**Agriculture Test - 3**

**Instructions: Time: 2.5 hrs**

1. All questions are compulsory.
2. Section A : 150 Words ; 10 Marks
3. Section B : 200 Words ; 12.5 Marks
4. Section C : 200 Words; 12.5 Marks
5. Section D: 200 Words ; 12.5 Marks

**Section A**

**Answer the following:**

1. Briefly describe the salient features of cytoplasmic inheritance and give the reasons therefor.
2. Discuss the usefulness of autopolyploidy in crop improvement.
3. Briefly describe the molecular mechanisms involved in heterosis.
4. Which measure of heritability will be appropriate for selection in a mixture of homozygous lines and for segregating generations. Explain the basis for your answer.
5. Discuss the usefulness of field inspection for seed certification.

**Section B**

**Discuss/Explain the reasons for the following:**

1. Purelines become genetically variable with time.
2. Interspecific hybrids show variable degrees of sterility.
3. Horizontal disease resistance is preferable to vertical resistance.
4. Cross-pollinated species show more inbreeding depression than self-pollinated species.

**Section C**

**Write short notes on the following:**

1. Sex-influenced and sex-limited characters
2. Genetically modified food
3. Classes of improved seed
4. Protection of Plant Varieties and Farmer’s Rights Act (2001)

**Section D**

**Explain the following:**

1. Genetic consequences of repeated backcrossing
2. Usefulness of somatic hybridization for creating genetic variation
3. Transgenic plants for disease/insect resistance
4. DNA fingerprinting in plant variety registration/protection