Register Number .....

B.TECH. DEGREE EXAMINATIONS: NOVEMBER 2009

Third Semester

BIOTECHNOLOGY

U07BT303: Bioorganic Chemistry

Time: Three hours **Maximum Marks: 100**

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. Compounds which have the same molecular formula but different molecular structures are called

(a) isomers (b) isotopes (c) allotropes (d) homologs.

2. L-glucose and D-mannose are

(a) enantiomers (b) diastereomers (c) epimers (d) mesomers

3. The amino acid which has the highest hydrophathic score

(a) Gly (b) Asp (c) Ile (d) Phe

4. Suicidal inhibitors are

(a) Activated specifically by target enzyme (b) competitive inhibitor of enzyme

(c) Does not bind to enzyme (d) It has to bind to substrate for inhibition

5. Ser residues in serine proteases participate in

(a) General acid- base catalysis (b) covalent catalysis

(c) Nucleophilic catalysis (d) doses not involve in catalysis

6. Molten globule is

(a) Intermediate in protein folding (b) Denatured form of protein

(c) Zymogen form of active protein (d) Having natively folded structure

7. Protein disulfide isomerase is involved in

(a) Protein secretion (b) Protein repair

(c) Protein targeting (d) Protein posttranslational modifications

8. Protein stability-activity trade off explains

(a) Certain mutations increases thermal stability with loss of activity

(b) Mutants always have more thermal stability than native molecules

(c) Mutants always have less thermal stability than native molecules

(d) Mutation never affects thermal stability and activity

9. Barnase is a protein that fold with

(a) Single state kinetics (b) Two state kinetics

(c) Multiple kinetic phases (d) folding kinetics unknown

10. In protein folding funnel, the width of the funnel represents

(a) Energy (b) Entropy (c) Number of intermediates (d) Folding kinetics

PART B (10 x 2 = 20 Marks)

11. Outline the difference between E1 and E2 reactions with example.
12. List out the nucleophilic residues participating in catalysis with specific examples.
13. Write a short note on chymotrypsin inhibitor 2.
14. Below are five amino acids. Indicate all characteristics that apply to each.

Amino acid	Characteristics
lysine	a) forms disulfide bonds
	b) is charged at pH=7
proline	c) non-polar/hydrophobic
aspartic acid	d) ring of side chain covalently linked to peptide backbone
tryptophan	e) has a ring
cysteine	f) absorbs light at wavelength 280 nm

15. Mention the different kinds of non covalent interactions that stabilize protein structure.
16. Give an example for compounds having chiral methyl and choral phosphate.
17. Comment on stability and activity of proteins.
18. Outline about transition state in protein folding.
19. Comment on role of temperature and pH on protein folding.
20. Outline the principle of any one technique used for studying protein folding.

PART C (5 x 14 = 70 Marks)

21. (a) Write a note on Hammond postulate h/d effects with examples.

(OR)

(b) Explain about Nucleophilic reactions with relevant examples.

22. (a) Explain the methods used to identify the essential residues participate in catalysis of serine protease. Outline its catalytic mechanism.

(OR)

(b) Outline the steriospecificity of NAD^+ dependent dehydrogenases with two examples.

23. (a) Explain the structural features responsible for calalytic mechanism of lysozyme.

(OR)

(b) Explain the catalytic mechanism of ribonucleases.

24. (a) Expalin two state and multistate kinetics of protein folding.

(OR)

(b) Explain about kinetic co- operativity in protein folding and unfolding.

25. (a) Explain the three classical mechanism of protein folding with suitable example.

(OR)

(b) Explain the role of molecular chaperonins in folding of proteins.

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