Elective Paper II (Group A)
Bioinorganic and Supramolecular Chemistry: 60 hrs.

I. Metal Storage Transport and Biomineralization **5 hrs.**
Ferritin, transferring and siderophores.

II. Calcium in Biology **6 hrs.**
Calcium in living cells, transport and regulation, molecular aspects of intramolecular processes, extracellular binding proteins.

III. Metalloenzymes **20 hrs.**
Zinc enzymes – carboxypeptidase and carbonic anhydrase. Iron enzymes – catalase, peroxidase and cytochrome P-450. Copper enzymes – superoxide dismutase. Molybdenum oxatransferase enzymes – xanthine oxidase. Coenzyme vitamin B_{12}.

IV. Metal – Nucleic Acid Interactions **6 hrs.**
Metal ions and metal complex interactions, Metal complexes –nucleic acids.

V. Metals in Medicine **5 hrs.**
Metal deficiency and disease, toxic effects of metals, metals used for diagnosis and chemotherapy with particular reference to anticancer drugs.

VI. Supramolecular Chemistry **18 hrs.**
Concepts and language.

(A) Molecular recognition: Molecular receptors for different types of molecules including arisonic substrates, design and synthesis of coreceptor molecules and multiple recognition.
(B) Supramolecular reactivity and catalysis.
(C) Transport processes and carrier design.
(D) Supramolecular devices. Supramolecular photochemistry, supramolecular electronic, ionic and switching devices.

Some example of self-assembly in supramolecular chemistry.

Books Suggested:

1. Principles of Bioinorganic Chemistry, S.J.Lippard and J.M.Berg. University Science Books.
2. Bioinorganic Chemistry, I.Bertini, H.B.Gray, S.J.Lippard and J.S.Valentine. University, Science Books.
3. Inorganic Biochemistry vols I and II. Ed. G.L.Eichhorn, Elsevier.
4. Progress in Inorganic Chemistry, Vols 18 and 38 ed. J.J.Lippard, Wiley.
5. Supramolecular Chemistry, J.M.Lehn, VCH.