

ELECTIVE COURSE IV - INDUSTRIAL CHEMISTRY

UNIT – I (15 Hrs)

- 1.1 Cement : Manufacture – Wet Process and Dry process, Types, Analysis of major constituents, setting of cement, Reinforced concrete. Cement Industries in India.
- 1.2 Ceramics : Important clays and feldspar, glazing and vitrification.
- 1.3 Glass : Types, Composition, manufacture of Optical glass, coloured glasses, lead glass, and neutron absorbing glass.
- 1.4 Fertilizers : Fertilizer industries in India, Manufacture of ammonia, ammonium salts, urea, superphosphate, triple superphosphate and nitrate salts.

UNIT – II (15 Hrs)

- 2.1 Sugar : Cane sugar manufacture, recovery of sugar from molasses, sugar estimation, sugar Industries in India.
- 2.2 Paints & Varnishes : Primary constituents of paints, Dispersion medium (solvent), binder, Pigments, oil based paints, latex paints baked on paints (alkydresins), formulation of paints and varnishes. Requirements of a good paint.
- 2.3 Cleansing Agents : Preparation of toilet and washing soaps, synthetic detergents – alkyl aryl Sulphonates, fatty alcohol sulphates, ethanalamines, nonionic detergents, Builders, additives, corrosion inhibitors.

UNIT – III (15 Hrs)

- 3.1 Chemical Explosives : Origin of explosive, preparation and chemistry of lead azide, nitroglycerine, nitrocellulose, TNT, Dynamite, cordite, picric acid, gunpowder, introduction to rocket propellants.
- 3.2 Leather Industry : Curing, Preservation and tanning of hides and skins, process of dehairing and dyeing, Treatment of tannery effluents.
- 3.3 Water in Industry : Pollution of water by fertilizers, detergents, pesticides, and industrial wastes, BOD, COD thermal pollution, water Treatment – Ion exchange electro dialysis, reverse osmosis, Softening of hard water.

UNIT – IV (15 Hrs)

- 4.1 Coal : Origin and economic importance of coal, types analysis and composition, coal gasification, Carbonisation, coal-tar and coal-tar based chemicals manufacture, coal mines in India.
- 4.2 Petroleum : Origin, refining, Cracking, reforming knocking and octan number, LPG, synthetic gas, synthetic petrol.
- 4.3 Fuel Gases : Large scale production, storage, hazards and uses of coal gas, water gas, producer gas, and oil gas.

UNIT – V (15 Hrs)

- 5.1 Electrochemical Industries : Production of materials like chlorine caustic soda sodium chlorate, perchlorates potassium permanganate hydrogen peroxide. Hydroxyl amine Electrolytic refining of aluminium, Electrosynthesis of aniline, p-aminophenol,

- Electro-Oxidation and electro- reduction processes with examples. Batteries – Primary and secondary cells, solar cells, fuel cells.
- 5.2 Agrochemical industries :
- Important categories of insecticides, fungicides, herbicides, rodenticide, Mode of action and synthesis of common pesticides like Gammexane, DDT, aldrin, Parathion, Malathion, Baygon, DDVP, Warfarin, Tabun, paraguat, decamethrin.

REFERENCE :

1. B.N.Chakrabarty, Industrial Chemistry, Oxford & IBH Publishing Co, New Delhi,1981.
2. B.K.Sharma, Industrial Chemistry, Goel Publishing House, Meerut.
3. P.P.Singh, T.M.Joseph, R.G.Dhavale, College Industrial Chemistry, Himalaya Publishing House, Bombay, 4th Ed., 1983.