

AGRICULTURE (Paper II)

Time Allowed : Three Hours

Maximum Marks : 300

QUESTION PAPER SPECIFIC INSTRUCTIONS

(Please read each of the following instructions carefully before attempting questions)

There are EIGHT questions divided in two Sections.

Candidate has to attempt FIVE questions in all.

Question Nos. 1 and 5 are compulsory and out of the remaining, any THREE are to be attempted choosing at least ONE question from each Section.

The number of marks carried by a question/part is indicated against it.

Wherever any assumptions are made for answering a question, they must be clearly indicated.

Word limit in questions, wherever specified, should be adhered to.

SECTION 'A'

1. Answer the following questions in about 150 words each:
12×5=60
 - (a) Describe different types of structural variations in chromosomes. Mention its genetic implications.
 - (b) What is marker-assisted selection? Discuss its advantages over conventional phenotype-based selection in crop improvement.
 - (c) What are male sterile lines? Describe its role in seed production.
 - (d) What are phytohormones? Describe the physiological roles of auxins and gibberellins in plants.
 - (e) What are the causes of pest outbreak? Discuss the role of pesticides in pest resurgence.
2. Answer the following in about 200 words each:
15×4=60
 - (a) What is cell cycle? Describe different stages of interphase of mitosis.
 - (b) What is detasselling? How it helps in hybrid breeding?
 - (c) What is host plant resistance? Give a detailed account of the biophysical and biochemical bases of resistance.
 - (d) Define the term stress. Give an account on how water deficit is created inside the tissue system in relation to injury and tolerance mechanism.
3. Answer the following in about 200 words each:
15×4=60
 - (a) Define heterosis. Discuss its application in crop improvement.
 - (b) “Genetic erosion caused by human activities is a threat to agriculture” – Comment.
 - (c) Differentiate between seed vigour and viability. How are the two assessed in a seed testing programme?
 - (d) Discuss the role of transgenic technology for enhancing shelf life of fruits, vegetables and flowers.
4. Write short notes on the following in about 200 words each:
15×4=60
 - (a) Phytoalexins

- (b) Plant breeder's right and variety protection
- (c) Gene for gene hypothesis
- (d) Microbial pesticides and their use in agriculture

SECTION 'B'

5. Answer the following in about 150 words each:

12×5=60

- (a) Define parthenocarpy. What are the different types of parthenocarpy in fruits? How can it be induced in fruits?
- (b) Describe in detail occurrence, symptoms, etiology, epidemiology and management of apple scab disease.
- (c) What is landscape architecture? State the principles of landscaping. What are the steps involved in landscaping a public place?
- (d) What is legislative control? Write various acts on pest control legislation adopted in India.
- (e) What is protein energy malnutrition (PEM)? Discuss reasons for malnutrition among children.

6. Answer the following in about 250 words each:

20×3=60

- (a) What is aerobic respiration? Describe the Krebs cycle reactions and discuss its significance in plant life.
- (b) Write the causes responsible for alternate bearing in mango and apple. Suggest effective measures to overcome the problem.
- (c) What do you mean by "Intellectual Property"? How can the Intellectual Property be protected? What is the relevance of Intellectual Property Right (IPR) in agriculture?

7. Answer the following in about 200 words each:

15×4=60

- (a) Write commercial cultivation practices of Anthurium with reference to microclimate, propagation and planting, harvesting and yield of Anthurium cutflowers.
- (b) Describe the diagnostic symptoms, etiology and management of rhizome rot of ginger or bacterial wilt of solanaceous crops.
- (c) Describe the production technology for Orchids under protected conditions.
- (d) What are the abiotic and biotic factors responsible for citrus decline? Suggest remedial measures to combat the problem.

8. Write short notes on the following in about 150 words each:

12×5=60

- (a) Antioxidant rich fruits and vegetables
- (b) Satellite viruses
- (c) Plant biosecurity
- (d) Over dominance hypothesis
- (e) Phytosanitary measures