

## B.PHARM. PART-III

### 3.1 Pharmaceutical Chemistry-IV (Medicinal chemistry-I)

#### Theory

1. Physical chemical properties and Biological activity : Drug receptor interaction.
2. Receptor site theory: The following topics shall be treated covering outline of synthetic procedures (of selected drugs), uses, SAR including physicochemical & steric aspects, metabolism and mode of action.
3. Steroids: Nomenclature, structure and conformational aspects of the steroids sd. Cholesterol, stigmasterol, ergosterol diosgenin, hecogenin, steroidal alkaloids, androgens, testosterone, methyl testosterone and methandienone, estrogens & progestational agents- mestranol, oestradiol, stiboesterol ethisterone, megestrol,progesterone, gulcocorticoids, cortisone, hydrocortisone, betamethasone, prednisolone, digitalis cardiac glycosides-digoxin, digitoxin, ouabain.
4. Vitamins- Classification, general chemistry and structural formulae of vitamins included in I.P., Detailed chemistry of Vit. D, Vit. B<sub>1</sub>, Vit. B<sub>2</sub>, and Vit.C.
5. Prostaglandins- A preliminary introduction.
6. Sulphonamides: Sulphacetamide, sulphisoxazole, sulphamethoxazole, sulphamethoxy pyridazine and phthalysulphathiazole, Trimrthoprim.
7. Antibiotics- Penicillin & its derivatives, streptomycin, Erythromycin, Chloramphenical, Rifampin, Tetracycline.
8. Antimalerials- Quinine, chloroquine, Amodiaquine, Quinacrine, Primaquine, pentaquine, Pyrimethamine, Proguanil.
9. Antiamoebic agents- Di-iodohydroxy quinoline, diloxanide, metronidazole, Tinidazole, Emetine, Carbazone.
10. Anthelmintics- Nirdazole, Lucanthone, pyrantel, mebendazole, Bephenium hydroxynaphthoate, Thiabendazole, Diethylcarbamzine.
11. Antifungal- Tolnaftate, Griseofulvin, miconazole, clotrimazole.
12. Antiseptics & disinfectants- Chlorophene, Hexylresorcinol, hexachlorophene, povidone-iodine, chloramines-T, Halazone, Thiomersal, Benzalkonium chloride, cetyl pyridinium chloride, malachitegreen, gentian violet, chlorhexidine.
13. Urinary antiseptics- Nitrofurantoin and Nalidixic acid.
14. Antiviral agents- Amantadine, Interferon, trilorone, Acyclovir, Idoxuridine, Vidarabine, methisazone, Arildone.
15. Antineoplastics- Methotrexate, cytarabine, Dacarbazine, Thiotepa, Chlorambucil, Carmustine, Cyclophosphamide, Busulfan, bisantrene, Vincristine, Procarbazine. Mitotane.
16. General anaesthetics- Diethyl ether, chloroform, Halothane, Ketamine, Thiopentone, Fluroxene, methoxyflurane.

17. Antitussives- Dextromethorphan, levopropoxyphene, noscapine, carbetapentane, caramiphen, Diphenhydramine, Benzonatate.
18. Analgesics- Opiate analgesics- Morphine, Codeine, Nonopiate analgesics- meperidine.
19. Nonsteroidal anti-inflammatory agents and antipyretics- Aspirin, salicylamide, aminopyrin, phenylbutazone, Oxyphenbutazone, mefenamic acid, indomethacin, Tolmetin, Ibuprofen, Naproxen, Piroxicam, analgin, paracetamol.
20. Hypnotics & sedatives- Phenobarbitone, pentobarbitone, chloral hydrate, meprobamate, glutethimide, lorazepam, Nitrazepam, Diazepam, cyprazepam.

**Books Recommended:**

Wilson & Gisvold's, Textbook of Organic Medicinal & Pharmaceutical Chemistry:  
J.B.lippincott Co.  
W.O.Foye, Principles of medicinal chemistry.  
M.E.Wolff, Burger's medicinal chemistry, John Wiley & Sons.  
Remington's Pharmaceutical Sciences

**PRACTICALS**

1. Separation and identification of organic mixtures containing not more than two compounds.
2. Typical synthesis of drugs & drugs intermediates by use of the following types of reactions-
  - (i) Chlorosulphonation- saccharin & sulfa
  - (ii) Esterification
  - (iii) Amination by reduction

**Books Recommended:**

1. Vogel's Textbook of practical organic chemistry, ELBS.
2. Mann & Saunders- Practical organic chemistry.