# Modification in B.Sc. Chemistry 2019-2022 Batch – Semester V

## CORE VIII - CHEMISTRY PAPER VI

Teaching hour: 60 hours per semester (4 hours per week)

**Subject description:** This paper presents the principle of radio activity, organometallic, coordination compounds and solvents.

**Goals:** To enable the students to know about the organometallic compounds, radio activity, isotopes, coordination compounds and the role of solvent in chemical reactions.

**Objectives:** To understand the principles of radio activity.

**UNIT I :**

Definition – Nomenclature of Organometallic compounds – Synthesis of organometallic compounds of Be, Mg, Zn, B and Al – Ferrocene: Preparation - Aromaticity of: Ferrocene, cyclic CnHn Ligands – Application of: Grignard reagent and Gilman Reagent - alkene polymerization using Ziegler-Natta catalyst.

**UNIT II :**

Artificial radio activity. Artificial transmutation of elements, synthesis of radio isotopes and. nuclear fission and fusion. Nuclear reactors – principle of working – production of electrical energy – atomic projects in India – Safety measures; disposal of reactor wastes – pollution. Nuclear reactions, mechanisms and different types of stellar energy.

**UNIT III :**

Nature of isotopes and isobars – detection and isolation of isotopes – various methods – importance of discovery of isotopes – uses of isotopes in various fields. Nuclear stability n/p ratio, magic numbers, C-12 atomic weight scale, C-14 dating, mass defect and nuclear binding energies. Radioactive disintegration series.

**UNIT IV :**

Co-ordination compounds – Nomenclature – conductivity and precipitation studies – Werner Co-ordination theory – electronic interpretation of coordinate bond by SidgeWick. Isomerism: Examples of Geometrical and optical isomerism in square planar and octahedral coordination compounds – magnetic properties of coordination compounds and their interpretation by Pauling's valence bond theory and crystal field theory.

**UNIT V :**

The solvents- solubility of compounds – effect of temperature on solubility- Role of water as solvent- chemical structure and solubility. Classifications of solvents-general behaviourproperties of ionizing solvents. Types of reactions in non aqueous solvents-protonic solvents - ammonia, hydrogen fluoride. Non Protonic solvents-SO2 and BrF3. Organic solvents - C2H5OH and Ether.