LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **BIOTECHNOLOGY**

FIRST SEMESTER – **NOVEMBER 2017**

17PBT1MC02 – BIOCHEMISTRY

Date: 04-11-2017 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

PART – A

Answer ALL the Questions

I. Choose the correct answer (5 x 1 = 5 Marks)

1. The pH of 1M HCl is_____.
   a) 0 b) 1 c) 3 d) 5
2. Choose the non -reducing sugar from the following.
   a) Glucose b) Sucrose c)Fructose d) Maltose
3. _____ acts as a major electron donar in oxidative phosphorylation.
   a)NADH b) ATP c) NADPH d) Water
4. Which of the following undergoes oxidative deamination?
   Glycine b) Glutamine c) Glutamate d) α ketoglutarate
5. Stabilization of charged intermediates by transfer of proton is an example for
   a) Metal ion catalysis b) Acid base catalysis
   c) Covalent catalysis d) both a and c

II. State whether the following are true or false. (5x1=5 Marks)

6. The dielectric constant of water is lesser then hexane.
7. Mannose is an epimer of glucose at C-2 position.
8. Conversion of pyruvate to oxaloacetate is catalyzed by Pyruvate dehydrogenase complex.
9. The ammonia released during deamination is converted to ammonium hydroxide. .
10. Enzyme E3 acts as a protein ligase in Ubiquitination.

III. Complete the following (5 x 1= 5 Marks)

11. Bond angle of water is _____.
12. The spatial arrangement of atoms in proteins is called its_____.
13. _____ is a soluble protein electron carrier in plants similar to cytochrome C.
14. Calvin's cycle happens at _____ of chloroplast.
15. _____ acts as a signal to target proteins to the proteasome.

IV. Answer the following within 50 words (5 x 1 = 5 Marks)

16. What is proton hopping?
17. Calculate the molecular weight of an α helix with 10 amino acids.
18. Define diastreomers with an example.
19. Mention a system to transport fatty acids to the mitochondria?
20. Give an example for a cofactor?

PART B

Answer the following each within 500 words. (5 x 8 = 40 marks)

Draw diagrams wherever necessary

21. (a)Derive an equation for ion product of water.

OR

(b)Write short notes on:

i. Bicarbonate buffer system ii.Titration curve of acetic acid.

22. (a) Classify carbohydrates with suitable examples.

OR

(b) Comment on the secondary structure of protein.

23. (a) Mention the complexes and electron transfer reactions in electron transport chain.

OR

(b) Write short notes on high energy compounds.

24. (a) Outline the steps involved in fatty acid synthesis.

OR

(b) Explain the biosynthesis of pyrimidine.

25. (a)Discuss about Metal ion catalysis and Acid base catalysis.

OR

(b)Comment based on enzyme kinetics.

i. Substrate specificity ii. Substrate concentration.

PART – C

Answer any TWO of the following, each within 1500 words. (2 x 20 = 40 Marks)
Draw diagrams wherever necessary.

26. Write in detail about complete oxidation of glucose and add a note on gluconeogenesis.
27. Explain any four approaches for protein purification.
28. Describe the light and dark reactions of photosynthesis.
29. Elaborate on competitive and uncompetitive inhibition using Line Weaver Burk plot using suitable examples.

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