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Daffodil International University

**Department of Genetic Engineering and Biotechnology**
Faculty of Health and Life Sciences
B. Sc. (Hons.) in Genetic Engineering and Biotechnology
Final Examination Spring 2026

**Course Code: 0512-1203** | **Course Title: Basic Microbiology**
**Level and Term: L1, T2** | **Section: 253 (A+B)** | **Course Teacher Initials: DNH**
**Time: 2 Hour** | **Total Marks: 40**

| | | | | Marks |
|---|---|---|---|---|
| 1 | (a) | Compare batch and continuous culture systems of microorganisms in terms of growth phases, nutrient dynamics, and product formation. | [CLO1, PLO2, C1] | 3 |
| | (b) | How do complex, selective, and enrichment media contribute to the isolation and growth of microorganisms? Explain with examples. | [CLO1, PLO2, C3] | 3 |
| | (c) | Explain the methods used for microbial culture preservation. | | 2 |
| 2 | (a) | Describe the essential nutrients required by microorganisms for growth. | [CLO1, PLO1, C5] | 3 |
| | (b) | Illustrate the growth curve of batch culture and explain how nutrient uptake and waste accumulation influence each growth phase. | [CLO2, PLO1, C4] | 3 |
| | (c) | Explain the plate count method for direct measurement of microorganisms. | | 2 |
| 3 | (a) | State the principle of sterilization. Discuss the key factors that affect the efficacy of sterilization methods. | [CLO2, PLO1, C2] | 3 |
| | (b) | Describe the chemical methods of sterilization. | [CLO1, PLO2, C1] | 3 |
| | (c) | How do antimicrobial agents act on microorganisms? | | 2 |
| 4 | (a) | Diagrammatically present the pour plate and spread plate methods of microbial culture. | [CLO1, PLO1, C1] | 3 |
| | (b) | Explain the serological and molecular techniques of microbial identification. | [CLO1, PLO2, C6] | 3 |
| | (c) | Write short note on IMViC. | | 2 |
| 5 | (a) | Define microbial ecology. State and explain the biotic and abiotic factors influencing a microbial ecosystem | [CLO2, PLO2, C2] | 4 |
| | (b) | Briefly discuss different types of microbial interactions with suitable examples. | [CLO2, PLO2, C6] | 4 |