

M.Sc. (Botany) Semester - 1 (CBCS) Examination**Nov/Dec-2023 (SYLLABUS YEAR JUNE-2018)****MOLECULAR BIOLOGY, GENETICS AND EVOLUTION(CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

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

Q.1 Answer the following (any seven out of ten, each of **two marks)****14**

- (1) Write types of polymerases and its function.
- (2) Explain the role of topoisomerase and helicase.
- (3) Define the function of cAMP
- (4) Write Millers experiment in brief.
- (5) Explain the role of DNA methylation in eukaryotes.
- (6) State the difference between induce and random mutation.
- (7) Explain the TATA box.
- (8) Define inversion chromosomal abbreviation.
- (9) What are the benefits of the speciation?
- (10) Describe the genetic mapping in brief.

Q.2 Answer the following (any two out of three, each of **seven marks)****14**

- (1) Explain the basic principle of independent assortment of Mendalian genetics.
- (2) Explain the Hardy-Weinberg genetic equilibrium and mention its importance.
- (3) Explain the basic principle and theories of the organic evolution.

Q.3 Answer the following**14**

- (1) Explain the DNA methylation in detail. [5]
- (2) Explain the structure of nucleic acids in prokaryotic and eukaryotic. [5]
- (3) Write a note on c-value paradox. [4]

OR**Q.3 Answer the following (each of **seven** marks)****14**

- (1) Explain genetic linkage.
- (2) Explain the DNA replication in prokaryotic organism.

Q.4 (A) Answer the following (any two out of three, each of **five marks)****10**

- (1) Describe the Transcription.
- (2) Write a note on regulation of gene expression.
- (3) Write a note on post translational modification.

Q.4 (B) Answer the following (any One out of two)**04**

- (1) Write a note on gene structure.
- (2) Write note on genetic code.

Q.5 Answer the following (any two out of four, each of **seven marks)****14**

- (1) Explain DNA repair mechanisms.
- (2) Write a note on spontaneous mutation.
- (3) Explain the chromosomal inheritance.
- (4) Discuss induce mutation in detail.
