647510 **BSC2BitC201x** **Seat No :_____**

B.Sc. Semester - 2 (*CBCS*) Examination
March/April – 2026 (New Course)
BIO-TECHNOLOGY (CORE)

Time: 2:30 Hours **Marks: 70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1(A) Answer the following. (Any one Out of Two) (07)

1. Explain ionic and covalent bonds with suitable examples.
2. Describe the concept of acids, bases, and buffers.

Que.1(B) Attempt any one. (Out of Two) (04)

1. State any two important properties of water.
2. Differentiate between polar and non-polar molecules.

Que.1(C) Attempt any three. (Out of Five) (03)

1. Define pKa.
2. What is a buffer?
3. The weak attractive force between molecules is known as _____ force.
4. The negative logarithm of hydrogen ion concentration is called _____.
5. ATP is considered a _____ energy compound in biological systems.

Que.2(A) Answer the following. (Any one Out of two) (07)

1. Explain the classification and functions of polysaccharides.
2. Write a note on glycoconjugates: proteoglycans, glycoproteins, and glycolipids.

Que.2(B) Attempt any one. (Out of two) (04)

1. Explain the functions of carbohydrates in biological systems.
2. Describe the configuration and conformation of monosaccharides.

Que.2(C) Attempt any three. (Out of Five) (03)

1. Define monosaccharide.
2. Starch and glycogen are examples of polysaccharides. (True/False)
3. The simplest form of carbohydrates is called _____.
4. The bond that links two monosaccharides in a disaccharide is called _____ bond.
5. Glycoproteins are formed by the combination of proteins and _____.

Que.3(A) Answer the following. (Any one Out of two) (07)

1. Explain the structure, properties, and classification of amino acids.
2. Explain DNA–protein and protein–protein interactions and their biological significance.

Que.3(B) Attempt any one. (Out of two) (04)

1. Classify amino acids based on their side chains.
2. Describe the four levels of protein structure.

Que.3(C) Attempt any three. (Out of Five) (03)

1. The building blocks of proteins are called _____.
2. Essential amino acids cannot be synthesized by the human body. (Interphase / Anaphase)
3. The bond that links amino acids in proteins is known as a _____ bond.
4. The three-dimensional structure of a protein is mainly stabilized by _____ bonds and other interactions.
5. Define amino acid.

Que.4(A) Answer the following. (Any one Out of two) (07)

1. Explain the Watson and Crick model of DNA double helix.
2. Describe the different types of RNA and their functions.

Que.4(B) Attempt any one. (Out of two) (04)

1. Describe the structure and functions of nucleotides.
2. Explain Chargaff's rule.

Que.4(C) Attempt any three. (Out of Five) (03)

1. The building blocks of nucleic acids are called _____.
2. According to Chargaff's rule, adenine pairs with _____ in DNA.
3. RNA that carries genetic information from DNA to ribosome is called _____ RNA.
4. DNA replication follows a semi-conservative mode. (True/False)
5. What is a nucleotide?

Que.5(A) Answer the following. (Any one Out of two) (07)

1. Explain the functions of fatty acids, triacylglycerols, phospholipids, and steroids.
2. Classify vitamins and explain their functions and sources.

Que.5(B) Attempt any one. (Out of two) (04)

1. Classify lipids with suitable examples.
2. Describe the structure of fatty acids and triacylglycerols.

Que.5(C) Attempt any three. (Out of Five) (03)

1. Lipids are generally _____ in water.
2. Triacylglycerols are formed by glycerol and _____ molecules of fatty acids.
3. Vitamin _____ is also known as ascorbic acid.
4. What are lipids?
5. What are vitamins?

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