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 Fall 2025

Course Code: 0512-1203 | **Section: 252 (A+B)** | **Course Title: Basic Microbiology**
Level and Term: L1, T2 | **Course Teacher Initials: SBN & DNH**
Time: 2 Hours | **Total Marks: 40**

Splitting any answer is strictly prohibited

			Marks
1	(a) Define microbial ecology. Briefly describe the biotic and abiotic factors of an ecosystem.	[CLO1, PLO2, C1]	2.5
	(b) Classify bacteria based on their morphological shapes. Briefly describe the classification of rod-shaped bacteria with example.	[CLO2, PLO2, C4]	3.5
	(c) Explain synergism and commensalism with relevant examples.	[CLO1, PLO1, C5]	2
2	(a) Define binary fission. Discuss the environmental factors that influence and enhance the rate of binary fission.	[CLO3, PLO1, C1]	3
	(b) Briefly discuss the sequential steps involved in the process of binary fission.	[CLO3, PLO1, C6]	5
3	(a) State the essential nutritional and physical requirements necessary for bacterial growth.	[CLO3, PLO1, C2]	2.5
	(b) Define complex media, selective media and differential media, and provide one example for each.	[CLO3, PLO2, C1]	3
	(c) What is lyophilization? State its advantages and disadvantages.	[CLO3, PLO2, C1	2.5
4	(a) What is the generation time of a bacterium? State the mathematical growth equation used to describe a bacterial population.	[CLO5, PLO1, C2]	2
	(b) Briefly explain the distinct phases of bacterial growth in a batch culture system.	[CLO5, PLO2, C2]	4
	(c) Explain the significance of the bacterial growth curve.	[CLO5, PLO2, C5]	2
5	(a) State the common physical methods used for sterilization. Why moist heat sterilization is more efficient over dry heat sterilization?	[CLO4, PLO2, C6]	4
	(b) What does IMViC stand for? Briefly describe the four biochemical tests included in the IMViC scheme for bacterial identification.	[CLO4, PLO2, C1]	4