Subject Chemistry **Class xi**

MONTH &CHAPTER	CONTENT	ACTIVITIES/ Co-curricular Activities
april **(** Some Basic Concepts of Chemistry**)**	• General Introduction: Importance and scope of chemistry. Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms • Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.	To draw diagram and make models Basic Laboratory Techniques 1. Cutting glass tube and glass rod
May **(structure of atom)**	• 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 sub shells • Dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle. • 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.	2. Bending a glass tube 3. Drawing out a glass jet
Classification of Elements and Periodicity in Properties	• 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.	4. Boring a cork Characterization of Chemical Substances 1. Determination of melting point of an organic compound. 2. Determination of boiling point of an organic compound.
july **(Chemical Bonding and Molecular Structure)**	• 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.	Quantitative Estimation (8 marks) i. Using a mechanical balance/electronic balance. ii. Preparation of standard solution of Oxalic acid.
August **Chemical Thermodynamics**	• 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 ΔU and ΔH, • 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) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium. • Third law of thermodynamics (brief introduction).	iii. Determination of strength of a given solution of Sodium hydroxide by titrating it against Standard solution of Oxalic acid.
September	**Revision and Half Yearly Exam**	
October **Equilibrium**	• 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)	iv. Preparation of standard solution of Sodium carbonate.
Redox Reactions	• General introduction, methods of purification, qualitative and quantitative analysis. • 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. • Classification and IUPAC nomenclature of organic compounds.	v. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid

November **Organic Chemistry -Some Basic Principles and Techniques** **December** **January**	• 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, types of organic reactions. Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, the 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, the 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: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of the functional group in monosubstituted benzene. Carcinogenicity and toxicity. Revision **&** Pre- Board Exams Revision	Determination of one anion and one cation in a given salt

January:- Revision & Pre- Board Exams
February & March- Revision & Final Exams
Syllabus for Unit Test (July)
Some basic concept of chemistry & structure of atom
Syllabus for Half Yearly Exams (September)
Some basic concept of chemistry (unit 1),
Structure of atom (unit 2) Classification of Elements and Periodicity in Properties (unit 3) & chemical bonding