KUMARAGURU
college of technology
character is life

Register Number: …….

B.TECH DEGREE EXAMINATIONS: APRIL/MAY 2016

(Regulation 2013)

Sixth Semester

BIOTECHNOLOGY

U13BTT603 : Protein Engineering

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The secondary structure in protein maximizes the ------- bonding and maintains the planar nature of proteins.
   a) disulphide b) peptide
   c) amide d) hydrogen
2. Cleavage of disulphide bond is favoured by ……
3. Loop regions that connect two adjacent antiparallel β strands results in---------.
   a) Hairpin loops b) Reverse loops
   c) Twist loops d) Open loops
4. Right handed cross over connection between two consecutive parallel strands of a β sheet consisting of an α helix is ----------.
5. The packing interactions between α helices and β strands are dominated by
   a) Branched hydrophilic side chains b) Branched hydrophobic side chains
   c) Disulphide bridges d) Aromatic amino acid residues
6. Polypeptide chain that can fold independently into a stable tertiary structure is----------.
7. Leucine zippers favours ---------
   a) Protein dimerization b) Loop formation
   c) Disulphide bond formation d) Reverse turns in proteins
8. Main function of TB II A is ……
9. Thermal stability of T_4 lysozyme is achieved by --------
   a) Peptide bonds b) Hydrophobic bonds
   c) Disulphide bonds d) Amide bonds
10. The type of protease in retrovirus belong to ……..

PART B (10 x 2 = 20 Marks)

(Answer not more than 40 words)

11. What is significance of peptide mapping?
12. List out the various covalent and non covalent interactions that stabilizes the protein structure.
13. Draw the pattern of up and down topology in proteins.
14. How are the parallel β strands connected?
15. How does the denaturation process affect the folding patterns in proteins?
16. How are the proteins found to be stable in quaternary structure?
17. Draw the protein foldings in Zn fingers.
18. Explain the binding pattern of cro protein.
19. Name the amino acids present in catalytic triad in serine protease.
20. Write the salient features of recombinant insulin.

PART C (5 x 14 = 70 Marks)

(Answer not more than 400 words)

Q.No. 21 is Compulsory

21. Elaborate on the protein structure prediction and the *de novo* protein design.

22. (a) Discuss on the steps involved in the solid phase synthesis.

(OR)

(b) Explain the different post translational modifications of proteins.

23. (a) Elaborate on automated Edman technique.

(OR)

b) Describe the various methods to determine motif structure.

24. (a) Elucidate the 3D· structure of proteins by X- ray diffraction technique.

(OR)

(b) How do the peptides co-ordinate themselves to form the stable complex?

25. a) Compare prokaryotic and eukaryotic transcription factors.

(OR)

b) Describe the structural features of photosynthetic reaction centre.

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