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V 4524

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Third Semester

Biotechnology

BT 1203 — BIOORGANIC CHEMISTRY

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is E and Z isomerism? Give one example.

2. Define general acid–base catalyst?

3. Write short notes on chiral phosphates.

4. Write the active site amino acids of alpha chymotrypsin.

5. What is meant by tetrahedral intermediate in enzymatic reaction. Give one example.

6. Write the reaction steps involved in ribonuclease catalyzed reaction.

7. What are the available methods for stabilizing the protein?

8. Define transition state of a protein folding.

9. Write briefly about Leventhal paradox.

10. Define Tanford β value.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the stereo chemistry of conformational isomer and configurational isomers. (8)

(ii) Write the sequence rule for designating an optically active compound R and S isomer. (8)

Or

(b) (i) Differentiate SN1 and SN2 reaction mechanism with suitable example. (8)

(ii) Discuss the stereo chemistry of nucleophilic substitution and elimination reaction. (8)

12. (a) (i) Explain the NAD^+ dependent stereo specific transfer of H^+ ion in oxydo reductase catalyzed reaction. (10)

(ii) Comment on the stereo chemistry of enzymatic reaction. (6)

Or

(b) Write an essay on the role of chiral methyl group compounds in biochmeical reaction.

13. (a) (i) Describe the role of metal ion in the dehydrogenase enzyme activity. (6)

(ii) Discuss the molecular mechanism of pepsin. (10)

Or

(b) Explain the catalytic mechanism of lysozyme.

14. (a) Describe the features of CI2 protein folding mechanism. (16)

Or

(b) Derive the mathematical expression of On and Off pathway of protein folding.

15. (a) Explain in detail about the folding of barnase.

Or

(b) Derive the observed constant for $^1H/H^2$ exchange methods.
