2020

SHAMBHUNATH INSTITUTE OF PHARMACY

Department of Pharmaceutical Chemistry

B. Pharm. 5th semester

(Question Bank)

MEDICINAL CHEMISTRY-II (BP501T)

Unit-I

1. What is histamine? What are its biological effects? Mention the different histamine receptors.
2. Classify the histamine H1-receptor antagonists. Write the structure, chemical name, and uses of one drug from each category.
3. Outline the synthesis of the following: Diphenhydramine and Promethazine.
4. Name any three ethylenediamines being used as anti-histamines with structure.
5. Write the chemical structure, chemical name, and uses of the following and describe the synthesis of any one drug (a) Cimetidine (b) Triprolidine
6. Outline the synthesis of the following drugs and mention their uses.
    a) Mechlorethamine
    b) Mercaptopurine
    c) Methotrexate
7. Write a brief account of the following:
    a) Drugs used in the prevention of histamine release
    b) Newer antihistamines
    c) SAR of PPI
8. Write a comprehensive account of the following:
    a) SAR of H1-receptor blockers
    b) Mode of action of anti-histamines
    c) SAR of H2-receptor blockers
9. What are non-sedative antihistamines? Enumerate them with the chemical structure.
10. The antihistamines, such as promethazine, make you very tired when you take them, whereas newer compounds such as loratadine do not. Why not?
11. What are proton pump inhibitors? Give suitable examples with structure.
12. Give the structures and uses of the following:
    a) Ranitidine
    b) Omeprazole
    c) Cetrizine
    d) Chlorpheniramine

e) Doxylamine

13. Discuss the mechanism of omeprazole withsuitable structures.
14. Name the heterocyclic ring system present incimetidine, ranitidine, famotidine, rabeprazole,roxatidine, and cyproheptadine.
15. What is a neoplasm? What are the causations of neoplasm? Write the structure, name, and uses of at least two drugs from alkylating agents and antimetabolites.
16. Classify anticancer agents based on mechanism of action and give structural examples for each class.
17. Describe in detail about the anticancer drugs obtained from plant source

OR

Describe in detail some plant-derived anticancercompounds and their mechanism of action.

18. Write a brief a note on Taxol derivatives and enzymes used in anticancer therapy.
19. Write the structure, chemical name, mode of action, and metabolism and uses of any three anticancer drugs from different class.
20. How will you classify the antineoplastic agents? Write the structure, chemical name, and uses of two agents from each class.
21. Write an account on antibiotics used in anticancer therapy

    OR

    Recognition of antibiotics as an important class of anti-neoplastic agents. Justify the statement with reference to the following drugs:

    a) Dactinomycin
    b) Daunorubicin.

22. How would you classify 'antimetabolites'?Give the structure, chemical name, and uses of the following:(a) Methotrexate (b) Mercaptopurine (c) Fluorouracil (d) Azathioprine.
23. Give a comprehensive account of hormones that are potent as antineoplastic agents. Support youranswer with suitable examples.**OR**

    Write a brief note on hormones and their antagonists as anticancer agents.

24. What are alkylating agents. Explain with the chemical reaction about alkylating mechanism inanticancer therapy. Enumerate the agents used in this category and describe the synthesis and usesof any one of them.

25. Write the structure, mode of action, metabolism, and uses of the following agents:Cyclophosphamide,Thiotepa, Cisplatin and Chlorambucil.
26. Discuss the following with regard to antineoplastic agents:(a) Pteridines (b) Acyclic tertiary amines (c) Steroids.

Unit-II

1. Write a short note on organic nitrates.
2. Isosorbide dinitrate is a fully nitrated compound that can be metabolized to an active metabolite. Comment on the statement.
3. Classify antianginal drugs with structure and discuss brieflytheir mode of action.
4. Compare isosorbide mononitrate with isosorbidedinitrate.
5. Give the synthetic protocol of isosorbide dinitrateand Nitroglycerin.
6. Classify antihypertensives and give two structural examples for each class.
7. Discuss chemistry and mechanism of action of hydralazine and propranolol.
8. Explain the mechanism of action and structure of ACE inhibitors.
9. Give the synthetic protocol for Methyldopate.
10. Give the general structure of thiazides and discuss the SAR.
11. Write a short note on furosemide.
12. Write the structure and uses of Timolol, Captopril **OR** Lisinopril.
13. Thiazide diuretics are used, among otherthings, for the treatment of hypertension. Howdo they work at the cellular level?
14. Write the synthesis of Furosemide and chlorothiazide with structures.
15. How would you classify 'CCB'? Give the structureand uses of the following: (a) Verapamil (b) Diltiazem (c) Nifedipine (d) Amlodipine.
16. What is potassium sparing diuretics? Give the structureand uses of Spironolactone, Amiloride OR Triamterene.
17. Write about carbonic anhydrase inhibitors with structure. Give the MOA of CAI

    OR

    What are Osmotic Diuretics? Give the structure and uses of Mannitol.

18. Give synthesis and uses of acetazolamide. Write structure and uses of Methazolamide and Dichlorphenamide.
19. Write structure and uses of Hydrochlorothiazide, Hydroflumethiazide OR Cyclothiazide. Give the synthesis and uses of Chlorthiazide.
20. Give the chemistry and uses of Bumetanide. Write the SAR, MOA and uses for Ethacrynic acid.
21. Give the structure and uses of Enalapril, Benazepril hydrochloride and Quinapril hydrochloride with chemical name.
22. Write the structure, uses and MOA of Clonidine hydrochloride, Guanethidine and Minoxidil.

Unit-III

1. How are antiarrhythmic drugs classified? Give at least two structural examples for each class.
2. Discuss the mechanism of action of Class I agents. Write the synthetic protocol with uses for Disopyramide.
3. Write the structure and uses of Quinidine, Procainamide hydrochloride and Phenytoin sodium (any two)
4. Give the synthesis, MOA and uses of Disopyramide Phosphate and Lidocaine Hydrochloride.
5. Describe the structure and uses of Tocainide hydrochloride and Mexiletine hydrochloride OR Lorcainide.
6. Illustrate the structure, MOA and uses of Amiodarone and Sotalol.
7. What are anti-hyperlipidemic agents? Give the classification and structure of HMG-CoA-reductase Inhibitor with MOA.
8. Write the SAR for Fibric Acid Derivatives. Give the structure, MOA and uses of Clofibrate.
9. What are HMG-CoA reductase inhibitor? Write the structure and uses of Lovastatin.
10. Write the SAR for HMG-CoA Reductase Inhibitor OR Write the SAR for Bile-Acid Sequestrants.
11. What are Bile-Acid Sequestrants? Give the structure, MOA and uses of Cholestyramine and Colestipol.
12. What are Coagulants and Anticoagulants? Give the classification with structure.

13. What are oral anticoagulants. Write the SAR for Coumarin Derivatives.
14. Write the structure, Synthesis, MOA and uses of Warfarin. Give the structure and uses of Vitamin K analogs Menadione.
15. Give the structure and uses of Anisindione, Clopidogreland Aceto menadione (any two)
16. What is CHF? Writ about Cardiac glycoside with suitable structure.
17. Write the chemistry and MOA Cardiac Glycosides.
18. Write the structure and uses of Digoxin, Digitoxin and Nesiritide (any two)
19. Give the structure, MOA and uses of Bosentan and Tezosentan.

Unit-IV

1. Write the steroidal nomenclature and stereochemistry.
2. Write the various class of steroid and corresponding natural hormones. Give the metabolism and general MOA of steroid.
3. Write the structure and uses of Testosterone, Nandrolone and Progesterone (any two)
4. What are estrogens? Give the SAR for estrogens derivative.
5. Give the structure, chemical name and uses of Oestriol, Oestradiol and Oestrione (any two)
6. Write the structure and uses of Diethylstilbestrol.
7. Write about thePhosphodiesterase-5(PDE5) inhibitors. Give the MOA and SAR for PDE5 inhibitor.
8. Draw the structure and uses of Sildenafil and Tadalafil.
9. What are oral contraceptives? Write the structure of Progestin Antagonists.
10. Give the structure, MOA and uses of Mifepristone, Norgestrel and Levonorgestrel. (any two)
11. What are corticosteroids? Write structure of Glucocorticoids and Mineralocorticoids.
12. Draw the structure and uses of Cortisone,Hydrocortisone and Prednisolone (any two)
13. Write The Structure and Uses of Betamethasone and Dexamethasone.
14. What are thyroids and anti-thyroids drugs? Give the structure and uses of Levothyroxine.

15. Write the structure and uses of Levothyronine, Propylthiouracil and Methimazole (any two)

Unit-V

1. Explain type I and type II diabetes with some typical examples.
2. What are the insulin? Give the SAR and mechanism of action for insulin.
3. How do you classify the oral hypoglycaemic agents? Write the structure, chemical names, and uses of at least two compounds.
4. Write the structure and mode of action of Tolbutamide and Phenformin.
5. Write in detail about Thiazolindiones with specific reference to the drugs Pioglitazone and Rosiglitazone.
6. Write a short note on the following oral hypoglycaemic agents:

   (a) Biguanides (b) α-Glucosidase inhibitors.
7. Write a brief account of the following with a few examples:

   (a) First-generation sulphonylureas (b) Second-generation sulphonylureas

OR

What are sulfonylurea hypoglycemic agents. Give the Structure, synthesis and uses of Tolbutamide.

8. Explain about the meglitinides' specific mechanism of actions. Write the structure, synthesis, metabolism, and uses of any one of them.
9. Write the structure and uses of Chlorpropamide, Glipizide and Glimepiride (any two)
10. What are Biguanides? Give the structure and uses of Metformin.
11. Draw the structure and uses of Meglitinides, Repaglinide and Nateglinide**.**
12. Write about Glucosidase inhibitors. Give the structure and uses of Acarbose and Voglibose.
13. What are Local anesthetics? Give the classification and structure of ester and amide derivative.
14. Give the MOA and SAR for local anesthetics.
15. Write the structure and uses of Cocaine, Hexylcaine and Meprylcaine.
16. Give the structure and uses of Cyclomethycaine and Piperocaine.
17. Write the structure, synthesis and uses of Benzocaine.

18. Give the structure and uses of Butamben. Write the synthesis rout and uses of procaine.
19. Give the structure and uses of Butacaine, Propoxycaine and Tetracaine OR Benoxinate.
20. Illustrate the structure and uses ofLignocaine, Mepivacaine and Prilocaine.
21. Draw the structure and write the uses of Etidocaine, phenacaine and Diperodon.
22. Write the structure, synthesis and uses of Dibucaine.