

Serial No.

0019

D-VSF-L-NTB

AGRICULTURE

Paper II

Time Allowed : Three Hours

Maximum Marks : 200

INSTRUCTIONS

Candidates should attempt questions 1 and 5 which are compulsory, and any THREE of the remaining questions selecting at least ONE question from each Section.

The number of marks carried by each question is indicated at the end of the question.

Answers must be written in ENGLISH.

SECTION—A

1. Attempt any **FOUR** of the following in about **150** words each :— 4×10=40
- (a) Briefly explain the concept of independent assortment, and discuss the reasons for its failure. 10
- (b) List the various systems of male sterility. Briefly describe the two-line and three-line systems of heterosis breeding giving suitable examples. 10
- (c) Define isolation distance, and discuss its significance in seed production with reference to



(Contd.)

- the mode of pollination of crops, giving suitable examples. 10
- (d) Define seed dormancy, and discuss its significance for crop production. 10
- (e) Explain the meaning of marker-assisted selection, and briefly describe its unique advantages and the important limitations. 10
2. (a) Briefly discuss the various strategies for breaking yield plateau: 10
- (b) Explain the meaning of germplasm. Briefly describe the various biotechnological approaches for germplasm conservation. 10
- (c) What are modifying genes ? Discuss their confusing effects, and uses in crop improvement. 10
- (d) Give the meaning of truthful seed, and discuss its significance to Indian agriculture. 10
3. Write short notes on the following in about 150 words each :—
- (a) Complementation test
- (b) Genetic consequences of long-term seed storage
- (c) Guttation
- (d) Biotype differentiation. $4 \times 10 = 40$
4. Differentiate between the following in about 150 words each :—
- (a) C_3 and C_4 plants
- (b) Micro- and mega-gametogenesis
- (c) Broad and narrow sense heritability
- (d) Pleiotropy and linkage. $4 \times 10 = 40$



(Contd.)

SECTION—B

5. Attempt any **FOUR** of the following in about **150** words each :— 4×10=40
- (a) Define graft incompatibility and explain its causes. 10
 - (b) Describe the ecological classification of fruits with examples. 10
 - (c) Define hypersensitive reaction, and explain its mechanism. 10
 - (d) Define preservation of perishable crop produce, and explain its objectives. Briefly describe the different methods of vegetable preservation. 10
 - (e) Define 'economic threshold' for an insect pest, and discuss its relevance to pest management. 10
6. Differentiate between the following. Support your answers with specific examples :—
- (a) Catabolism and anabolism
 - (b) Macro- and micro-nutrients of plants
 - (c) Maturity and ripening of fruits
 - (d) Mycoparasitism and mycophagy. 4×10=40
7. Write short notes on the following, with specific examples, in about **150** words each :—
- (a) Nutritive value of Indian foods
 - (b) Respiratory changes during ripening of fruits
 - (c) Arid zone horticulture
 - (d) Granulation formation in citrus fruits. 4×10=40

8. (a) Describe the package of practices adopted in rose flower production for export. 10
- (b) What are the main constituents of fruits ? Describe their role in human nutrition. 10
- (c) Describe the potato production technology with reference to varieties, nutritional requirements, sowing time, seed rate and plant protection methods. 10
- (d) Briefly discuss the reasons for malnutrition among the Indians. 10