

M.Sc. (Botany) Semester - 1 (CBCS) Examination
OCT/NOV-2025 (AS PER SYLLABUS YEAR JUNE-2023)
Molecular Biology, Genetics & Evolution (Core (New-23))

Time: 2:30 Hours**Marks:70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Que.1 Answer the following (any seven out of Eight, each of two marks) (14)
- 1) Explain of function of the LacA and Z genes in the operon.
 - 2) Explain the start codon in prokaryotic and eukaryotic translation.
 - 3) Explain the function of methylation.
 - 4) Explain the mutation that causes Thymine-thymine formation.
 - 5) Define a chemical mutagen with a suitable example.
 - 6) Define DNA constancy.
 - 7) What is the origin of life?
 - 8) Define natural selection and give its suitable example.
- Que.2 Answer the following (any two out of three, each of seven marks) (14)
- 1) Write a note on independent assortment.
 - 2) Explain Hardy-Weinberg genetic equilibrium and explain its assumptions.
 - 3) Explain Miller's experiment.
- Que.3 Answer the following (any two out of three, each of seven marks) (14)
- 1) Discuss the genetic linkage and mapping.
 - 2) Explain the DNA replication in detail
 - 3) Explain the nucleic acid structure in prokaryotic and eukaryotic organisms.
- Que.4 Answer the following (any two out of three, each of seven marks) (14)
- 1) Write a note on post translation modification.
 - 2) Explain the Lac operon regulation of gene expression.
 - 3) Explain transcription in detail.
- Que.5 Answer the following (any two out of three, each of seven marks) (14)
- 1) Write a note on spontaneous and induce mutation.
 - 2) Describe extra-chromosomal inheritance.
 - 3) Explain the DNA repair mechanism in detail.
