

Lesson Plan

Name of Assistant Professor: Parmila

Class: B.Sc (4th Sem)

Chemistry Lesson Plan: Week (From JAN 2025 to Apr 2025)

Month	Week	Topic Name
Jan	3 rd	Chemistry of F-Block elements (Lanthanide) Lanthanides Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds.
	4 th	Chemistry of F-Block elements (Actinides) General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from U, Comparison of properties of Lanthanides and Actinides and with transition elements
Feb	1 st	Theory Of Qualitative and Quantitative Inorganic Analysis-I Chemistry of analysis of various acidic radicals, Chemistry of identification of acid radicals in typical combinations, Chemistry of interference of acid radicals including their removal in the analysis is of basic radicals.
	2 nd	Theory Of Qualitative and Quantitative Inorganic Analysis-II Chemistry of analysis of various groups of basic radicals, Theory of precipitation, co-precipitation, Post-precipitation, purification of precipitates.
	3 rd	Thermodynamics-III Second law of thermodynamics, need for the law, different statements of the law, Carnot's cycles and its efficiency, Carnot's theorem, Thermodynamics scale of temperature. Concept of entropy – entropy as a state function, entropy as a function of V & T, entropy as a function of P & T, entropy change in physical change, entropy as a criteria of spontaneity and equilibrium. Entropy change in ideal gases and mixing of gases.
	4 th	Thermodynamics-IV
Mar	1 st	Electrochemistry-III Electrolytic and Galvanic cells – reversible & Irreversible cells, conventional representation of electrochemical cells. EMF of cell and its measurement, Weston standard cell, activity and activity coefficients. Calculation of thermodynamic quantities of cell reaction (G, H & K). Types of reversible electrodes – metal-metal ion gas electrode, metal-insoluble salt-anion and redox electrodes. Electrode reactions, Nernst equations, derivation of cell EMF and single electrode potential
	3 rd	Electrochemistry-IV Concentration cells with and without transference, liquid junction potential, application of EMF measurement i.e. valency of ions, solubility product activity coefficient, potentiometric titration (acid-base and redox). Determination of pH using Hydrogen electrode, Quinhydrone electrode and glass electrode by potentiometric methods.
	4 th	Infrared(IR)absorption spectroscopy Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds. Applications of IR spectroscopy in structure elucidation of simple organic compounds.
	5 th	Revision
	Apr	1 st
	2 nd	Nitro compounds Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.
	3 rd	Aldehydes and ketones
	4 th	Revision