

## Ph D(Tech) (Dyestuff) Syllabus for Entrance Examination

### Organic Chemistry

- ❖ Basic reactions in organic chemistry: Oxidation, Reduction, Halogenations, Dehydration, Dehydrohalogenation, Condensation reaction, Free radical reaction, Catalytic reduction, Esterification, Polymerisation, Hydrolysis.
- ❖ Name reactions in organic chemistry: Friedel-Craft, Fries, Perkin, Sandmeyer, Mannich, Knoevenagel, Aldol, Michael, Stobbe, Grignard, Cannizaro reaction.
- ❖ Heterocyclic chemistry: Three, four, five membered heterocycles, Synthesis, applications.

### Dyestuff Chemistry

- ❖ Introduction and classification of colorants – Acid dyes, direct dyes, basic dyes, vat dyes, disperse dyes, reactive dyes, azoic, sulphur dyes.
- ❖ Basic dyes: Diphenyl and triphenylmethane dyes, oxazines, diazines, thiazines.
- ❖ Application of dyes in traditional and hi-technological field.

### Analytical Chemistry

- ❖ Spectroscopy: FTIR, Mass spectrometry, Nuclear Magnetic Resonance, Fluorescence spectroscopy
- ❖ Chromatography: Gas chromatography, High pressure liquid chromatography, Thin layer chromatography, Ion exchange chromatography..

### Chemical Engineering

- ❖ Unit operations, Purification techniques, distillation, drying, evaporation, extraction, fluid storage, heat exchange, membrane separation, mixing, size reduction, solid handling, solid-solid separation, micro reactors etc.
- ❖ Various engineering/ safety factors
- ❖ Material of construction: Various Forms of Corrosion For Metals, Corrosion Rate, Coatings And Linings, Coatings And Linings, Choice of Material of Construction, Choice of Process Conditions

### Fiber-Polymer chemistry

- Natural fibres : cellulose, wool, silk, etc.
- Synthetic fibres: polyester, nylon, cellulose acetate,
- Dye-fiber interaction for various types of dyes and fibres.