SUBJECT NO-CY41014, SUBJECT NAME- Principles of Organometallics & Bioinorgnic Chem.

LTP- 4-0-0,CRD- 4

SYLLABUS :-

CY40110 Principles of Organometallic and Bioinorganic Chemistry (4-0-0 : 4 credits)

Prerequisite : CY40101

Organometallic chemistry: Bonding models in sigma and pi-complexes. 18-electron formalism and isolobal principle. Basic concepts guiding the synthesis and stability of Li, Mg, B, Si organometallic compounds. Wades/Mingos/Jemmis rule. Basic concepts guiding the synthesis and stability of transition metal alkyls, carbonyls, alkenes, alkynes, arenes, allyls, carbenes, and metallocenes. Basic organometallic reactions: oxidative-addition, reductive elimination, transmetallation, insertion, nucleophilic attach on coordinated ligand. Typical examples of fluxional organometallics.

Bioinorganic Chemistry: The biochemistry of iron and copper: Dioxygen binding, transport and utilization in hemoglobin, hemocyanin and hemerythrin. Biological and synthetic dioxygen carriers. Metal-sulfide proteins: Ferredoxin and nitrogenases. Metalloporphyrins and Respiration: Cytochromes. Electron transfer reactions. Metalloenzymes: Carbonic anhydrase, carboxypeptidase and vitamin B12.

Books:

Inorganic Chemistry by J.E. Huheey

The Organometallic Chemistry of The Transition Metals, by R.H. Crabtree

Principles & Applications of Organo-transition Metal Chemistry, by J.P. Collman, L.S. Hegedus, J.R. Norton, R.G. Finke

Bioinorganic Chemistry by Lippard, and Bartini