

# Question Paper

Exam Date & Time: 06-Jul-2023 (02:00 PM - 05:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

Medicinal Chemistry I (Theory) [PCH-BP402T-S2]

Marks: 75

Duration: 180 mins.

### I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

- 1) The carbamoyl group of carbachol makes it a potent cholinergic agonist why? (1)

[It acts as a metabolically susceptible group](#)  
[It interacts with a hydrophilic pocket in the binding site.](#)  
[It acts as a steric shield to protect the ester group.](#)  
[It protects the neighboring ester group by means of an electronic effect](#)

- 2) What is the role of histidine residue in the active site of acetylcholinesterase enzyme? (1)

[Acts as nucleophile](#)  
[Forms a hydrogen bond with acetylcholine](#)  
[Acts as an acid base catalyst](#)  
[None of the above](#)

- 3) Which of the following functional group is responsible for opioid antagonistic activity of nalorphine? (1)

[N-phenethyl](#)  
[N-Methyl](#)  
[N-Cyclopropyl](#)  
[Methyl](#)  
[N-allyl](#)

- 4) Which of the following drug/s is used in the treatment of organophosphorus poisoning? (1)

[Pralidoxime](#)  
[Atropine](#)  
[Malathion](#)  
[Both a & b](#)

- 5) Meclofenamate is 25 times more potent than mefenamic acid why? (1)

[Presence of a ionisable acid group and an aromatic ring](#)  
[Meclofenamate is N-aryl anthranilic acid derivative](#)  
[Due to the presence of second non-co-planar aromatic ring](#)  
[Meclofenamate is a 'S' isomer](#)

- 6) Replacement of oxygen at C-2 of barbiturates by a sulphur atom increases the onset and shortens the duration of sedation why? (1)

[Increases the binding affinity to the GABA A](#)

- [receptor](#)
- [Decrease the lipophilicity](#)
- [Increases the lipid solubility](#)
- [Keep the drug in correct conformation](#)

7) Which of the following is SAR feature for benzodiazepines decreases the duration of action? (1)

- [A hydroxyl group on 3rd position of benzodiazepine ring](#)
- [A electron withdrawing group at position seven](#)
- [A phenyl group at position five of benzodiazepine ring](#)
- [A carbonyl group at position 2 of benzodiazepine ring](#)

8) Identify the IUPAC name of Ibuprofen (1)

- [2-\(4-\(2-methyl butyl\) phenyl\) propanoic acid](#)
- [2-\(4-\(isopropyl\) phenyl\) propanoic acid](#)
- [2-\(4-\(2-methyl propyl\) phenyl\) acetic acid](#)
- [2-\(4-\(2-methyl propyl\) phenyl\) propanoic acid](#)

9) Which among the following non-benzodiazepine drug which binds to benzodiazepine binding site on GABA-A receptor? (1)

- [Carbamazepine](#)
- [Chlorazepate](#)
- [Zolpidem](#)
- [Alprazolam](#)

10) Transesterification reaction is involved in the synthesis of (1)

- [Fentanyl](#)
- [Dicyclomine](#)
- [Procyclidine](#)
- [Meperidine](#)

11) If warfarin is taken with phenobarbitone, it will be (1)

- [less effective](#)
- [more effective](#)
- [no change in drug action](#)
- [prolongs the drug action.](#)

12) The drug which act by blocking dopamine receptor especially D2 receptor is (1)

- [haloperidol](#)
- [clozapine](#)
- [prochlorperazine maleate](#)
- [loxapine](#)

13) How INH is converted to inactive metabolite by the enzyme? (1)

- [N methyl transferase](#)
- [N acetyl transferase](#)
- [N acyl transferase](#)
- [Glutathione S transferase](#)

14) Which of the following is the selective antagonist of alpha1 receptors? (1)

- [Prazosin](#)

- [Clonidine](#)  
[Adrenaline](#)  
[Yohimbaine](#)
- 15) Metoprolol exhibits selective adrenergic receptor antagonism on (1)
- [Alpha1](#)  
[Alpha2](#)  
[Beta 1](#)  
[Beta2](#)
- 16) Dimercaprol is a chelating agent used for the treatment of (1)
- [Arsenic poisoning](#)  
[Iron poisoning](#)  
[Lead poisoning](#)  
[Vanadium poisoning](#)
- 17) The most important physicochemical properties affecting the drug action (1)
- [Acid base properties](#)  
[Chelation](#)  
[Hydrogen bonding](#)  
[Partition coefficient](#)
- 18) Benorylate is hydrolysed to (1)
- [Paracetamol and diclofenac](#)  
[Paracetamol and morphine](#)  
[Paracetamol and aspirin](#)  
[Aspirin and diclofenac](#)
- 19) Which of the following substance is the first precursor of Adrenaline? (1)
- [DOPA](#)  
[Tyrosine](#)  
[Dopamine](#)  
[Nor adrenaline](#)
- 20) Which drug used in allergic reaction? (1)
- [Naphazoline](#)  
[Isopurine](#)  
[Dopamine](#)  
[Ephedrine](#)

## II Long Answers

Answer all the questions.

- 1) Discuss the SAR of cholinergic drugs and add a note on various chemical modifications of acetylcholine and their effect on cholinergic agonist activity (7)
- A)
- B) Explain how pralidoxime acts as an antidote in organophosphorus poisoning? (3)
- 2) Define antipsychotic drugs, classify them giving one structure from each class and discuss the SAR & MOA of Phenothiazine drugs. Outline the method of synthesis of Propranolol (10)

## III Short Answers

**Answer all the questions.**

- 1) . Discuss the structural features and SAR of Morphine and its derivatives (5)
  - 2) Discuss the general structural features of NSAIDs (5)
  - 3) Explain the SAR of benzodiazepines as hypnotics and sedatives (5)
  - 4) Explain phase 1 reactions in drug metabolism (5)
  - 5) Discuss in detail about the physicochemical properties like solubility and partition coefficient and their effect on drug action (5)
  - 6) Write the structure and uses of four anticonvulsant drugs (5)
  - 7) Briefly discuss the SAR of adrenergic blocking agents (2.5)
- A)
- B) Outline the synthesis of Ibuprofen (2.5)

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