

Time: 3 hours

Total marks:75

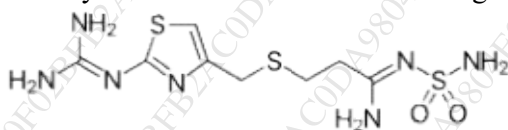
- N.B. : 1. All questions are compulsory**
2. Figures to right indicate full marks

I. Choose appropriate option for following multiple choice based questions. 20

1 The active intermediate of proton pump inhibitors that is responsible for inhibiting the H⁺/K⁺ ATPase pump is _____.

- Sulphonamide
- Sulphonyl
- Sulphacetamide
- Sulfenamide

2 Identify the class to which the following drug belongs



- First generation H₁ antagonist
- H₂ antagonist
- Second generation H₁ antagonist
- Gastric proton pump inhibitor

3 The metabolic conversion of loratadine to descarboethyloratadine occurs by _____.

- Carboxylation
- Oxidation followed decarboxylation
- Hydrolysis
- Reduction

4 Organoplatinum anticancer agents have _____.

- Square planar geometry
- Pyramidal geometry
- Tetrahedral geometry
- Pentavalent geometry

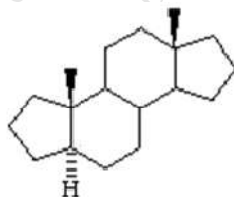
5 Ring system present in Methotrexate is _____.

- Pteridine
- Purine
- Pyrimidine
- Imidazole

6 Which of the following ACE inhibitor shows skin rash and taste disturbances as side effects?

- Enalapril
- Benazepril
- Captopril
- Lisinopril

- 7 Which of the following diuretics belongs to 5-sulphamoyl anthranilic acid chemical class?
- Furosemide
 - Ethacrynic acid
 - Acetazolamide
 - Chlorthiazide
- 8 The mechanism of action of organic nitrates is _____.
- Activation of cGMP leading to vasodilation
 - Activation of cAMP leading to vasodilation
 - Formation 1,2 DAG leading to vasodilation
 - Formation of IP3 leading to vasodilation
- 9 Identify potassium channel agonist prodrug with N-oxide functional group.
- Diazoxide
 - Minoxidil
 - Sodium nitroprusside
 - Hydralazine
- 10 Fibrates are _____.
- Anion exchange resins
 - 7-sustituted-3,5-dihydroxyheptanoic acid
 - Phenoxyisobutyric acid analogs
 - Pyridine analogs
- 11 Which of the following structural features are present in quinidine?
- Isoquinoline ring, decaline ring and methylene bridge
 - Quinoline ring, quinuclidine ring and hydroxymethylene bridge
 - Indole ring, quinuclidine ring and methylene bridge
 - Benzofuran, decaline ring and hydroxymethylene bridge
- 12 Amiodarone belongs to _____ antiarrhythmics.
- Class I
 - Class II
 - Class III
 - Class IV
- 13 Steroidal ring in cardiac glycosides has _____ ring fusion.
- Cis-cis-cis
 - Trans-trans-trans
 - Cis-trans-trans
 - Cis-trans-cis
- 14 IUPAC nomenclature of structure given below is _____.



- a. 4-nor-5 α -androstane
- b. 4-nor-5 α -estrane
- c. 5-nor-5 α -androstane
- d. 5-nor-5 β -androstane

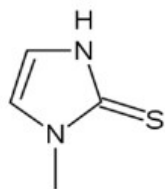
15 The mechanism of action of Tadalafil involves _____.

- a. Inhibition of phosphodiesterase-3
- b. Inhibition of 5 α - reductase
- c. Inhibition of phosphodiesterase-5
- d. Inhibition of hydrolase

16 Select the incorrect statement related to steroids.

- a. Testosterone is an androgenic steroid
- b. Alkyl substitution at C-17 α position reduces metabolism in estradiol
- c. Progesterone is active when A/B-B/C-C/D rings are cis/trans/cis fused
- d. Testosterone on metabolism give active metabolites

17 Identify the following drug which is used in the treatment of hyperthyroidism



- a. L-Thyroxine
- b. L-Thyronine
- c. Propylthiouracil
- d. Methimazole

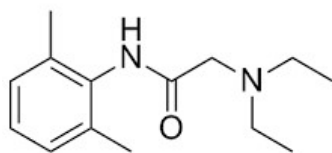
18 Which position of long-acting insulin analogs (Glargine) have structural changes compare to human insulin?

- a. The amino acid residue in C-terminus of chain A and B
- b. The amino acid residue in N-terminus of chain A and B
- c. The amino acid residue in C-terminus of chain A and N-terminus of chain B
- d. The amino acid residue in N-terminus of chain A and C-terminus of chain B

19 Select the incorrect pair.

- a. Glipizide: 2nd generation sulphonylurea
- b. Metformin: Biguanides
- c. Repaglinide: non-sulphonylurea
- d. Rosiglitazone: α -Glucosidase inhibitor

20 Identify the following structure.

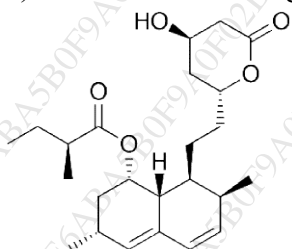


- a. Procaine
- b. Etidocaine
- c. Lidocaine
- d. Mepivacaine

II. Long Answer Questions (Answer any 2 out of 3) 20

- Q1 A) Write structure, mechanism of action and activation of Omeprazole? 4
 B) Applying the principles of organic chemistry, predict the synthesis of Promethazine, depicting the reagents and reaction conditions involved. Write use of Promethazine 4
 C) Draw structure of triprolidine. Mention the chemical class to which it belongs. 2

Q2 A) Answer the following questions. 4



1. Identify the drug.
2. Depict its activation.
3. Give the mechanism of action

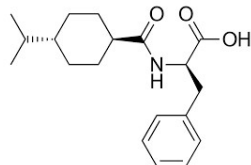
B) Match the following

	Name of drug		Chemical moiety		Mechanism of action
1	Warfarin	A	Naphthoquinone	i	Inhibits the vitamin K-mediated gamma-carboxylation of precursor proteins
2	Clopidogrel	B	1,3-indandione	ii	Prothrombin activator
3	Anisindione	C	Coumarin	iii	Inhibits platelet aggregation
4	Menadione	D	Thienopyridine	iv	Vitamin K reductase inhibitor

C) Potassium supplements are co-administered with furosemide. Justify

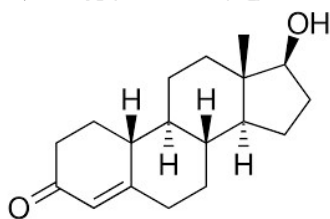
Q3 i) Discuss the SAR of sulfonylureas. Using suitable examples bring out the differences in the structural features between the first- and second-generation sulfonylureas. **4**

ii) With respect to the following structure, answer the questions given below **4**



- Identify the antidiabetic drug.
- Name the class to which it belongs.
- Give mechanism by which it exerts its action.

iii) Give the IUPAC nomenclature of the following structure. **2**



III. Short Answer Questions (Answer 7 out of 9) **35**

Q1 What are antimetabolites. Enlist the different types of antimetabolites with example. Give the mechanism of action of methotrexate. **5**

Q2 i) Classify diuretic drugs based upon their site of action. Give one example with structures from each class. **3**

ii) Justify the statement :Nimodipine is used in cerebral vasospasm & ischemia. **2**

Q3 i) Sotalol is dual acting antiarrhythmic drug. Justify the statement. Support your answer with relevant structure. **3**

ii) Depict the metabolism of lidocaine. **2**

Q4 i) Draw the structure of Mifepristone. Write its mechanism of action and therapeutic use. **3**

ii) Name and give structure of an antithyroid drug belonging to thioamide class. **2**

Q5 i) Outline the synthesis of Benzocaine mentioning reagents and reaction conditions. **3**

ii) Explain how Pioglitazone acts as antidiabetic agent. **2**

Q6 i) Discuss SAR of 1,4-dihydropyridines by citing suitable examples. **3**

ii) Name and draw the structure of Potassium channel opener. **2**

- Q7** i) Depict the metabolism of testosterone leading to two active metabolites **3**
ii) Trans-diethylstilbesterol is more potent than cis- diethylstilbesterol. Justify **2**
- Q8** i) Name an Endothelin receptor antagonist used in congestive heart failure. **3**
Explain its mechanism of action.
ii) Name an antibiotic used as anticancer agent and explain its mode of action. **2**
- Q9** i) Write a note on organic nitrates as antianginal agents. **3**
ii) Give an example and structure of adrenergic neuronal blockers. **2**
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