Lesson Plan

B.Sc IInd year IVth Semester Organic Chemistry (Theory)

January 2024 – (Section-A)

Infrared (IR) absorption Spectroscopy – Molecular vibrations, Hooke's law, Selection rules, intensity and position of IR bands, Measurement of IR Spectrum, Fingerprint region, Characteristic absorption of various functional groups and interpretation of IR Spectra of Simple organic Compounds. Application of IR Spectroscopy in Structure elucidation of Simple organic Compounds.

February 2024 –

Amines – Structure and nomenclature of amines, Physical properties, Separation of a mixture of primary, Secondary and tertiary amines. Structural features affecting basicity of amines. Preparation of alkyl & aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabriel-phthalimide reaction, Hofmann-bromoamide reaction. Electrophilic aromatic Substitution in aryl amines, reaction of amines with nitrous acid.

Lesson Plan

B.Sc IInd year 4th Semester Inorganic Chemistry Theory.

January 2024- Section A

Chemistry of 4f- block elements – Lanthanides :-

Electronic Structure, oxidation States, Magnetic properties, Complex formation, Colour, Ionic radii, Lanthanide Contraction, Occurence, Separation of lanthanides, Lanthanide Compounds.

February 2024 –

Chemistry of 5f block elements - Actinides :-

General characterstics of actinides, chemistry of Separation of Np, Pu and Am from Uranium. transuranic elements. Comparison of properties of lanthanides and actinides with transition elements.

March 2024 - Section B

Theory of Qualitative and Quantitative analysis.

Chemistry of Analysis of various groups of

Lesson Plan

B.Sc IInd year 4th Semester Physical chemistry Theory.

January 2024 –

Thermodynamics – Second law of thermodynamics, need for the law, different statements of the law, Carnot's cycles and its efficiency, Carnot's theorm, Thermodynamics Scale of temprature, 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.

February 2024 –

Thermodynamics – Third law of thermodynamics; Nernst heat theorem, Statement of concept of residual entropy, evaluation of absolute entropy from heat capacity. Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities, G as criteria for thermodynamic equilibrium and spontaneity, its advantage over entropy Change. Variation of G with P, V and T.

March 2024 – Electrochemistry – Electrolytic and