Time: 3 Hours Marks: 70

NOTE: 1. All questions are compulsory
2. Write structures and reactions wherever necessary

Q1 Answer the following questions: (15)

(i) Give an example of drug that is lipid in nature (structure not needed)
(ii) Which types of inter- molecular interactions the hydroxyl group can be a part of?
(iii) Draw the structure of peptide linkage
(iv) Name any one viral enzyme and it's inhibitor
(v) Give an example of a nuclear receptor
(vi) Give one example of post translational modification of protein
(vii) In Uncompetitive inhibition Km increases, true or false, correct if false
(viii) Name a drug which forms covalent bond with DNA
(ix) Protein binding can prolong the duration of action. Explain
(x) List the types of tertiary structures of proteins
(xi) Discuss the importance of SAR studies
(xii) Give one example of acetylation metabolic reaction using any drug, name the enzyme involved.
(xiii) Explain the term monoclonal antibody
(xiv) Cis and Trans terms imply optical isomerism. True or false. Correct if false
(xv) Name the co-enzyme involved in glucuronidation.

Q.2. A. i) Explain "Hydrogen bonding" with a suitable example (02)
ii) Complete the following table: (02)

| Binding regions | Binding groups | Type of interaction |
|---|---|---|
| | | Ion-Dipole interactions |
| -OH | | |

B. Predict the effect of the following structural changes on activity **(Any three):** (03)
i. α-Acyl carbon as part of a 3-aryl-5-methyl isoxazole ring in penicillins
ii. Epimerization at position 5a in tetracyclines
iii. Introduction of a phenylglycyl substituent at the 7-amino group in cephalosporins
iv. Introduction of an α-methoxy group at position 7 in cephalosporins

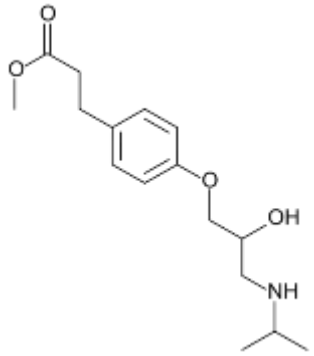
C. Give the structure, generic name and name the enzyme inhibited by the following: (04)
i. 1-Ethyl-6,8-difluoro-1,4-dihydro-7-(3-methyl-1-piperazinyl)- 4-oxo-3-quinolinecarboxylic acid
ii. 4-amino-N-(5,6-dimethoxypyrimidin-4-yl)benzenesulfonamide

Q.3 A. Explain the following by giving suitable examples: (04)
i. Signal Transduction
ii. Ion channel Receptor

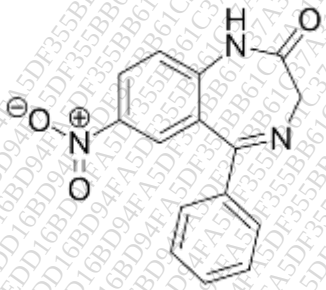
B. Outline the synthetic pathway of Primaquine OR Pyrimethamine and give necessary reagents and reaction conditions. (03)

C. i. Explain the following terms: (02)
a. Agonist b. Potency
ii. Write a short note on Monoclonal Antibodies (02)

Q.4.A (i) Predict any two phase-I metabolites for each of the following: (02)




a)




b)

(ii) Predict the metabolic pathway for a tertiary amine (02)

B. Give the structure and generic name for of the following **(Any three):** (03)
i. A β-lactamase inhibitor
ii. A cephalosporin prodrug
iii. A degradation product of penicillin
iv. A first generation cephalosporin

C. Answer the following questions: (04)
i. Write the structure and mechanism of action for Metronidazole
ii. Explain the term 'bioisosterism' with suitable examples
iii. Give the structure and generic name of the least phototoxic fluoroquinolone
iv. Give one example of a drug used for amoebiasis

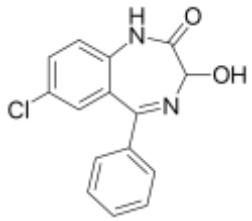
Q.5.A. State whether the following statements are true or false; justify the same and correct if false (03)
i) The trans- stereochemistry of bicyclic ring of penicillin with respect to the acylamino side chain is important.
ii) Cefpodoxime proxetil orally active drug derivative is hydrolyzed by esterases in the intestinal wall and in the plasma to provide cefpodoxime.
iii) Gentamycin contain, two amino sugars are attached to 2-deoxy streptamine.

B. Outline the synthesis of PAS OR Dapsone along with reagents and reaction condition (03)
C. Write a note on 4-aminoquinolines (03)
D. Give the structure and use of Albendazole (02)

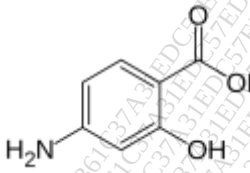
Q.6. A. Give the scheme of synthesis of 1-(o-Chloro-α,α-diphenylbenzyl)imidazole with reagents and reaction conditions (03)
B i) Write a short note on Polyene class of antifungal agents (02)
ii) Give the structure and name of the following (Any Two) (02)
a. Metabolite of Ethambutol
b. Pyrazine-2-carboxamide
c. Anti – leprotic drug

C i) Predict Phase II metabolite for following molecules: (02)

i)




ii)




ii) Give the Structural features of macrolide antibiotics (02)

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