Reg. No. : | | | | | | | | | | | |

K 4107

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2009.

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 meant by R-isomer and S-isomer? Give one example.

2. Define E and Z isomers. Give one example.

3. Write any three biochemical role of chiral methyl group.

4. What are cysteine proteases? Give one example.

5. What is meant by exopeptidase?

6. What is the coenzyme required for *malate dehydrogenase* reaction?

7. Write the amino acids in active site of barnase.

8. Write short notes on Levinthal paradox.

9. What is meant by transition state of protein folding pathway?

10. Define the parameter ϕ_F value.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the important features of Hammond postulate. (10)

(ii) Explain how can general-acid, general-base catalyst can increase the rate of reaction. (6)

Or

(b) (i) Explain the important features of stereo chemistry of conformational isomer and configurational isomer. (6)

(ii) Explain the sequence rule to designate an optically active compound. (10)

12. (a) (i) Describe the NAD+ dependent stereo specific transfer of H+ ion in the oxido-reductase catalyzed reaction. (8)

(ii) $R'OPO_3^{-2} + ROH \text{ ----------> } ROPO_3^{-2} + R'OH.$

Explain the possible mechanism involved in this reaction. (8)

Or

(b) (i) Explain the stereo chemistry of fumarase catalysed reaction. (8)

(ii) Discuss the stereo chemistry of product formation in nucleophilic substitution reaction. (8)

13. (a) (i) Briefly explain the molecular mechanism of carboxy peptidase A. (6)

(ii) Write the structure, molecular mechanism of lysozyme. (10)

Or

(b) (i) Discuss the role of metal ion in the dehydrogenase enzyme catalyzed reaction. (8)

(ii) Explain the molecular mechanism of ribonuclease. (8)

14. (a) (i) How is observed rate constant $^1H/^2H$ exchange reaction derived? (8)

(ii) Describe the CI 2 protein folding with clear diagram. (8)

Or

(b) (i) Discuss the various methods for studying the protein folding pathway. (8)

(ii) Explain the multi state kinetic for protein folding. (8)

15. (a) (i) Explain in detail about the folding of barnase. (10)

(ii) Write an essay on molecular chaperones in protein folding. (6)

Or

(b) (i) Describe the theories of protein folding. (8)

(ii) Derive the equation for on and off pathway of protein folding. (8)
