

C 3097

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

Bio-Technology

BT 1354 — PROTEIN ENGINEERING

(Regulation – 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the weak forces that are essential for the stability of protein structure.
2. Write the principle behind the UV absorption of protein at 480 nm.
3. Define poly amino acids.
4. Give one example for proteolytic processing, disulfide bond formation in post translational modifications of protein.
5. Write the role of distance maps in the prediction of tertiary structure of a protein.
6. Write briefly about the two types of association between the identical monomers.
7. What are abzymes? Give one example.
8. What are zing finger protein? Give one example.
9. Write short notes on engineered proteins with one example.
10. Write the amino acids of active site of T-4 lysozyme.

PART B — (5 × 16 = 80 marks)

11. (a) Write the significance of electrostatic forces in the stability of protein structure in detail.

Or

- (b) Explain why the hydrogen bonds and hydrophobic bonds are essential for the protein conformation.

12. (a) Discuss the chemistry involved in the post translational modifications of protein through glycosylation and phosphorylation with suitable example.

Or

- (b) Classify the standard amino acids according to the charge at neutral pH. Write the chemical structure, standard triplet letter, and single letter code for each amino acids.

13. (a) How is the protein folding pathway elucidated? Explain with an example.

Or

- (b) Write an account on X-ray crystallographic method to predict the quaternary structure of a protein.

14. (a) Explain in detail about the following features of prokaryotic DNA binding proteins

- (i) DNA binding domain
- (ii) Affinity for DNA binding.

Or

- (b) (i) What are membrane proteins? (3)
(ii) Discuss the structural features and functions of bacteriorhodopsin. (13)

15. (a) Describe how is recombinant insulin produced to increase its biochemical function and shelf life.

Or

- (b) Write an essay on the steps involved in protein engineering with respect to increase the thermal stability of protein with one example.