

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

2018

(April)

BOTANY

(Honours)

(Genetics, Plant Breeding, Molecular Biology)

(BOTH-601)

Marks : 56

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

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

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

- (a) Operon concept**
- (b) Multiple allilism**
- (c) Chromosomal deletions**
- (d) Advantages of mass selection**

(2)

SECTION—I

2. Give a detailed account of Meiosis-I with suitable diagrams and mention its significance. 5+2+3=10
3. What is gene interaction? With the help of suitable examples, explain the term 'epistasis'. What is the significance of epistasis? 2+5+3=10

SECTION—II

4. What are sex chromosomes? Give an account of the mechanism of chromosomal sex determination. 2+8=10
5. What is cytoplasmic inheritance? Explain the phenomenon of cytoplasmic inheritance in variegated leaves of *Mirabilis*. 2+8=10

SECTION—III

6. What is the importance of hybridization in crop improvement? Describe the procedure of hybridization in self-pollinated crops. 3+7=10
7. Differentiate between heterosis and inbreeding depression. Explain the significance of heterosis in plant breeding. 4+6=10

(3)

SECTION—IV

8. Give an account of the mechanism of protein synthesis in prokaryotes. 10
9. Discuss the following : 5+5=10
- (a) Clover leaf model of tRNA
- (b) Bacterial transduction

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**(Plant Reproductive Biology and
Plant Biotechnology)**

(BOTH-602)

Marks : 56

Time : 3 hours

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for the questions*

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

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

(a) Microgametogenesis in angiosperms

(b) Synergids and their functions

(c) Cellular totipotency

(d) Restriction enzymes

SECTION—I

- 2. With the help of suitable diagrams, describe the pollen-pistil interaction. 10
- 3. Give a detailed account of pollen morphology and its role in taxonomy with suitable illustrations. 10

SECTION—II

- 4. Write brief notes on the following : 5+5=10
 - (a) Polyembryony
 - (b) Monosporic embryo sac
- 5. Describe the structure and function of endosperm and its haustoria. 10

SECTION—III

- 6. Explain the production of haploid plants from anthers with the help of suitable diagrams. 10
- 7. Write short notes on any four of the following : $2\frac{1}{2} \times 4 = 10$
 - (a) Organogenesis
 - (b) Cryopreservation

- (c) Somatic hybrids
- (d) Meristem culture
- (e) Artificial seeds

SECTION—IV

- 8. What is Ti plasmid? With suitable diagram, describe how Ti plasmid is used as vector in genetic engineering. 10
- 9. Write short notes on the following : $2\frac{1}{2} \times 4 = 10$
 - (a) Sticky end legation
 - (b) Significance of CRY gene in resistance against pests
 - (c) BLAST
 - (d) Reverse transcriptase
