LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – **NOVEMBER 2019**

PBT 1502 – BIOCHEMISTRY

Date: 01-11-2019 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 0.1N NaOH is
   a) 1 b) 13 c) 0 d) 14
2. Which of the following is a C-4 epimer of glucose?
   a) Fructose b) Galactose c) Maltose d) Mannose
3. Adenosine deaminase deaminates adenosine to
   a) Hypoxanthine b) Inosine c) Xanthine d) Guanosine
4. Choose the membrane bound enzyme, from the following
   a) Aconitase b) α-ketoglutarate dehydrogenase
   c) Fumarase d) Succinate dehydrogenase
5. Statin drugs compete with which of the following enzyme?
   a) Mevalonate synthase b) HMG CoA reductase
   c) Farnesyl synthase d) Squalene synthase

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

6. Hydrophobic effect observed in water is entropy driven.
7. Methionine is a positively charged amino acid.
8. Electron transport is an exergonic process.
9. Synthesis of fatty acids happens at the mitochondrial matrix.
10. Km does not vary with concentration of enzyme.

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

11. The concentration of pure water at 25^{θ}C is _____.
12. The glycosidic bond in sucrose is _____.
13. The electrons of cytosolic NADH are transported to mitochondria through_____ shuttle.
14. _____ marks proteins for degradation.
15. _____ are enzymes that change the molecular form of substrates.

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

16. What is buffer capacity?
17. Define enantiomers.
18. Mention any two amino acids which are helix breakers?
19. List any one substrate level phosphorylation in glycolysis.
20. What does a large Km signify?

PART B

Answer the following, each within 500 words (5 x 8 = 40 Marks)

21. (a)Derive a relationship between the dissociation constant and ionic product of water.

OR

(b)Write notes on:

i. Dissolution of NaCl in water ii. Cleansing action of soap

22. (a)Give an account on Sphingolipids and Glycolipids

OR

(b) Explain the principle behind ion exchange chromatography.

23. (a) Examine the synthesis of ATP through Chemiosmosis.

OR

(b) Tabulate the regulatory enzymes, inhibitors and mechanism of regulation in Krebs cycle.

24. (a) Illustrate transport of fatty acids to mitochondria.

OR

(b) Outline the catabolism of amino acids.

25. (a)Discuss about acid base catalysis and metal ion catalysis.

OR

(b)Explain competitive inhibition with an example.

PART – C

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

26. Employ an electrophoretic technique to separate proteins based on their molecular weight.
27. Elaborate on the process of phosphorylation in plants.
28. Describe complete oxidation of glucose to water.
29. Derive Michaelis Menten equation.

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