

B.Sc. Semester - 2 (NEP-2020) Examination**MARCH/APRIL-2025****MIC: Microbial Physiology -1 (Major-3)****Time: 2:00 Hours****Marks: 50****Instructions:**

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

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| Que-1 | (1) Classify carbohydrates based on their structure and give one example of each type. (05) |
| | (2) Explain the different types of lipids and their biological roles. (05) |
| | OR |
| Que-1 | (1) Describe the primary structure of proteins and explain its significance. |
| | (2) Differentiate between DNA and RNA based on structure and function. |
| Que-2 | (1) What are the key chemical and physical properties of enzymes? (05) |
| | (2) Explain the basis of enzyme classification and give an example for each class. (05) |
| | OR |
| Que-2 | (1) Differentiate between competitive, non-competitive, and uncompetitive enzyme inhibition. |
| | (2) Explain allosteric regulation of enzymes with an example. |
| Que-3 | (1) What are the principles of microbial control? Explain the different types of microbial control methods. (05) |
| | (2) Describe the characteristics of an ideal antimicrobial agent. (05) |
| | OR |
| Que-3 | (1) Differentiate between bactericidal and bacteriostatic agents with examples. |
| | (2) Explain the classification of bacteriological media based on composition and function. |
| Que-4 | (1) What is the role of radiation (UV light, X-rays, and Gamma rays) in microbial control? (05) |
| | (2) Describe the mechanism of action of heavy metals in microbial control. (05) |
| | OR |
| Que-4 | (1) What is the Phenol Coefficient Method, and how is it used to evaluate chemical antimicrobial agents? |
| | (2) How do quaternary ammonium compounds and aldehydes act as microbial control agents? |
| Que-5 | (1) Explain the role of nucleic acids in protein synthesis. (05) |
| | (2) What are the major differences between prokaryotic and eukaryotic enzyme regulation? (05) |
| | OR |
| Que-5 | (1) Define: sterilization, disinfectant, antiseptic. |
| | (2) Explain how high temperature and low temperature control microbial growth. |
