

EMBASSY OF INDIA SCHOOL (KV) MOSCOW					
SPLIT UP SYLLABUS - CLASS XI - CHEMISTRY 2024-25					
S NO	MONTH	NO OF WORKING DAYS	Description (Topics /Units)	SUGGESTIVE PRACTICAL / PROJECT/MDP/TEST /ASSAIGNMENT	SUGGESTED METHODOLOGY TO BE USED (LIKE PPT/AIL /EXPERIENTIAL LEARNING
1	MAY	21	Unit I: Some Basic Concepts of Chemistry - 12 Periods General Introduction: Importance and scope of Chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry. Structure of Atom 14 Periods Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg's uncertainty principle.	Basic Laboratory Techniques USE OF APPROPRIATE APPARATUS	EXPERIENTIAL LEARNING , DISCUSSION , EXPERIMENTAL VIDEOS , PROBLEM SOLVING METHOD
2	JUNE/ JULY	18+6	Structure of Atom concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals. Classification of Elements and Periodicity in Properties 08 Periods Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.	Characterization and Purification of Chemical Substances 1. Determination of melting point of an organic compound. 2. Determination of boiling point of an organic compound. 3. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid	VIDEO - ANIMATION OF THEORY AND EXPERMENTS , MAKING OF PERIODIC TABLE

3	AUGUST	19	<p>Chemical Bonding and Molecular Structure - 14 Periods Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules(qualitative idea only), Hydrogen bond.</p> <p>Chemical Thermodynamics 16 Periods Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions. First law of thermodynamics -internal energy and enthalpy, heat capacity and specific heat, measurement of U and H, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction)</p>	<p>Experiments based on pH a) Any one of the following experiments: • Determination of pH of some solutions obtained from fruit juices, solution of known and varied concentrations of acids, bases and salts using pH paper or universal indicator. • Comparing the pH of solutions of strong and weak acids of same concentration. Study the pH change in the titration of a strong base using universal indicator. b) Study the pH change by common-ion in case of weak acids and weak bases.</p>	MAKING MODELS OF MOLECULE AND AND FORMATION OF BONDS, MOLECULAR STRUCTURES USING BALLS AND STICKS AND BALLOONS , PROBLEM SOLVING
4	SEPTEMBER	20	<p>Introduction of entropy as a state function, Gibb's energy change for spontaneous and nonspontaneous processes, criteria for equilibrium. Third law of thermodynamics (brief introduction)</p> <p>Equilibrium - 14 Periods Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).</p>	<p>Quantitative Estimation i. Using a mechanical balance/electronic balance. ii. Preparation of standard solution of Oxalic acid. iii. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.</p>	DISCUSSION , ANALYSIS , PROBLEM SOLVING , DERIVING FORMULAS
5	OCTOBER	18	<p>Redox Reactions - 06 Periods Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.</p> <p>Chemistry -Some Basic Principles and Techniques 14 Periods General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds.</p> <p style="text-align: right;">Organic</p>	<p>iv. Preparation of standard solution of Sodium carbonate. v. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.</p>	VIDEO ANIMATION - MAKING MOLECULES , WRITING IUPAC NAMES AND DRAWING STRUCTURES

6	NOVEMBER	20	Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles,	Qualitative Analysis a) Determination of one anion and one cation in a given salt Cations-	MECHANISM IDENTIFICATION , AND WRITING CHEMICAL EQUATIONS , DRAWING STRUCTURES
8	DECEMBER/January	10	Hydrocarbons 12 Periods Classification of Hydrocarbons - Aliphatic Hydrocarbons: Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes - Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water. Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties:	Qualitative Analysis a) Determination of one anion and one cation in a given salt Cations-	ORGANIC REACTION MECHANISM , DISCUSSION AND DRAWING STRUCTURES , MAKING CONCLUSION AND IDENTIFICATION OF PRODUCT AND REACTION MECHANISMS
10	FEBRUARY		REVISION / PRACTICAL EXAM		