SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Inorganic Chemistry)
Semester: III
Syllabus with Effect from: June - 2013

Paper Code: PS04ECHE02	**Total Credit: 4**
Title Of Paper: Reaction Mechanism & Bioinorganic Chemistry	

Unit	Description in detail	Weightage (%)
I	**Reaction Mechanism - I:** The nature of substitution reaction. Theoretical approach to substitution mechanism. Nucleophilic reactivity. Nature of central atom. Kinetic application of crystal field theory. Replacement of coordinated metal. Acid analysis. Molecular rearrangement complexes. Reactions of geometrical and optical isomers.	25%
II	**Reaction Mechanism – II:** Isomerisation and racemization of octahedral complexes. Ligand stereo specificity. Outer sphere electron transfer reactions. Inner sphere electron transfer reactions. The nature of the bridge ligand. Two electron transfer. Non complementary reactions. Synthesis of coordination compounds using electron transfer reactions.	25%
III	**Bioinorganic Chemistry - I:** The elements of living system : The biological roles of metal ions, Calcium biochemistry, Iron biochemistry, Nonmetals biochemistry. Enzymes exploiting acid catalysis: Carbonic anhydrase, Carboxy peptidases.	25%
IV	**Redox Catalysis:** Iron sulphur proteins and non-heme iron, Cytochromes of the electron transport chain, Cytochrome P-450 enzymes, Coenzyme B12, Blue copper proteins. **Metals in Medicine:** Antibiotic and related compounds, Chelate therapy, Inhibition and poisoning, Metal complexes as probes of nucleic acids.	25%

Basic Text & Reference Books:-

- Mechanism of Inorganic Reactions, F. Basolo and R.G.Persons, Wiley Pub.
- Reaction Mechanism of Coordination Compounds, C.H.Langford and H.B.Gray.
- Inorganic Reaction Mechanisms, M. L. Tobe, Nelson Pub.
- Inorganic Chemistry, K.F. Purcell and J. C. Kotz.
- Fundamental Principles of Inorganic Chemistry, D. Banerjea
- Elements of Bioinorganic Chemistry, G.N. Mukerjee and Arabinda Das
- Bioinorganic Chemistry, G. R. Chatwal and A. K. Bhagi
- Principles of Bioinorganic Chemistry, S.J. Lippard and J. M. Bersa
- Bioinorganic Chemistry, I. Bertini, H. B. Gray and S. J. Lippard
- Inorganic Chemistry, Shriver and Atkins
- Inorganic Chemistry, James E. huheey, Ellen A. Keiter and Richard L. Keiter