

## DYEING AND PRINTING

Paper No : HSCT (304)

ES-3

Credits – 2+2=4

SEM – III(M.Sc. C.T.)

Marks : 50 + 50 = 100

### Objective

- i. To impart the knowledge about preparation of fabric for dyeing & printing.
- ii. To understand the theory of dyeing in relation to various classes of dyes.
- iii. Application of various dyes & properties related to it.
- iv. To introduce the concept of dyeing at commercial level.
- v. To inculcate awareness of the different methods of printing and appreciate the technical advantages of each.
- vi. To develop technical competency in printing with different dyes on different fabrics.

### Unit- 1.

- A. Preparation of fabric for dyeing & printing
  - Scouring, bleaching, designing
  - Reagents used & their application
  - Specific preparatory steps for industrial level for yarn, fabric & price goods

### Unit- 2

Dye

- Classification, definition, com
- Colour & chemical constitution of dyes
- Dyeing with chemical dyes
  - a. Direct, reactive, vat, sulphur, azo [for cellulosic]
  - b. Acid, metal complex, disperse [for protein]
  - c. Basic, nylomine, disperse [for man-made]
- Dyeing with natural dyes
- use of pigments
- Dyeing machines for fibers, yarns & fabrics
- Industrial dyeing practices

- Dyeing auxiliaries & their uses
- Dyeing of blends
- Unit 2.a Textile design through dyeing
- Tie & dye
- Batik
- Union & Cross dyeing
- Dyeing defects & remedies

### **Unit -3**

Introduction to printing – difference between dyeing and printing.

Methods of printing

- Historical development of printing methods – block stencil. Screen roller and rotary screens used at cottage and industrial level.

Printing pastes – Thickening agents and auxiliaries for printing and their suitability to various classes of dyes and fibres. Preparation of printing pastes for different dyes and different fibres.

### **Unit -4**

Styles of Printing

Direct style, dyed, resist or reserve style, discharge style and raised style.

Styles and methods of printing traditionally used in India.

Special printing procedures

Polychromatic dyeing, transfer printing, carpet printing, flock printing.

Finishing and after treatment of printed goods at cottage and industrial level.

### **Practicals**

1. Preparation of fabric for dyeing & printing
2. Dyeing of yarns & fabric with different classes of dyes, in fibre & blends (variable – MLR, con, temp leveling/ exhausting agents)
  - Direct, reactive, vat, sulphur, azo
  - Acid, chrome, metal complex
  - Basic, disperse
  - Natural dyes

3. Preparation of fabric for printing – different fibre groups with different dyes, different styles of printing.
4. Preparation of screens for printing
5. Printing with blocks and screens on cotton, silk, wool and cotton wool, cotton silk and cotton polyester blends in different styles with different dye classes.
  - Direct style
  - Mordant or dyed style, Azok style
  - Discharge style
  - Resist style
  - Raised style
  - Transfer printing
6. Finishing the printed goods
7. Reports of visits to processing and printing units – cottage and industrial level.

## References

1. V.A. Shenai (1987), Chemistry of Dyes and Principles of Dyeing, Sevak Praksshan, Mumbai.
2. H.A. Lubs, Robert, E. The chemistry of Synthetic Dyes and Pigments, Krieger Publishing company, New York.
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5. V.A. Shenai (1977), Technology of Printing – Technology of Textile Processing, Vol. IV, Sevak Publication.
6. M.L. Gulrajani and Deepti Gupta (1990), Natural Dyes and their Application to Textiles”. Ed. I.I.T. Delhi Publication.
7. John and Margarot Cannon (1994), Dye Plants and Dyeing, The Herbert Press (UK).
8. ASTM and ISI Standatds.
9. K. Venkatrama (1970), Chemistry of Synthetic Dyes, Part I and II.