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.

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

1. *(a)* Why is Golgi body called as Golgi body or dictyosome? Briefly describe the morphology and functions of Golgi body. 8

   (b) Give a concise account on merits and demerits of mass selection. 8

   (c) Describe the major differences between scientifically produced seed and the grain (when used as seed). Also discuss the quality characteristics of seed. 8

   (d) Explain diffusion pressure and its significance in plants. Also discuss the various factors influencing the rate of diffusion. 8

   (e) Explain the right approaches for breeding of crop varieties for wide adaptability. 8

2. *(a)* What do you understand by somatic and meiotic crossing-over? Discuss the mechanism of meiotic crossing-over. 15

   (b) Discuss the technique of producing virus-free nucleus stock in potato. 15

   (c) Briefly discuss the biotechnological approaches for increasing yield and quality of oil. 10

3. *(a)* Distinguish between imbibition and permeability. Also discuss the importance of imbibition in plants and the factors affecting it. 15

   (b) What do you understand by spontaneous mutations, induced mutations and mutation rate? Describe the practical applications and significance of mutations in cereal crops. 15

   (c) Enlist the breeding methods for disease resistance in crop plants and discuss hybridization method in detail with suitable examples. 10

4. *(a)* What is cytoplasmic-genetic male sterility? Discuss about the development of new male sterile and restorer lines with the help of examples and suitable diagrams. Also explain the limitations of cytoplasmic-genetic male sterility in hybrid seed production of crops. 15

   (b) Write in detail about the mechanism of water absorption in plants. Explain the factors influencing the rate of water absorption. 15

   (c) Explain *in situ* and *ex situ* germplasm conservations. 10

SECTION—B

5. *(a)* Write in detail about different phases of growth and growth curve. Also explain the determinate and indeterminate types of growth in crops with suitable examples. 8

(b) Write the symptoms and management of late blight and golden cyst nematode in potato. 8

(c) Discuss the importance of fruits and vegetables in human nutrition. 8

(d) Write the symptoms and management of shoot and fruit borer in brinjal and diamondback moth in cabbage. 8

(e) How is food consumption trend in Indian population changing in relation with availability of crop produces and socio-economic factors? 8

6. *(a)* Write in detail about the occurrence, transport, site of synthesis and bioassay of abscisic acid in plants. Also explain the effect of abscisic acid on various plant physiological processes. 15

(b) Discuss the following in respect of turmeric cultivation :

(i) Climate and soil

(ii) Varieties, seed rate and planting

(iii) Manures and fertilizers

(iv) Cultural operations

(v) Post-harvest processing 3×5=15

(c) Discuss in detail about apple scab and its management. 10

7. *(a)* Enumerate the major insect-pests which affect wheat crop produce qualitatively and quantitatively during storage. Describe the preventive and control measures for management of storage insect-pests in cereals. 15

(b) Discuss the following post-harvest processes with reference to fruits and vegetables :

(i) Curing

(ii) Degreening

(iii) Pre-cooling

(iv) Disinfestation

(v) Sorting and grading 3×5=15

(c) Explain the role of ethylene in plants. 10

8. *(a)* Describe the following :

(i) NAFED

(ii) The Targeted Public Distribution System

(iii) Buffer stock operations

(iv) Coffee Board

(v) Food production and nutrition 3×5=15

(b) Give a lucid account on the principal biotic agents and the methods of their use in horticultural crops. 15

(c) Briefly discuss the methods of lawn making in India. 10

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