Sem-VI (CBSGS) = PC = II 2-11-16

QP Code : 21702

(3 Hours) [Total Marks : 70

1. Answer the following. Question 1-11 carry one mark each and questions 12-13 carry 2 marks each
    1. Give an example (structure and name) of a drug that is a nucleic acid analog with its therapeutic use.
    2. Which is the weakest among all the intermolecular bonding forces.
    3. What is a quaternary structure of a protein. Give an example
    4. An alpha helix is an example of a protein primary structure. True or False. Correct if False.
    5. Give an example of a monoclonal antibody's therapeutic use
    6. Which enzyme kinetic parameter/s do competitive inhibitors affect.
    7. Give the structure and name of a drug that is an antibacterial due to inhibition of a bacterial enzyme
    8. Give an example of a receptor that has autocatalytic activity.
    9. The DNA double helix is an example of DNA tertiary structure. True or False. Correct if False.
    10. Name a DNA intercalating agent and give its therapeutic use
    11. Cis and trans terms imply optical isomerism. True or False. Correct if False.
    12. Give one example of a CYP450 catalyzed metabolic reaction using a drug/chemical of your choice.
    13. Proteins can be drug targets or drugs themselves. Explain the statement

2. (a) Discuss any four intermolecular forces involved in drug-receptor binding 4

    (b) Answer the following (any **two**) 4

        i. Explain the following terms:
            a) Monoclonal antibodies
            b) Proteomics
        ii. Give the structure and chemical name of a sulfonamide used for ulcerative colitis
        iii. Classify sulfonamides on the basis of duration of action giving one example from each class

[TURN OVER

LO-Con. : 446-15.

(c) Give the structures and names of any three degradation products of penicillins 3

OR

(c) Fill in the blanks: 3

i. Introduction of ——— group which is electron ———, at the α-carbon leads to acid stability in penicillins

ii. Introduction of a fluoro group at ——— position increases the potency of quinolones

iii. Increasing the ——— is responsible for rendering the penicillins β-lactamase resistant.

3. (a) Classify receptors and give one example from each class. 4

(b) Answer in brief: 4

i. Explain the following terms.

a. Agonist

b. Potency

ii. Give the structure, generic name and use for the following: 1-Cyclopropyl-6-fluoro-4-oxo-7-(piperazin-1-yl) quinoline-3-carboxylic acid

(c) Outline the various steps involved in the synthesis of primaquine. 3

4. (a) Name any three Phase II drug metabolizing enzymes and give an example of a reaction catalyzed by any one of them. 4

(b) Describe the synthesis of ampicillin OR cloxacillin 3

(c) Give reasons for the following:

i. Drugs should have appropriate solubility and partition coefficient for oral administration. 2

ii. Sparfloxacin is not phototoxic 1

iii. Co-trimoxazole is an example of synergism 1

5. (a) Discuss SAR of tetracycline with respect to position 5 and 6 of the ring. 3

(b) Outline the synthesis of PAS along with reagents and reaction conditions. 3

(c) Write a note on artemisinin and improvements made to artemisinin 3

OR

(c) Classify antimalarials based on their site of action. Give examples. 3

(d) Justify the statement along with structure: Metronidazole is considered as a prodrug. 2

6. (a) Give the scheme of synthesis of clotrimazole with reagents and reaction conditions. 3

(b) Write the mechanism of action of the following (any **two**) 4

i. Ketoconazole

ii. Ethambutol

iii. Ethionamide

(c) Answer in short the following (any **two**) 4

i) Structure features of aminoglycoside antibiotics

ii) pKa and drug design for sulphonamides

iii) SARis generally obtained from a series of compounds sharing a common core structure. Justify

---