SYLLABUS
B.Sc. II Year (Semester-III and IV)
Session-2012-13

Subject
Pharmaceutical Chemistry (as one subject)

Semester III
Medicinal Chemistry
Practicals

Semester IV
Chemistry of Natural Products
Practicals
SEMESTER III
MEDICINAL CHEMISTRY

UNIT I

**General Anesthetics**: Definition, Stages of Anesthesia, Classification and Theories of General Anesthetics.
Preparation, Mode of action, Therapeutic uses and Adverse Effects of Compounds
- Thiopental Sodium, Halothane, Cyclopropane.

**Local Anesthetics**: Definition, Classification and Theories of Local Anesthetics
(five Theories).
Preparation, Mode of action, Therapeutic uses and Adverse Effects of Compounds
- Procaine, Benzocaine, Lignocaine HCl, Diperodon HCl.

UNIT II

**Hypnotics and Sedatives**: Definition, Classification and Structure Activity Relationship of barbiturates.
Preparation, Mode of action, Therapeutic uses and Adverse Effect of Compounds
- Barbitone Sodium, Allobarbiton, Hexabarbitons, Glutethimide.

**Tranquillizers and Anticonvulsants**: Definition, Classification.
Preparation, Mode of action, Therapeutic use and adverse effect of Compounds
- Chlorpromazine Hcl, Chlordiazepoxide, Diazepam

UNIT III

**Adrenergic Agents**: Classification, Adrenergic hormone, Structure Activity Relationship of Phenylethylamine analogs, Ephedrine, Pseudoephedrine HCl, Metarminol, Naphazoline HCl

**Antihypertensive**: General Introduction, Causes and types of hypertension, Classification of antihypertensives, Mode of action of Calcium channel blockers.
Preparation, Mode of action, Therapeutic uses and Adverse effect of Compounds
- Tolazoline Hcl, Propranolol HCl, Methyl dopa, Guanithidine sulphate, Captopril

UNIT IV

**Non Steroidal Anti-Inflammatory Drugs**: Definition, Types of Pain, Classification of NSAID, Structure Activity Relationship of Indole Acetic Acid derivatives, Structure Activity Relationship of Salicylic acid derivatives.
Preparation, Mode of action, Therapeutic uses and Adverse effect of Compounds
- Indomethacin, Tolmetin Sodium.

UNIT V

**Drugs Acting on Respiratory Systems**, Expectorants and Antitussives: Classification and Mechanism of action, Potassium glucosulphate, Terpine hydrate, Noscopine.
(b) **Antiasthmatics Drugs**: Classification, Causes of Asthma, Preparation, Mode of action, Therapeutic uses and Adverse Effect of Compounds – Salbutamol, Terbutaline.
BOOKS RECOMMENDED

6. John H. Block, John M. Beak, Jr., Organic Medicinal and Pharmaceutical Chemistry, Lippincot Williams & Wilkins.
SEMESTER III
PRACTICAL
PHARMACEUTICAL CHEMISTRY

Total allotted hours: 4
Examination: 4 hours
Max. Marks: 50

I  Preparation of Organic Compounds:  12 Marks
   (a) Phenyl Benzoate  (b) 1-Phenyl Azo-β-naphthol (c) Phthalimide
   (d) Benzanilide (e) Hippuric Acid (f) Naphthyl acetate (g) Succinic anhydride
   (h) Di-azo-amino benzene (i) 2,4-Dinitro toluene (j) 2,4,6-Tribromo aniline
   (k) p-acetansidide.

II  Isolation:  12 Marks
   (a) Starch from potatoes (b) Hippuric from Cow’s urine
   (c) Calcium citrate from Lemon juice. (d) Solanin from Potatoes.

III  Identification of Plant Products:  06 Marks

III  Identification of Drugs:  06 Marks

IV  Viva  06 Marks

V  Practical record  08 Marks
SEMESTER IV
NATURAL PRODUCTS

UNIT I

**Heterocyclic Compounds:** Nomenclature, Structural formula and chemistry of Imidazoles, Oxazoles, Pyrazoles, Pyran, Pyrimidine, Indole, Isoquinoline.

**Terpenes:** Isolation, Classification. General methods of determining structure with references to Citral, Terpineol, Carvone, Menthol, Camphor.

UNIT II

**Carbohydrates:** Classification of Carbohydrates, Monosaccharides: Glucose, Fructose and their reactions, Cyclic structure of D-glucose, Mutarotation. Disaccharides: Maltose, Lactose, Sucrose. Polysaccharides: Starch, Cellulose.

**Alkaloids:** Classification. General methods of determining structure of an Alkaloid. A general study of structure of Quinine, Morphine, Reserpine, Atropine.

UNIT III

**Glycosides:** Classification, Chemistry of Salicin, Arbutin, Amygdalin, Sinigrin, Anthraquinone glycosides, Tannin, Cardiac glucosides, Saportins.

**Purines:** Uric acid, Caffeine, Theobromine, Theophylline

UNIT IV


**Steroids:** Isolation, Nomenclature, Chemistry of Cholesterol, Ergosterol, Stigmastanol

UNIT V

**Lipids:** Fats, Oils, Waxes, Fattyacids, Physio-chemical properties, Phospholipids, Lecithines, Cephalines, Plasmogens, Glycolipids.

**Polynuclear Aromatic Hydrocarbon:** Chemistry of Naphthaline, Anthracene and Phenanthracene.

**BOOKS RECOMMENDED**

1. Dr.J.L.Jain, Fundamentals of Biochemistry, S.Chand & Company Ltd. New Delhi.
2. P. Kalsi, Chemistry of Natural Product, Kalyani Publisher, Ludhiana
4. G.R. Chatwal, Chemistry of Natural Products, Himalaya Publishing House, Bombay
5. Chawala and Parmar, Chemistry of Natural Products, Sultan Chand and Sons, Delhi
SEMESTER IV
PRACTICAL
PHARMACEUTICAL CHEMISTRY

Total allotted hours: 12 Marks
Examination: 4 hours

I Assay:
(a) Ampicillin
(b) Aspirin
(c) Benzoic acid
(d) Citric acid
(e) Sodium Bicarbonate

II Isolation:
(a) Casein from Milk
(b) Lactose from Milk
(c) Hesperidin from Orange peel
(d) Lycopene from Tomatoes

III TLC of Drugs:

IV Viva
06 Marks

V Practical record
08 Marks

[Signatures]