

QP Code : BV-8580

(2½ Hours)

[Total Marks : 60

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

1. (a) Answer any two of the following :-
- (i) Explain :-
 - (A) Therapeutic index. 4
 - (B) Drug assay. 4
 - (ii) Discuss the pharmacokinetics in drug biotransformation and in drug elimination. 4
 - (iii) What is bioisosterism? Give three examples each, of classical and of non-classical bioisosters. 4
 - (iv) How are homologation and chain branching used in structure modifications for increase of potency? 4
- (b) Answer any one of the following :-
- (i) "Resonance and inductive effect are important factors that affect the bioactivity of a drug". Justify this statement. 4
 - (ii) What is a lead compound in drug discovery? How was Librium discovered without a lead? 4
2. (a) Answer any two of the following :-
- (i) Discuss the secondary structure of proteins. 4
 - (ii) Write a note on the functions of m-RNA and t-RNA. 4
 - (iii) Explain the H-phosphonate method for the synthesis of oligonucleotides. 4
 - (iv) Give the synthesis of oligonucleotides by the Phosphodiester method. 4
- (b) Answer any one of the following :-
- (i) Discuss the chemical and the enzymatic hydrolysis of proteins to peptides. 4
 - (ii) Explain the role of DNA with respect to the genetic code. 4
3. (a) Attempt any two of the following :-
- (i) Describe enzymes classification and their nomenclature. 4
 - (ii) Discuss the specificity of enzymes. 4
 - (iii) What is enzyme inhibition? Explain the irreversible inhibition. 4
 - (iv) Discuss the following in the mechanism of enzyme action :- 4
 - (A) Covalent catalysis.
 - (B) Strains.
- (b) Attempt any one of the following :-
- (i) Explain the types of reactions catalyzed by enzyme in organic chemistry. 4

- (ii) Briefly discuss the following factors affecting the enzyme kinetics :- 4
(A) Temperature
(B) pH
4. (a) Attempt any two of the following :-
(i) Outline the shikimic acid pathway. Write the biosynthesis of phenylalanine. 4
(ii) Explain the acetate hypothesis for the biosynthesis of 6-methylsalicylic acid. 4
(iii) Describe the general principles of alkaloid biosynthesis. 4
(iv) Write the biosynthesis of ephedrine. 4
(b) Attempt any one of the following :-
(i) Discuss mevalonate pathway in the biosynthesis of mevalonic acid. 4
(ii) How is cholesterol biosynthesised? 4
5. Answer any four of the following :-
(a) Discuss the importance of isomerism in drug distribution. 3
(b) Justify the statement—" structure-activity relationship studies are important for lead modification". 3
(c) Explain the double helix structure of DNA. 3
(d) Give the structure of ADP and explain its functions. 3
(e) Describe the transition state theory in mechanism of enzyme action. 3
(f) Explain the mechanism of chymotrypsin catalysed cleavage of a peptide bond. 3
(g) Explain the following terms :- 3
(i) Precursor.
(ii) Primary metabolites.
(h) How is citronellol biosynthesised from mevalonic acid? 3
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