

B.Sc. 3rd Semester (Honours) Examination, 2023 (CBCS)**Subject : Zoology****Course : CC-VII****(Fundamentals of Biochemistry)****Time: 2 Hours****Full Marks: 40***The figures in the margin indicate full marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer *any five* of the following: 2×5=10
- How do phospholipids contribute to cell membrane structure?
 - What is PUFA? State its significance.
 - Define ketogenic amino acids with example.
 - Differentiate between a nucleotide and a nucleoside.
 - Write down the significance of nucleotide salvage pathway.
 - What roles do coenzymes play in enzymatic reactions?
 - Enumerate the significance of the double helical structure in DNA.
 - What is redox potential?
2. Answer *any two* of the following: 5×2=10
- Briefly describe the Urea cycle and mention its biological significance. 4+1
 - Mention the steps of β -oxidation of Linoleic acid. (Schematic representation only) 5
 - Describe biological importance of Glycogen and Starch. Provide an example each of a protein where hydrogen bonding and disulphide bonding is crucial. 2+2+1
 - Explain the role of mitochondrial inner membrane in creating a protein gradient during oxidative phosphorylation with a suitable diagram. 5
3. Answer *any two* of the following: 10×2=20
- Discuss the role of enzymes a biological catalysis. Describe the mechanism enzyme inhibition with the distinction between competitive and non-competitive inhibition. 4+6
 - Write short notes on *any two*: 5×2
 - Pentose phosphate pathway (structure not required)
 - Role of pH and temperature on enzyme activity
 - Fatty acid biosynthesis (Schematic)
 - Derive the Michaelis-Menten equation. What happens when $[S] = K$ and $[S] > K$ in enzyme-substrate reaction? 6+2+2
 - Discuss the process of glycolysis with its significance in the catabolism of carbohydrates. How does RNA differ from DNA in terms of structure and function? 4+3+3