Exam. Code : 107403
Subject Code : 2206

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) Pleotropism. 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