

COLOUR SCIENCE AND INSTRUMENTATION

Paper No HSCT (203)

CC-6

Credits : 4+0=4

SEM – II (M.Sc. C.T.)

Marks : 100

Objectives

1. To develop an understanding of the scientific aspects of colour, difference between natural and colour compound.
2. Understanding of colour formulation, assessment of colour differences, colour, sorting techniques and colour perception.
3. To understand theory of colour measurements in solution and on textiles and the instruments used for colour measurement.
4. To acquaint students with the recent developments regarding eco-regulation and banned dyes.

Unit -1

- Electromagnetic Radiation, Electromagnetic Spectrum and its uses in
- Physical/organic chemistry, sources of natural and artificial light, properties of artificial light sources, absorption and scattering of light, spectrophotometric curves and their relationship to perceived colour.

Unit -2

Relation between colour and chemical constitution of dyes, to acquaint

With colour index.

- Instruments for the measurement of colour, principle of spectrophotometry, early colorimeter, absorption spectroscopy, Beer-Lambert's Law, single beam and double beam spectrophotometer.

Unit -3

Colour mixing system, colour order system, CIE colour specifications, Illuminant, yellowness index and whiteness index, reflectance spectrophotometer , Kubelka Munk Theory, Relation between K-S and concentration of colourant, understanding colour difference, hue, chroma etc.

Unit -4

Introduction to chromatography and basic instrumentation; Application of Thin layer chromatography, HPLC and GC in day analysis.

Practicals

1. Identification of dyes, direct, reactive, vat, acid, azo, disperse and natural dyes.
2. Demonstration of reflectance spectrophotometer for colour data measurements, whiteness and yellowness index.

References

1. Colour physics for industry, Ed., by Roderick McDonald, Published by the Society of dyers and colourists.
2. Instrumental methods of Chemical Analysis, Galen W.E. Wing, McGraw –Hill Book Company.
3. Instrumental Methods of Chemical Analysis – G.R. Chatwal and S. Anand, Himalaya, Publishing House, Mumbai.
4. Dyeing and Chemical Technology of Fibers, S.R. Trotman, Charles Gribbin & company limited.
5. Chemistry of Synthetic Dyes Part i & ii – K. Venkatraman.