

Register Number:.....

B. TECH. DEGREE EXAMINATIONS: OCTOBER/NOVEMBER-2008

Third Semester

BIOTECHNOLOGY

U07BT303 BIOORGANIC CHEMISTRY

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:

PART A (20 x 1 = 20 Marks)

- Molecular formula of glucose is
 - $C_6H_{12}O_6$
 - $C_{12}H_{22}O_{11}$
 - $(C_6H_{12}O_5)_n$
 - $C_6H_{12}O_7$
- Chiral carbon means
 - Valency of carbon is satisfied with different groups
 - Valency of carbon is satisfied with same groups
 - Valency of carbon is satisfied with hydrogen atom
 - Valency of carbon is satisfied with oxygen atom
- Which one of the following compounds becomes ester?
 - Ethyl acetate
 - Ethyl alcohol
 - Methyl alcohol
 - Acetone
- Homogeneous catalyst means
 - The reactant, product and catalyst are in the same medium
 - The reactant, product and catalyst are in the different medium
 - The reactant, product are in the same medium and catalyst is in the different medium
 - All are in the different medium
- The molecular formula of deuterated ethanol is
 - CH_3CH_2OH
 - $CH_3CH_2CH_2OH$
 - CH_3CD_2OH
 - CH_3COOH
- Oxidation means
 - loss of protons
 - loss of neutrons
 - loss of protons and neutrons
 - loss of electrons
- S_N2 reaction means
 - Nucleophilic substitution unimolecular reaction
 - Nucleophilic substitution bimolecular reaction
 - Nucleophilic substitution termolecular reaction
 - Electrochemical reaction

8. Asymmetric carbon means
- optically inactive carbon
 - chiral carbon
 - optically active carbon
 - adjacent carbon
9. Holoenzyme means
- The complex of enzyme and coenzyme
 - The complex of enzyme and substrate
 - The complex of enzyme and protein
 - The complex of enzyme and fat
10. Glyceraldehyde 3-phosphate dehydrogenase is a
- monomeric enzyme
 - dimeric enzyme
 - trimeric enzyme
 - tetrameric enzyme
11. Resonance Raman spectra of acylenzymes of Serine Proteases have a signal at
- 1300 cm^{-1}
 - 1700 cm^{-1}
 - 1500 cm^{-1}
 - 1200 cm^{-1}
12. Lysozyme present in
- Hen egg white
 - Milk
 - Oil
 - Curd
13. Arrhenius equation is
- $A = K^{(-E_A/RT)}$
 - $K = A^{(-E_A/RT)}$
 - $A = K^{(RT-E_A)}$
 - $K = ART$
14. Protein folding involves making and breaking of weak bonds which can be described by
- Planck equation
 - Eyring equation
 - Arrhenius equation
 - Classic statistical mechanics and Newton's equations
15. $K_{int} = K_{H_2O} + K_{OH^-} [OH^-] + K_{H^+} [H^+]$

The above reaction follows

- First order reaction
- Third order reaction
- Second order reaction
- Pseudounimolecular reaction

16. Folding of peptides involves
- Loops, α -helixes, β -hair pin
 - Lysosome
 - DNA, RNA
 - Nucleic acids
17. Folding is explained by the mechanism
- Transition state mechanism
 - Nucleation – condensation mechanism
 - Steady-state approximation
 - Hammond
18. Barnase is secreted from
- Ribosomes
 - Nucleic acids
 - Bacillus amyloliquefaciens
 - Proteins
19. Protein folding in terms of energy landscapes is described by
- Quantum theory
 - Wave mechanics theory
 - De-broglie equation
 - Classical polymer theory
20. HSP is
- Heat – Shock polypeptide
 - Heat – Shock proteins
 - Heat – Shock proteolysis
 - Heat – Shock process

Part – B (5 x 16 = 80 Marks)

21. (a) (i) List out any four reactions of carbohydrates and proteins (8)
(ii) Explain the conformation of ethane (8)

(OR)

- (b) (i) Explain the mechanism of S_N1 and S_N2 reaction (8)
(ii) What are catalysts? Explain the concept of acid-base catalyst. (8)

22. (a) (i) Discuss NAD and NADP-dependent oxidation reduction reaction (8)
(ii) Explain the stereochemistry of nucleophilic reactions (8)

(OR)

- (b) (i) Explain the stereochemistry of fumarase catalysed reaction. (8)
(ii) Write a note on chiral phosphate (8)

23. (a) Discuss in detail about dehydrogenases (16)

(OR)

(b) (i) Explain the salient features of proteases (8)

(ii) Describe some important features of lysozyme (8)

24. (a) (i) Explain the principles of two state kinetics (8)

(ii) Explain the principles of multistate kinetics (8)

(OR)

(b) (i) Explain a transition state in protein folding (8)

(ii) Write notes on folding of peptides (8)

25. (a) (i) Explain the mechanism of c_{i2} (8)

(ii) Write the mechanism of nucleation-condensation reaction (8)

(OR)

(b) Give an detailed account on molecular chaperones (16)
