

(2½ Hours)

[Total Marks : 60

N.B. : (1) All the questions are compulsory.
 (2) Figures to the right indicate full marks.

1. (a) Answer any two of the following :-
 - (i) Explain :- 4
 - (A) Drug Receptor
 - (B) Bio availability.
 - (ii) Discuss the pharmacokinetics of drug distribution and biotransformation. 4
 - (iii) What is a lead compound in drug discovery? How was penicillin discovered without a lead? 4
 - (iv) How are :- 4
 - (A) Chain branching and
 - (B) Ring-chain transformations, used in the structure modification of a lead for increasing potency?
 - (b) Answer any one of the following :-
 - (i) Explain why solubility is an important parameter for drug distribution in the body? 4
 - (ii) Give an account of the use of random and non-random screening for the discovery of lead compounds. 4
2. (a) Answer any two of the following :-
 - (i) Discuss the ternary and quaternary structure of proteins. 4
 - (ii) Explain the functions of ribonucleic acids. 4
 - (iii) What is the 'Phosphoramidite method' for the synthesis of oligonucleotides? 4
 - (iv) Give the H-Phosphonate method for the synthesis of oligonucleotides. 4
 - (b) Answer any one of the following :-
 - (i) What are the methods for the determination of the amino acid sequence in proteins? 4
 - (ii) Explain the process of replication of DNA. 4
3. (a) Attempt any two of the following :-
 - (i) Explain the "Enzyme efficiency". Describe the induced fit hypothesis. 4
 - (ii) What are enzymes? Discuss the major classes of enzymes. 4
 - (iii) Explain the following factors affecting the enzyme kinetics :- 4
 - (A) Substrate concentration.
 - (B) Temperature.
 - (iv) Discuss the following in the mechanism of enzyme action :- 4
 - (A) Substrate strain
 - (B) Covalent catalysis.

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- (b) **Attempt any one of the following :-**
- (i) What do you understand by the term "Specificity of enzymes"? 4
 - (ii) Explain the reversible inhibition of enzymes. 4
4. (a) **Attempt any two of the following :-**
- (i) Discuss the mevalonate pathway in the biosynthesis of isopentenyl pyrophosphate. 4
 - (ii) Discuss the biosynthesis of shikimic acid. 4
 - (iii) Describe the general principles involved in the biosynthesis of steroids. 4
 - (iv) Write the biosynthesis of L-tryptophan. 4
- (b) **Attempt any one of the following :-**
- (i) How are acetogenins biosynthesised using acetate hypothesis? 4
 - (ii) How is ephedrine biosynthesised? 4
5. **Answer any four of the following :-**
- (a) Discuss the importance of partition co-efficient in drug distribution. 3
 - (b) Show how structure-activity relationship studies are important for lead modification". 3
 - (c) Discuss the secondary structure of RNA. 3
 - (d) Write the structure and functions of adenosine diphosphate (ADP). 3
 - (e) Explain the mechanism of chymotrypsin-catalyzed hydrolysis of a peptide bond. 3
 - (f) What is the role of acid-base catalysis in the enzyme catalysis process? 3
 - (g) Explain the following terms :- 3
 - (i) Biogenesis.
 - (ii) Primary metabolites.
 - (h) Write the biosynthesis of citronellol from mevalonic acid. 3
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