

VEER NARMAD SOUTH GUJARAT UNIVERSITY

Third Year B. Sc. Semester -V

General elective subject (Dyes)

Proposed syllabus from June 2021

50 Marks (External)

20 Marks (Internal)

Total: 30 Hrs

Time: 2 Hrs. (Uni. Exam)

Topic –1: Dyes intermediates:

4 Hrs

Name and structure of Benzene, naphthalene and anthraquinone intermediates useful in the dyestuff industry, synthesis of 4-amino -2-methoxy toluene, 2,3- diamino anthraquinone, Chromotropic acid, Bromamine acid.

Topic –2: Diazotisation and coupling: (AZO dyes)

6 Hrs

Definition and mechanism of diazotization, common method of diazotization, common and special coupling components, laws of coupling reaction with phenols and amines of benzene and naphthalene series, monoazo dyes, synthesis of Direct black EW, Orange - II, Orange – IV, Orange – III, Eriochrome Black – A.

UNIT – II

Topic –1: Disperse Dyes:

5 Hrs

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

Topic –2: Dyes and pigments:

5 Hrs

Relation between colour and chemical constitution with reference to Witt's theory, definition of dyes & pigments, difference between dyes & pigments.

Classification of dyes based on,

(a) Chemical constitution with illustrative example.

(b) Methods of application to fibres, synthesis of Pigment yellow G, Benzidine orange, Pigments Orange VI.

UNIT – III

Topic –1: Vat dyes:

10 Hrs

(a) Definition and general account of vat dyes, Indigo obtained from natural source, Synthesis of Indigo by Heumann process and Sand Meyer process. Halogen derivatives of Indigo (Brilliant Indigo – 4B, Brilliant indigo -4G, 5;5- dibromoindigo vat blue -35) Synthesis of thioindigo by anthranilic acid, halogen derivatives of Thioindigo, Indanthrene Red Violet RRN.

(b) Anthraquinone vat dyes: Bohn's discovery of Anthraquinone Vat dyes, classification with reference to anthraquinone derivatives synthesis of Caledon Jade-green, Indanthrene yellow 5 GK, Indanthrene Brilliant Scarlet –RK.

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 hand 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
- (10) Synthetic dyes and pigments by E. N. Abrahart.
- (11) High tech Dyes by Smith.



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UNIT-I

Topic – 1: Drugs: Classifications-Terminology

05 Hrs

Definition of the term drug. Drugs obtained from plants. Different class of the drugs. Explanation of the following terms: Agonist, Antagonist, Receptors, Pharmacophore, Pro-drug, Soft-drug, CNS depressants, CNS stimulants, Mode of action. Brief accounts of the following agents giving the name and structures of two important drugs in each case (1) Antifungal agents (2) Antiviral agents (3) Anti-cancer or Cytotoxic drugs (4) Non-Steroidal Anti-Inflammatory Drugs (NSAIDS).

Topic – 2: Micro-organism and Diseases

05 Hrs

Brief account of microbes: Bacteria, Fungi, Protozoa, Virus. Classification of the bacteria based on shape, Gram staining and Ziehl–Neelsen staining. Names of at least two diseases in case of each of the following types of infection and also the name of microbes responsible for the same: (1) Respiratory tract infections (2) Gastro intestinal tract infections (3) Urinary tract infections (4) Urethritis and sexually transmitted diseases (5) Skin and soft tissue infections (6) Cardio vascular system infections (7) Central nervous system infections. Name of important drug for each of the following diseases: (1) Typhoid (2) Dysentery (3) Pneumonia (4) Meningitis (5) Gastroenteritis (6) Actinomycosis.

UNIT-II

Topic – 1: Antibiotics

05 Hrs

Definition. History of discovery of penicillin. Structural variations in penicillin. Broad spectrum antibiotics and their therapeutic uses. Sources, Structural formula and Therapeutic uses of Streptomycin, Tetracycline, Doxycycline, Cycloserine, Chloramphenicol and Some recent antibiotics. Synthesis of Ampicillin.

Topic – 2: Sulfa drugs

05 Hrs

History of discovery and development of sulfa drugs. Structural variations among sulfonamides. Mode of action of Sulfonamides. Therapeutics uses and antimicrobials activity of sulfonamides. Synthesis and uses of Sulphadimidine, Sulfaguanidine, Sulfisoxazole (Sulfafurazole), Sulfacetamide, Succinyl sulfathiazole, Sulfanilamide, Sulfadiazine, Sulfapyridine.

UNIT-III

Topic – 1: Coagulants and Anti coagulants

05 Hrs



Definition, Fibrin-Fibrinogen, thrombin prothrombin role of calcium in blood clotting. Classification and structural variations. Blood coagulants, Vitamin K group as blood coagulants. Synthesis and uses of Warfarin, Dicoumarol, Bromindone.

Topic – 2: Analgesics

05 Hrs

Definition, classification and structural variations. Synthesis and uses of Meperidine (Pethidine), Ibuprofen, Aspirin, Meclofenamate sodium, Oxyphenbutazone, Paracetamol, Novalgin.

Reference Books:

1. May's Chemistry of synthetic Drugs by Dyson.
2. Chemistry of drugs, Ener and Caldwell.
3. Synthetic drugs by Tyagi and Yadav.
4. Synthetic Drugs by G. R. Chatwal, Himalaya Publishers.
5. The Organic Chemistry of Drug Synthesis by Daniel Lednicer & L.A.Mitscher.
6. Drugs by V.K.Ahluwalia Pub. Ane Books Pvt. Ltd.
7. Medicinal Chemistry by Balkishan Razdan, Pub. CBS Publishers.
8. Pharmaceutical Organic Chemistry by S.K.Dewan, Pub. Narosa.
9. Medicinal Chemistry - a Molecular and Biochemical Approach, by Thomas Nogrady & Donald F Weaver.
10. Pharmaceutical Organic Chemistry by Shyam Singh Pub. Himalaya Publishers.
11. Medicinal Chemistry by G Patrick. Pub. Viva Books.
12. Burger's Medicinal Chemistry & Drug Discovery. Ed. by D. J. Abraham.

