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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
Midterm Examination Fall 2026

Course Code: 0512-1207 **Course Title:** Microbial Genetics
Level and Term: L-1, T-2 **Section: 262 A** **Course Teacher Initials:** DMI
Time: 1 Hour 30 Minutes **Total Marks: 25**

Answer the following questions:

			Marks
1	(a) Define Microbial Genetics. Briefly explain its scope and applications in Biotechnology.	[CLO1, PLO1, C1]	2.5
	(b) Briefly describe the initiation and elongation stages of bacterial DNA replication with diagram.	[CLO1, PLO1, C6]	2.5
2	(a) What is antibiotic resistance? Explain the causes of antibiotic resistance.	[CLO2, PLO2, C2]	2.5
	(b) Discuss the mechanisms of antibiotic resistance in bacteria.	[CLO2, PLO2, C6]	2.5
3	(a) Differentiate between conjugative and non-conjugative plasmids.	[CLO2, PLO2, C4]	2.5
	(b) Define the ColE1 plasmid and describe its structural organization in detail with a labeled diagram.	[CLO2, PLO2, C1]	2.5
4	(a) Describe the different stages of bacterial conjugation with a labeled diagram.	[CLO3, PLO1, C6]	2.5
	(b) Define *tra* operon and sex pili. Explain the major functions of sex pili in bacterial conjugation.	[CLO3, PLO1, C2]	2.5
5	(a) What is bacterial transformation? Explain the major differences between natural and artificial transformation in bacteria.	[CLO4, PLO3, C2]	2.5
	(b) Discuss how foreign DNA is introduced into bacterial cells through heat-shock transformation.	[CLO4, PLO3, C6]	2.5

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