefan-Boltzmann law, Wien's displacement law; thermodynamic equilibrium, zeroth law, concept of temperature; first law of thermodynamics ($\Delta Q = \Delta U +$); work done in isothermal, adiabatic, isobaric, and isochoric processes; second law of thermodynamics, reversible and irreversible	PV diagrams; heat cycles.	Thermodynamics and kinetic theory.	Thermodynamic cycles mastered.

	processes; Kinetic Theory of Gases: ideal gas equation, molecular kinetic energy, root-mean-square speed (v_{rms}), degrees of freedom, law of equipartition of energy, molar specific heats (C_v, C_n), mean free path[1].			
Week 9	**Oscillations and Mechanical Waves** Periodic motion, Simple Harmonic Motion (SHM), differential equation of SHM, kinematic equations of SHM (displacement, velocity, acceleration), phase relations, kinetic and potential energy in SHM; simple pendulum, loaded helical spring systems (series and parallel); wave motion, transverse and longitudinal waves, speed of traveling waves; progressive wave equation; superposition principle, reflection of waves, standing waves in strings and organ pipes (fundamental and harmonic modes), end corrections, beats phenomenon[1].	SHM restoring force equations.	Oscillations and wave motion.	Acoustic resonance mastered.
Week 10	**Electrostatics I: Electric Charges, Fields & Gauss's Law** Electric charges, conservation and	Gauss law; electric flux.	Electric charges and fields.	Gauss flux mastered.

	quantization of charge, Coulomb's law in vector form, superposition principle, continuous charge distributions (linear, surface, volume); electric field intensity, electric field lines and properties, electric dipole, dipole moment, electric field due to a dipole on axial and equatorial lines, torque and potential energy of a dipole in a uniform electric field; electric flux, Gauss's law and its applications: electric field due to an infinitely long straight wire, uniformly charged infinite plane sheet, and uniformly charged thin spherical shell[1].			
Week 11	**Electrostatics II: Potential, Equipotential Surfaces & Capacitors** Electric potential and potential difference, calculation of electric potential due to a point charge, electric dipole, and system of charges; equipotential surfaces and their geometric properties; electrostatic potential energy of a system of point charges and of an electric dipole in an external field; conductors in electrostatic equilibrium, electrostatic shielding; dielectrics and electric polarization;	Capacitor networks; potential contours.	Potential and capacitor circuits.	Capacitor circuits mastered.

	capacitance of a parallel plate capacitor with and without dielectric media, combination of capacitors in series and parallel, energy stored in a capacitor ($U =$), energy density of an electric field[1].			
Week 12	**Current Electricity** Electric current, drift velocity, mobility and their relation with electric current ($I =$), Ohm's law, electrical resistance, $V-I$ characteristics of ohmic and non-ohmic conductors; electrical resistivity and conductivity, temperature dependence of resistance; electrical power and energy; series and parallel combinations of resistors; internal resistance, electromotive force (EMF), and terminal potential difference of a cell, combinations of cells in series and parallel; Kirchhoff's circuit rules and their systematic applications; Wheatstone bridge condition; Metre Bridge principle and resistance determination[1].	Kirchhoff laws; bridge circuits.	Current electricity; circuits.	Circuit laws mastered.
Week 13	**Magnetic Effects of Current & Magnetism** Biot-Savart law and its	Magnetic fields; galvanometer conversions.	Magnetism and magnetic	Magnetic forces mastered.

	application to current-carrying circular loops; Ampere's circuital law and its applications to infinitely long straight conductors and solenoids; Lorentz magnetic force on a moving charge in uniform electric and magnetic fields; force on a current-carrying conductor in a uniform magnetic field; force between two parallel current-carrying conductors, definition of the ampere; torque experienced by a current loop in a magnetic field; moving coil galvanometer, current and voltage sensitivity, conversion to ammeter and voltmeter; current loop as a magnetic dipole, magnetic dipole moment; bar magnet, magnetic field lines, field due to a magnetic dipole along axial and equatorial lines, torque on a magnetic dipole; magnetic properties: diamagnetic, paramagnetic, and ferromagnetic substances, Curie's law[1].		effects.	
Week 14	**Electromagnetic Induction & Alternating Currents** Electromagnetic induction: magnetic flux, Faraday's laws of induction, induced EMF and current; Lenz's law and energy conservation, eddy currents;	AC phasors; resonant frequency.	Electromagnetic induction; alternating currents.	AC resonance mastered.

	self-inductance (L) and mutual inductance (M); alternating currents: peak and root-mean-square values of AC voltage and current; inductive and capacitive reactance, impedance (Z); series LCR circuit analysis, phasor diagrams, electrical resonance ($f_0 =$), quality factor (Q); power in AC circuits, power factor ($\cos\phi$), wattless current; AC generator principles; transformer equations and energy loss mechanisms[1].			
Week 15	**Electromagnetic Waves & Ray Optics** Electromagnetic waves: displacement current, characteristics of EM waves, transverse nature, electromagnetic spectrum (radio waves to gamma rays) and practical applications; Ray optics: reflection by spherical mirrors, mirror formula, sign conventions; refraction at plane and spherical surfaces, thin lens formula, lens maker's formula; total internal reflection (TIR) and optical fibers; magnification, optical power of a lens, combination of thin lenses in contact; refraction through a	Ray tracing; lens-mirror formulas.	Ray optics; optical instruments.	Ray tracing mastered.

	prism, angle of minimum deviation; optical instruments: compound microscope and astronomical telescope (magnifying power in normal and near-point adjustments)[1].			
Week 16	**Wave Optics & Dual Nature of Radiation/Matter** Wave optics: wavefronts, Huygens' principle, geometric proofs of laws of reflection and refraction; interference of light, coherent sources, Young's double-slit experiment (YDSE), derivation of fringe width ($\beta =$), conditions for constructive and destructive interference; single-slit diffraction, angular width of central maximum; polarization of light, plane-polarized light, Brewster's law, Malus's law. Dual nature: photoelectric effect, Hertz and Lenard's observations, Einstein's photoelectric equation ($h\nu = \phi_0 +$), stopping potential; matter waves, de Broglie relation ($\lambda = \frac{h}{} =$)[1].	Wave interference; photoelectric equations.	Wave optics; dual nature.	Interference patterns mastered.
Week 17	**Atoms, Nuclei & Semiconductor Electronics**	Bohr transitions; diode logic.	Modern physics and semiconductors.	Modern physics mastered.

	Atomic physics: alpha-particle scattering experiment, Rutherford's nuclear model, Bohr model of the hydrogen atom, postulates, derivations of orbital radii, electron velocities, and energy levels, hydrogen emission spectrum (Lyman, Balmer, Paschen series); Nuclear physics: nuclear composition, nuclear radius ($R =$), atomic masses, mass defect, binding energy per nucleon curve, nuclear fission and fusion; Semiconductors: energy bands, intrinsic and extrinsic (n-type, p-type) semiconductors, p–n junction formation, forward and reverse bias I–V characteristics, junction diode as a half-wave and full-wave rectifier; optoelectronic diodes: LED, photodiode, solar cell, Zener diode as a voltage regulator; logic gates: basic truth tables (AND, OR, NOT, NAND, NOR)[1].			
Week 18	**Experimental Skills in Physics** Practical laboratory physics: Vernier calipers (internal/external diameter and depth); screw gauge	Vernier, gauge, practical apparatus.	Experimental physics skills.	Instrument measurements mastered.

	(wire diameter and plate thickness); simple pendulum (energy dissipation and amplitude decay graphs); Metre scale (mass determination via principle of moments); Young's modulus of a wire; surface tension of water via capillary rise; coefficient of viscosity via terminal velocity of a falling sphere; speed of sound using a resonance tube; specific heat capacity of solids and liquids via method of mixtures; resistivity using a Metre bridge; resistance verification via Ohm's law; galvanometer resistance and figure of merit via half-deflection; focal lengths of convex/concave mirrors and lenses using the optical bench parallax method; prism deviation curve; travelling microscope refractive index; p–n diode and Zener diode characteristic curves; identification of diodes, LEDs, resistors, and capacitors[1].			
Week 19	**Physics Revision Phase I: Class 11 Core Mechanics & Thermodynamics** Comprehensive re-evaluation of Kinematics, Laws of Motion, Work-Power-Energy,	Review mechanics error log.	Class 11 mechanics review.	Mechanics revision complete.

	Rotational Dynamics, Gravitation, Fluid Mechanics, and Thermal Physics[6].			
Week 20	**Physics Revision Phase II: Class 12 Electromagnetism, Optics & Modern Physics** Comprehensive review of Electrostatics, Current Electricity, Magnetism, EMI, Alternating Currents, Optics, Dual Nature, Atoms, Nuclei, and Semiconductors[6].	Review electromagnetism error log.	Class 12 physics review.	Electromagnetism revision complete.
Week 21	**Full Simulation & Advanced Problem-Solving Phase I** Full-syllabus integration with focus on multi-concept questions (such as electromagnetic induction coupled with mechanics, or thermodynamic cycles linked to kinetic theory)[6].	Timed mock; error analysis.	Full physics mock papers.	Calculation errors reduced.
Week 22	**Full Simulation & Intensive Weak-Area Remediation Phase II** Targeted remediation of persistent weak areas identified in mock diagnostics (such as optical sign conventions, rotational collisions, or magnetic dipole vectors)[6].	Target weak physics areas.	Advanced physics problem sets.	Target score reached.
Week 23	**Grand Revision: Rapid**	Active formula	Physics	Rapid formula recall.

	Formula & Graph Drills Active recall of all physical equations, dimensional constants, experimental precautions, boundary conditions, and circuit shortcuts.	derivations daily.	formula sheets.	
Week 24	**Final Exam Readiness & Cognitive Stabilization** Review of high-frequency topics (Modern Physics, Current Electricity, Semiconductors, Dimensional Analysis); testing temperament and pacing[6].	Review errors; rest well.	Final physics mock test.	Complete testing readiness.

Chemistry: 24-Week Comprehensive Curriculum

Chemistry performance requires balancing three distinct disciplines: Physical Chemistry relies on numerical problem-solving and unit conversions; Inorganic Chemistry requires memorization of periodic anomalies, trends, and coordination structures; and Organic Chemistry demands a clear understanding of reaction mechanisms, intermediate stabilities, and multi-step synthesis pathways.

The curriculum incorporates Unit 20 (Principles Related to Practical Chemistry), preparing candidates for qualitative salt analysis, functional group testing, and titrimetric chemistry alongside standard theoretical modules[1].

Week Number	Topics for That Week	Daily Work to be Done	Assignment for That Week	Milestone of the Topics Covered for That Week
Week 1	**Physical: Some Basic Concepts in Chemistry** Matter and	Stoichiometry; concentration term drills.	Mole concept and stoichiometry.	Stoichiometric calculations mastered.

	particulate nature, Dalton's atomic theory; atomic and molecular masses, mole concept, molar mass, percentage composition, empirical and molecular formulas; chemical stoichiometry, limiting reagent calculations, reaction yield; concentration units: mass percentage, volume percentage, mole fraction, molarity, molality[1].			
Week 2	**Physical: Structure of Atom** Electromagnetic radiation, photoelectric effect; hydrogen atomic spectrum, Rydberg equation; Bohr model of the hydrogen	Quantum numbers; nodal surfaces.	Atomic structure; quantum mechanics.	Quantum numbers mastered.

	atom, postulates, derivations of radii, orbital velocity, and energy levels, limitations; dual nature of matter, de Broglie relation, Heisenberg uncertainty principle; quantum mechanical model, wave functions (ψ, ψ^2), radial and angular probability distributions, quantum numbers (n, l, m, s), orbital shapes, Aufbau principle, Pauli exclusion principle, Hund's rule, electronic configurations and anomalous stabilities (Cr, Cu)[1].			
Week 3	**Inorganic: Periodic Classification & Periodicity**	NCERT tables; periodic anomalies.	Periodic classification and trends.	Periodic trends memorized.

	Modern periodic law and layout of the periodic table; classification into s, p, d, f blocks; periodic trends in atomic and ionic radii, consequences of the lanthanoid contraction; ionization enthalpy trends and anomalies (B vs Be, N vs O); electron gain enthalpy variations (F vs Cl); electronegativity scales, valence, oxidation states, and diagonal relationships[1].			
Week 4	**Inorganic/Physical: Chemical Bonding & Molecular Structure**	VSEPR shapes; MO diagrams.	Chemical bonding; molecular structure.	Molecular shapes mastered.

	Kossel-Lewis approach, ionic bond formation, lattice enthalpy, Born-Haber cycle; covalent bonding, electronegativity, Fajan's rules (polarization); dipole moments, percentage ionic character; VSEPR theory and molecular geometry predictions; Valence Bond Theory (hybridization involving s, p, d orbitals); Molecular Orbital Theory (LCAO principles, σ, π molecular orbitals, bond order, bond length, magnetic properties of O_2, B_2, N_2); hydrogen bonding types and physical consequences[1]			

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Week 5	**Physical: Chemical Thermodynamics** Concepts of system, surroundings, state and path functions, extensive and intensive properties; first law ($\Delta U = q +$); work done in reversible and irreversible isothermal and adiabatic expansions; enthalpy (H), molar heat capacities (C_n, C_v); Hess's law of constant heat summation; standard enthalpies of formation, combustion, bond dissociation, atomization, sublimation, phase transitions, and solution;	Hess law; spontaneity checks.	Chemical thermodynamics and energetics.	Free energy mastered.

	second law of thermodynamics, entropy (S), spontaneity criteria ($\Delta S_{\text{universe}} >$); Gibbs energy change ($\Delta G = \Delta H -$), standard Gibbs energy change ($\Delta G^\circ =$)[1].			
Week 6	**Physical: Chemical Equilibrium** Dynamic nature of equilibrium, physical equilibria (Henry's law); law of chemical equilibrium, equilibrium constants (K_p, K_c) and their relationship ($K_p =$); reaction quotient (Q) and reaction direction; factors influencing	Equilibrium shifts; Le Chatelier.	Chemical equilibrium principles.	Equilibrium shifts mastered.

	equilibrium, Le Chatelier's principle (variations in concentration, pressure, volume, temperature, inert gas addition at constant volume/pressure, catalyst impact)[1].			
Week 7	**Physical: Ionic Equilibrium** Electrolytes, degree of ionization; Arrhenius, Bronsted-Lowry, and Lewis acid-base concepts; auto-ionization of water (K_w), pH scale; weak acid and base equilibria (K_a, K_b), Ostwald's dilution law; common ion effect; salt hydrolysis (all four classes: strong acid-strong	pH equations; buffer solutions.	Ionic equilibrium; salt hydrolysis.	Acid-base equilibria mastered.

	base, weak acid-strong base, strong acid-weak base, weak acid-weak base, and derived pH equations); buffer solutions (acidic and basic buffers, Henderson-Hasselbalch equation); solubility product (K_{sp}) and precipitation criteria ($Q_{sp} >$)[1].			
Week 8	**Physical: Redox Reactions and Electrochemistry** Oxidation numbers, rules, balancing redox equations (ion-electron and oxidation number methods); electrolytic versus galvanic cells;	Balance redox; Nernst equations.	Electrochemistry and redox reactions.	Electrochemical cells mastered.

	standard electrode potentials, electrochemical series; Nernst equation and cell potential ($E_{\text{cell}} = E^\circ_{\text{cell}} -$); relationship between E°_{cell} and ΔG°; electrolytic conduction, conductivity (κ), molar conductivity (Λ_m), Kohlrausch's law and applications; batteries (dry cell, lead accumulator), fuel cells[1].			
Week 9	**Physical: Solutions** Types of solutions, expressions of concentration; vapor pressure of liquid solutions, Raoult's law for volatile solutes; ideal and non-ideal solutions,	Colligative formulas; van't Hoff.	Solutions and colligative properties.	Colligative properties mastered.

	positive and negative deviations, azeotropes; colligative properties: relative lowering of vapor pressure (RLVP), elevation of boiling point ($\Delta T_b =$), depression of freezing point ($\Delta T_f =$), osmotic pressure ($\pi =$); abnormal molar mass, van 't Hoff factor (i) calculations for association and dissociation[1].			
Week 10	**Physical: Chemical Kinetics** Rate of reaction (average and instantaneous); factors influencing rate:	Integrated rates; Arrhenius plots.	Chemical kinetics rate laws.	Reaction rates mastered.

	concentration, temperature, catalyst; rate law, rate constant (k), order and molecularity; differential and integrated rate laws for zero and first-order reactions, half-life ($t_{1/2}$); temperature dependence, Arrhenius equation ($k =$), activation energy calculation; collision theory of bimolecular gaseous reactions[1].			
Week 11	**Inorganic: p-Block Elements (Groups 13 to 18)** General introduction, electronic configuration, oxidation states, inert pair effect; periodic trends in physical and	NCERT reading; p-block trends.	p-Block group elements.	Group trends memorized.

	chemical properties; unique behavior of the first element in each group; group trends for Group 13 (Boron family), 14 (Carbon family), 15 (Nitrogen family), 16 (Oxygen family), 17 (Halogens), and 18 (Noble gases)[1].			
Week 12	**Inorganic: d- and f-Block Elements & Coordination Compounds I** Transition metals: electronic configuration, occurrence, trends in metallic properties, atomic radii, ionization enthalpies, variable oxidation states, color, catalytic properties, magnetic	Transition metals; coordination IUPAC.	d-f blocks; coordination chemistry.	Transition elements mastered.

	properties (spin-only formula $\mu =$ BM), interstitial compounds, alloy formation; preparation, properties, and oxidizing actions of $K_2Cr_2O_7$ and $KMnO_4$. Lanthanoids: configuration, oxidation states, lanthanoid contraction and consequences. Actinoids: configuration, comparison with lanthanoids. Introduction to coordination compounds, Werner's theory, ligands, coordination number, denticity, chelation, IUPAC nomenclature[1].			
Week 13	**Inorganic: Coordination Compounds II &**	Isomerism drawings; CFSE	Coordination isomerism; organic	Complex isomerism mastered.

	Purification/Analysis of Organic Compounds Isomerism in coordination complexes (structural: ionization, solvate, linkage, coordination; stereoisomerism: geometrical and optical); bonding in coordination compounds: Valence Bond Theory, Crystal Field Theory (octahedral and tetrahedral splitting, Δ_o, Δ_t), spectrochemical series, CFSE calculations, color and magnetic properties; biological importance of complexes. Organic purification: crystallization, sublimation, distillation	calculations.	purification.	

	(simple, fractional, steam, vacuum), differential extraction, chromatography; qualitative analysis (detection of N, S, P, halogens via Lassaigne's test); quantitative analysis (estimation of C, H, N via Dumas/Kjeldahl, halogens via Carius)[1].			
Week 14	**Organic: Some Basic Principles of Organic Chemistry (GOC)** Tetravalency of carbon, hybridization (sp^3, sp^2, sp), molecular shapes; classification, functional groups, homologous series; IUPAC nomenclature	Electronic effects; intermediate stabilities.	General organic chemistry fundamentals.	Organic mechanisms understood.

	of polyfunctional compounds; structural and stereoisomerism (chain, position, functional, metamerism, tautomerism; geometrical $cis/trans$, optical: chirality, enantiomers, diastereomers); homolytic/heterolytic cleavage, free radicals, carbocations, carbanions, stability orders; electromeric, inductive, resonance, hyperconjugation effects; electrophiles and nucleophiles; types of organic reactions (substitution, addition, elimination, rearrangement)[1].			
Week 15	**Organic: Hydrocarbons**	Alkene additions;	Hydrocarbons and aromatic	Hydrocarbon reactions

	Alkanes: nomenclature, synthesis (Wurtz, Kolbe, decarboxylation), combustion, free radical halogenation mechanism, conformations of ethane (Sawhorse, Newman). Alkenes: structure, geometrical isomerism, synthesis (dehydrohalogenation, dehydration), electrophilic addition reactions (mechanism of addition of H_2, halogens, water, hydrogen halides: Markovnikov and peroxide effect/Kharasch), ozonolysis, acidic oxidation, polymerization. Alkynes: acidity of terminal	ozonolysis problems.	substitutions.	mastered.

	alkynes, addition reactions, cyclic polymerization. Aromatic hydrocarbons: benzene structure, aromaticity; electrophilic aromatic substitution (EAS): halogenation, nitration, sulfonation, Friedel-Crafts alkylation/acylation; directive influence of functional groups[1].			
Week 16	**Organic: Organic Compounds Containing Halogens (Haloalkanes & Haloarenes)** Nomenclature, nature of $C-X$ bond, general methods of preparation (from alcohols, alkenes, halogen exchange:	SN1 SN2 stereochemistry review.	Haloalkanes and haloarenes.	Alkyl halide mechanisms.

	Finkelstein, Swarts); physical properties; chemical reactions: nucleophilic substitution (S_N1 and S_N2 mechanisms, kinetics, stereochemistry, inversion vs racemization), elimination reactions (Saytzeff vs Hofmann elimination), reaction with metals (Grignard reagent formation, Wurtz-Fittig); haloarenes: unreactivity toward nucleophilic substitution, resonance structures, Dow's process, electrophilic substitution reactions; environmental effects of chloroform, iodoform,			

	freons, DDT[1].			
Week 17	**Organic: Alcohols, Phenols, and Ethers** Alcohols: classification, nomenclature, preparation (hydration of alkenes, hydroboration-oxidation, oxymercuration-demercuration, reduction of carbonyls, Grignard additions); physical properties, hydrogen bonding; chemical reactions: acidity, esterification, reactions with HX, PCl_3, P, mechanism of dehydration to alkenes; distinction tests (Lucas test, Victor Meyer, oxidation using PCC, Jones, copper at 573 K). Phenols: preparation	Dehydration mechanisms; ether cleavages.	Alcohols, phenols, and ethers.	Ether reactions mastered.

	(from cumene, diazonium salts), physical properties, acidic nature (resonance stabilization of phenoxide); electrophilic substitution: halogenation, nitration, Kolbe's reaction, Reimer-Tieman n reaction, reaction with zinc dust, oxidation. Ethers: structure, preparation (Williamson ether synthesis, alcohol dehydration), reactions: cleavage of $C-O$ bond by HX (mechanism with primary, secondary, and tertiary alkyl groups)[1].			
Week 18	**Organic: Aldehydes, Ketones, and Carboxylic**	Carbonyl additions; named condensations.	Aldehydes, ketones, carboxylic acids.	Carbonyl chemistry mastered.

	Acids Aldehydes and Ketones: nature of carbonyl group, preparation (oxidation of alcohols, ozonolysis, Rosenmund reduction, Stephen's reduction, Gattermann-Koch, Friedel-Crafts acylation); physical properties; chemical reactions: nucleophilic addition mechanisms (addition of HCN, $NaHSO_3$, alcohols, Grignard reagents, ammonia derivatives NH_2-G), relative reactivity of aldehydes vs ketones; reduction: Clemmensen,			

	Wolff-Kishner, $LiAlH_4, NaB$; oxidation: Tollens' test, Fehling's test, haloform reaction (iodoform test); acidity of α -hydrogens, Aldol condensation (cross and cyclic), Cannizzaro reaction. Carboxylic Acids: acidic strength, inductive and resonance factors; preparation, reactions: decarboxylation (soda-lime, Kolbe electrolysis), Hell-Volhard-Zelinsky (HVZ) reaction[1].			
Week 19	**Organic: Nitrogen Compounds & Biomolecules** Amines: structure, classification, nomenclature,	Amine basicity; biomolecule structures.	Nitrogen compounds and biomolecules.	Biochemical structures mastered.

	preparation (reduction of nitro, nitriles, amides; Gabriel phthalimide synthesis, Hofmann bromamide degradation); physical properties, basic character (basicity orders in aqueous and gaseous phases: inductive, steric, and hydration effects); chemical reactions: acylation, carbylamine reaction, reaction with nitrous acid, Hinsberg test for distinction; diazonium salts: preparation, stability, synthetic transformations (Sandmeyer, Gattermann, coupling reactions). Biomolecules: Carbohydrates:			

	aldoses, ketoses, monosaccharides (glucose structure, D/L configuration, cyclic pyranose/furanose structures, fructose), disaccharides (sucrose, lactose, maltose - glycosidic linkage, reducing/non-reducing nature); Proteins: amino acids (zwitterion, essential/non-essential, peptide bond), structure (primary, secondary α -helix/β -pleated, tertiary, quaternary), denaturation, enzymes; Vitamins: classification, deficiency diseases; Nucleic Acids: chemical composition,			

	nucleosides, nucleotides, DNA/RNA double helix; Hormones: general introduction[1].			
Week 20	**Principles Related to Practical Chemistry** Detection of extra elements (N, S, halogens) in organic compounds; detection of functional groups: hydroxyl (alcoholic and phenolic), carbonyl (aldehyde and ketone), carboxyl, and amino groups. Preparation of inorganic compounds: Mohr's salt, potash alum; preparation of organic compounds: acetanilide, p-nitroacetanilide, aniline	Salt analysis; functional tests.	Practical chemistry qualitative analysis.	Qualitative analysis mastered.

	yellow, iodoform. Titrimetric exercises: acid-base titrations, indicators; redox titrations: oxalic acid vs $KMnO_4$, Mohr's salt vs $KMnO_4$. Qualitative inorganic salt analysis: systematic detection of cations (Pb^{2+}, Cu^{2+}, A) and anions (CO_3^{2-}, S^{2-}, S). Chemical principles in enthalpy experiments (solution of $CuSO_4$, neutralization), preparation of lyophilic/lyophobic sols, and kinetics of iodide-hydrogen peroxide reaction[1].			
Week 21	**Chemistry Revision Phase I: Physical**	Timed arithmetic; formula review.	Physical chemistry revision sets.	Numerical speed mastered.

	Chemistry Master Drill Systematic re-evaluation of Mole Concept, Atomic Structure, Thermodynamics, Chemical & Ionic Equilibrium, Electrochemistry, Kinetics, and Solutions[6].			
Week 22	**Chemistry Revision Phase II: Inorganic & Practical Chemistry Drill** Comprehensive re-evaluation of Periodic Trends, Bonding, p-Block, d- and f-Block, Coordination Compounds, and Salt Analysis[6].	Inorganic NCERT text review.	Inorganic and practical chemistry.	Inorganic recall perfected.
Week 23	**Chemistry Revision Phase III: Organic**	Draw reaction conversion maps.	Organic multi-step synthesis	Organic synthesis mastered.

	Reaction Pathways Drill Systematic review of GOC, Hydrocarbons, Haloalkanes, Oxygen and Nitrogen compounds, and Biomolecules; reaction roadmap conversions[8].		pathways.	
Week 24	**Final Full-Syllabus Chemistry Simulation & Error Remediation** Full-syllabus integration simulating real exam pressure; strategic management of 45 Chemistry questions within a target time of 40 to 45 minutes[6].	Review error log calmly.	Final chemistry mock paper.	Full exam confidence.

Biology: 24-Week Comprehensive Curriculum

Biology accounts for 50% of the NEET UG paper (90 compulsory questions, 360 marks), divided between Botany and Zoology[6]. Current testing patterns show that questions are drawn directly from NCERT prose, figure labels, summary paragraphs, and complex multi-statement assertions[5].

The curriculum includes all newly added angiosperm families under structural organization (Malvaceae, Cruciferae, Leguminosae, Compositae, Gramineae) and frog anatomy alongside traditional physiology, genetics, and biotechnology modules[1].

Week Number	Topics for That Week	Daily Work to be Done	Assignment for That Week	Milestone of the Topics Covered for That Week
Week 1	**Diversity in Living World I: The Living World & Biological Classification** Characteristics of living organisms, biodiversity, taxonomy, systematics; binomial nomenclature, taxonomical hierarchy, species concept. Five-kingdom classification; salient features of Monera (archaebacteria, eubacteria, mycoplasma), Protista (chrysophytes, dinoflagellates, euglenoids, slime moulds, protozoans),	NCERT reading; fungal tables.	Living world; biological classification.	Taxonomic systems memorized.

	Fungi (phycomycetes, ascomycetes, basidiomycetes, deuteromycetes); Lichens, Viruses, Viroids, Prions[1].			
Week 2	**Diversity in Living World II: Plant Kingdom** Salient features and classification of plants into major groups: Algae (Chlorophyceae, Phaeophyceae, Rhodophyceae - pigments, stored food, cell wall composition, flagellation); Bryophytes (Liverworts, Mosses - alternation of generations, gametophyte and sporophyte stages); Pteridophytes	Algae types; bryophyte cycles.	Plant kingdom classification.	Plant cycles mastered.

	(Lycopsida, Sphenopsida, homospory and heterospory, evolution of seed habit); Gymnosperms (morphology, mycorrhiza and coralloid roots, life cycle, non-motile gametes, pollination mechanisms)[1].			
Week 3	**Diversity in Living World III: Animal Kingdom** Basis of animal classification: levels of organization, symmetry, diploblastic versus triploblastic, coelom types, segmentation, notochord; non-chordate phyla: Porifera, Coelenterata (Cnidaria), Ctenophora, Platyhelminthes, Aschelminthes, Annelida,	Phyla features; chordate charts.	Animal kingdom classification.	Animal diversity memorized.

	Arthropoda, Mollusca, Echinodermata, Hemichordata; chordates: Urochordata, Cephalochordata, Vertebrata (Cyclostomata, Chondrichthyes, Osteichthyes, Amphibia, Reptilia, Aves, Mammalia)[1].			
Week 4	**Structural Organisation in Plants** Morphology and modifications of root, stem, and leaf; inflorescence (racemose, cymose); flower structure, aestivation, placentation, fruit types (drupe), seed structure (monocot and dicot). Anatomy of flowering plants: meristematic,	Floral diagrams; plant histology.	Structural organisation in plants.	Floral formulas mastered.

	simple, and complex tissues; internal structure of dicot and monocot root, stem, and leaf; secondary growth principles. Angiosperm families: Malvaceae, Cruciferae (Brassicaceae), Leguminosae (Fabaceae), Compositae (Asteraceae), Gramineae (Poaceae)[1].			
Week 5	**Structural Organisation in Animals** Animal tissues: Epithelial tissue (simple: squamous, cuboidal, columnar, ciliated; compound), cell junctions (tight, adhering, gap); Connective tissue (loose: areolar, adipose; dense	Tissue types; frog anatomy.	Animal tissues; frog anatomy.	Frog morphology understood.

	regular and irregular; specialized: cartilage, bone, blood); Muscular tissue (skeletal, smooth, cardiac); Neural tissue (neurons, neuroglia). Morphology, anatomy, and physiological systems (digestive, circulatory, respiratory, nervous, and reproductive) of an insect/amphibian (Frog - brief account)[1].			
Week 6	**Cell Structure and Cell Division** Cell theory; prokaryotic versus eukaryotic cell architecture; cell envelope, fluid mosaic membrane model, cell wall; endomembran	Organelle functions; division stages.	Cell biology; cell division.	Cell cycle mastered.

	e system: endoplasmic reticulum, Golgi apparatus, lysosomes, vacuoles; mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles; nucleus, chromatin, nucleolus. Cell cycle: interphase (G_1, S, G_2), M phase (mitosis: prophase, metaphase, anaphase, telophase, cytokinesis); meiosis (Meiosis I: sub-stages of Prophase I, Meiosis II); significance of mitosis and meiosis[1].			
Week 7	**Biomolecules & Enzymes** Chemical constituents of	Enzyme kinetics; biomolecule structures.	Biomolecules and enzymes.	Enzyme action mastered.

	living cells; biomolecules: structure and function of carbohydrates (monosaccharides, disaccharides, polysaccharides: starch, glycogen, cellulose, chitin), lipids (fatty acids, glycerol, triglycerides, phospholipids); proteins: amino acids, peptide bond, primary, secondary, tertiary, and quaternary structures; nucleic acids: purines, pyrimidines, DNA, RNA, phosphodiester bonds. Enzymes: properties, mechanism of enzyme action, induced fit model, activation energy, factors affecting enzyme activity (temperature, pH, substrate			

	concentration), Michaelis-Menten kinetics, enzyme inhibition (competitive, non-competitive), classification and nomenclature[1].			
Week 8	**Plant Physiology I: Photosynthesis in Higher Plants** Photosynthesis as autotrophic nutrition, site of photosynthesis, chloroplast ultrastructure; photosynthetic pigments (chlorophyll a, b, carotenoids), absorption and action spectra; photochemical phase: light absorption, water splitting, oxygen-evolving complex, cyclic and non-cyclic photophosphorylation (Z-scheme);	Z-scheme; Calvin cycle energetics.	Photosynthesis in higher plants.	Photosynthetic pathways mastered.

	chemiosmotic hypothesis; biosynthetic phase: Calvin cycle (C_3 pathway: carboxylation, reduction, regeneration), C_4 pathway (Hatch-Slack pathway, Kranz anatomy); photorespiration (C_2 cycle); factors affecting photosynthesis (Blackman's law of limiting factors, light, CO_2, temperature)[1].			
Week 9	**Plant Physiology II: Respiration & Plant Growth** Cellular respiration: gas exchange; glycolysis (EMP pathway), substrate-level phosphorylation, metabolic fate of pyruvate (lactic	Glycolysis steps; plant hormones.	Respiration and plant growth.	Respiration pathways mastered.

	acid and alcoholic fermentation); aerobic respiration: tricarboxylic acid (TCA/Krebs) cycle, electron transport system (ETS) and oxidative phosphorylation, ATP synthase complex; respiratory balance sheet; amphibolic pathway; respiratory quotient (RQ). Plant growth: characteristics, phases of growth, growth rate (arithmetic, geometric); conditions of growth; differentiation, dedifferentiation, redifferentiation; plant development; plant growth regulators (PGRs): discovery,			

	physiological roles, and applications of auxins, gibberellins, cytokinins, ethylene, abscisic acid; seed germination[1].			
Week 10	**Human Physiology I: Breathing & Circulation** Breathing and Respiration: respiratory organs in animals; human respiratory system; mechanism of breathing and its neural regulation; gas exchange (O_2, CO_2), transport of gases (oxygen-hemo globin dissociation curve, Bohr effect, chloride shift), respiratory volumes and capacities (	Gas transport; cardiac cycles.	Human respiration and circulation.	Cardiovascular physiology mastered.

	TV, IRV, ER); respiratory disorders (asthma, emphysema, occupational disorders). Body Fluids and Circulation: blood composition, cellular elements, blood groups (ABO, Rh), coagulation cascade; lymph; human circulatory system, heart anatomy, conducting system, cardiac cycle, heart sounds, cardiac output; ECG wave interpretations; double circulation, systemic and pulmonary loops; regulation of cardiac activity; circulatory disorders (hypertension, CAD, angina pectoris, heart			

	failure)[1].			
Week 11	**Human Physiology II: Excretion & Locomotion** Excretory Products: modes of nitrogenous excretion (ammonotelism, ureotelism, uricotelism); human excretory system, nephron histology (cortical and juxtamedullary nephrons); urine formation (glomerular filtration, tubular reabsorption, tubular secretion); countercurrent mechanism (Henle's loop, vasa recta); osmoregulation; regulation of kidney function (RAAS system, ANF, ADH/diabetes insipidus); role of lungs, liver,	Countercurrent nephron; muscle contraction.	Excretion and locomotion movement.	Renal physiology mastered.

	skin; excretory disorders (uremia, renal failure, renal calculi, nephritis, hemodialysis). Locomotion and Movement: types of movement (ciliary, flagellar, muscular); skeletal muscle ultrastructure, contractile proteins (actin, myosin, troponin, tropomyosin), sliding filament theory of contraction; neuromuscular junction; skeletal system: axial and appendicular skeleton, joints (fibrous, cartilaginous, synovial); musculoskeletal disorders (myasthenia gravis, tetany, muscular dystrophy, arthritis,			

	osteoporosis, gout)[1].			
Week 12	**Human Physiology III: Neural & Chemical Coordination** Neural Control: neurons and nerves, structural types; human nervous system: central nervous system (brain: forebrain, midbrain, hindbrain; spinal cord), peripheral nervous system, visceral nervous system; generation and conduction of nerve impulse (resting membrane potential, depolarization, action potential, saltatory conduction), synaptic transmission (electrical and	Action potential; endocrine glands.	Neural and chemical coordination.	Endocrine signaling mastered.

	chemical synapses, neurotransmitters). Chemical Coordination: endocrine glands and hormones; human endocrine system: hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; hormones as messengers and regulators; mechanism of hormone action (protein hormones via second messengers: $cAMP, IP_3, C$; steroid hormones via intracellular receptors); endocrine disorders (dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes mellitus/insipid			

	us, Addison's disease)[1].			
Week 13	**Reproduction I: Sexual Reproduction in Flowering Plants** Flower structure, reproductive organs; male gametophyte development (microsporogenesis, pollen grain morphology, vegetative and generative cells); female gametophyte development (megasporogenesis, embryo sac development, 7-celled 8-nucleate structure); pollination: modes (autogamy, geitonogamy, xenogamy), agents (wind, water, insects); outbreeding adaptations; pollen-pistil interaction,	Embryo sac; pollination mechanisms.	Flowering plant sexual reproduction.	Plant embryogeny mastered.

	compatibility, siphonogamy; double fertilization (syngamy and triple fusion); post-fertilizatio n events: endosperm development (free nuclear, cellular), embryo development (monocot and dicot embryogeny); seed and fruit development; special modes: apomixis, parthenocarpy, polyembryony; significance of seed and fruit formation[1].			
Week 14	**Reproduction II: Human Reproduction & Reproductive Health** Human Reproduction: male reproductive anatomy (testes, seminiferous tubules, Leydig	Menstrual hormones; contraceptive methods.	Human reproduction; reproductive health.	Reproductive endocrinology mastered.

	cells, Sertoli cells, accessory ducts and glands); female reproductive anatomy (ovaries, fallopian tubes, uterus, histology); microscopic anatomy of testis and ovary; gametogenesis : spermatogenesis (stages, spermiogenesis, spermiation, hormonal control) and oogenesis (follicular maturation, primary and secondary oocytes, polar bodies); menstrual cycle (follicular, ovulatory, and luteal phases, gonadotropin and ovarian hormone fluctuations); fertilization, acrosome reaction, cortical			

	reaction; cleavage, blastocyst formation, implantation; pregnancy, placenta formation and endocrine roles (hCG, hPL, relaxin); parturition and lactation (neuroendocrine reflex, oxytocin, prolactin). Reproductive Health: need for reproductive health; STDs/STIs; birth control methods: natural, barrier, IUDs, oral contraceptives, injectables, surgical methods; Medical Termination of Pregnancy (MTP); amniocentesis; infertility causes and Assisted Reproductive Technologies			

	(ART): IVF, ET, ZIFT, GIFT, ICSI, IUI[1].			
Week 15	**Genetics and Evolution I: Principles of Inheritance & Variation** Mendelian inheritance; terminology (gene, allele, phenotype, genotype); Mendel's laws (dominance, segregation, independent assortment); deviations from Mendelism: incomplete dominance, codominance, multiple alleles (ABO blood groups), pleiotropy, polygenic inheritance; chromosome theory of inheritance (Sutton and Boveri); linkage and crossing over (Morgan's Drosophila experiments,	Pedigree diagrams; genetic crosses.	Mendelian inheritance and variation.	Pedigree analysis mastered.

	recombination frequencies, genetic mapping); sex determination: humans, birds ($ZW-ZZ$), honey bees (haplodiploidy); sex-linked inheritance (hemophilia, color blindness); Mendelian disorders: autosomal recessive and dominant traits (sickle-cell anemia, phenylketonuria, thalassemia, cystic fibrosis); chromosomal disorders: aneuploidy, polyploidy, Down, Turner, and Klinefelter syndromes[1].			
Week 16	**Genetics and Evolution II: Molecular Basis of Inheritance** Search for genetic material: Griffith's	Replication, transcription, Lac operon.	Molecular basis of inheritance.	Central dogma mastered.

	transformation, Avery-MacLeod-McCarty experiment, Hershey-Chase bacteriophage experiment; DNA as genetic material, RNA world hypothesis; DNA structure (Watson-Crick model, nucleotide parameters) and RNA types; DNA packaging in prokaryotes and eukaryotes (nucleosome model, histones, heterochromatin vs euchromatin); DNA replication: Meselson-Stahl experiment (semiconservative demonstration), replication enzymology (DNA polymerases, helicase, primase,			

	ligase, Okazaki fragments); central dogma; transcription: promoter, structural gene, terminator, RNA polymerases, transcription in prokaryotes versus eukaryotes (splicing, capping, tailing); genetic code: properties (degenerate, unambiguous, universal); translation: tRNA structure (cloverleaf model), ribosome machinery, initiation, elongation, termination; gene expression regulation: operon concept, Lac Operon (structural genes, operator, repressor, inducer,			

	positive/negative control); Human Genome Project (goals, methodology, salient findings); DNA fingerprinting (VNTRs, satellite DNA, Southern blot protocol)[1].			
Week 17	**Genetics and Evolution III: Evolution** Origin of life: chemical evolution (Oparin-Haldane theory, Miller-Urey experiment); biological evolution and evidence: paleontology (fossils), comparative anatomy and morphology (homologous vs analogous organs, divergent and convergent evolution), embryology, molecular evidence;	Hardy-Weinberg equations; human evolution.	Evolution and population genetics.	Evolutionary patterns mastered.

	Darwin's contribution, natural selection, Lamarckism, mutation theory of Hugo de Vries (saltation); Modern Synthetic Theory of Evolution; mechanisms of evolution: variation (mutation, recombination); natural selection (stabilizing, directional, disruptive); gene flow, genetic drift (founder effect, bottleneck effect); Hardy-Weinberg equilibrium ($(p+q)^2 = p^2$), factors disturbing equilibrium; adaptive radiation (Darwin's finches, Australian marsupials); human			

	evolution: lineage sequence (Dryopithecus, Ramapithecus, Australopithecus, Homo habilis, Homo erectus, Neanderthal, Homo sapiens), cranial capacities, milestones[1].			
Week 18	**Biology in Human Welfare: Health, Disease & Microbes** Pathogens causing human diseases: Malaria (Plasmodium life cycle in man and mosquito), Filariasis (Wuchereria), Ascariasis, Typhoid (Widal test, Salmonella), Pneumonia (Streptococcus, Haemophilus), Common cold	Disease cycles; immune cells.	Human health, disease, microbes.	Immunology principles mastered.

	(Rhinovirus), Amoebiasis (Entamoeba), Ringworm (Microsporum, Trichophyton, Epidermophyton), Dengue, Chikungunya; immunology: innate and acquired immunity, humoral and cell-mediated immunity (B and T lymphocytes), antibody structure (H_2L_2), active and passive immunity, vaccines and immunization; allergies, autoimmunity (rheumatoid arthritis); immune system lymphoid organs (primary: bone marrow, thymus; secondary: spleen, lymph nodes, MALT); Cancer: types, characteristics			

	of cancer cells, oncogenes, carcinogens, diagnosis, treatment; HIV and AIDS: structure of HIV, replication mechanism (reverse transcriptase), transmission, diagnosis (ELISA), prevention; drug, alcohol, and tobacco abuse. Microbes in Human Welfare: household processing (LAB, curd, cheese, baker's yeast), industrial production (fermented beverages, antibiotics, penicillin, organic acids, enzymes, bioactive molecules: cyclosporin A, statins); sewage treatment (primary and secondary			

	treatment, BOD concept); biogas production (methanogens) ; microbes as biocontrol agents (Bt, Trichoderma, Baculoviruses); biofertilizers (Rhizobium, Azospirillum, Azotobacter, mycorrhiza, cyanobacteria) [1].			
Week 19	**Biotechnology: Principles, Processes, and Applications** Principles of Biotechnology: genetic engineering (recombinant DNA technology); tools of recombinant DNA technology: restriction enzymes (endonucleases, sticky/blunt ends, palindromic sequences,	Cloning vectors; PCR steps.	Biotechnology principles and applications.	Recombinant methods mastered.

	nomenclature), DNA ligase, alkaline phosphatase; cloning vectors: plasmids (pBR322 selectable markers: amp^R, tet^R, insertional inactivation, origin of replication ori, rop), bacteriophages, BAC, YAC; competent host transformation (chemical method, electroporation, gene gun/biolistics, micro-injection, Agrobacterium tumefaciens disarmed Ti plasmid); processes of rDNA technology: isolation of DNA, agarose gel electrophoresis (ethidium bromide staining, UV visualization,			

	elution), PCR (steps: denaturation, annealing, extension, Taq polymerase), insertion of rDNA, culturing host cells, bioreactors (stirred-tank and sparged), downstream processing. Applications of Biotechnology: applications in agriculture: genetically modified organisms (GMOs), Bt cotton (cry genes, endotoxin activation), pest-resistant plants (RNA interference [RNAi] mechanism using Agrobacterium in tobacco against Meloidogyne incognita); applications in medicine: genetically engineered human insulin			

	(humulin synthesis: A and B chains linked by disulfide bonds, proinsulin processing), gene therapy (ADA deficiency treatment using retroviral vector), molecular diagnosis (PCR, ELISA); transgenic animals (production, reasons: normal physiology, disease models, biological products like α -1-antitrypsin, vaccine safety, toxicity testing); biosafety issues, biopiracy, patents[1].			
Week 20	**Ecology and Environment** Organisms and Populations: organism and	Ecosystem energy; biodiversity reserves.	Ecology, ecosystems, biodiversity conservation.	Ecology concepts mastered.

	environment; population attributes: population size, density, birth rate, death rate, sex ratio, age distribution (age pyramids: expanding, stable, declining); population growth: exponential ($dN/dt =$) and logistic growth ($dN/dt = rN$); carrying capacity (K); population interactions: mutualism, competition (Gause's competitive exclusion, resource partitioning), predation, parasitism (ectoparasites, endoparasites, brood parasitism), commensalism, amensalism. Ecosystem: structure and			

	function, ecosystem components; productivity: primary productivity (GPP, NPP, formula $NPP = GPP$), secondary productivity; decomposition (steps: fragmentation, leaching, catabolism, humification, mineralization); energy flow: food chains, food webs, 10% trophic law; ecological pyramids: pyramids of number, biomass, and energy (always upright), exceptions. Biodiversity and Conservation: concept of biodiversity, levels (genetic, species, ecological); magnitude and patterns of biodiversity			

	(latitudinal gradients, species-area relationship: $\log S = \log C$); importance of biodiversity (Rivet popper hypothesis); loss of biodiversity: causes (The Evil Quartet: habitat loss/fragmentation, over-exploitation, alien species invasions, co-extinctions); conservation strategies: in-situ (national parks, sanctuaries, biosphere reserves, sacred groves) and ex-situ conservation (zoological parks, botanical gardens, cryopreservation, seed banks), international conventions (Earth Summit, World			

	Summit)[1].			
Week 21	**Biology Revision Phase I: Class 11 Comprehensive Scan** Systematic line-by-line review of NCERT Class 11 text: Diversity, Structural Organisation (including new families and frog), Cell Biology, and Physiology[1].	NCERT Class 11 reread.	Class 11 biology review.	Class 11 mastered.
Week 22	**Biology Revision Phase II: Class 12 Comprehensive Scan** Systematic line-by-line review of NCERT Class 12 text: Reproduction, Genetics, Evolution, Human Welfare, Biotechnology, and Ecology[1].	NCERT Class 12 reread.	Class 12 biology review.	Class 12 mastered.

Week 23	**Biology High-Speed Assertion-Reason & Statement Drill** Extensive practice with complex question formats: Multi-statement, Match-the-Column, and Assertion-Reason items matching latest NTA standards[7].	Timed statement question practice.	Assertion-reason statement drills.	Question speed optimized.
Week 24	**Final Full-Syllabus Biology Simulation & Active Recall** Rapid visual review of all NCERT diagrams, morphological floral diagrams, and physiological flowcharts; final psychological stabilization.	Diagram review; stay calm.	Final full biology mock.	Ready for 360.

Pedagogical Strategy and Execution Framework

Executing a six-month NEET preparation curriculum requires moving beyond passive reading toward structured retrieval practice, systematic error logging, and calibrated pacing during timed tests[8].

Because the examination enforces negative marking across all 180 questions, minimizing unforced errors is just as important as expanding topic coverage[9]. The instructional framework described below outlines the necessary routines for managing daily workload, analyzing performance gaps, and budgeting time during the examination[4].

Weekly Cognitive Rhythm and Workload Management

A productive preparation cycle balances new concept acquisition with spaced revision to prevent memory decay[10]. The instructional week is organized around distinct cognitive tasks across three operational periods:

Day of the Week	Operational Academic Focus	Distribution of Workload
Monday to Friday	Core Curriculum Execution & Daily MCQ Integration	Candidates spend nine hours daily acquiring theory and working through focused problem sets, divided evenly among Biology, Physics, and Chemistry. The final 90 minutes of each day are dedicated to an untimed mixed question set (60 MCQs) followed by error analysis[8].
Saturday	Buffer Remediation, Laboratory Manuals & Consolidation	The morning session is reserved for completing any unfinished weekly targets or resolving difficult mathematical derivations. The afternoon focuses on practical science modules (Experimental Physics and Practical Chemistry), while the evening is spent reviewing the week's accumulated error logs[1].

Sunday	Timed Examination Simulation & Diagnostic Audit	Between 14:00 and 17:00, candidates take a formal, invigilated three-hour mock examination matching the official test timing[6]. The evening is devoted to a detailed diagnostic audit of incorrect responses and setting academic targets for the upcoming week[6].

Error Log Documentation and Tri-Tier Categorization

A major cause of performance plateaus during competitive test preparation is the repetition of identical mistakes across successive testing cycles[6]. To prevent this, candidates must log every incorrect or omitted question in an **Error Log Notebook**, categorizing each error into one of three primary failure modes[8]:

- **Category A: Conceptual Deficits (Knowledge Gaps).** This occurs when a student misinterprets a physical law, forgets an inorganic reaction condition, or confuses biological structures[8]. These errors indicate an incomplete mental model[8]. The required correction involves re-reading the relevant NCERT section or class notes, re-deriving the underlying equation, and adding a summary note to the student's revision flashcards[8].
- **Category B: Execution and Calculation Errors (Process Gaps).** This occurs when the underlying concept is understood, but the final answer is wrong due to algebraic slips, faulty arithmetic, or incorrect unit conversions (such as failing to convert Angstroms to meters or Joules to electron-volts)[8]. The correction requires re-calculating the entire problem on a clean page without a calculator and writing the correct physical dimensions at each intermediate step.
- **Category C: Comprehension and Question Reading Failures (Focus Gaps).** This occurs when a student misreads qualifying words (such as "incorrect," "false," "except," or "only") or marks the wrong bubble on an OMR sheet despite solving the problem correctly[3]. The operational fix requires using a pencil to physically underline all qualifying negative words on the test paper before attempting an answer, alongside taking a two-second pause before filling each bubble[13].

Examination Day Simulation and Time Budgeting

Achieving a high score in NEET UG requires a disciplined time-budgeting strategy across the 180-minute testing window[2]. Rather than answering questions in chronological order, candidates should follow an optimized sequence that secures accessible marks quickly, controls cognitive fatigue, and leaves sufficient time for demanding calculations[3].

Examination	Subject &	Target Completion	Operational

Phase	Question Allocation	Time	Strategy & Mark Yield
Phase 1	Biology: Botany & Zoology *(90 Compulsory Questions)*	**45 – 50 Minutes**	Read questions in a single pass; answer clear recall questions immediately; flag complex assertion-reason items for a second look; target mark yield: 330–360[4].
Phase 2	Chemistry: Inorganic, Organic, Physical *(45 Compulsory Questions)*	**40 – 45 Minutes**	Complete factual Inorganic and Organic reaction questions first; move on to standard Physical Chemistry numericals; target mark yield: 155–170[6].
Phase 3	Physics: All Units & Experimental Skills *(45 Compulsory Questions)*	**70 – 75 Minutes**	Start with Modern Physics, Semiconductors, and theoretical questions; proceed through standard mechanics and circuit calculations; leave lengthy multi-step problems for last; target mark yield: 145–165[4].
Phase 4	Verification, Buffer & Ambiguity Resolution	**10 – 15 Minutes**	Review flagged questions; verify question numbers against the OMR

			sheet; confirm that no answers were marked twice[6].

Strategic Synthesis

This 24-week curriculum establishes a balanced roadmap for the NEET UG examination, systematically moving from foundational topic mastery to experimental application and timed full-syllabus simulations[6].

By maintaining a steady daily study routine, categorizing every practice error, and sticking to an efficient section-by-section time budget during testing, candidates can systematically address conceptual gaps and maximize their overall score across Physics, Chemistry, and Biology[4].

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