Register Number:……..

B.TECH., DEGREE EXAMINATIONS MAY/JUNE 2013

Fourth Semester

BIO TECHNOLOGY

BTY108: Bioorganic Chemistry

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

Answer ALL Questions:-

PART A (10x1=10 Marks)

1. Tautomers are
   a) chiral molecule b) enantiomers c) structural isomers d) epimers
2. RS notation is an
   a) Absolute notation b) relative notation c) imaginary notation d) artificial notation
3. Electrophilic catalysis is a
   a) Covalent catalysis b) Non-caovalent catalysis c) Ionic catalysis d) Entrapment
4. Asymmetric synthesis of amino acids involves
   a) Chiral catalysts b) chiral substrate c) chiral lolvents d) chiral cofactor
5. Ribomuclease contains _____
   a) 118 amino acids b) 110 amino acids c) 124 amino acids d) 121 amino acids
6. Shape of Chevron plot in rate constant
   a) sigmoidal b) V shape c) Linear d) S shape curve
7. Formation of β Hairpin by joining of
   a) both hydrophobic chain b) one hydrophobic and hydrophilic
   c) Both hydrophilic side chain d) Two alpha helix
8. H/D exchange is useful to find
   a) Exchangeable solvent b) Exchangeable hydrogen
   c) Exchangeable products d) Exchangeable water
9. GroEL is _____
   a) Transporter protein b) Inhibitor c) allosteric protein d) Storage protein
10. Levianthal paradox necessisates folding to take place in scale of
    a) Millions of years b) Thousand of years c) milliseconds d) minutes

PART B (10 x 2=20 Marks)

11. What do you mean by Plane polarized light in prism?
12. Write short notes on elimination reactions and their different types?
13. Write the applications of hammond's postulate effects in reaction kinetics?
14. Explain about the Nucleophilic catalysis with proper example?
15. Differences between the stereochemistry of enzymatic and non-enzymatic reactions
16. Draw a neat chemical structure of Ribonuclease A with their complex
17. List out the important parameters involved in the Two state kinetics in protein folding?
18. Write down the equation of protection factor in 1H/2H-exchange method?
19. State the limitations of first law of thermodynamics.
20. How do you explain the molecular model of iron transport in human system?

PART C (5 x 14 = 70 Marks)

21. a) (i) Give an account of different types of stereoisomerism with proper example. (4)

(ii) Write down the various methods involved in the resolution of racemic mixture? (3)

(iv) Illustrate the naming rules of R-S and E-Z systems in isomerism? (7)

(OR)

b) Describe the mechanism and reaction behavior of following reactions with example

(i) Elimination unimolecular (4)

(ii) Elimination bimolecular (5)

(iii)Elimination using conjugate base (4)

22. a) Narrate the study of covalent catalysis with following examples

(i) Electrophilic catalysis by Schiff base formation (7)

(ii) Pyridoxal phosphate-electrophilic catalysis (7)

(OR)

b) (i) Define Gibbs Free energy and hence Derive the Relationship between Equilibrium Constant and Gibbs free energy and hence Calculate ΔG^{o} for conversion of oxygen to ozone $3/2\ O_2\ (g) \longrightarrow O_3\ (g)$ at 300 K, if K_p for this conversion is 9.4710^{-29}. (10)

(ii) Write down the significant of activation energy in reaction kinetics. (4)

23. a) With neat sketch diagram explain the following enzymatic reaction mechanism

(i) Stereochemistry of fumarase catalysed reaction. (4)

(ii) Stereochemistry of nucleophilic reactions. (4)

(iii) NAD^+ and $NADP^+$ dependent oxidation and reduction. (6)

(OR)

b) Elucidate the mechanism and structure involved in the hen egg white lysozyme system of reaction chemistry.

24. a) (i) Elaborate the mechanism of $^1H/^2H$-exchange methods in protein folding. (10)

(ii) Differentiate between the Φ-va!ue analysis with quenched-flow $^1H/^2H$-exchange (4)

(OR)

b) Briefly discuss about the structure prediction and kinetics of Chymotrypsin Inhibitor 2 with molecular simulation.

25. a) (i) Describe the various in two methods for the synthesis of α-amino acids. (10)

(ii) Write in details about the combinatorial chemistry in structure prediction. (4)

(OR)

b) (i) Illustrate the strategies involved in the designing of novel drug compounds of neuropeptides in clinical chemistry. (10)

(ii) Write in details about the design of enzyme molecules from steroid complex. (4)

****