2025-26

ANNUAL LESSON PLAN FOR CLASS 11TH (CHEMISTRY)

MONTH	NO OF DAYS	NAME OF THE LESSON	LEARNING OUTCOMES
APRIL	22	Some Basic Concepts of Chemistry	• appreciate the contribution of India in the development of chemistry understand the role of chemistry in different spheres of life; • explain the characteristics of three states of matter; • classify different substances into elements, compounds and mixtures; • use scientific notations and determine significant figures; • differentiate between precision and accuracy; • define SI base units and convert physical quantities from one system of units to another; • explain various laws of chemical combination; • appreciate significance of atomic mass, average atomic mass, molecular mass and formula mass; • describe the terms – mole and molar mass; • calculate the mass per cent of component elements constituting a compound; • determine empirical formula and molecular formula for a compound from the given experimental data and • perform the stoichiometric calculations.
MAY	3	Structure of an atom	• know about the discovery of electron, proton and neutron and their characteristics; • describe Thomson, Rutherford and Bohr atomic models; • understand the important features of the quantum mechanical model of atom; • understand nature of electromagnetic radiation and Planck's quantum theory; • explain the photoelectric effect and describe features of atomic spectra; • state the de Broglie relation and Heisenberg uncertainty principle; • define an atomic orbital in terms of quantum numbers; • state aufbau principle, Pauli exclusion principle and Hund's rule of maximum multiplicity; and • write the electronic configurations of atoms.
JUNE	18	Structure of an atom	----------
JULY	26	*Classification of Elements and Periodicity in Properties	• appreciate how the concept of grouping elements in accordance to their properties led to the development of Periodic Table. • understand the Periodic Law; • understand

		Chemicalbonding	the significance of atomic number and electronic configuration as the basis for periodic classification; • n a m e t h e e l e m e n t s w i t h Z >100 according to IUPAC nomenclature; • classify elements into s, p, d, f blocks and learn their main characteristics; • recognise the periodic trends in physical and chemical properties of elements; • compare the reactivity of elements and correlate it with their occurrence in nature; • explain the relationship between ionization enthalpy and metallic character; • use scientific vocabulary appropriately to communicate ideas related to certain important properties of atoms e.g., atomic/ionic radii, ionization enthalpy, electron gain enthalpy, electronegativity, valence of elements u n d e r s t a n d Kössel-Lewis approach to chemical bonding; • explain the octet rule and its limitations, draw Lewis structures of simple molecules; • explain the formation of different types of bonds; • describe the VSEPR theory and predict the geometry of simple molecules; • e x p l a in the valence bond approach for the formation of covalent bonds; • predict the directional properties of covalent bonds; • explain the different types of hybridisation involving s, p and d orbitals and draw shapes of simple covalent molecules; • describe the molecular orbital theory of homonuclear diatomic molecules; • explain the concept of hydrogen bond
AUGUST	22	Thermodynamics	• identify dynamic nature of equilibrium involved in physical and chemical processes; • state the law of equilibrium; • explain characteristics of equilibria involved in physical and chemical processes; • write expressions for equilibrium constants; • establish a relationship between Kp and Kc ; • explain various factors that affect the equilibrium state of a reaction; • classify substances as acids or bases according to Arrhenius, Bronsted-Lowry and Lewis concepts; • classify acids and bases as weak or strong in terms of their ionization constants; • explain the dependence of degree of

			ionization on concentration of the electrolyte and that of the common ion; • describe pH scale for representing hydrogen ion concentration; • explain ionisation of water and its duel role as acid and base; • describe ionic product (Kw) and pKw for water; • appreciate use of buffer solutions; • calculate solubility product constant.
SEPTEMBER	23	Chemical Equilibrium	• identify dynamic nature of equilibrium involved in physical and chemical processes; • state the law of equilibrium; • explain characteristics of equilibria involved in physical and chemical processes; • write expressions for equilibrium constants; • establish a relationship between Kp and Kc ; • explain various factors that affect the equilibrium state of a reaction;
OCTOBER	11	Ionic equilibrium	• classify substances as acids or bases according to Arrhenius, Bronsted-Lowry and Lewis concepts; • classify acids and bases as weak or strong in terms of their ionization constants; • explain the dependence of degree of ionization on concentration of the electrolyte and that of the common ion; • describe pH scale for representing hydrogen ion concentration; • explain ionisation of water and its duel role as acid and base; • describe ionic product (Kw) and pKw for water; • appreciate use of buffer solutions; • calculate solubility product constant.
NOVEMBER	21	Redox reactions	identify redox reactions as a class of reactions in which oxidation and reduction reactions occur simultaneously; • define the terms oxidation, reduction, oxidant (oxidising agent) and reductant (reducing agent); • explain mechanism of redox reactions by electron transfer process; • use the concept of oxidation number to identify oxidant and reductant in a reaction; • classify redox reaction into combination (synthesis), decomposition, displacement a n d d i s p r o p o r t i o n a t i o n reactions; • suggest a comparative order among various reductants and oxidants; • balance chemical equations using (i) oxidation number (ii) half reaction method; • learn

			the concept of redox reactions in terms of electrode processes.
DECEMBER	23	General organic chemistry	• under stand r easons for tetravalence of carbon and shapes of organic molecules; • write structures of organic molecules in various ways; • classify the organic compounds; • name the compounds according to IUPAC system of nomenclature and also derive their structures from the given names; • understand the concept of organic reaction mechanism; • explain the influence of electronic displacements on structure and reactivity of organic compounds; • recognise the types of organic reactions; • lear n the techniques of p u r i f i c a t i o n o f o r g a n i c compounds; • write the chemical reactions involved in the qualitative analysis of organic compounds; • understand the principles involved in quantitative analysis of organic compounds
JANUARY	25	Hydrocarbon	• name hydrocarbons according to IUPAC system of nomenclature; • recognise and write structures of isomers of a l k a n e s , alkenes, alkynes and aromatic hydrocarbons; • learn about various methods of preparation of hydrocarbons; • distinguish between alkanes, alkenes, alkynes and aromatic hydrocarbons on the basis of physical and chemical properties; • draw and differentiate between various conformations of ethane; • appreciate the r o l e o f hydrocarbons as sources of energy and for other industrial applications; • predict the formation of the addition products of unsymmetrical alkenes and alkynes on the basis of electronic mechanism; • comprehend the structure of benzene, explain aromaticity and understand mechanism of electrophilic substitution reactions of benzene; • predict the directive influence of substituents in monosubstituted benzene ring; • learn about carcinogenicity and toxicity
FEBRUARY	22	revision	

Practical Work (Throughout the Year):

Activity	Learning Objectives
Basic Laboratory Techniques	- Learn to handle chemicals and apparatus safely.
Quantitative Analysis (Volumetric)	- Perform acid-base titration to determine concentration.
Qualitative Analysis (Salt Analysis)	- Identify cations and anions in salt mixtures.
Organic Compound Purification	- Understand techniques like crystallization and distillation.
Project Work & Investigatory Projects	- Develop scientific skills and presentation abilities.