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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, Dipiperdon 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, Terpene hydrate, Noscopine.(b) **Antiasthmatics Drugs :** Classification, Causes of Asthma, Preparation, Mode of action, Therapeutic uses and Adverse Effect of Compounds - Salbutamol, Terbutaline.

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BOOKS RECOMMENDED

1. Ashutosh Kar, Medicinal Chemistry, New Age International (P) Limited, Publishers.
2. G.R.Chatwal, Pharmaceutical Chemistry Organic Vol. II, Himalaya Publishing House, Bombay.
3. Dr.J.L.Jain, Fundamentals of Biochemistry, S.Chand & Company Ltd. New Delhi.
4. Harkishan Sing, V.K. Kapoor , Organic Pharmaceutical Chemistry, Vallabh Prakashan, Delhi.
5. Harkishan Sing, V.K. Kapoor, Medicinal and Pharmaceutical Chemistry ,Vallabh Prakashan, Delhi.
6. John H.Block, John M.Beak,Jr., Organic Medicinal and Pharmaceutical Chemistry, Lippincot Williams & Wilkins.
7. Stenlake & Beckett, Practical Pharmaceutical Chemistry Part I, CBS Publishers and Distributors, New Delhi.

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**SEMESTER III
PRACTICAL
PHARMACEUTICAL CHEMISTRY**

Total allotted hours:

Max. Marks: 50

Examination: 4 hours

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|------------|---|-----------------|
| 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-acetanisidide. | |
| 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 |

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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 refernces to Citral, Terpeneol, Carvone, Menthol, Camphor.

UNIT II

Carbohydrates: Classification of Carbohydrates, Monosaccharides : Glucose, Fructose and their reactions, Cyclic structure of D-glucose, Mutarotation. Diasaccharides : 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, Caeffine, Theobromine, Theophylline

UNIT IV

Proteins and Amino Acids: Isolation and classification of protein, Hydrolysis of proteins, Fibrous and Globular proteins, Methods of synthesis, Properties and Classification of amino acids. Nucleoproteins, Nucleic acids.

Steroides : Isolation, Nomenclature, Chemistry of Cholesterol, Ergosterol, Stigmasterol

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
3. O.P.Agrawal, Advanced Organic Practical., Goyal Publishing House, Meerut (U.P.)
4. G.R. Chatwal, Chemistry of Natural Products , Himalyaya Pulishing House , Bombay
5. Chawala and Parmar , Chemistry of Natural Products , Sultan Chand and Sons, Delhi

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**SEMESTER IV
PRACTICAL
PHARMACEUTICAL CHEMISTRY**

**Total allotted hours:
Examination: 4 hours**


Max. Marks: 50

I	Assay : (a) Ampicillin (b) Aspirin (c) Benzoic acid (d) Citric acid (e) Sodium Bicarbonate	12 Marks
II	Isolation : (a) Casein from Milk (b) Lactose from Milk (c) Hesperdin from Orange peel (d) Lycopene from Tomatoes	12 Marks
III	TLC of Drugs :	12 Marks
IV	Viva	06 Marks
V	Practical record	08 Marks

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