

Question Paper

Exam Date & Time: 23-Nov-2023 (10:00 AM - 01:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

Medicinal Chemistry II [PCH-BP501T]

Marks: 75

Duration: 180 mins.

I Multiple Choice Questions (MCQs)

Answer all the questions.

Section Duration: 30 mins

- 1) What kind of groups are preferred on pyridine ring of proton pump inhibitors? (1)
- [Electron withdrawing groups](#)
[Electron donating groups](#)
[Lipophilic groups](#)
[Hydrophilic groups](#)
- 2) Which of the following calcium channel blocker is not useful in the treatment of cardiac arrhythmia (1)
- [Amlodipine](#)
[Verapamil](#)
[Diltiazem](#)
[Bepridil](#)
- 3) Which of the following antihistamine has a terminal cyanoguanidine group? (1)
- [Cetirizine](#)
[Fexofenadine](#)
[Cimetidine](#)
[Ranitidine](#)
- 4) 3rd and 5th carbon of Nifedipine is found to be non-identical why? (1)
- [To different ester groups are present at these positions](#)
[To different alkyl groups are present at these positions](#)
[Same ester groups with different conformations are present at these positions](#)
[Same alkyl groups with different conformations are present at these positions](#)
- 5) Which of the following drug is an anthranilic acid derivative? (1)
- [Methazolamide](#)
[Furosemide](#)
[Ethacrynic acid](#)
[Chlorothiazide](#)
- 6) Which among the following is a prodrug which acts by PPAR- α mediated activation of lipoprotein lipase? (1)
- [Lovastatin](#)
[Simvastatin](#)

[Clofibrate](#)

[Metformin](#)

- 7) What kind groups are preferred on the sulfur end of the sulfonamide group of a carbonic anhydrase inhibitors? (1)

[Small lipophilic groups](#)

[Groups which increases the acidity of sulfonamide group](#)

[Electron donating groups](#)

[Groups which maintain non-planarity](#)

- 8) Which among the following antihyperglycemic agent exhibits PPAR-Gamma mediated insulin sensitization? (1)

[Acarbose](#)

[Metformin](#)

[Glipizide](#)

[Pioglitazone](#)

- 9) Which among the following insulin preparation involves replacement of Chain B 30th amino acid with a C14- fatty acid chain? (1)

[Glargine](#)

[Aspart](#)

[Lispro](#)

[Detemir](#)

- 10) How para substitution of phenyl ring system of amino-alkyl ethers with small lipophilic groups increases the antihistaminic potency? (1)

[Increases lipid water partition coefficient](#)

[Increases metabolic stability](#)

[Increases oral bioavailability](#)

[Adopt a noncoplanar conformation](#)

- 11) Lotrix is a mixture of synthetic levothyroxine and liothyronine in a ratio of (1)

[1:1](#)

[2:3](#)

[1:4](#)

[4:1](#)

- 12) What term is used to indicate the ability of a cancer to invade other parts of the body and to produce secondary tumours? (1)

[Carcinogenesis](#)

[Apoptosis](#)

[Metastasis](#)

[Mutagenesis](#)

- 13) Which property will improve in the presence of tertiary amine group in Local anesthetics? (1)

[Lipid permeability](#)

[Water solubility](#)

[Melting point](#)

[Taste](#)

- 14) Which one of the following is a long-acting IM depot preparations of Testosterone? (1)

- [Testosterone](#)
[Testosterone enanthate](#)
[Testosterone HCl](#)
[Testosterone Phosphate](#)
- 15) Liothyronine is (1)
- [Tetraiodothyronine](#)
[Thyroxine](#)
[Calcitonine](#)
[L-Triiodothyronine](#)
- 16) The mechanism of action of vinca alkaloids, such as vincristine, involves (1)
- [Inhibition of topoisomerase II](#)
[Disruption of microtubule formation](#)
[Inhibition of DNA synthesis](#)
[Alkylation of DNA](#)
- 17) Heparin is an anticoagulant that acts by inhibiting the activity of which substance in the blood? (1)
- [Thrombin](#)
[Fibrin](#)
[Platelets](#)
[Factor VIII](#)
- 18) Bosentan belongs to one of the following class of drugs used in congestive heart failure (1)
- [Beta-blockers](#)
[Angiotensin-converting enzyme \(ACE\) inhibitors](#)
[Endothelial receptor antagonist](#)
[Calcium channel blockers](#)
- 19) What is the primary mechanism of action of ACE inhibitors in treating hypertension? (1)
- [Inhibition of angiotensin II synthesis](#)
[Blocking beta receptors](#)
[Inhibition of aldosterone release](#)
[Vasodilation through calcium channel blockade](#)
- 20) Which of the following is a synthetic steroid that mimics the action of cortisol and is used as an anti-inflammatory medication? (1)
- [Prednisone](#)
[Testosterone](#)
[Estradiol](#)
[Progesterone](#)

II Long Answers

Answer all the questions.

- 1) Classification of antihistamines with examples and one structure under each class and explain the general SAR features of H¹ antihistaminic compounds (7.5)
- A)
- B) Outline the synthesis of Disopyramide (2.5)
- 2) Write the structure, mechanism of action and specific use of following antineoplastic agents: (8)
- a) Daunorubicin b) Dactinomycin c) Mercaptopurine d) Etoposide
- A)

B) Outline the synthesis of Methchloroethamine (2)

III Short Answers

Answer all the questions.

- 1) Explain how nitrovasodialators cause smooth muscle relaxation and outline the synthesis of Nifidipine (5)
- 2) Discuss the SAR of loop diuretics and outline the synthesis of Furosemide (5)
- 3) Discuss the mechanism of action and SAR of sulphonyl ureas as oral hypoglycemics (5)
- 4) Explain how lovastatin act as a prodrug explain its mechanism of action (2.5)

A)

- B) Write a short note on oral contraceptives and their safety. (2.5)
- 5) Outline the synthesis with names of all intermediates and reagents used along with the uses of a) Dibucaine b) Warfarin (5)
- 6) Explain the SAR of ACE inhibitors and Cortisteroids (5)
- 7) Write the SAR and metabolism of Betamethasone (5)

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