# RAMAKRISHNA MISSION VIDYAMANDIRA

**(Residential Autonomous College affiliated to University of Calcutta)**

**B.A./B.Sc. FOURTH SEMESTER EXAMINATION, MAY 2025**

**SECOND YEAR [BATCH 2022-25]**

Date : 10/05/2025 **ZOOLOGY**

Time : 11 am – 1 pm **Paper : 4ZOOMJC4** Full Marks : 50

1. Answer **any five** questions **:** [2×5]

   a) What are the essential and non- essential amino acids?

   b) What is apolipoprotein?

   c) Write down the principle of filtration chromatography.

   d) What is the minimum number of carbon atoms found in a carbohydrate molecule and why?

   e) What do you mean by mutarotation?

   f) What is $Q_{10}$ value of an enzyme?

   g) Describe the role of mitochondria in oxidative phosphorylation.

   h) What is ATP synthase? Describe its structure and function.

Answer **any four** questions **:** [4×10]

2. a) State in brief about the role of carnitine shuttle used in fatty acid transfer with a schematic diagram.
   b) What is ceramide?
   c) How does rancidity occur in fat? Write a short note on Chylomicron. [4+2+1+3]

3. a) Suppose you have molecules of different charges and you want to separate it. Explain the best chromatic graphic method you would use to perform the task.
   b) What is Rf Value?
   c) What is analyte?
   d) What is spacer arm? [4+2+2+2]

4. a) Explain in detail about the synthesis of saturated palmitic acid.
   b) State about different types of lipoproteins.
   c) What is HMG-co A? [4+4+2]

5. a) Illustrate the steps of glycogenesis with the names of the intermediates and enzymes involved.
   b) Write a short on Cori cycle.
   c) Give the Fischer and Haworth formulae of β-D-Fructofuranose. [5+3+(1+1)]

6. a) Distinguish between starch and glycogen.
   b) Explain the role of pyridoxal phosphate (PLP) in transamination.
   c) Does sucrose show positive result in Benedict's test? Explain. [2+5+(1+2)]

7. a) Compare and contrast alpha-helix and beta-sheet structures in proteins.
   b) Explain the role of Cytochrome c and Coenzyme Q in the ETC. [(2.5+2.5)+(2.5+2.5)]

8. a) What is Linewearer-Burk plot? Explain competitive and non-competitive enzyme inhibition with the help of Lineware- Burk plot.
   b) Write a short note on : NMR [(2+2+2)+4]

9. a) Explain the chemiosmotic theory of ATP synthesis with a suitable diagram.
   b) What is Malate- Aspartate shuttle?
   c) Describe the effect of pH on enzyme action. [(3+2)+2+3]

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