



Seat No. _____

HS-14

B. Sc. (Sem. II) (W.E.F. 2019) Examination

May - 2023

Biotechnology

BT - 201 : Fundamentals of Biomolecules

Time : $2\frac{1}{2}$ / Total Marks : 70

Instructions :

- (1) All questions are compulsory.
- (2) The right side figure indicates total marks of the questions.
- (3) Draw the figure wherever necessary.

- 1 (a) Objective type questions : 4
- (1) _____ is energy associated with the movement of an object.
 - (2) The energy need to raise the temperature of one gram of a substance one degree Celsius is known as _____.
 - (3) A solution with pH of 8.5 has a pOH of _____.
 - (4) The bond present in N₂ is _____.
- (b) Answer in brief : (any 1 out of 2) 2
- (1) Define buffer with one example.
 - (2) What is isoelectric point ?
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Explain the properties of carbohydrates.
 - (2) Write a note on general properties of water.
- (d) Write a note on : (any 1 out of 2) 5
- (1) Write a detail note on chemical bonds.
 - (2) Write a note on ATP and other high energy compound.

- 2 (a) Objective type questions : 4
- (1) A polysaccharide which is often called animal starch is _____.
 - (2) Compounds that have same structural formula and are non-superimposable mirror images are known as _____.
 - (3) The distinguishing test between monosaccharides and disaccharides is _____.
 - (4) The epimer of glucose is _____.
- (b) Answer in brief : (any 1 out of 2) 2
- (1) Explain any one disaccharide with structure.
 - (2) What are Epimers ? Give an example.
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Discuss glycolipids.
 - (2) Role of polysaccharide in biological system.
- (d) Write a note on : (any 1 out of 2) 5
- (1) Briefly describe classifications and functions of disaccharides and polysaccharides.
 - (2) Write a detail note on glycoconjugates.
- 3 (a) Objective type questions : 4
- (1) At isoelectric point amino acids exist as _____.
 - (2) Collagen is not a fibrous protein. (True or false)
 - (3) How many amino acids are non-essential ?
 - (4) The first protein sequenced by Frederick Sanger is _____.
- (b) Answer in brief : (any 1 out of 2) 2
- (1) Briefly explain significance of protein folding.
 - (2) Draw the structures of aromatic amino acid.
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Describe DNA-protein and protein-protein interaction with suitable example.
 - (2) Write a note on amino acid derivatives.
- (d) Write a note on : (any 1 out of 2) 5
- (1) Explain levels of structures in protein.
 - (2) Write a note on biologically important proteins.

- 4 (a) Objective type questions : 4
- (1) Z-DNA is _____ handed helical structure.
 - (2) DNA wrapped around histones is known as _____.
 - (3) It has been found that protein synthesis in a cell is controlled by a complex macromolecule called _____.
 - (4) The chemical name 2-amino-6-oxypurine is known as _____.
- (b) Answer in brief : (any 1 out of 2) 2
- (1) What are ribozymes ?
 - (2) What are the types of DNA ?
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Comment about experiment proving semiconservative nature of DNA.
 - (2) Write a short note on nucleotide analogues.
- (d) Write a note on : (any 1 out of 2) 5
- (1) Discuss type of RNA and their functions.
 - (2) Explain Sanger DNA sequencing method.
- 5 (a) Objective type questions : 4
- (1) _____ fat soluble vitamin works as antioxidant.
 - (2) Acid value measures _____ of oil.
 - (3) Linoleic acid is unsaturated fatty acids. (True or False)
 - (4) The number of double bonds in Arachidonic acid is _____.
- (b) Answer in brief : (any 1 out of 2) 2
- (1) What are bipolar lipids ?
 - (2) Why pellagra is common in people who have eaten maize as a staple diet ?
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Short note : Vitamin A.
 - (2) Explain structure and function of triacylglycerol.
- (d) Write a note on : (any 1 out of 2) 5
- (1) Classify vitamins and discuss any three in detail from vitamin B complex.
 - (2) Discuss lipid classification with diagram.