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| **B.Sc III (Semester V) ODD** |
| **Subject –** | Course outcome |  |
| **Inorganic Chemistry** | CO1 | Discuss limitation of valence bond theory and elementary idea of crystal field theory  |
|  | CO2 | Explain crystal field splitting in octahedral, tetrahedral and square planar complexes and factor affecting the crystal field splitting |
|  | CO3 | Give brief outline of thermodynamic stability of metal complexes and factor affecting the stability, substitution reaction of square planar complexes of Pt (II) and magnetic properties of transition metal complexes |
|  | CO4 | What do you understand by µs, µeff orbital contribution and application of magnetic moment data for 3d metal complexes |
|  | CO5 | Explain type of electronic transition and selection rule for d-d transition and spectro chemical series and also discuss orgel level diagram for d1 and d9 |
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| **Physical Chemistry** | CO1 | Explain black body radiation, Plank’s radiation law, photo electric effect |
|  | CO2 | Define operator along with its importance; postulates of quantum mechanics |
|  | CO3 | Derive a relation for wave function and energy for a particle in one dimension box |
|  | CO4 | Discuss various physical properties (optical activity, dipole moment, magnetic susceptibility, magnetic permeability) and importance of these properties in structure elucidation |
|  | CO5 | What is spectroscopy; explain rotational, vibrational, Raman spectra and various terms involving in spectroscopy |
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| **Organic Chemistry** | CO1 | Discuss the principle and various terms associated with NMR (nuclear magnetic resonance). |
|  | CO2 | Give the application and structure determination of various compounds on basis of NMR. |
|  | CO3 | Give the classification, nomenclature, configuration and interconversion of various carbohydrates with osazone formation mechanism. |
|  | CO4 | Explain the ring size determination of glucose and fructose along with mechanism of mutarotation. |
|  | CO5 | Illustrate disaccharides and polysaccharides with their structures. |
|  | CO6 | Discuss the formation, structure, chemical properties of various organometallic compounds (organolithium, organozinc, organomagnesium). |
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| **B.Sc III (Semester VI) EVEN** |
| **Inorganic Chemistry** | CO1 | Explain nomenclature and classification of organomettalic compound and discuss the preparation,properties and bonding of alkyl Li, Al, Hg and Sn. |
|  | CO2 | Give brief account of metal olefin complex, mononuclear carbonyl and the nature of bonding in metal carbonyl.. |
|  | CO3 | Explain Arrhenious, bronsted lowry, Lux Flood, Solvent System and Lewis Concept and discuss Relative strength of acid and base and Concept of Hard and Soft acid. |
|  | CO4 | Explain essential, trace element and Metalloporphrins with special reference to haemoglobin and myoglobin. |
|  | CO5 | Discuss Biological role of alkali and alkaline earth metal ion with special reference to Na+ / K+ pump, Ca2+ and nitrogen fixation. |
|  | CO6 | Discuss preparation, properties, structure, bonding and use of silicones and phosphazenes. |
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| **Physical Chemistry** | CO1 | Discuss Importance of statistical thermodynamics along with thermodynamic probability, Maxwell Boltzmann distribution statistics, Born oppenheimer approximation |
|  | CO2 | Discuss partition function, physical significance & its relationship with various thermodynamic terms  |
|  | CO3 | Explain photochemistry along with various terms involved and describe various laws of photochemistry |
|  | CO4 | Draw the Jablonski diagram and explain various processes occurring in it |
|  | CO5 | Discuss all types of colligative properties and how they changes with association and dissociation of solute |
|  | CO6 | Derive an expression for Gibbs phase rule and explain terms involved in it with the example single component (water, sulfur) and two component (Lead-silver) systems and importance of Pattinson processs |
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| **Organic Chemistry** | CO1 | Discuss the structure of pyrrole, thiophene, furan and their basicity order along with methods of preparation and reactions. |
|  | CO2 | Explain the methods of preparation and mechanism of different reactions for various heterocyclic compounds (pyridine, quinoline, isoquinoline, indole). |
|  | CO3 | Give the method of synthesis of diethyl malonate, ethyl acetoacetate with mechanism and analysis of acidity of alpha-hydrogen atom of these compounds. |
|  | CO4 | Discuss the nomenclature, classification and structure determination for amino acid, protein, peptide along with various properties associated with amino acid. |
|  | CO5 | Explain the various kinds of polymerisation used in preparation of polymers. |
|  | CO6 | Elaborate the various kinds of synthetic polymers (polyester, polyamides, polyurethanes, epoxy resin) and rubbers. |
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| **Practical Chemistry** **(ODD+ EVEN)** | CO1 | Qualitative analysis of given inorganic compounds |
| CO2 | Preparation, purification, melting point and TLC of given organic compound |
| CO3 | Determine the strength of solution using conductometeric and potentiometeric methods |
| CO4 | Study of optical activity (using polarimeter) and pH (with pH meter) of solution |
| CO5 | Using Rast method, find the molecular weight of nonvolatile solute |