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| **B.Sc II (Semester III) ODD** |
| **Subject –** | Course outcome |  |
| **Inorganic Chemistry** | CO1 | Define transition elements, their general characteristics and properties and Compare properties of 3d elements with 4d and 5d elements. |
|  | CO2 | Explain the various theories of transition metal complexes? |
|  | CO3 | Discuss physical and chemical properties of non-aqueous solvents |
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| **Physical Chemistry** | CO1 | Discuss various thermodynamic terms, first law of thermodynamic and derive expression for w ,q, dU ,dH, for expansion of ideal gas under isothermal and adiabatic reversible processes |
|  | CO2 | Explain the concept of heat capacity, joule Thomson coefficient for ideal and real gas and inversion temperature |
|  | CO3 | Explain various equilibrium constant along with various thermodynamic functions  |
|  | CO4 | Illustrate with example Le- Chatelier;s principle , clausius inequality and their applications. |
|  | CO5 | Define distribution law. how is the law modified if solute undergo association and dissociation in one of the solvent along with its applications |
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| **Organic Chemistry** | CO1 | Discuss the nomenclature, structure, methods of preparation, physical and chemical properties, acidic nature of alcohol and phenols. |
|  | CO2 | Discuss the synthesis and ring opening (acid/base) reactions of epoxide. |
|  | CO3 | Discuss the principle of UV spectroscopy and applications of UV spectroscopy in structure elucidation of various compounds. |
|  | CO4 | Discuss the nomenclature, structure, methods of preparation, physical and chemical properties, acidic nature of of carboxylic acid and its derivatives. |
| **B.Sc II (Semester IV) EVEN** |
| **Inorganic Chemistry** | CO1 | Explain the electronic configuration and physical properties of lanthanides and actinides and compare it with transition elements. |
|  | CO2 | Explain occurrence and isolation of lanthanides and actinides? |
|  | CO3 | Explain chemistry of analysis of acid and basic radicals, their identification from typical combination along with interfering radicals. |
|  | CO4 | What is Gravimetric analysis and explain about various terms used in it? |
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| **Physical Chemistry** | CO1 | Explain the need for second law of thermodynamics and Carnot’s cycle, Carnot’s theorem  |
|  | CO2 | Discuss the concept of entropy and derive its expression for an ideal gas with change of pressure, volume, temperature and on mixing of ideal gas |
|  | CO3 | Derive expression for work function and gibbs functions. |
|  | CO4 | Discuss the, gibbs - helmhotz equation and Nernst heat theorem and residual entropy |
|  | CO5 | Explain galvanic cell, electrolytic cell, different types of electrodes and electrochemical series along with its applications. |
|  | CO6 | Derive expression for EMF of various types of electrode and discuss application of emf measurements |
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| **Organic chemistry**  | CO1 | Explain the principle of IR Spectroscopy and application of IR Spectroscopy and how to interpret the IR Spectra of given organic compound |
|  | CO2 | Discuss the nomenclature, structure, methods of preparation, physical and chemical properties, separation and basicity of amines. |
|  | CO3 | Discuss the structure, preparation method and various chemical reaction of benzene diazonium chloride along with its synthetic applications.  |
|  | CO4 | Discuss the nomenclature, structure, methods of preparation physical and chemical properties of aldehydes and ketones. |
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| **Practicals****(ODD + EVEN)** | CO1 | Preparation of given inorganic compounds. |
| CO2 | To determine critical solution temperature of phenol – water system , heat of solution ,dissolution and neutralization. |
| CO3 | To study distribution law ,Beer-Lambert Law, kinetics of reaction and gravimetric analysis |
| CO4 | To analyse the given organic compounds. |