B.PHARM VIIth SEMESTER

COURSE NO 701: PHARMACEUTICAL CHEMISTRY-V
(NATURAL PRODUCTS)

1. Carbohydrates: Classification and general properties. Knowledge of structure including stereochemistry of glucose, fructose, and sucrose. General treatment of pharmaceutically important carbohydrates-maltose, lactose, starch, cellulose, dextrin, and glycosides.


5. Terpenes: Occurrence, general methods of isolation and classification, chemistry of citral, limonene, \( \alpha \)-terpeneiol, carvone, camphor and menthol. Preparation, general composition, properties and analysis of essential oils of I.P.

6. Alkaloids: Classification, general methods of isolation, chemical tests for alkaloids, Chemistry and uses of ephedrine, nicotine, papaverine and atropine.

7. Vitamins: Classification, chemistry, physiological role and uses of thiamine, riboflavin and ascorbic acid. Skeletal structures of vitamins official in I.P.


11. Antibiotics: A general study of antibiotics, isolation or synthesis, chemistry and uses of penicillin, chloramphenicol and streptomycin, general introduction to tetracycline and other antibiotics included in I.P.

Section 1.11 PRACTICAL

1. Determination of acid value
2. Determination of saponification value
3. Determination of iodine value
4. Determination of unsaponifiable matter
5. Determination of Eugenol in clove oil
6. Estimation of cineole in eucalyptus oil
7. Estimation of citral in lemon grass oil
8. Determination of aminophylline
9. Determination of caffeine citrate
10. Estimation of strychnine hydrochloride
11. Tests for absence of arachis oil, cottonseed oil and sesame oil in other oils
12. Reactions of carbohydrates, glycosides, alkaloids, amino acids (including
   Xanthine alkaloids), sterols and vitamins
13. Identification of selected natural products
14. Preparation of caffeine from Tea dust
15. Preparation of caseine and estimation of nitrogen
16. Soxhelt extraction of a crude drug
17. Assay of tincture Nuxvomica/Tincture Belladona

SUGGESTED BOOKS

1. Organic chemistry, Vol. II. By I.L. Finar
2. Wilson and Gisvold, Textbook of Organic, Medicinal and Pharmaceutical
   Chemistry
3. Bently and Driver’s Textbook of Pharmaceutical chemistry
4. Remington’s Practice of Pharmaceutical Sciences
5. Indian Pharmacopoeia.

COURSE NO 703: PHARMOCOLOGY-II- THEORY

1. Chemotherapy: sulphonamides, antibiotics, antiviral, antifungal agents and
   antineoplastic.
2. Drug treatment in tuberculosis, leprosy, venereal diseases, malaria, filaria,
   leishmaniasis, trypanosomiasis, amoebiasis and helminthiasis.
3. Vitamins and hormones: vitamins, thyroid, parathyroid, adrenal cortex, insulin
   and oral antidiabetic drugs.
4. Pharmacology of drugs acting on sex organs: Oral Contraceptives, oxytocic
   agents and uterine relaxants.
5. Immunity and biological standardisation: vaccines and immune sera,
   immunosuppressive agents.
6. Methods of biological assay, principles of bioassays, fundamentals of
   biometric analysis. Detailed study of the official bioassay methods for
   adrenaline, posterior pituitary, insulin, gonadotrophic hormones, cholera
   vaccine and diphtheria antitoxin.
   Tests for pyrogens: LAL Test & rabbit method.
7. Pharmacology of local anaesthetics.
8. Drugs acting on respiratory system: cough suppressants, bronchodilators, drugs used in asthma.
10. Drugs acting on GI tract: digestants, antispasmodics, anti-diarrhoeal agents, cathartics, emetics, antiemetics, drugs used in inflammatory bowel syndrome, antacids and drugs used in gastric ulcers.

Text Books:
1. Textbook of Pharmacology by Rang and Dale
2. Essentials of Medical Pharmacology. -KD Tripathi
3. Lippincort’s illustrated pharmacology
4. Pharmacology and pharmacotherapeutics by Satoshkar and Bandarkar.

Reference Books:
1. Pharmacological basis of Therapeutics by Goodman and Gillman.
3. Indian Pharmacopoeia.

 COURSE NO 704: PHARMOCOLOGY-II- PRACTICAL

List of Practicals:

1. Action of drugs adrenaline,Ach on isolated smooth muscle (physiological antagonism)
2. Action of atropine and Ach (receptor antagonism) on isolated smooth muscle of rabbit intestine.
3. Action of histamine & antihistamine (receptor antagonism) on isolated smooth muscle.
4. Drug antagonism studies on isolated smooth muscle strips Adrenaline× propanolol (receptor antagonism) of rabbit intestine.
5. Two-point bioassay of acetylcholine on frog rectus abdominis muscle.
6. Three-point bioassay of acetylcholine on frog rectus abdominis muscle.
7. Bioassay of histamine on guineapig ileum.
8. Action of drugs on rabbits eye (local anaesthetics).
9. Action of drugs on mice (CNS stimulants).
10. Action of drugs on mice (CNS depressants).
11. Test for pyrogens (rabbit method).
12. Insulin hypoglycaemic action in rabbits.
COURSE NO 705: PHARMACOGNOSY AND PHYTOCHEMISTRY II

General Pharmacognosy: Advantages and disadvantages of obtaining drugs from cultivated and wild plants. Variability of drug constituents due to exogenous and endogenous factors like altitude, temperature, rain fall, light, propagation by seed vegetative means, mutation, hybridization; Deterioration of crude drugs during storage by insects, pests and enzymes. Factors influencing the storage of crude drugs. Methods of storage.

Evaluation of crude drugs: Identity, purity and quality of crude drugs by organoleptic microscopic, physical, chemical and biological evaluation; Methods of adulteration, detection and identification of adulterants types and significance of standards for crude drugs included in I.P. and B.P. Quantitative pharmacognosy.

A detailed study of the following drugs, their classification methods of preparation, commercial varieties, active principles, their chemical nature, identification, tests and uses; Roots and rhizomes: Male fern, valerian, rhubarb, podophyllum, liquorice, turmeric, ginger, ipecac, rauwolfia, aconite and jalap; Unorganised drugs: opium, aloes, kino, gambier, agar, alginates, gelatin.

Resins, gum resins, oleoresins-colophony, benzoin, shellac, myrrh, galbanum, asafetida, turpentine, balsam of Tolu, balsam of Peru and storax; Glands and glandular secretions-thyroid, pituitary, adrenal, pancreas and musk; Gums and saccharin substances: acacia, tragacanth and honey.

Chromatography and some related terms. Classification and a study of various chromatographic methods. Column, paper, thin layer and gas chromatography, HPLC and their applications to natural products. Biogenesis; Pathways leading to formation of plant products; Historical development of plant tissue culture, types of cultures, nutritional requirements, growth and their maintenance, applications of plant tissue culture in production of pharmaceutically important secondary metabolites.

Recommended Books:

1. Atal CK and Kapoor BM. Cultivation and utilization of Aromatic Plants. CSIR Publications;
2. Tyler, VC, Brady, LR and Robers, JE. Pharmacognosy, 11th to 14th Editions;
4. Kokate, CK, Purohit, AP. and Gokhale, SB. Pharmacognosy;
5. Ross, MF. And Brain, KR. An introduction to Phytopharmacy, Pitman Medical – Kent;
COURSE NO 706: PHARMACOGNOSY AND PHYTOCHEMISTRY II (PRACTICAL)

1. Identification of powdered crude drugs and their combinations with the help of organoleptic, microscopic and chemical tests;
2. Determination of leaf constants such as stomatal index, stomatal number, vein islet number and palisade ratio;
3. Thin layer chromatographic studies of extracts from crude drugs.

Recommended Books:
1. Pharmacopoeia of India, 1985;

COURSE NO 707: GMP AND VALIDATIONS

1. CGMP: A detailed study of GMP as prescribed in Schedule M of Drugs and Cosmetics Act and Rules. Requirements regarding premises, sanitations, personnel, equipment and building, documentation and records and processes.

Books:

COURSE NO 708: PROJECT