

VEER NARMAD SOUTH GUJARAT UNIVERSITY
M.Sc. Semester-III (ORGANIC CHEMISTRY)
SYLLABUS TO BE EFFECTIVE FROM JUNE 2019

PAPER-IV (DYES AND INTERMEDIATES-I)

Max. Marks: 100 (External – 70 + Internal – 30)

Total Periods: 45

UNIT-I AZO DYES

(12 Periods)

General Introduction: Diazotization, mechanism and different methods of diazotization and laws of coupling, General introduction, classification and synthesis of Monoazo dyes, Bisazo dyes and Azoic dyes.

Synthesis of the following:

Disperse Red 13, Acid Blue 92, Mordant Black 3, Acid Black 1, Acid Blue 113, Direct Blue 15, Direct Violet 1, Direct Red 28, Naphthol AS-BR, Fast Orange GGD.

UNIT-II

(11 Periods)

(A) Fluorescent Whitening Agents

Introduction, Theory of fluorescence, Classification of FWA and synthesis of important member of each class and their uses.

(B) Types of Fibres and Basic Operations in Dyeing Process

Types of fibres: Natural, semisynthetic and synthetic, Dyeing and

Interactions: Ionic Interactions, Hydrogen bond, Van der Waal's Interactions and Covalent Interactions.

Basic Operations in Dyeing Process: Preparation of the fibres, Preparation of the dyebath, application of the dyebath and finishings, Various methods of dyeing: Direct dyeing, Vat dyeing, Mordant dyeing, Disperse dyeing and Formation of dye on the fibre, Dyeing of wool with the acid dyes, Dyeing with the reactive dyes, Fastness properties: Colour fastness, Light fastness, Sublimation fastness and Burnt gas fumes fastness.

UNIT-III

(11 Periods)

(A) Classification of Dyes according to application and chemical constitution.

(B) Evaluation of dyes

(C) Dyes for Non-Textile Application

Leather dyes, Paper dyes, Hair dyes, Food dyes, Ink dyes, Photographic dyes, Indicator dyes, Laser dyes, Liquid crystal dyes, Solar cell, biological uses of dyes.

Synthesis of the following:

Eriochrome Black T, Sunset Yellow FCF, Acridine Yellow G, Safranin B, Prontosil, Methylene Blue, Nile Blue 2B, Tartrazine

UNIT-IV**(11 Periods)****(A) Pigments**

Different classes of organic and inorganic pigments and their applications with examples.

(B) Heterocyclic Dyes

Pyrazolone dyes, cyanine dyes, dyes containing azine, oxazine and thiazine ring systems,

Thiazole Dyes

Synthesis of only the following:

Basic Yellow 11, Basic Orange 21, Safranin B, Rosinduline GG, Sirius Supra Blue FFRL, Brilliant Alizarin Blue 3R, Sirius Supra Yellow RT, Acid Yellow 19, Copper Phthalocyanine, Sirius Supra Light Green FFGL.

Reference Books Recommended

1. The chemistry of synthetic Dyes, Vol. I to VII by Venkataraman, Academic Press, New York.
2. Chemistry of Synthetic Dyes & Pigments by Lubs.
3. Dyes and their intermediates by E. N. Abraham.
4. Handbook of synthetic dyes and pigments, Vol. I & II by K. M. Shah.
5. Industrial Dyes by Klaus Hunger, Germany by Wiley-VCH.
6. Development in the Chemistry and technology of Organic Dyes by J. Griffiths, Blackwell Sci. Pub., Oxford, London.
7. Principles of colour Technology by Fred W. Billmeyer and Max Saltzman, John Wiley & Sons.
8. Advance in colour chemistry, series vol.-3, Modern colourants: Synthesis and structure, edited by A.T. Peters and H.S. Freeman, Blackie Academic & Professional(1995).
9. Colour chemistry: Synthesis, properties and applications of organic dyes and pigments, Heinrich Zollinger VCH, Germany(1987).
10. Organic Chemistry in Colour V., P.F. Gordon, P. Gregory, Spinger-Verlag(1983).
11. Textile Auxiliaries, J.W. Batty
12. The production and applications fluorescent brightening agents, Milos Zahradnik, John Wiley & Sons (1982).
13. Chemistry of Dyes and Principles of dyeing-V.A. Shenai
14. Synthetic dyes- G.R. Chatwal
15. Critical reports on Applied chemistry, Vol-7, Developments in chemistry and Technology of organic dyes, Edited by : J. Griffiths, Blackwell