

FIRST ALLIED COURSE III : BASIC CHEMISTRY

UNIT – I

Coordination Chemistry : Nomenclature of mono nuclear complexes – Werner, Sidgwick Pauling Theories – Chelation and its industrial importance with particular reference to EDTA – Biological role of Hb and chlorophyll – Application in quantitative, qualitative and analytical chemistry.

UNIT – II

Industrial Chemistry:

- a. Synthesis, properties and uses of silicones – Fuel gases – Natural gas, Semi-water gas, water gas, Carburetted water gas, producer gas and oil-gas (Manufacturing details not needed) – Fertilizers – urea, ammonium sulphate, ammonium nitrate, super phosphate of lime, triple super phosphate, potassium nitrate.
- b. General methods of preparation and properties of alloys of the following metals – copper zinc, Aluminium Manganese, Stannum, Lead, Titanium, Thorium, Bismuth, Cobalt, Manganese Nickel and Iron – The role of carbon in steel and treatment of steel.

UNIT – III

Aromatic Aromatic Compounds

- a. Types of organic reactions and reagents – Common electrophiles, nucleophiles and free radicals – Electron displacement effects, inductive effect, Resonance effect, Hyper conjugation and steric effects – states of Hybridisation carbon geometry of organic molecules CH_4 , C_2H_6 , C_2H_4 and C_7H_6 .
- b. Typical substitution reactions – Nitration – Halogenation – Alkylation – Sulphonation – preparation and uses of Naphthalene and Anthracene/

UNIT – IV

- a. Halogenated Compounds : Importance chloro hydro carbons used as solvents and pesticides (Dichloromethane, Chloroform, CCl_4 , DDT and BHC) – Freons – properties & uses.
- b. Synthetic Dyes and Polymers: Teflon, alkyl resins, polyester, epoxide resins – general treatment – Azo dyes, vat dyes, food colours – General treatment.

UNIT – V

- a. Emulsions, Gels, preparation, properties and applications – Importance of pH and buffers in the living systems – pH determination by colorimetric and electrometric methods – Electrochemical corrosion and prevention.
- b. Laws of Photo Chemistry and applications.

Reference:

1. Veeraiyan and A.N.S. Vasudevan – Text Book of Ancillary Chemistry Vol.I & II.
2. P.L.Soni – Inorganic Chemistry
3. B.S.Bhal and G.D.Tuli – Essentials of Physical Chemistry.