B.PHARM. PART-IV

4.1 Pharmaceutical Chemistry-V (Medicinal Chemistry-II including drug design)

Theory

1. Theoretical aspects of drug design: SAR Studies.
2. Structural features and pharmacological activity: Steric aspects.
3. Drug metabolism: Pathways of biotransformation, conjugation pathways. The following topics shall be treated as covering outline of synthetic procedures (of selected drugs) uses, SAR including physiochemical and steric aspects, metabolism & mode of action.
4. Cholinergics & methacholinesterases: Acetylcholines, methacholine, carbachol, bethanechol, psychostigmine, Neostigmine, Ditsopropyl fluorophosphates, parathion.
5. Adrenaline, salbutamol, noradrenaline, orciprenaline, isoprenaline, amphetamine, ephedrine.
6. Anticonvulsants: Phenobarbitone, metharbital, phenytoin, ethotoin, paramethadione, phensuximide, methosuximide, acetazolamide, phenscetride, primidone, diazepam, chlordiazepoxide, clonazepam, valproic acid, carbamazepine.
7. Analeptics: strychnine, picrotoxin, nikethamide, ethamivan, pentylene tetrazole, bemegride, caffeine, theophyline.
8. Antipsychotics: chlorpromazine, prochlorperazine, haloperidol, chloroprothixene.
9. Antianxiety agents: chlordiazepoxide, diazepam, hydroxyzine, tybamate.
10. Muscle relaxants: Mephenesin, methocarbamol, carisoprodol, metaxalone, chlorzoxazone, orphenadrine.
11. Antiparkinsonism drugs: Benzfropine, procyclidine, biperiden, diphenhydramine, chlorphenoxamine.
12. Antispasmodics & antiulcer drugs: Atropine, hyoscyamine, scopolamine, homatropine, clidinium bromide, cyclopentolate, dicyclomine, glycopyrrolate, mepenzolate, oxyphency climine, propantheline, orphenadrine, isopropamide, procyclidine, ethopropazine.
13. Curariform drugs and ganglion blockers: d-tubocurarine, succinylcholine, decamethonium, gallamine, hexafluorenium, pancuronium.
14. Local anaesthetics: Cocaine, isobucaine, piperocaine, benzocaine, procaine, tetracaine, propoxycaine, lidocaine, prilocaine, etidocaine, phenacaine, diperodon, dyclonine.
15. Antiallergic agents: Diphenhydramine, doxylamine, pyrilamine, tripelennamine, pheniramine, chlorpheniramine, brompheniramine, triprolidine, promethazine, methdilazine, chlorcyclizine, phenindamine, cyproheptadine, buclizine.
16. Gastrointestinal agents: Bisacodyl, simethicone, docusate, metoclopramide.

17. Thyroid hormones & antithyroid drugs: Levothyroxine, liothyronine, propylthiouracil, methimazole, polypeptide & protein harmones.
18. Oxytocics: Oxytocin.
19. Diuretics: Mersalyl, urea, mannitol, chlormerodrin, ethacrynic acid, aminophylline, triamterene, amiloride, acetazolamide, dichlorphenamide, chlorothiazide, hydrochlorothiazide, bendroflumethiazide, furosemide, metolazone, closexolone, chlorthalidone, spironolactone.
20. Antihypertensive agents: Reserpine, guanethidine, diazoxide, hydralazine, minoxidil, methyldopa, prazosin, clonidine, pargyline.
21. Coagulants and anticoagulants: Heparin, Bishydroxycoumarine, warfarin, phenindione, dicumarol, anisindione.
22. Hypoglycemic agents: Insulin, phenformin, tolbutamide, chlorpropamide, acetohexamide, tolazamide.
23. Plasma expanders and diagnostic agents: Iodohippurate, diatrizoate, iothalamate, metrizamide, iopanoid acid propyliodone, aminohippuric acid, ipodate, rosebengal, fluorescein, chlormerodin, metyrapone, evansblue.

Books Recommended:

1. Wilson & Gisvolds, Textbook of Organic Medicinal & pharmaceutical Chemistry, J.B. Lippincott Co.
2. W.O.Foye, Principles of Medicinal Chemistry.
3. M.E. Wolff, Burger's medicinal chemistry, John Wiley & Sons.
4. Remingtons Pharmaceutical Sciences.

PRACTICALS

Typical synthesis of drugs & drug intermediates by use of the following types of reactions: (i) Benzoin condensation (ii) Benzilic acid rearrangement, (iii) Friedel Crafts alkylation and acylation, (iv) Hoffmann- Bromamide reaction. (v) Perkin condensation, (vi) Grignard reaction, (vii) Claisen condensation, (viii) MVP reduction, (ix) Catalytic hydrogenation, (x) Skraup synthesis.

Books Recommended:

1. Vogals Textbook of practical organic chemistry, ELBS.
2. Mann & Saunders- Practical organic chemistry.