

B.Sc. Semester - 2 (CBCS) Examination
March/April – 2025 (New Course)
MICROBIOLOGY (CORE)

Time: 2.30 Hours**Marks: 70****Instructions:**

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

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- Que.1 (A) Give specific answers. (04)
- 1) The atomic number of an element is determined by the number of _____ in its nucleus.
 - 2) The type of chemical bond formed by the sharing of electron pairs between atoms is called a _____ bond.
 - 3) All isotopes of an element have the same atomic mass. (True/False)
 - 4) Water is known as the universal solvent due to its ability to dissolve a wide range of substances. (True/False)
- Que.1(B) Answer in Brief. (Any one out of two) (03)
- 1) Differentiate between ionic and covalent bonds with an example.
 - 2) Why is water considered essential for biochemical reactions in microbiology?
- Que.1(C) Write a Note on. (Any one out of two) (07)
- 1) Explain the role of pH in microbial growth and metabolism with examples.
 - 2) Discuss the importance of chemical reactions in microbial metabolism, providing at least two specific examples.
- Que.2 (A) Give specific answers. (04)
- 1) The monomers of carbohydrates are called _____.
 - 2) The monomeric units of proteins are called _____.
 - 3) The two types of nucleic acids found in living organisms are _____ and _____.
 - 4) Lipids are insoluble in water but soluble in nonpolar solvents. (True/False)
- Que.2(B) Answer in Brief. (Any one out of two) (03)
- 1) Differentiate between purines and pyrimidines with one example of each.
 - 2) Differentiate between saturated and unsaturated fatty acids.
- Que.2(C) Write a Note on. (Any one out of two) (07)
- 1) Explain the classification of proteins based on their structure with examples.
 - 2) Explain the classification of carbohydrates with suitable examples.
- Que.3(A) Give specific answers. (04)
- 1) The region of an enzyme where substrate binding occurs is called the _____.
 - 2) Enzyme inhibitors that bind to the active site and compete with the substrate are known as _____ inhibitors.
 - 3) All enzymes are proteins. (True/False)
 - 4) Name the enzyme that catalyzes the breakdown of hydrogen peroxide.
- Que.3(B) Answer in Brief. (Any one out of two) (03)
- 1) Differentiate between competitive and non-competitive enzyme inhibition.
 - 2) What is the significance of enzyme specificity in biological reactions?
- Que.3(C) Write a Note on. (Any one out of two) (07)
- 1) Explain the mechanism of enzyme action using the lock and key model or induced fit model.
 - 2) Regulation of enzyme activity in prokaryotic and eukaryotic cells.
- Que.4(A) Give specific answers. (04)
- 1) The process of killing or removing all forms of microbial life, including spores, is called _____.
 - 2) The method used to compare the effectiveness of a disinfectant to phenol is known as the _____.
 - 3) Bacteriostasis refers to the complete killing of bacteria. (True/False)
 - 4) Define the term "antiseptic."

- Que.4(B) Answer in Brief. (Any one out of two) (03)
- 1) Differentiate between sterilization and disinfection.
 - 2) What are quaternary ammonium compounds, and how do they act as antimicrobial agents?
- Que.4(C) Write a Note on. (Any one out of two) (07)
- 1) Explain the different types of radiation used in microbial control and their effects on microorganisms.
 - 2) Discuss the characteristics of an ideal antimicrobial agent and its significance in microbial control.
- Que.5(A) Give specific answers. (04)
- 1) The ability of a chemotherapeutic agent to kill or inhibit microbes without harming the host is known as _____.
 - 2) Antibiotics that inhibit bacterial cell wall synthesis primarily target the _____ component of the bacterial cell wall.
 - 3) Antiviral drugs primarily act by inhibiting bacterial ribosomes. (True/False)
 - 4) Name one antibiotic that inhibits protein synthesis
- Que.5(B) Answer in Brief. (Any one out of two) (03)
- 1) Differentiate between broad-spectrum and narrow-spectrum antibiotics.
 - 2) How do chemotherapeutic agents damage the cytoplasmic membrane of microorganisms?
- Que.5(C) Write a Note on. (Any one out of two) (07)
- 1) Explain the different modes of action of antibiotics with suitable examples.
 - 2) Describe the microbiological assay of antibiotics and its significance in determining antibiotic potency.
