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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 Summer 2026

Course Code: 0512-1207 **Course Title:** Microbial Genetics
Level and Term: L-1, T-2 **Section: 261A** **Course Teacher Initials:** DMI
Time: 02 Hours **Total Marks:** 40

Answer the following questions:

			Marks
1	(a)	Define transduction. Briefly describe the mechanism of bacteriophage-mediated transduction with a diagram.	[CLO5, PLO5, C1] 4.0
	(b)	Differentiate between generalized and specialized transduction. Give two applications of each.	[CLO5, PLO5, C4] 4.0
2	(a)	Define transposons. Briefly describe the cut-and-paste mechanism of transposons with a labeled diagram.	[CLO6, PLO4, C1] 4.0
	(b)	Briefly describe the characteristics of transposons and explain their applications in genetic studies.	[CLO6, PLO4, C6] 4.0
3	(a)	What do you mean by molecular cloning? Explain the process of molecular cloning with a labeled diagram.	[CLO7, PLO6, C2] 4.0
	(b)	Define is cloning vector. Explain the key characteristics of cloning vectors and classify the major types with suitable examples.	[CLO7, PLO6, C4] 4.0
4	(a)	Explain the term bacteriophages. Briefly describe their major characteristics and significant roles in biotechnology.	[CLO5, PLO5, C1] 4.0
	(b)	Briefly describe the major stages of the lytic cycle of bacteriophages with a diagram.	[CLO5, PLO5, C6] 4.0
5	(a)	What is meant by mating type in microorganisms? Explain the applications and significance of mating-type genetics in microorganisms.	[CLO7, PLO6, C2] 4.0
	(b)	Discuss the major steps involved in the construction of a gene library with appropriate diagram.	[CLO7, PLO6, C6] 4.0

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