647510 **BSC2MicC201x** **Seat No :_____**

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

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

Instructions:

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

Que.1(A) Give specific answers. (04)

1. The smallest unit of an element that retains the chemical properties of that element is called an _____.
2. A chemical bond formed by the sharing of electrons between atoms is called a _____ bond.
3. Water molecules are polar due to the uneven sharing of electrons between oxygen and hydrogen atoms. (True/False)
4. Acids have a pH value greater than 7. (True/False)

Que.1(B) Answer in Brief. (Any one out of two) (03)

1. Briefly describe the structure of an atom, including its subatomic particles and their charges.
2. Explain the concept of a chemical reaction in simple terms.

Que.1(C) Write a Note on. (Any one out of two) (07)

1. Discuss the importance of water for microbial life, highlighting its key properties.
2. Explain the formation of ionic bonds and covalent bonds, providing one example of each.

Que.2(A) Give specific answers. (04)

1. The primary structural component of plant cell walls is _____.
2. The basic building blocks of proteins are _____.
3. Triglycerides are the main storage form of lipids in animals. (True/False)
4. DNA typically exists as a single-stranded molecule. (True/False)

Que.2(B) Answer in Brief. (Any one out of two) (03)

1. Briefly describe the difference between saturated and unsaturated fatty acids.
2. Explain the primary, secondary, and tertiary structures of proteins.

Que.2(C) Write a Note on. (Any one out of two) (07)

1. Discuss the classification and function of carbohydrates.
2. Explain the structure and biological functions of nucleic acids.

Que.3(A) Give specific answers. (04)

1. Enzymes are biological _____ that speed up biochemical reactions.
2. The specific region on an enzyme where the substrate binds is called the _____ site.
3. Enzymes are consumed during the chemical reactions they catalyze. (True/False)
4. Competitive inhibitors bind to the allosteric site of an enzyme. (True/False)

Que.3(B) Answer in Brief. (Any one out of two) (03)

1. Briefly describe the chemical and physical properties of enzymes.
2. Explain the concept of enzyme specificity.

Que.3(C) Write a Note on. (Any one out of two) (07)

1. Describe enzyme action: substrate binds to the active site, forming an enzyme-substrate complex, lowering activation energy.
2. Explain different types of enzyme inhibition (competitive and non-competitive).

Que.4(A) Give specific answers. (04)

1. The complete elimination or destruction of all forms of microbial life, including spores, is called _____.
2. An agent that inhibits the growth of bacteria but does not necessarily kill them is called a _____.
3. Antiseptics are used on inanimate objects to reduce the number of microorganisms to a safe level. (True/False)
4. Autoclaving is a method of sterilization that utilizes high-pressure steam. (True/False)

Que.4(B) Answer in Brief. (Any one out of two) (03)

1. Differentiate between a bacteriostatic agent and a bactericidal agent.
2. Briefly describe the principle behind the use of filtration for microbial control.

Que.4(C) Write a Note on. (Any one out of two) (07)

1. Discuss the characteristics of an ideal antimicrobial agent.
2. Explain the different types of physical agents used for microbial control, providing one specific example of each.

Que.5(A) Give specific answers. (04)

1. A substance produced by a microorganism that inhibits or kills other microorganisms is called an _____.
2. The process of using chemical agents to treat diseases caused by microorganisms is known as _____.
3. Antibiotics that inhibit cell wall synthesis typically target the peptidoglycan layer in bacterial cells. (True/False)
4. Antivirals are generally more effective against bacterial infections than viral infections. (True/False)

Que.5(B) Answer in Brief. (Any one out of two) (03)

1. What is the primary characteristic of an ideal chemotherapeutic agent?
2. Explain the concept of selective toxicity in the context of chemotherapeutic agents.

Que.5(C) Write a Note on. (Any one out of two) (07)

1. Explain the general principles and purpose of microbiological assays for antibiotics.
2. Describe the different modes of action of antibiotics.

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