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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 Fall 2025

**Course Code:** 0512-1207 **Course Title:** Microbial Genetics
**Level and Term:** L-1, T-2 **Section: 251 (A+B)** **Course Teacher Initials:** DMI & SBN
**Time:** 2 Hours **Total Marks:** 40

**Splitting any answer is strictly prohibited**

| | | | | Marks |
|---|---|---|---|---|
| 1 | (a) | Define the term of transposon. Discuss the mechanism of cut and paste transposition with suitable diagram. | [CLO6, PLO4, C2] | 4.5 |
| | (b) | Explain the mechanism of copy and paste transposition. | [CLO6, PLO4, C6] | 3.5 |
| 2 | (a) | What is the restriction endonuclease. Illustrate the process of molecular cloning. | [CLO7, PLO6, C2] | 5.0 |
| | (b) | Distinguish between the plasmid and vector | [CLO7, PLO6, C4] | 3.0 |
| 3 | (a) | Enumerate the types of gene libraries. Elaborate the procedure of gene libraries preparation with diagram. | [CLO7, PLO6, C2] | 4.5 |
| | (b) | What is cloning vector? Enumerate and explain the types of cloning vector | [CLO7, PLO6, C1] | 3.5 |
| 4 | (a) | Extend the concept of phages. Explain the structure of phage with suitable diagram. | [CLO6, PLO4, C2] | 3.5 |
| | (b) | Discuss the Phage T4 life cycle with diagram. | [CLO6, PLO4, C6] | 4.5 |
| 5 | (a) | Explain the mating type in bacteria. Discuss the process of mating type in bacteria. | [CLO7, PLO6, C2] | 4 |
| | (b) | Write the applications of bacterial plasmid in biotechnology and research. | [CLO7, PLO6, C6] | 4 |