

**6/H-62 (vii) (Syllabus-2015)**

**2 0 2 2**

**( May/June )**

**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) Centromere**

**(b) Cytoplasmic male sterility**

**(c) B-DNA**

**(d) Hybridization**

( 2 )

SECTION—I

2. Describe different sub-stages of Prophase I with suitable diagrams. Mention the significance of meiosis. 5+2+3=10
3. What is a duplicating factor? With the help of a suitable example, explain duplicate gene interaction. Why this interaction is considered as a dihybrid cross and not a monohybrid cross? 2+6+2=10

SECTION—II

4. What are sex chromosomes? Give an account of different types of chromosomal sex determination in plants with examples. 2+8=10
5. What is chromosomal aberration? Describe different types of chromosomal structural aberrations in plants with illustrations. 2+6+2=10

SECTION—III

6. Describe the methods of pure line selection for crop improvement. Mention its advantages and disadvantages. 6+4=10
7. Discuss the role of gene mutation in crop improvement. 10

( 3 )

SECTION—IV

8. Explain the operon concept of regulation of gene expression taking 'lac operon' as an example. 10
9. Give an account of mechanism of protein synthesis in prokaryotes. 10

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