C 126

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

Third Semester

Bio–Technology

BT 1203 — BIOORGANIC CHEMISTRY

(Regulations 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define enantiomers. Give one example.

2. What is R & S configuration?

3. What is meant by kinetic isotopic effect?

4. What is meant by prochiral compound?

5. What are proteinase? Give an example.

6. What are the amino acids that are present in the active site of α – chymotrypsin?

7. What is Tanford value (β)?

8. Define the parameter φ_F value.

9. What are molecular chaperons?

10. What is the Levinthal paradox?

PART B — (5 × 16 = 80 marks)

11. (i) Discuss the mechanism and stereochemistry of the nucleophilic substitution and elimination reaction with suitable examples. (10)

(ii) Give the mechanism of the transistor function reaction with a suitable example. (6)

12. (a) (i) Describe the differences between the stereo chemistry of enzymatic and non enzymatic reactions. (8)

(ii) Write the stereochemistry principles that are involved in the synthesis of chiral phosphate group. (8)

Or

(b) (i) Describe the NAD^+ – dependant stereo specific transfer of H^+ ion in oxido – reductase catalyzed reaction. (8)

(ii) Write notes on the stereochemistry of *fumerase* catalyzed hydration of fumeric acid to malic acid. (8)

13. (a) (i) Write short notes on dehydrogenase enzymes. (4)

(ii) Describe in detail about the molecular mechanism involved in the *lactate dehydrogenase* enzyme catalyzed reaction. (12)

Or

(b) Explain the mechanism of reaction and substrate specificity of the following enzymes :

(i) Ribonuclease – A. (8)

(ii) Lysozyme. (8)

14. (a) Explain in detail on the role of molecular chaperons in protein folding. (16)

Or

(b) How is the rate constant for $^1H/^2H$ exchange reaction derived? (16)

15. (a) Describe the mechanism involved in the folding of Chymotrypsin Inhibitor 2 (CI2) protein. (16)

Or

(b) (i) Explain the folding patterns of Barnase enzyme (8)

(ii) Write the three abstract procedures for protein folding. (8)
