

DYE CHEMISTRY

UNIT – I Dyes and Dye Intermediates : (15 Hrs)

- 1.1 Classification of Dyes (based on their use and on their structures) – Classes of Dyes for dyeing on different Fabrics (Natural and Man made).
- 1.2 Important dyestuff intermediates – their names and structures.
- 1.3 General properties of Dye Stuff – Linearity, coplanarity, Fastness properties, Fluorescence, optical brighteners.

UNIT – II Fibre Science (15 Hrs)

- 2.1 Fibre Classification – Properties (Count, Denier, Tex, staple Length, Spinning properties, Strength, elasticity and creep)
- 2.2 Natural Fibres – Cotton, Wool, Silk – General Characteristics.
- 2.3 Synthetic Fibres – Polyamide Fibre (Nylon 66 – Preparation Nylon degradation) – Polyester Fibre (Preparation, degradation) – Polyacrylonitrile Fibre (Preparation, Properties) – Viscose (Preparation Properties).
- 2.4 Identification Tests for Cellulose, Cotton, wool, silk, Rayon, Acrylic, Viscose, Polyamide and Polyester Fibres.

UNIT – III DYE APPLICATION-I PRE TREATMENTS (15 Hrs)

- 3.1 Sizing and Desizing – Purpose – Desizing methods (Hydrolytic and Enzymatic)
- 3.2 Scouring – Purpose – Kier boiling – Alkali Scouring – Acid Scouring – Principles involved in these methods.
- 3.3 Bleaching – Methods (Hypochlorite, Peroxide and Bleaching Powder bleachings).

UNIT – IV DYE APPLICATION II PRINCIPLES OF DYEING (15 Hrs)

- 4.1 Dye bath preparation – M.L.Ratio – Fixation of Dye and additive concentration on the basis of weight of the material – Methods of expressing the concentrations in Dye bath (gpl).
- 4.2 Dyeing assistants – Wetting agent (TR Oil – Preparation and Purpose) – Anionic and Non-ionic detergents (Examples, Functions)- Levelling agents(Examples, functions) – Fastness improvers (Example functions)

-Dispersing agents (Examples, functions) – Exhausting agents (Examples, Functions) –Mordants – Ingrain.

- 4.3 Dye bath Recepte model (Dyeing of cotton with Reactive dyes, sulfur dyes, Azoic dyes – Dyeing of Polyester with disperse dyes with and without carriers, Dyeing of silk with metal; complex dyes).

UNIT – V DYE APPLICATION – II : DYEING PROCESS : (15 Hrs)

- 5.1 Vat Dyeing – Classification of Vat dyes – Vatting – Dyeing procedure – Exhaustion in vat dyeing – Oxidation.
- 5.2 Reactive Dyeing – Hot and cold brand – Principles involved in the Dyeing Process – batch and continuous processes.
- 5.1 Dyeing of Polyester and Blends – Function of dispersing agents – Fibre swelling – Carrier dyeing – High temperature dyeing – Selection of dye stuff.

REFERENCES :

1. Shenai, V.A. – An Introduction to Dye Staff and intermediates Sevak Publications, Wadela, Bombay-3.
2. Abraham E.N.- Outlines of Chemistry of Dye Staff and intermediates – Chemical publishing, New York.
3. Shenai, V.A. – Technology of Textile Processing,
 - a) Textile Fibres, Vol.I,
 - b) Techniques of Bleaching Vol.III
 - c) Principles of Dyeing Vol.IV
4. Synthetic Organic Dyes, Chatwal and Anand.