A-0015

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MSCBOT-507

M.Sc. BOTANY (MSCBOT)

(Cytogenetic and Plant Breeding)

2nd Semester Examination, Session December 2024

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

(Long Answer Type Questions) 2×19=38

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. Give a detailed account on role of plant breeding for disease resistance. Discuss the advantages to develop disease resistance varieties of plants.

2. Describe the role of chloroplast and mitochondria in the cytoplasmic inheritance.

3. Write explanatory notes on the following :

   (a) Environmental Mutagens

   (b) Explain hormonal control of sex determination.

   (c) Hybridization technique

4. Write a detailed note on mechanism of crossing over and significance of the factors affecting crossing over. Describe the role of Crossing over in crop improvement.

5. Describe methods of plant breeding used in self-pollinated crops and cross-pollinated crops.

Section–B

(Short Answer Type Questions) 4×8=32

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Write the applications of apomixis in plant breeding.

2. How do alkylating agents cause mutations ?

3. Differentiate any *two* of the following :

   (a) Mass selection and pure line selection

   (b) Transition mutation and transversion mutation

   (c) Pedigree method and bulk method

4. Discuss the objectives of plant breeding.

5. Describe the methods of production of haploids. Explain the importance of haploids.

6. Briefly explain the overdominance hypothesis of heterosis.

7. Write a note on polyploidy breeding.

8. Write short notes on any *two* of the following :

   (a) Genetic basis of Apomixis

   (b) Multiple crossing over

   (c) Why Mendel didn't find linkage ?

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