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.

Question Nos. **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.

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

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.

Answers must be written in ENGLISH only.

SECTION—A

1. *(a)* Describe the mode of origin and growth of a cell wall with its functions. 8

(b) Explain the pre- and post-harvest factors affecting the seed quality of a crop during seed production. 8

(c) Describe chemically induced male sterility and its importance in crop improvement and seed production. 8

(d) Discuss various factors affecting enzyme activity in plants. 8

(e) Explain the molecular markers approach in crop improvement. 8

2. *(a)* Differentiate between the following : 5×3=15

(i) Sex-linked and sex-limited characters

(ii) C_3 and C_4 plants

(iii) Epistasis and dominance gene interaction

(b) Explain the method of recurrent selection. Write the importance of combining ability in crop improvement. 15

(c) Explain the mechanism of interphase in mitosis cell division. 10

3. *(a)* Describe the detailed structure of deoxyribonucleic acid (DNA) as prepared by Watson and Crick with suitable diagram. 15

(b) Describe backcross method of plant breeding and its application in development of biotic stress tolerant or resistant varieties with suitable examples. 15

(c) Discuss the role of public and private sector organizations in seed production and marketing in India. 10

4. *(a)* What is seed treatment? Discuss the role of quality seeds in success of seed production programmes. 15

(b) Explain the methods for creating the variability. How are the types of selection responsible for population improvement in crop plants? 15

(c) What is imbibition? Differentiate between osmosis and diffusion. 10

SECTION—B

5. *(a)* Describe the preventive and curative methods for management of storage pests in pulses. 8

(b) Describe the principles of fruits and vegetables preservation. 8

(c) Discuss the strengths and weaknesses of Public Food Distribution system in India. 8

(d) Discuss the principles and components of integrated pests and diseases management. 8

(e) Describe the role of brassinosteroids and salicylic acid hormones in agriculture. 8

6. *(a)* Describe in detail the package of practices for onion cultivation in India. 15

(b) Discuss the growth and development in plants. Describe various parameters for measuring the plant growth. 15

(c) Discuss the high density planting system in fruit crops along with suitable examples and advantages of the system. 10

7. *(a)* Describe the role of under-utilized fruits and vegetables in human nutrition with suitable examples. 15

(b) Describe the biological control methods of pests and diseases with respect to organic and natural farming. 15

(c) Describe the management of fungal and bacterial diseases of major vegetable crops. 10

8. *(a)* Discuss the iron and protein malnutrition in India. Describe the dietary pattern for mitigating the above-said malnutrition. 15

(b) Enlist the cut flower ornamental crops grown in India. Describe the off season production technology for chrysanthemum. 15

(c) Discuss the integrated management of nematodes in fruits and vegetables. 10

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