LESSON PLAN

Session: 2025-26 **Class: B.Sc. 1st. year (MINOR)**

Subject: Chemistry **Paper code: CHE -103**

Name of the faculty: MS Ramandeep Kaur

Month	Week	Topics to be covered
July	22.07.25-26.07.25	Introduction to chemical kinetics.
	29.07.25-31.07.25	Rate of reaction, Rate equation, its types and measurements.
August	01.08.25-03.08.25	factors influencing the rate of a reaction– concentration, temperature, pressure, solvent, light, catalyst.
	05.08.25-10.08.25	Order of a reaction and molecularity of reaction.
	12.08.25-17.08.25	difference between them, half-life period
	19.08.25-24.08.25	Integrated rate expression for zero order, its characteristics,
	26.08.25-31.09.25	half-life period and units of rate constant.
September	02.09.25-07.09.25	Integrated rate expression for first order, its characteristics, its half-life period and units of rate constant
	09.09.25-14.09.25	COVALENT BOND-shapes of simple inorganic molecules.
	09.09.25-14.09.25	VSEPR theory its postulates.
	16.09.25-23.09.25	Hybridization with suitable examples of linear trigonal bipyramidal and octahedral arrangements.
October	25.09.25-1.10.25	ALKANES–nomenclature, classification, of carbon atom in alkanes. Methods of preparation of alkanes – Wurtz reaction, Kolb reaction and Corey -House reaction.
	02.09.25-05-10.25	Metallic Bonding Introduction.
	06.10.25-12.10.25	Sessional
	13.10.24-18.10.24	Band theory
	19.10.25-26.10.25	Diwali vacations
November	27.10.25-03.11.25	Chemical Bonding
	04.11.25-08.11.25	Conductors
	11.11.25-21.11.25	Revision.
	24.11.25 onwards	EXAMINATION

LESSON PLAN

Session: 2025-26 **Class: B.Sc. 1st year (MINOR)**

Subject: Chemistry **Paper code: B23-CHE-304**

Name of the faculty: Ms. Ramandeep Kaur

Month	Week	Topics to be covered
July	22.07.25-26.07.25	s and p block elements: HYDRIDES of s-block elements.
	29.07.25-31.07.25	Oxides of s-block elements.
August	01.08.25-03.08.25	Halides of s-block elements.
	05.08.25-10.08.25	Hydroxides of s-block elements.
	12.08.25-17.08.25	Salient features of compounds of p-block elements (DIBORANE).
	19.08.25-24.08.25	BORAZINE (properties, structure).
	26.08.25-31.09.25	Oxides of Nitrogen.
September	02.09.25-07.09.25	Oxoacids of Sulphur.
	09.09.25-14.09.25	Oxides of Phosphorous.
	09.09.25-14.09.25	Test of Borazine.
	16.09.25-23.09.25	Diagonal relationship between the elements of Group 1 and 2 of s-block.
October	25.09.25-1.10.25	Test of properties of p-block elements.
	02.09.25-05-10.25	Test of oxides of Nitrogen.
	06.10.25-12.10.25	Sessional
	13.10.24-18.10.24	Oxyacids of chlorine.
	19.10.25-26.10.25	Diwali vacations
November	27.10.25-03.11.25	Noble gases: Inertness of noble gases, compounds of xenon.
	04.11.25-09.11.25	Low reactivity of noble gases.
		Test of noble gases.
	11.11.25-21.11.25	Previous question paper discussion.
	24.11.25 onwards	EXAMINATION

LESSON PLAN

Session: 2025-26 **Class: B.Sc. 1ST year (MAJOR)**

Subject: Chemistry **Paper code: B23-CHE-301**

Name of the faculty: Ms. Ramandeep Kaur

Month	Week	Topics to be covered
July	22.07.25-26.07.25	s and p block elements: HYDRIDES of s-block elements.
	29.07.25-31.07.25	Oxides of s-block elements.
August	01.08.25-03.08.25	Halides of s-block elements.
	05.08.25-10.08.25	Hydroxides of s-block elements.
	12.08.25-17.08.25	Salient features of compounds of p-block elements (DIBORANE).
	19.08.25-24.08.25	BORAZINE (properties, structure).
	26.08.25-31.09.25	Oxides of Nitrogen, phosphorous, Sulphur and chlorine.
September	02.09.25-07.09.25	Catenation, carbides.
	09.09.25-14.09.25	Test of oxides of nitrogen.
	09.09.25-14.09.25	Comparison acidic strength of oxyacid's.
	16.09.25-23.09.25	Diagonal relationship between the elements of Group 1 and 2 of s-block.
October	25.09.25-1.10.25	Test of properties of p-block elements.
	02.09.25-05-10.25	Test of structure of whites phosphorous and red phosphorous.
	06.10.25-12.10.25	Sessional
	13.10.24-18.10.24	Oxyacids of chlorine.
	19.10.25-26.10.25	Diwali vacations
November	27.10.25-03.11.25	Noble gases: Inertness of noble gases, compounds of xenon.
	04.11.25-09.11.25	Low reactivity of noble gases.
		Test of noble gases.
	11.11.25-21.11.25	Previous question paper discussion.
	24.11.25 onwards	EXAMINATION

LESSON PLAN

Session: 2025-26 **Class: B.Sc. Ist Sem**

Subject: Chemistry **Paper code: B23-CHE-101**

Name of the faculty: Dr. Prabjot Kaur

Month	Week	Topics to be covered
July	22.07.25- 26.07.25	Atomic Structure Dual behaviour of matter and radiation, de Broglie's relation,
	29.07.25-31.07.25	Heinsenberg's uncertainty principle, concept of atomic orbitals, significance of quantum numbers,
August	01.08.23-09.08.25	radial and angular wave functions, normal and orthogonal wave functions, significance of and 4^2, shapes of s, p, d, f orbitals,
	11.08.23-16.08.25	Rules for filling electrons in various orbitals, effective nuclear charge, Slater's rules.
	18.08.23-23.08.25	Introduction and Gaseous state: States of matter and difference between types of states Gas Laws, Kinetic Molecular Theory of Gases,
	25.08.23-30.08.25	Maxwell's distribution of velocities and energies, Effect of temperature on Maxwell´s Distribution
September	01.09.23-06.09.25	Derivation of root mean square velocity and average velocity, most probable velocity
	08.09.23-13.09.25	Deviation of Real gases from ideal behavior. Their causes and effect on different Temp and Pressure
	15.09.23-20.09.25	Derivation of Van der Waal's Equation of State, its application in the calculation of Boyle's temperature with numericals
	22.09.23-30.09.25	Periodic table and atomic properties and Classification of periodic table, definition of atomic and ionic radii, ionisation energy, electron affinity electronegativity,
October	01.10.23-04-10.25	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
	06.10.23-11.10.25	Sessionals
	13.10.23-18.10.25	Liquid State: Definition of Liquids, Types of force of attractions, structure of liquids, Properties of liquifds- surface tension, vapour pressure
Vacations	19.10.25-26.11.25	Diwali Vacations

	27.10.25-31.10.25	Refractive index, viscosity, optical activity
	01.11.25-08.11.25	Solids: Classification of solids, laws of crystallography, laws of constancy of interfacial angles, Ideal symmetry and symmetry elements, seven crystal systems and fourteen Bravais lattices
	10.11.25-15.11.25	X-ray diffraction, Bragg's law, a simple account of Laue method, rotating crystal method, Powder pattern method
	17.11.25-24.11.25	Miller indics and law of rational indices, its numericals and Revision
November	25.11.25-31.12.25	Examination

LESSON PLAN

Session: 2025-26 **Class: B.Sc. IIIrd Sem**

Subject: Chemistry **Paper code: B23-CHE-301**

Name of the faculty: Dr. Prabjot Kaur

Month	Week	Topics to be covered
July	22.07.25- 26.07.25	**Electrochemistry:** Introduction to electrochemistry, electrolytic and metallic conduction and its difference,
	29.07.25-31.07.25	Factors affecting electrolytic conduction, Specific conductance Arhenius equation with numericals.
August	01.08.23-09.08.25	Molar conductance, equivalent conductance and relation between them
	11.08.23-16.08.25	The variation of conductance with concentration, Arrhenius theory of ionization, Ostwald's Dilution Law
	18.08.23-23.08.25	Application of Kohlrasch's Law in calculation of conductance of weak electrolytes at infinite dilution, Applications of conductivity measurements:
	25.08.23-30.08.25	Determination of degree of dissociation, Determination of K_a of acids, Determination of solubility product of sparingly soluble salts,
September	01.09.23-06.09.25	Conductometric titrations, Concepts of pH and pK_a, Buffer solution, numerical problems based on them.
	08.09.23-13.09.25	Buffer action, Henderson – Hazel equation, Buffer mechanism of buffer action with numericals
	15.09.23-20.09.25	Determination of degree of dissociation, Determination of K_a of acids, Determination of solubility product of sparingly soluble salts,
	22.09.23-30.09.25	Conductometric titrations, Concepts of pH and pK_a, Buffer solution, numerical problems based on them.
October	01.10.23-04.10.25	Introduction to electrochemistry, galvanic cell, electrolytic cell and difference between them
	06.10.23-11.10.25	Sessional
	13.10.23-18.10.25	Representation of a galvanic cell Reversible and irreversible cells, Electrode potential, EMF of cell and its measurement, Reversible electrodes and

		its types: metal- metal ion, gas electrode, metal –insoluble salt- anion and redox electrodes
Vacations	19.10.25-26.11.25	Vacations
	27.10.25-31.10.25	Standard hydrogen electrode and measurement of electrode potential and calomel electrodes Measurement of electrode potential, electrochemical series,
	01.11.25-08.11.25	Applications of electrochemical series and numericalsStandard state, Nernst equation, EMF of a cell and numerical based on them
	10.11.25-15.11.25	Nernst equation for electrode potential and its numericals, Concentration cells with and without transference with numerical.
	17.11.25-24.11.25	Applications of EMF measurement in solubility product Potentiometric titrations using glass electrode, Calculation of thermodynamic quantities of cell reaction. Numericals
November	25.11.25-31.12.25	Examination

LESSON PLAN

Session: 2025-26 **Class: B.Sc. Vth Sem**
Subject: Chemistry **Paper code: B23-CHE-501**
Name of the faculty: Dr. Prabjot Kaur

Month	Week	Topics to be covered
July	22.07.25- 26.07.25	Internship
	29.07.25-31.07.25	
August	01.08.23-09.08.25	Entropy as a criterion of spontaneity and equilibrium, physical significance of entropy, importance of third law Third law of thermodynamics, Nernst heat theorem, residual entropy, evaluation of absolute entropy from heat capacity.
	11.08.23-16.08.25	Gibbs function and Helmholtz function, Gibbs Helmholtz equation, criteria for spontaneity of a process Variation of Helmholtz function with temperature and volume, variation of Gibbs function with temperature and pressure, Chemical Potential (Numerical Included)
	18.08.23-23.08.25	Introduction to Classical and Quantum Mechanics, Black-body radiation, Plank's radiation law, photoelectric effect, De-Broglie hypothesis, Bohr model, Heisenberg's Principle, Compton effect, Significance of wave function, Schrodinger wave equation,
	25.08.23-30.08.25	postulates of quantum mechanics, mechanical operators, commutation relations, Hamiltonian operator, Hermitian operator, Role of operators in quantum Mechanics. Particle in one dimensional box
September	01.09.23-06.09.25	Spectroscopy-Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Born - Oppenheimer approximation,
	08.09.23-13.09.25	Degrees of freedom, Selection rules, Energy levels of rigid rotator (semi-classical principles), rotational spectra of diatomic molecules,
	15.09.23-20.09.25	spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), Determination of bond length and isotopic effect.
	22.09.23-30.09.25	**Phase Equilibrium** Statement and meaning of the terms – phase, component and degree of freedom, thermodynamic derivation of Gibbs phase rule,
October	01.10.23-04-10.25	phase equilibria of one component

		system –Example – water system.
	06.10.23-11.10.25	Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead
	13.10.23-18.10.25	Coordination Compounds: Werners theory of coordination compounds, EAN rule, Chelates, nomenclature of coordination compounds
Vacations	19.10.25-26.11.25	Diwali Vacations
	27.10.25-31.10.25	Isomerism in coordination compounds, Metal Ligand bonding in Transition Metal Complexes: Valence bond theory, applications and their limitations
	01.11.25-08.11.25	Elementary idea of CFT, CFT in Octahedral, tetrahedral, square planer complexes
	10.11.25-15.11.25	Magnetic Properties of transition metal Complexes: Types of magnetic materials, magnetic susceptibility
	17.11.25-24.11.25	Method of determination, spin only formula, basic idea of L-S coupling
November	25.11.25-31.12.25	Examination

LESSON PLAN

Session: 2025-26 **Class: B.Sc. III Sem**

Subject: Chemistry **Paper code: B23-CHE-304**

Name of the faculty: Dr. Prabjot Kaur

Month	Week	Topics to be covered
July	22.07.25- 26.07.25	**Electrochemistry:** Introduction to electrochemistry, electrolytic and metallic conduction and its difference, Factors affecting electrolytic conduction, Specific conductance
	29.07.25-31.07.25	Determination of solubility product of sparingly soluble salts,
August	01.08.23-09.08.25	Molar conductance, equivalent conductance and relation between them
	11.08.23-16.08.25	The variation of conductance with concentration, Arrhenius theory of ionization, Ostwald's Dilution Law
	18.08.23-23.08.25	Application of Kohlrasch's Law in calculation of conductance of weak electrolytes at infinite dilution
	25.08.23-30.08.25	Determination of degree of dissociation, Determination of K_a of acids,
September	01.09.23-06.09.25	Determination of solubility product of sparingly soluble salts,
	08.09.23-13.09.25	Concepts of pH and pK_a , Buffer solution
	15.09.23-20.09.25	Buffer solution, numerical problems based on them.
	22.09.23-30.09.25	Buffer action, Henderson – Hazel equation, Buffer mechanism of buffer action with numericals
October	01.10.23-04-10.25	Thermodynamics-I: Introduction and Revise the basics, Basics of thermodynamics, Definition of thermodynamic terms: system, surrounding etc. Types of systems, State and path functions and their differentials.
	06.10.23-11.10.25	Sessional
	13.10.23-18.10.25	Intensive and extensive properties, Thermodynamic process.
Vacations	19.10.25-26.11.25	Vacations
	27.10.25-31.10.25	Thermodynamic equilibrium, Concept of heat and work
	01.11.25-08.11.25	First law of thermodynamics: statement, concepts of internal energy
	10.11.25-15.11.25	Enthalpy and Heat capacity

	17.11.25-24.11.25	Heat capacities at constant volume and pressure and their relationship
November	25.11.25-31.12.25	Examination