RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, MARCH 2022

SECOND YEAR [BATCH 2020-23]

Date : 07/03/2022

ZOOLOGY (HONOURS)

Time : 11 am – 1 pm

PAPER : VII [CC7]

Full Marks : 50

Answer all the questions:

Group A

1. Describe different types of neurotransmitters and their roles. What will happen if the synthesis of

   a) dopamine and b) serotonin is suppressed in an individual? (2.5+2.5)

Group B

2. Describe the structure of ATP synthase with suitable diagram. (3+2)

3. a) Write down the differences between oxidative deamination and non-oxidative deamination.

   b) What is the significance of Ornithine cycle in ureotelic animals? (3+2)

Group C

4. a) Any amino acid, excepting glycine, can have two possible stereoisomers – elaborate the statement.

   b) State the characteristics of peptide bonds in a protein that govern the final 3-D structure of the macromolecules.

   c) State the nature of investigations that can be carried out using the principle of NMR spectroscopy in the field of biology. (1.5+2+1.5)

5. a) The R_f values of substances A and B are 0.34 and 0.68 when chromatographed on thin layer using ethanol as solvent. What is the ratio of the distance moved after three hours, assuming that neither substance has run off the paper? Explain.

   b) State the principle of gel filtration.

   c) Give examples of two chromatographic techniques each which are based on principles of partition and adsorption chromatography. (2+2+1)

Group D

6. a) What is the role of cellular shuttle systems?

   b) Name the Branching and Debranching enzyme in glycogen anabolism and catabolism, respectively.

   c) How does pyruvate from glycolysis enter into the TCA cycle?

   d) What are enantiomers? (1+1+2+1)

7. a) What are furanose and pyranose?

   b) Describe the basis of Howarth's perspective formula with the help of a 6-carbon monosaccharide.

   c) What is the cellular function of pentose phosphate pathway? (1+3+1)

Group E

8. a) Define with application of Q_{10} value of an enzyme.

   b) How do K_M and V_{Max} values of an enzyme tend to change in presence of excessive substrate and an uncompetitive inhibitor?

   c) State the advantage of Lineweiver-Burk plot over Michaelis-Menten equation. (2+2+1)

9. a) Why covalent modification is thought to be an important enzyme action modifier?

   b) "Zymogen activation is a sophisticated enzyme action"--- comment on the statement.

   c) Why EC numbering is advantageous over orthodox enzyme nomenclature? (2+2+1)

10. a) Define sphingolipid and VLDL.

    b) Why PUFA is healthier in body than saturated fatty acid?

    c) Mention two clinical patho-significance of lipid. (2+2+1)

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