



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: 0512-1201

Level and Term: L1, T2

Time: 2 hours

Section: 253 (A+B)

Course Title: Principles of Genetics

Course Teacher Initials: AR

Total Marks: 40

	Marks
1. a) Define chromosomal linkage and crossing over. Classify chromosomal linkage with examples. [CLO4, PLO1, C2]	3.5
b) Discuss chromosome maps. Write down the linkage map of <i>Drosophila</i> chromosomes 2 and 3. [CLO4, PLO2, C5]	4.5
2. a) What is sex determination? Describe the basis of sex determination. [CLO6, PLO1, C5]	3.0
b) Explain the cytological sex determination of different organisms. [CLO6, PLO2, C4]	5.0
3. a) Define mutagens. Describe physical mutagens that cause mutation in DNA. [CLO5, PLO1, C3]	3.5
b) Briefly discuss the types of chromosomal mutation I and II. [CLO5, PLO1, C2]	4.5
4. a) Define mutation. Classify gene mutations with examples. [CLO5, PLO2, C1]	4.0
b) Write down the significance of gene mutation in Biological Science. [CLO5, PLO1, C4]	4.0
5. a) What is extrachromosomal inheritance? Briefly describe its characteristics and classification. [CLO6, PLO1, C1]	4.5
b) How do bacterial cells transfer their plasmid DNA into other bacteria? Explain the process with a diagram. [CLO3, PLO2, C6]	3.5

transformation, conjugation, transduction.