B.Sc. (Hons.) 3rd Semester

1125

BIO-TECHNOLOGY

Paper : BIOT-Sem–III–IV–T : Plant Tissue Culture

Time Allowed : Three Hours]   **[Maximum Marks : 67**

Note :– Attempt **five** questions in all by selecting **one** question from each Unit. Section A is compulsory.

SECTION–A

1. **Compulsory Question :**

    (a) What is Non-disjunction ?

    (b) Define Position Effect.

    (c) Define Coefficient of Coincidence.

    (d) What is Recombination Frequency ?

    (e) Maternal Inheritance or Cytoplasmic Inheritance ?   3×5

UNIT–I

2. (a) Describe the Mendel's Law of segregation with examples showing the segregation in F1 and F2 generation.   6

(b)   Discuss the results obtained by Morgan in his experiments related to sex linked genes in *Drosophila melanogaster*.

7

3.   (a)   What is Non-disjunction and how it helps to prove the chromosomal theory of inheritance ?   6

(b)   Describe the various types of numerical chromosomal aberrations with example.   7

UNIT–II

4.   (a)   Give the reason for obtaining 9 : 7 and 13:3 ratios in certain crosses. Explain with example and checkerboard.   6

(b)   How are genes mapped on a chromosome on basis of recombination and linkage ?   7

5.   (a)   How is somatic cell hybridization used for gene linkage studies ?   7

(b)   Give an account of three hereditary effects and their genetic basis in humans.   6

UNIT–III

6.   (a)   What do you understand by gene and genotype frequencies ? Derive the law which gives the mathematical relationship between the two.   7

(b)   Give an account of Chemical Mutagens.   6

7. Give a detailed account of various kinds of mutation induced by chemical and physical mutagens. 13

UNIT–IV

8. What is one gene–one enzyme hypothesis ? How are mutations found out in any biochemical pathway ? Explain with example.

13

9. (a) What are the various types of transduction that occur in bacteria ? 8

(b) How are auxotrophs isolated ? 5