



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: 0512-1207
Level and Term: L-1, T-2
Time: 02 Hours

Section: 253 (A+B)

Course Title: Microbial Genetics
Course Teacher Initials: DMI
Total Marks: 40

- | | Marks |
|--|-------|
| 1 (a) Discuss the detail process of molecular cloning with [CLO7, PLO6, C6] diagram. | 4.0 |
| (b) Explain the common types of cloning vectors. Briefly [CLO7, PLO6, C2] discuss the applications of bacterial plasmids in biotechnology. | 4.0 |
| 2 (a) Discuss the process of cut-and-paste transposition and [CLO6, PLO4, C6] illustrate it with a labeled diagram. | 4.0 |
| (b) Explain the mechanism of copy-and-paste transposition [CLO6, PLO4, C2] with figure. | 4.0 |
| 3 (a) List the types of gene libraries. Elaborate the procedure for [CLO7, PLO6, C6] the preparation of gene libraries with a diagram. | 5.0 |
| (b) What are the differences between sticky ends and blunt [CLO7, PLO4, C1] ends? | 3.0 |
| 4 (a) Illustrate and discuss the different stages of the T4 [CLO6, PLO4, C2] bacteriophage life cycle. | 4.0 |
| (b) Briefly describe the applications and significance of [CLO6, PLO4, C6] bacteriophages in biotechnology. | 4.0 |
| 5 (a) Describe and illustrate the gene structure of prokaryotes and [CLO5, PLO5, C6] eukaryotes. | 4.0 |
| (b) Explain mitochondrial inheritance in yeast and contrast it [CLO7, PLO6, C2] with genetic inheritance mechanisms in bacteria. | 4.0 |