

VEER NARMADA SOUTH GUJARAT UNIVERSITY

Third Year B. Sc.

Chemistry

Dyes

(Effective from July 2002 – Revised in B O S dated 23/10/2002)

70 Marks (External)

Total 60 Hrs

30 Marks (Internal)

Time 3 Hrs.

(Uni. Exam)

UNIT – I

Topic –1: Dyes intermediates: 6 Hrs

Name and structure of Benzene, naphthalene and anthraquinone intermediates useful in the dyestuff industry, synthesis of p-crecidine. H-acid and Bromamine acid

Topic –2: Dyes and pigments: 8 Hrs

Important landmark in the history of dyes. Relation between colour and chemical constitution with reference to Witt's theory, definition of dyes & pigments, organic Pigments, classification of dyes based on

(a) chemical constitution with illustrative example.

(b) methods of application to fibres, synthesis of Pigment yellow G, Pigment yellow 10 G, Benzidine orange.

UNIT – II

Topic –1: Diazotisation and coupling :(AZO dyes) 8 Hrs

Definition and mechanism of diazotisation common method of diazotisation, common and special coupling components, laws of coupling reaction with phenols and amines of benzene and naphthalene series, monoazo dyes, synthesis of Congo red, Direct black EN, Eriochrom black T, Orange II and Orange IV

Topic –2: Disperse Dyes: 4 Hrs

Definition classification of disperse dyes with examples, application of disperse dyes, synthesis of Cellitone Scarlet B, Dispersol Blue, Golden yellow VIII.

UNIT – III

Topic –1: Vat dyes: 8 Hrs

(a) Indigo from indigenous source, Halogen derivatives of indigo and sulphur analogs of indigo. Synthesis of indigo and thioindigo.

(b) Anthraquinone vat dyes: Bohn's discovery of Anthraquinone Vat dyes, classification with reference to (i) anthraquinone and (ii) anthrone derivatives- synthesis of Caledon Jade-green, Indanthrene Khaki GG, Dibenzanthrone.

Topic –2: Reactive dyes: 4 Hrs

Definition, classification of reactive dyes base on reactive system general accounts of reactive dyes base on monochlorotriazinyl , dichlorotriazinyl and vinyl sulphone system. Application of reactive dyes . synthesis of procion Brilliant red H-3B , procion Brilliant Yellow M-6G, Remazole Black B.

UNIT – IV

Topic –1: Azoic dyes: 4 Hrs

Definition of azoic dyes , coupling components used for azoic dyes , fast bases , fast salts , rapid fast, colours rapidogens and rapidazoles, synthesis of naphthol AS , Fast blue B base (Dianisidine)

Topic –2: Fluorescent brightening agents: 8 Hrs

General account, classification of FBA base on chemical constitution with examples, Stilbene and Coumarin derivatives of FBA , synthesis of Tinopal BV, Blankophor R, Blankophor G , 3-phenyl-7 methoxy coumarin, 4 methyl –3 phenyl-7-aminocoumarin and 3-phenyl-7-acetylamino coumarin.

UNIT – V

Topic –1: Mordant dyes: 3 Hrs

Definition , General account with reference to azo, nitroso, anthraquinone acidic and basic ground and their application , chrome dyeing , synthesis of alizarin and Mordant yellow 2 G

Topic –2: Non-textile application of dyes: 7 Hrs

(a) Food colours , cosmetic dyes , dyes for paper and printing inks , dyes for paints , dyes for leather and polishes synthesis of Amaranth , Lithol Rubine, Lithod Red, Crystal violet, Hansa Yellow G, Bismark brown G, and Eosin.
(b) Dyes used as drugs general account and synthesis of Erythrosin , Acriflavin and Mercurochrome.

Topic –3: Sulphur dyes: 2 Hrs

(a) Sulphur Black (b) Sulphur brown (c) Sulphur red (d) Sulphur blue (e) Vat blue -

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Reference books:

- (1) Synthetic organic chemistry by O.P. Agrawal
- (2) The chemistry of synthetic dyes and pigments by H. A. Lubes
- (3) chemistry of synthetic dyes VOL I to VII by K. Venkatraman
- (4) An introduction to synthetic dyes by D. W. Ranghekar & P. P. Singh
- (5) A had book of synthetic dyes and their application by C. T. Bhastana & V. H. Raichura & others
- (6) chemistry of dyes & Principles of dyeing Vol II by V. A. Shehai
- (7) chemistry of synthetic dyes by I. G. Vashi
- (8) Chemistry of dyes and pigments by K. M. Shah
- (9) Synthetic dyes by G. R. Chatwal