Question Paper

Exam Date & Time: 26-Dec-2023 (10:00 AM - 01:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Medicinal Chemistry II [PCH-BP501T - S3]

Marks: 75 **Duration: 180 mins.**

I Multiple Choice Questions (MCQs)

Answer all the questions. Section Duration: 30 mins

1) Which of the following forms of histamine preferentially binds to its receptor and produces agonist activity? (1)

- Dicationic tau tautomeric form
- Monocationic tau tautomeric form
- Dicationic π tautomeric form
- Monocationic π tautomeric form

2) Synthesis of which of the following drugs involves aminoalkylation of p-methyl acetophenone with pyrrolidine and formaldehyde (1)

- Triprolidine
- Procyclidine
- Cimetidine
- Promethazine

3) In cimetidine why the imidazole ring group is in tau tautomeric form (1)

- Electron withdrawing sidechain on 4th position
- Electron donating methyl substitution 5th carbon
- Due to Electron withdrawing sidechain on 4th position and Electron donating methyl substitution 5th carbon
- Due to -CN substitution on guanidine group

4) Why phenyl ring at fourth position of 1,4-dihydropyridine antianginals should preferably have ortho or meta substituents? (1)

- Required for binding to the receptor
- To increase metabolic stability
- To maintain non-coplanarity
- To improve selectivity

5) Which of the following drug has a thiadiazole ring system? (1)

- Furosemide
- Methazolamide
- Chlorothiazide
- Ethacrynic acid

6) Which of the following drug increases the intraluminal osmotic pressure in the tubular lumen? (1)

- Furosemide

Methazolamide
Mannitol
Chlorothiazide

7) Which of the following antiarrhythmic drug prolong phase 3 repolarization? (1)

Sotalol
Lidocane
Mexiletine
Amiodarone

8) Which of the following prodrug drug is made up of six membered lactone ring? (1)

Pravastatin
Cholestyramine
Clofibrate
Lovastatin

9) Which of the following drug is an oligosaccharide derivative? (1)

Cholestyramine
Acarbose
Pioglitazone
Colestipol

10) Why chlorpropamide is more potent than tolbutamide? (1)

Increased lipid water partition coefficient
Increased oral bioavailability
Due to chirality
Increased metabolic stability

11) Which Glucocorticoids consists of following ring system? (1)

5-beta-Androstane
5-beta-Cholane
5-beta-Pregnane
5-beta- Estrane

12) Which of the following is not true about Alpha methyl dopa? (1)

It's an analogue of DOPA
It's a prodrug
It's active form is ethyl nor-ephinephrine
It's alpha 2 agonist.

13) Which amongst the following antineoplastic agent is a folic acid analogue? (1)

Mercpatopurine
Methotrexate
Cytarabine
Flurouracil

14) Protamine sulphate is a (1)

Anticoagulant
Antiarrythmic
Coagulant

Antilipidemic

15) To keep the local anesthetic soluble in commercial solutions, most preparations are (1)

Basified
Neutralised
Acidified
Kept in buffer

16) Which of the following is an example of a platinum-based anticancer drug? (1)

Paclitaxel
5-Fluorouracil
Cisplatin
Doxorubicin

17) Methimazole and propylthiouracil (PTU) are examples of which class of drugs used to treat hyperthyroidism? (1)

Beta-blockers
Thyroid hormone replacements
Antithyroid drugs
Glucocorticoids

18) Digoxin is classified as one of the following: (1)

ACE inhibitor
Diuretic
Ionotropic drug
Aldosterone antagonists

19) Which of the following is a precursor for the synthesis of all steroid hormones? (1)

Progesterone
Cortisol
Testosterone
Cholesterol

20) Which hormone is primarily produced by the thyroid gland and regulates the body's metabolism? (1)

Thyroxine (T4)
Triiodothyronine (T3)
Calcitonin
Parathyroid hormone (PTH)

II Long Answers

Answer all the questions.

1) Outline the synthesis of any one carbonic anhydrase inhibitor and explain the important SAR features of carbonic anhydrase inhibitors as diuretics (5)

A)

B) Explaining cardiac electrophysiology classify antiarrhythmic agents with one structure from each class (5)

2) Classify antineoplastic agents with examples and one structure under each class. Outline the synthesis of Methotrexate mentioning all names of reactants and reagents used (5)

A)

	B)	What are ACE inhibitors? Give two examples with their structures. Explain their hypothetical mechanism of action with an example	(5)

III Short Answers

Answer all the questions.

1)		What structural feature of Glipizide makes it more potent than tolbutamide? Give the structure and uses of any one alpha-glucosidase inhibitor and outline the synthesis of tolbutamide	(5)
2)		Give the structure and uses of any one proton pump inhibitor and H^2 receptor antagonist. Outline the synthesis of Diphenhydramine	(5)
3)		Give the structure and uses of any one bile acid sequestering agent and HMGCoA reductase inhibitor. Discuss how bile acid sequestering agents and HMGCoA reductase inhibitors reduces total cholesterol.	(5)
4)		Give the structure and advantages of any one second generation H^1 receptor antagonist and explain what structural feature commonly seen in second generation H^1 receptor antagonist	(2.5)
	A)	compared to first generation H^1 receptor antagonist	
	B)	Write a note of Nesritide and Bosentan	(2.5)
5)		Write the structure of the following drugs and mentions its uses: a)Progesterone b) Thyroxine c) Anisindione d) Diethylstilbesterol e) Propyl thiouracil	(5)
6)		Explain the SAR of Local anesthetics. List out the properties of an ideal anesthetic.	(5)
7)		What are steroids? Classify them. Explain the nomenclature of steroids. Give a brief account on stereochemistry and numbering of steroids	(5)

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