

# **Swami Ramanand Teerth Marathwada University, Nanded**



**B. O. S. In Chemistry**

**B. Sc. Third Year (Dyes and Drugs)**

**Revised Syllabus**

**In force from June - 2010**

# **B. Sc. Third Year DYES AND DRUGS**

## **Revised Syllabus**

<b>Paper</b>	<b>Course No.</b>	<b>Course</b>	<b>Periods /week</b>	<b>Total Periods</b>	<b>Marks</b>
VIII	CHDD-301	Dyes	3	80	100
IX	CHDD-302	Drugs	3	80	100
X	CHDD-303	Laboratory Course-II	4	120	100
XI	CHDD-304	Laboratory Course-III	4	120	100

**B. Sc. Third Year  
DYES AND DRUGS  
Paper: VIII  
Dyes (CHDD-301)**

**Marks:100**

**Periods:80**

**UNIT I**

**I. Action of light on dyes and dyed fibres**

**10 periods**

1. Factors affecting fastness of dyed fibres
  - a. General consideration
  - b. fluorescence, phototropy, mechanism of fading
2. Constitution of dyes and light fastness with respect to Nitro dyes, Azo dyes, basic dyes, sulphur dyes, Indigo dyes, anthraquinones.
3. Light fastness of pigments

**II. Fluorescent brightening agents**

**10 periods**

- a. Introduction
- b. Fluorescence, mechanism of fluorescence
- c. Characteristic properties of fluorescent brightening agents.
- d. Fluorescent brighteners for
  - i) cellulosic fibers
  - ii) acrylic fibers
- e. Toxicity of fluorescent brightener.

**UNIT II**

**I. Sulfur dyes**

**12 periods**

- a. Introduction
- b. Classification of sulphur dyes on the basis of colour and application
- c. Condition of thionation
- d. General properties and application of sulphur dyes.
- e. Fastness properties of sulphur dyes
- f. Sulphur side chain in sulphur dyes
- g. Carbon-carbon linkage in sulphur dyes

**II. Mordant Dyes**

**08 periods**

- a. Introduction
- b. Natural mordant dyes
- c. Synthetic mordant dyes
- d. Methods of application (brief study)
  - i) Chrome mordant process
  - ii) After chrome process
  - iii) Metachrome process.

### UNIT III

#### I. Reactive dyes

08 periods

- a. Introduction
- b. Constitutional aspects of reactive dyes (flexibility through chromogen, reactive group)
- c. Study of vinyl sulfone dyes, sulphatoethyl sulfone dyes, acryl amide dyes
- d. Reactive mordants
- e. Cross linkage agents
- f. Dyes requirement

#### c. Disperse dyes:

12 periods

- a. Introduction
- b. Ionamines, disperse acetate dyes and solacet dyes
- c. Chemical structure of disperse dyes
- d. Dispersion process
- e. Function of dispersing agents
- f. Disperse dyeing process
- g. Fiber swelling in dyeing
- h. Use of carriers in dyeing
- i. Use of heat energy in dyeing

### UNIT IV

#### I. Evaluation of dyes by chromatography:

20 periods

- 1) Identification and purification of commercial dyes
- 2) Concept of chromatography
- 3) Types of chromatography
  - a) Adsorption chromatography
  - b) Partition chromatography
    - i) Paper chromatography
    - ii) Thin layer chromatography
- 4) Chromatography of dyes
- 5) Separation of azo, basic and vat dyes
- 6) Evaluation of dyes by
  - a) chemical analysis
  - b) colorimetry,
  - c) Experimental dyeing.

**B.Sc. Third Year  
DYES AND DRUGS  
Paper: IX  
Drugs (CHDD-302)**

**Marks:100**

**Periods:80**

**UNIT I**

**I. Pharmaceutical dosage forms:**

**20 Periods**

- a. Principal pharmaceutical ingredients used in drug formulation, general consideration in drug product formulation.
- b. Solvents for oral preparation,  
Preparation of
  - i) Potassium iodide solution
  - ii) Strong Iodine solution
  - iii) Magnesium citrate and citric acid oral solution
- c. **Syrups**: components of syrups, different methods of preparation of syrups: acacia, cocoa, simple syrup, ferrous sulphate.
- d. **Elixirs**: Introduction, preparation of medicated and non-medicated elixiers.
- e. **Suspensions**: Preparation of antacid, antihelminthic antibacetiral suspension.
- f. **Emulsions** : Methods of prepration of emulsion. Examples.....
- g. **Tablets**: Methods of preparation of tablets. Examples.....

**UNIT II**

**I. Unit operation**

**20 Periods**

- a. Introduction, need for preparation of drugs on large scale
- b. Concept of unit operation, basis of study of unit operation.
- c. Fluid flow properties, mechanism of fluid flow by Reynold's experiment  
Significance of Reynold's number, distribution of velocities of fluid across a tube, boundary layers.
- d. **Heat transfer**: properties of steam, use of steam on heating medium
- e. **Distillation** : Principles of simple fractional distillation, molecular distillation types of fractionating column.
- f. Size reduction: objectives of size reduction and significance of particle size factors affecting size reduction, mechanism size reduction, methods of size reduction.
- g. **Crystallization**: Introduction, types of crystallizers
- h. **Mixing** : concept, objectives of mixing types of mixing.
- i. **Drying** : Types of dryers, dryers for dilute solution and suspension, construction, working advantages disadvantages of drum and spray dryers.

### UNIT III

#### **I. Materials used for pharmaceutical plant construction** **06 Periods**

- a. Factors affecting the selection of material for pharmaceutical plant construction
- b. Metals and non metallic material used for construction of pharmaceuticals plant

#### **II. Cardiovascular drugs :** **10 Periods**

- a. Introduction, classification
- b. Vasodilators : synthesis and application of  
(I) Amyl Nitrate (ii) Glycerol trinitrate
- c. Antihypertensive agents: synthesis and applications of
  - i) Hydralazine
  - ii) Minoxidil
  - iii) Lidocaine
  - iv) Methyl dopa
- d. Anti arrhythmic agents: Synthesis and applications of
  - i) Propranolol
  - ii) Procaine

#### **III. Antineoplastic drugs:** **04 Periods**

Introduction, cancer causing agents, cancer chemotherapy

### UNIT IV

#### **I. Anti AIDS Agent** **06 Periods**

- a. Introduction
- b. Symptoms of AIDS, Causes,
- c. Application of Drugs and their effect

#### **II. Anti tubercular** **08 Periods**

- 1) Introduction
- 2) Characteristics of antitubercular drugs
- 3) Synthesis and application of the following
  - i) p-amino salicylic acid (PAS)
  - ii) Isoniazide
  - iii) Ethambutol
  - iv) Pyrazinamide

#### **III. Antileprosy drugs:** **06 Periods**

Introduction, synthesis and application of the following drugs

- i) Dapsone
- ii) Solapsone
- iii) DADDs

**B.Sc. IIIyear**  
**DYES AND DRUGS**  
**Paper: X**  
**LABORATORY COURSE V (CHDD-303)**

**Marks: 100**

**Periods: 120**

(Any sixteen experiments are to be covered)

1. Preparation of Dyes (any three)
  - a. Phenyazo-  $\beta$ -naphthol
  - b. Magneson II
  - c. Chrysoidine
2. Estmation of Dyes by reduction method using Titanu chloride (any Five)
  - a. Indigo carmine
  - b. Amarnath
  - c. Crystal Voilet
  - d. Eosine
  - e. Methylene Blue
  - f. Malachite Green
3. Estmation of coupling component by Diazonium salt solution (any Four)
  - a. R-Acid
  - b. B-Naphthol
  - c. Resorcinol
  - d. J-acid
4. Chomatography
  - a. Separation of given mixture by Thin layer Chromatography (Two Mixture)
  - b. Separation of given mixture by Paper Chromatography (Two Mixture)
  - c. Separation of given mixture by Column Chromatography (Two Mixture)
5. Separation of Azo, Basic and Vat dyes by chemical method (Two Mixture)

**B.Sc. Iyear**  
**DYES AND DRUGS**  
**Paper: XI**  
**LABORATORY COURSE IV (CHDD-304)**

**Marks: 100**

**Periods: 120**

(Any sixteen experiments are to be covered)

1. To determine percentage purity of calcium gluconate in a given drug by complexometric titration
2. Assay of ascorbic acid as a given drugs.
3. Assay of isoniazide in a given drug.
4. Assay of Chloroquine in a given drug
5. Assay of Riboflavin in a given drug
6. Formulations  
Preparation of representative examples of drugs in the following forms (Any seven)
  - i) Glycerines - Borax glycerine, Phenol
  - ii) Syrups - Simple syrup by IPS USP. Lemon syrup
  - iii) Oral solution - Sodium citrate and citric acid solution, KI oral solution .strong iodine solution
  - iv) Emulsion - Cod liver oil emulsion, Turpentine Emulsion, Castor oil emulsion, Acacion emulsion.
  - v) Lotions - Calamine lotion, Zinc sulphate lotion
  - vi) Ointments - Simple ointment, Sulphur ointment
  - vii) Elixirs - Simple elixir
  - viii) Ear Drops - H<sub>2</sub>O<sub>2</sub> ear drops, sodium bicarbonate ear drops
7. Preparation of granules of different powder drugs (Two drugs).
8. Determination of refractive index of following drugs by refractometer
  - a. Methyl salicylate
  - b. Euginol
  - c. Cinnamon Oil