Lesson Plan Semester-(2025-2026) ODD-SEMESTER

Name of the Assistant Professor: **Dr. Ekta**
Subject: Chemistry

B.Sc. 1st sem. - B23-CHE-101

B.Sc. 1st sem. - B23-CHE-103

Month	Topic/ Chapter
22 JULY 2025 to 31 july 2025	**B23-CHE-101** **Structure and Bonding** Localized and delocalized chemical bond, Van der Waals interactions. Concept of resonance and its applications, hyperconjugation, inductive effect, Electromeric effect and their comparison. **B23-CHE-103** **Metallic Bond and semiconductors** Metallic bond — Qualitative idea of Band theory of metallic bond (conductors, semiconductors. insulators). **(Assignments/test/problem discussion)**
AUGUST 2025	**B23-CHE-101** **Mechanism of Organic Reactions** Curved arrow notation, homolytic and heterolytic bond fission. Types of reagents: electrophiles and nucleophiles. Types of organic reactions: Substitution, Addition, Condensation, Elimination, Rearrangement, Isomerization and Pericyclic reactions. Reactive intermediates: Carbocations, carbanions, free radicals, carbenes (structure & stability). **Gaseous State** Kinetic theory of gases, Maxwell's distribution of velocities and energies (derivation excluded) Calculation of root mean square velocity, average velocity, and most probable velocity. Collisiondiameter, collision number, collision frequency and mean free path (Derivations excluded). Deviation of Real gases from ideal behaviour, Derivation of Van der Waal' s Equation of State, its application in the calculation of Boyle' s temperature (compression factor) **Critical Phenomenon** Concept of Critical temperature, critical pressure, critical volume, relationship between critical constants and Van der Waal' s constants (Derivation Excluded). **Liquid State** Structure of liquids, Properties of liquids – surface tension, refractive index, viscosity, vapour pressure and optical rotation. **B23-CHE-103** **Covalent Bond** Shapes of simple inorganic molecules and ions based on valence shell electron pair repulsion (VSEPR) theory and hybridization with suitable examples of linear, trigonal planar, square planar tetrahedral, trigonal bipyramidal and octahedral arrangements. **Alkanes (upto 5 carbon atoms)** Alkanes, nomenclature, classification of carbon atoms in alkanes. Isomerism in alkanes, methods of formation: Wurtz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids. **(Assignments/test/problem discussion)**
SEPTEMBER 2025	**B23-CHE-101** **Atomic Structure** Dual behaviour of matter and radiation, de Broglie's relation, Heinsenberg's uncertainty principle, concept of atomic orbitals, significance of quantum

	numbers, radial and angular wave functions, normal and orthogonal wave functions, significance of Ψ and Ψ2. Shapes of s, p, d, f orbitals, Rules for filling electrons in various orbitals, effective nuclear charge, Slater's rules. **Periodic table and atomic properties** Classification of periodic table, definition of atomic and ionic radii, ionisation energy, electron affinity and electronegativity, trend in periodic table (in s and p-block elements), Pauling, Mulliken, Allred Rachow and Mulliken Jaffe's electronegativity scale, Sanderson's electron density ratio. **Solid State** Classification of solids, Law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry and symmetry elements, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of Laue method, rotating crystal method and powder pattern method. **B23-CHE-103** **Chemical Kinetics** Concept of reaction rates, factors influencing the rate of reaction, Order and molecularity of a reaction, integrated rate expression for zero and firstorder reactions. **(Assignments/test/problem discussion)**
OCTOBER 2025	**(Assignments/test/problem discussion)**
NOVEMBER 2025	**(Assignments/test/problem discussion)**