

**M. Sc. (Final) Examination, 2001**  
**BOTANY**  
**Second Paper**  
**(Cytology and Molecular Biology, Genetics and Plant**  
**Breeding)**

Time—Three Hours  
Maximum Marks—100

Attempt **FIVE** questions in all,  
selecting at least **TWO** questions from each section.  
All questions carry equal marks.

**SECTION A**

1. What is linkage? Give mechanism of gene mapping on the chromosome. **20**
2. Write detailed account of the following:
  - (a) Molecular mechanism of mutations
  - (b) Properties and decipheration of genetic code. **10+10**
3. Give structure, chemistry and functions of various enzymes of DNA replication. **20**
4. Write critical account of the following
  - (a) DNA sequencing or genomic cloning
  - (b) transposable elements.

**OR**

- Nature and concept of gene. **10+10**
5. Write notes on the following:
  - (a) Nucleosome
  - (b) Programming of morphogenesis in higher plants
  - (c) Synthesis of exportable protein. **6+6+8**

**SECTION B**

6. Give inheritances of the following:
  - (a) Coiling in snails
  - (b) Self-sterility in plants. **10+10**
7. Give detailed account of the following
  - (a) Graft hybrids
  - (b) Quantitative traits and their inheritances. **10+10**
8. Give an account of Breeding systems as basis of heritable variations. **20**

9. Write an account of cytology, 'origin, genetics and improvement work done in wheat. **20**

10. Write short account of the following:

- (a) Synthetic varieties
- (b) Hybrid vigour and Maize breeding
- (c) Inbreeding depression.

**7+7+6**