

PMT-NEET Type Combine Topic-wise & Full Course Test 23-24

Test No.	Date	SUB	TOPIC
1	18.02.24	P	Modern Physics
		C	1. SOLUTIONS Different methods for expressing the concentration of solution - molality, molarity, mole fraction. percentage (by volume and mass both), the vapour pressure of solutions and Raoult's Law - Ideal and non-ideal solutions, vapour pressure - composition, plots for ideal and non-ideal solutions: Colligative properties of dilute solutions - a relative lowering of vapour pressure, depression of freezing point, the elevation of boiling point and osmotic pressure; Determination of molecular mass using Colligative properties; Abnormal value of molar mass, van't Hoff factor and its significance.
		B	Sexual Reproduction in Flowering Plants, Biodiversity and Conservation
		Z	Human Reproduction: Male and female reproductive systems; Microscopic anatomy of testis and ovary; Gametogenesis-spermatogenesis & oogenesis; Menstrual cycle; Fertilisation, embryo development upto blastocyst formation, implantation: Pregnancy and placenta formation (Elementary idea); Parturition (Elementary idea); Lactation (Elementary idea). Reproductive health: Need for reproductive health and prevention of sexually transmitted diseases (STD); Birth control-Need and Methods, Contraception and Medical Termination of Pregnancy (MTP); Amniocentesis; Infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (Elementary idea for general awareness).
2	22.02.24	P	Ray Optics, Wave Optics
		C	1. ORGANIC COMPOUNDS CONTAINING OXYGEN General methods of preparation, properties, reactions, and uses. ALCOHOLS, PHENOLS and ETHERS Alcohols: Identification of primary, secondary, and tertiary alcohols: mechanism of dehydration. Phenols: Acidic nature, electrophilic substitution reactions: halogenations, nitration and sulphonation, Reimer - Tiemann reaction. Ethers: Structure. Aldehyde and Ketones: Nature of carbonyl group; Nucleophilic addition to $>C=O$ group, relative reactivities of aldehydes and ketones; Important reactions such as - Nucleophilic addition reactions (addition of HCN, NH_3 , and its derivatives), Grignard reagent; oxidation: reduction (Wolf Kishner and Clemmensen); the acidity of α -hydrogen. aldol condensation Cannizzaro reaction. Haloform reaction, Chemical tests to distinguish between aldehydes and Ketones.
		B	Principles of Inheritance and Variation
		Z	Salient features and classification of animals-non-chordate up to phyla level and chordate up to classes level (three to five salient features and at least two examples)
3	25.02.24	P	Vector, UD, Error, Kinematics
		C	1. REDOX REACTIONS AND ELECTROCHEMISTRY Electronic concepts of oxidation and reduction, redox reactions, 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 - Electrolytic and Galvanic cells, different types of electrodes, electrode potentials including standard electrode potential, half - cell and cell reactions, emf of a Galvanic cell and its measurement: Nernst equation and its applications; Relationship between cell potential and Gibbs' energy change: Dry cell and lead accumulator; Fuel cells.
		B	The Living World, Biological Classification

		Z	Animal tissues; Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect (Cockroach) and Frog (Brief account only)
4	29.02.24	P	NLM, Friction, Circular Motion
		C	1.SOME BASIC CONCEPTS IN CHEMISTRY Matter and its nature, Dalton's atomic theory: Concept of atom, molecule, element. and compound: Laws of chemical combination; Atomic and molecular masses, mole concept, molar mass, percentage composition, empirical and molecular formulae: Chemical equations and stoichiometry. 2.CLASSITICATION 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.
		B	Plant Kingdom, Morphology of Flowering Plants
		Z	Combined Syllabus of Test – 1, 2 and 3
5	05.03.24	P	Heat and Thermodynamics & Fluid Mechanics
		C	1. 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 reactions (no derivation). 2. HYDROCARBONS Classification isomerism, IUPAC nomenclature, general methods of preparation, properties, and reactions. Alkanes - Conformations: Sawhorse and Newman projections (of ethane): Mechanism of halogenations of alkanes. Alkenes - Geometrical isomerism: Mechanism of electrophilic addition: addition of hydrogen, halogens, water, hydrogen halides (Markownikoffs and peroxide effect); Ozonolysis and polymerization. Alkynes - Acidic character: Addition of hydrogen, halogens, water, and hydrogen halides: polymerization. Aromatic hydrocarbons – Nomenclature, benzene - structure and aromaticity: Mechanism of electrophilic substitution: halogenations, nitration. Friedel - craft's alkylation and acylation, directive influence of the functional group in mono-substituted benzene.
		B	Cell: The Unit of Life, Cell Cycle and Cell Division, Biomolecules
		Z	Evolution: Origin of life; Biological evolution and evidences for biological evolution from Paleontology, comparative anatomy, embryology and molecular evidence); Darwin's contribution, Modern Synthetic theory of Evolution; Mechanism of evolution Variation (Mutation and Recombination) and Natural Selection with examples, types of natural selection; gene flow and genetic drift; Hardy-Weinberg's principle; Adaptive Radiation; Human evolution.
6	09.03.24	P	Magnetism up to AC, EMW
		C	1. ATOMIC STRUCTURE Nature of electromagnetic radiation, photoelectric effect; Spectrum of the hydrogen atom. Bohr model of a hydrogen atom - its 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. 2. CHEMICAL BONDING AND MOLECULAR STRUCTURE Kossel - Lewis approach to chemical bond formation, the concept of ionic and covalent bonds. Ionic Bonding: Formation of ionic bonds, factors affecting the formation of ionic bonds; calculation of lattice enthalpy. Covalent Bonding: concept of electronegativity. Fajan's rule, dipole moment: valence Shell Electron Pair Repulsion (VSEPR) theory and shapes of simple molecules. Quantum mechanical approach to covalent bonding: Valence bond theory - its important features. the concept of hybridization involving s, p, and d orbitals; Resonance. Molecular orbital Theory - Its important features. LCAOs, 'types of molecular orbitals (bonding, antibonding), sigma and pi-bonds, molecular orbital electronic configurations of homonuclear diatomic molecules, the concept of bond order, bond length, and bond energy, Elementary idea of metallic bonding. Hydrogen bonding and its applications.
		B	Molecular Basis of Inheritance

		Z	<p>Breathing and Respiration: Respiratory organs in animals (recall only); Respiratory system in humans; Mechanism of breathing and its regulation in humans-Exchange of gases, transport of gases and regulation of respiration Respiratory volumes; Disorders related to respiration (Asthma Emphysema, Occupational respiratory disorders).</p> <p>'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.</p>
7	18.03.24	P	Electrostatics, Gauss's Law, Gravitation
		C	<p>1. 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.</p> <p>2. SOME BASIC PRINCIPLES OF ORGANIC CHEMISTRY Tetra valency 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 carbocations 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.</p>
		B	Biotechnology : Principles and Processes, Biotechnology and Its Applications
		Z	Human Health and Disease; Pathogens; parasites causing human diseases (Malaria, Filariasis, Ascariasis. Typhoid, Pneumonia, common cold, amoebiasis, ring worm, dengue, chikungunya); Basic concepts of immunology-vaccines; Cancer, HIV and AIDS; Adolescence, drug and alcohol abuse. Tobacco abuse
8	22.03.24	P	Current Electricity and Capacitor
		C	<p>1. 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 Gibb's energy change) and equilibrium constant.</p> <p>2. 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 principles only) - Estimation of carbon. Hydrogen, nitrogen, halogens, sulphur, phosphorus. Calculations of empirical formulae and molecular formulae: Numerical problems in organic quantitative analysis.</p>
		B	Microbes in Human Welfare, Organisms and Populations, Ecosystem
		Z	<p>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; Uremia, Renal failure, Renal calculi, Nephritis; Diuresis and artificial kidney.</p> <p>Locomotion and Movement: Types of movements-ciliary, flagellar, muscular; Skeletal muscle-contractile proteins and muscle contraction; Skeletal system and its functions (To be dealt with the relevant practical of practical syllabus); Joints; Disorders of muscular and skeletal system-Myasthenia gravis, Tetany, Muscular dystrophy, Arthritis, Osteoporosis, Gout</p>

9	28.03.24	P	SHM, Waves, Properties of Matter
		C	<p>1. P- BLOCK ELEMENTS Group -13 to Group 18 Elements General Introduction: Electronic configuration and general trends in physical and chemical properties of elements across the periods and down the groups; unique behaviour of the first element in each group</p> <p>2. BIOMOLECULES General introduction and importance biomolecules. CARBOHYDRATES - Classification; aldoses and ketoses: monosaccharides (glucose and fructose) and constituent monosaccharides of oligosaccharides (sucrose, lactose, and maltose). PROTEINS- Elementary idea of α-amino acids, peptide bond, polypeptides. Proteins: primary, secondary, tertiary, and quaternary structure (qualitative idea only, denaturation of proteins, enzymes. VITAMINS - Classification and functions. NUCLEIC ACIDS - Chemical constitution of DNA and RNA. Biological functions of nucleic acids. Hormones (General introduction)</p>
		B	Photosynthesis in Higher Plants, Respiration in Plants
		Z	<p>Neural control and coordination: Neuron and nerves; Nervous system in human central nervous system, peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse;</p> <p>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)</p>
10	31.03.24	P	Work Energy Power, Centre of Mass, Rotational Motion
		C	<p>1. 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.</p> <p>2. PRINCIPLES RELATED TO PRACTICAL CHEMISTRY Detection of extra elements (Nitrogen, sulphur, halogens) in organic compounds; Detection of the following functional groups; hydroxyl (alcoholic and phenolic), carbonyl (aldehyde and ketones) carboxyl, and amino groups in organic compounds.</p> <ul style="list-style-type: none"> •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^- (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
		B	Anatomy of Flowering Plants, Plant Growth and Development
		Z	Combined Syllabus of Test – 5, 6, 7, 8, 9 (Complete syllabus from Class 11 th)
11	04.04.24		Complete Class 12 th Syllabus
12	08.04.24		Complete Class 11 th Syllabus
13	12.04.24		FULL SYLLABUS
14	16.04.24		
15	20.04.24		
16	24.04.24		
17	28.04.24		
18	01.05.24		ONLINE