

U.G. 3rd Semester Examination - 2022

ZOOLOGY

[HONOURS]

Course Code : ZOOL-H-CC-T-07

Full Marks : 40

Time : 2½ Hours

*The figures in the right-hand margin indicate 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
- a) What is the difference between metabolism and catabolism?
 - b) Explain the Induced-fit model for enzyme structure.
 - c) Name major covalent and non-covalent bonds stabilizing protein structure.
 - d) What will be the ATP yield for a 35-C fatty acid?
 - e) Why pentose phosphate pathway is called HMP shunt?
 - f) Compare competitive and non-competitive enzyme inhibition.

[Turn over]

- g) Distinguish between oxidative and non-oxidative deamination.
- h) How Glycerol-3-Phosphate shuttle operates in mitochondrial membrane?

2. Answer any two questions: 5×2=10

- a) Tabulate major enzyme classes along with their functions and examples.
- b) Draw and describe the structure of ETC in mammals.
- c) Present schematically the steps of Urea cycle in mitochondria.
- d) How a straight-line graph is obtained from the Michaelis-Menten equation?

3. Answer any two questions: 10×2=20

- a) How fatty acids are activated? Describe the mechanism of β -oxidation of saturated fatty acid, with chemical structures of all intermediates. Provide an example to show how β -oxidation can proceed for an unsaturated fatty acid. 2+(3+3)+2
- b) Compare nucleosides and nucleotides. Describe the structures and properties of t-RNA and Z-DNA. Mention the significances of nucleotide metabolism. 3+5+2

c) Define Isozyme and Allosteric enzyme. Derive the Michaelis-Menten equation for omnidirectional enzymatic reactions. How the K_m and V_{max} is affected by the increase in substrate concentration? 3+5+2

d) Write short note on (any two) : 5+5

i) Oxidative phosphorylation

ii) Trans-de-amination

iii) Gluconeogenesis