B.Sc. Semester-III Examination, 2022-23

ZOOLOGY [Honours]

Course ID : 32613 Course Code : SH/ZOO/303/C-7

Course Title : Fundamental of Biochemistry

Time : 1 Hour 15 Minutes Full Marks : 25

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

UNIT-I

1. Answer any **five** of the following questions: 1×5=5

   a) Define isoelectric point (pI).

   b) What is proton motive force (pmf)?

   c) Why oxaloacetate is known as activated pyruvate?

   d) What is the keto acid of alanine?

   e) Why pentose phosphate pathway is called as hexose monophosphate shunt?

   f) Differentiate between nucleoside and nucleotide.

   g) Name any two inhibitors of the Electron Transport System.

   h) In an omega 3 fatty acid, what omega 3 signifies?

UNIT-II

2. Answer any **two** of the following questions: 5×2=10

   a) What is denaturation of DNA? What is DNA hyperchromic shift? Explain how does the hyperchromicity of DNA alter with the denaturation process? 1+1+3

   b) Describe the mechanism of beta oxidation of a fatty acid with even number of Carbon atoms. 5

   c) Write down the steps of Kreb's cycle where reduced co-enzymes are produced. What is the link between these reduced co-enzymes and Electron Transport Chain (ETC)? 4+1

   d) How Phosphofructokinase 1 (PFK 1) is responsible for regulating glycolysis? State the function of lactate dehydrogenase. 4+1

UNIT-III

3. Answer any **one** of the following questions: 10×1=10

   a) If V is the velocity of an enzyme catalyzed reaction and V_{max} is the maximum velocity of that reaction, where S is the substrate concentration and K_M is the Michaelis constant, then prove $V=V_{max}. [S]/K_M+S$.

Suppose enzyme M has K_M =1.5mM and K_{cat}= 6 per unit time; and enzyme N has K_M = 6mM and K_{cat}=24 per unit time, then according to you which enzyme performs better regarding catalytic efficiency? Explain with suitable logical answer. 8+2

b) Why non-covalent interactions are predominant in biological system? State the significance of hydrogen bond regarding the stabilization of any biological macromolecule. What is hydrophobic interaction? Briefly describe the blood buffer system. 2+3+2+3

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