

**SARDAR PATEL UNIVERSITY**  
**Programme & Subject: M.Sc (Physical Chemistry)**  
**Semester: IV**  
**Syllabus with Effect from: June – 2013**

<b>Paper Code: PS04ECHE02</b>	<b>Total Credit: 4</b>
<b>Title Of Paper: Reaction Mechanism &amp; Bioinorganic Chemistry</b>	

Unit	Description in detail	Weightage (%)
I	<b>Reaction Mechanism: I</b> 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	<b>Reaction Mechanism: II</b> Isomerisation and racemization of octahedral complexes. Ligand stereospecificity. Outersphere electron transfer reactions. Innersphere electron transfer reactions. The nature of the bridge ligand. Two electron transfer. Noncomplementary reactions. Synthesis of coordination compounds using electron transfer reactions.	25%
III	<b>Bioinorganic Chemistry-I</b> <b>The Elements Of Living System</b> The biological roles of metal ions, Calcium biochemistry, Iron biochemistry, Nonmetals biochemistry. <b>Enzymes Exploiting Acid Catalysis</b> Carbonic anhydrase, Carboxy peptidases.	25%
IV	<b>Bioinorganic Chemistry-II</b> <b>Redox Catalysis</b> Iron sulphur proteins and non-heme iron, Cytochromes of the electron transport chain, Cytochrome P-450 enzymes, Coenzyme B12, Blue copper proteins. <b>Metals In Medicine</b> 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  
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

