

B.Sc. (Biotechnology) 3rd Semester

GENETICS

Paper : BT—6

Time Allowed—3 Hours]

[Maximum Marks—40

SECTION—A

1. Write brief notes on the following :

- (i) Compare structure of Centromere and Telomere.
- (ii) Induced Mutations.
- (iii) Map distance.
- (iv) Transduction.
- (v) Thymine Dimer.
- (vi) Co-dominance.
- (vii) Complete Linkage.
- (viii) Pleiotropism. 8×1=8

SECTION—B

Note :— Attempt any **five** questions at least **one** from each unit. Each question carries **4** marks.

UNIT—I

- 2. Illustrate and describe the structure of Nucleosome.
- 3. What is a karyotype ? How are chromosomes classified based on their structure ?

UNIT—II

- 4. Giving a suitable example enunciate Mendel's law of Segregation of characters.
- 5. Explain the causes of modification of F2 ratios due to epistasis.

UNIT—III

- 6. Discuss molecular mechanism underlying chiasmata formation.
- 7. Describe coupling and repulsion hypothesis to explain gene linkage.

UNIT—IV

- 8. Discuss the process of conjugation in bacteria.
- 9. Briefly write various types of physical mutagens.

4×5=20

SECTION—C

Note :— Attempt any **two** questions.

- 10. Discuss Chromosomal theory of Linkage and its significance. 6
- 11. Discuss Mendel's Laws of Inheritance of characters. With suitable examples describe a dihybrid cross to explain the laws. 6
- 12. Describe the structure of following types of chromosomes :
 - (a) Lampbrush chromosome
 - (b) Satellite chromosome
 - (c) Supercoiled DNA. 6
- 13. Explain the molecular mechanisms underlying mutagenesis by various chemicals. What is the use of mutagenesis in biological studies ? 6