

B.Sc. Semester - 2 (CBCS) Examination
July-2025 (OLD COURSE)
MICRO-BIOLOGY (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) Objective type questions. (04)
1. _____ bonds are responsible for the secondary structure of proteins and the properties of water.
 2. The atomic number of an element is equal to the number of _____ in its atom.
 3. Hydrogen bonds are stronger than ionic bonds. (True/False)
 4. Define **pH**.
- Que.1(B) Answer in brief. (Any 1 out of 2) (02)
1. Name two major elements found in living organisms and mention their importance.
 2. Write any two differences between ionic and covalent bonds.
- Que.1(C) Answer in detail. (Any 1 out of 2) (03)
1. Explain the role of water in biological systems with respect to its polarity and hydrogen bonding.
 2. What are chemical reactions? Give one example of a biochemical reaction important in microbial metabolism.
- Que.1(D) Write a note on. (Any 1 out of 2) (05)
1. Explain the importance of biochemistry in understanding microbial structure and function. Include at least two examples.
 2. Describe the structure of an atom. Explain how electrons participate in chemical bonding.
- Que.2(A) Objective type questions. (04)
1. _____ is the nitrogenous base found in RNA but not in DNA.
 2. _____ are lipids that contain phosphate groups and are major components of cell membranes.
 3. Polysaccharides are made up of repeating units of amino acids. (True/False)
 4. Define **Protein**.
- Que.2(B) Answer in brief. (Any 1 out of 2) (02)
1. List any two functions of lipids in living organisms.
 2. Mention two differences between DNA and RNA.
- Que.2(C) Answer in detail. (Any 1 out of 2) (03)
1. Classify carbohydrates and explain any one type with an example.
 2. Describe the basic structure of an amino acid and its linkage in protein formation.
- Que.2(D) Write a note on. (Any 1 out of 2) (05)
1. Explain the classification and biological functions of carbohydrates in detail.
 2. Describe the structure and biological role of nucleic acids in living systems.
- Que.3(A) Objective type questions. (04)
1. Enzymes are primarily composed of _____.
 2. Enzyme activity is affected by factors such as temperature, pH, and _____ concentration.
 3. Enzymes are permanently changed during a chemical reaction. (True/False)
 4. Define Enzyme Inhibition.

- Que.3(B) Answer in brief. (Any 1 out of 2) (02)
1. Name any two physical properties of enzymes.
 2. Write any two differences between prokaryotic and eukaryotic enzyme regulation.
- Que.3(C) Answer in detail. (Any 1 out of 2) (03)
1. Describe the main types of enzyme inhibition with examples.
 2. Explain the IUBMB system of enzyme classification with one example from any class.
- Que.3(D) Write a note on. (Any 1 out of 2) (05)
1. Explain the mechanism of enzyme activity and the role of the active site in substrate binding.
 2. Discuss the regulation of enzyme synthesis in prokaryotic and eukaryotic cells.
- Que.4(A) Objective type questions. (04)
1. _____ is the chemical agent used to kill microorganisms on living tissues.
 2. The removal of microorganisms using membrane filters is called _____.
 3. Gamma rays and X-rays control microbes by causing DNA damage. (True/False)
 4. Define **Disinfectant**.
- Que.4(B) Answer in brief. (Any 1 out of 2) (02)
1. Name any two heavy metals used in microbial control and mention one use of each.
 2. What is the difference between antiseptics and sanitizers?
- Que.4(C) Answer in detail. (Any 1 out of 2) (03)
1. Describe the use of desiccation and osmotic pressure in microbial control.
 2. Write a short note on quaternary ammonium compounds and their applications.
- Que.4(D) Write a note on. (Any 1 out of 2) (05)
1. Explain in detail the physical methods of microbial control by radiation.
 2. List and explain the criteria for selecting an ideal chemical antimicrobial agent.
- Que.5(A) Objective type questions. (04)
1. Antibiotics that inhibit bacterial cell wall synthesis are most effective against _____ bacteria.
 2. The process of evaluating the potency of an antibiotic using microorganisms is called _____.
 3. Antiviral drugs primarily work by destroying the virus structure directly. (True/False)
 4. Define **Chemotherapeutic Agent**.
- Que.5(B) Answer in brief. (Any 1 out of 2) (02)
1. List any two characteristics of an ideal chemotherapeutic agent.
 2. Name one antifungal and one antiviral agent along with their target mode of action.
- Que.5(C) Answer in detail. (Any 1 out of 2) (03)
1. Explain how antibiotics inhibit bacterial protein synthesis.
 2. Write a short note on the inhibition of specific enzyme systems by antibiotics.
- Que.5(D) Write a note on. (Any 1 out of 2) (05)
1. Describe the various modes of action of antibiotics with examples for each (cell wall, membrane, nucleic acids, proteins).
 2. What is the microbiological assay of antibiotics? Explain its principle and applications.
