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(July)

BOTANY

(Honours)

(Genetics, Plant Breeding Molecular Biology)

(BOTELH–601)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions in total. Question No. **1** is compulsory. Answer the remaining **four** questions, selecting **one** from each Section

1. Write short notes on the following : 4×4=16

(a) Epistasis

(b) Aneuploidy

(c) Artificial selection

(d) Bacterial conjugation

SECTION—I

2. *(a)* Explain Mendel's law of Independent Assortment. 5

(b) Write an explanatory note on chromosomal theory of inheritance. 5

3. Describe the various stages of prophase 1 of meiosis in a typical plant cell. Mention its importance. 8+2=10

SECTION—II

4. What is chromosomal aberration? Describe the different types of chromosomal structural aberrations. 2+8=10

5. Write short notes on the following : 5+5=10

(a) Cytoplasmic male sterility

(b) Types of chromosomal sex determination in plants

SECTION—III

6. Differentiate between the following : 5+5=10

(a) Heterosis and inbreeding depression

(b) Mass selection and pure-line selection

7. What do you understand by the term crop domestication? With the help of suitable examples, describe the role of spontaneous mutations in crop evolution. 2+8=10

SECTION—IV

8. Write a detailed account of the mechanism of protein synthesis in prokaryotes. 10

9. Discuss the following : 5+5=10

(a) Bacterial transformation

(b) Regulation of lac operon in *E. coli*

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