

AGRICULTURE

Paper – II

Time Allowed : **Three Hours**

Maximum Marks : **200**

Question Paper Specific Instructions

Please read each of the following instructions carefully before attempting questions :

*There are **EIGHT** questions in all, out of which **FIVE** are to be attempted.*

*Questions no. **1** and **5** are compulsory. Out of the remaining **SIX** questions, **THREE** are to be attempted selecting at least **ONE** question from each of the two Sections A and B.*

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

*Answers must be written in **ENGLISH** only.*

SECTION A

- Q1.** (a) What is the principle of independent assortment in inheritance of genes ? Describe the experiment used by Mendel. 8
- (b) Explain the mechanisms which promote cross-pollination. 8
- (c) Why is quarantine regulation on seeds needed ? Explain the actions to be recommended for this purpose. 8
- (d) Describe the factors affecting the rate of transpiration and its significance in crop production. 8
- (e) Discuss the genetic basis of heterosis and inbreeding depression. 8
- Q2.** (a) What is polyploidy ? Define the ways in which polyploidy can occur. 15
- (b) What is micropropagation ? Discuss its advantages. Name the types of explants used in micropropagation in important crops. 15
- (c) Explain how synthetic varieties are produced and indicate their merits. 10
- Q3.** (a) Differentiate between linkage and crossing over. Did Mendel recognize the phenomenon of linkage ? Explain. 15
- (b) What is distant hybridization ? Explain how it is used for developing new varieties. 15
- (c) What are the characters of purelines ? Describe the procedure for pureline selection with achievements made in agriculture. 10
- Q4.** (a) Describe somaclonal variation and its importance. Discuss the causes and factors influencing such variation. 15
- (b) What is dormancy of seed ? Explain the causes of seed dormancy and methods to break the dormancy. 15
- (c) Discuss the photosynthetic pigments in plants and the factors influencing photosynthesis. 10

SECTION B

- Q5.** (a) What are plant growth regulators ? Explain the functions of auxins in plants and mechanism of their action. 8
- (b) Describe the package of practices for banana cultivation in North India. 8
- (c) What are the challenges in fruit and vegetable marketing in India ? Suggest suitable remedial measures. 8
- (d) Define acellular plant pathogens and discuss their mode of natural transmission. Name five acellular pathogens and symptoms induced by them in potato. 8
- (e) Discuss the national plan for supply and distribution of food grains. 8
- Q6.** (a) Describe the procedures involved in Hi-tech nursery production. 15
- (b) What are baculovirus and entomopathogenic fungi ? Discuss their role in pest management. 15
- (c) Discuss the relation of food production to national dietary pattern and protein-energy malnutrition. 10
- Q7.** (a) Discuss the following : 5×3=15
- (i) Physiological disorders in cauliflower
- (ii) Physiological disorders in tomato
- (iii) Quincunx system of orchard planting
- (b) Describe the biology, nature of damage and management of the following stored grain pests : 5×3=15
- (i) Lesser grain borer
- (ii) Pulse beetle
- (iii) Rice moth
- (c) Describe the influence of photoperiodism and vernalisation in flowering of plants. 10

- Q8.** (a) Explain the methods to prolong vase-life of cut flowers. 15
- (b) Describe the following : $5 \times 3 = 15$
- (i) Neonicotinoid insecticide
 - (ii) Systemic fungicide
 - (iii) Insecticide granules
- (c) Describe the systematic position, nature of damage and management of the following : $4 + 3 + 3 = 10$
- (i) Chilli thrips
 - (ii) Fall armyworm
 - (iii) Citrus greening