

Roll No. ....

(05/25)

**5185**

**B.Sc. EXAMINATION**

(For Batch 2011 to 2023 Only)

(Second Semester)

BOTANY

Paper-II

Genetics

*Time : Three Hours*

*Maximum Marks : 40*

**Note :** Attempt *Five* questions in all, selecting *two* questions from each Unit. Question No. 1 is compulsory.

**Compulsory Question**

1. Answer briefly : **8×1=8**

- (i) Name the scientists who proposed the double helix model of DNA.

- (ii) What is genetic linkage ?
- (iii) Define Genetic Code.
- (iv) What are complementary genes ?
- (v) What is the modern concept of a gene ?
- (vi) What are Ribosomes ?
- (vii) What molecule carries amino acids to the ribosome ?
- (viii) What are transposable genetic elements ?

### Unit I

- 2. (a) Describe any *one* experiment to prove that DNA is the genetic material. 5
- (b) Write a brief note on Nucleosome model. 3
- 3. Give an account of DNA replication with the help of diagrams. 8

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- 4. (a) Describe Mendel's Law of Segregation with a suitable example. 6
- (b) Differentiate between test cross and back cross. 2
- 5. (a) What is supplementary gene interaction ? Explain it with a suitable example. 6
- (b) Differentiate between Incomplete Dominance and Codominance. 2

### Unit II

- 6. (a) Describe the types and functions of RNA. 6
- (b) Differentiate between spontaneous and induced mutations. 2
- 7. With diagrams explain the process of translation in prokaryotes. 8

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8. (a) Explain, how is the tryptophan operon regulated in prokaryotes ? 6
- (b) Write a note on 2-D structure of proteins. 2
9. What is extra-nuclear inheritance ? Write a short note on mitochondrial DNA and its functions. 8

