

5 MJ 60312

FOUR YEAR B.Sc. (Honors) DEGREE EXAMINATION, NOVEMBER/DECEMBER 2025.

FIFTH SEMESTER

Botany

Paper XII — CELL BIOLOGY AND GENETICS

(w.e.f 2023-24 Regulations)

Time : Three hours

Maximum : 70 marks

(No additional sheet will be supplied)

SECTION A — (5 × 4 = 20 marks)

Answer any FIVE questions.

1. Ultra-structure of a plant cell
2. Mitochondrial DNA
3. Heterochromatin
4. Karyotype and ideogram
5. Complementary gene interactions
6. Multiple allelism
7. Types of RNA
8. Translation
9. Mutation
10. Hardy-Weinberg law.

SECTION B — (5 × 10 = 50 marks)

Answer ALL the following questions.

11. Elaborate the ultra-structure of plasma membrane and various theories on its organization.
Or
12. What is Cell theory? Write about prokaryotic vs eukaryotic cell.
13. Give a note on morphology of a eukaryotic chromosome.
Or
14. Describe the organization of DNA in a chromosome.

15. Give a detailed note on chromosomal mapping.

Or

16. Write about Mendel's laws of inheritance.

17. Describe the regulation of gene expression in the Lac Operon in bacteria.

Or

18. Give an account on DNA replication by the Semiconservative method.

19. Give a detailed account on evolution of gene concept.

Or

20. Give a note on pattern of sex determination in plants.
