D 121203 **(Pages : 2)** **Name.....**

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2025

(CBCSS)

Botany

BOT 4E01–6.—GENETICS AND CROP IMPROVEMENT

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Section A (Short Answer Type Questions)

Answer any **four** *questions.*
Each question carries 2 *weightage.*

1. What are the major breeding techniques used for rubber ?
2. What is CGIAR ? What is its role in crop research ?
3. What are the main reasons for conserving crop genetic resources ?
4. What is seed certification ?
5. What is plant domestication ?
6. Describe the reproductive system of cashew plants.
7. What are the principles of organic farming ?

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

Answer any **four** *questions.*
Each question carries 3 *weightage.*

8. Explain the concept of primary and secondary centres of diversity.
9. Describe the role of polyploidy in plant breeding.
10. Differentiate between sexual and asexual reproduction in crop plants.
11. What is mutation breeding, and how is it different from conventional breeding ?

Turn over

12. Describe the importance of gene banks in conserving crop genetic resources.

13. Explain distant hybridization and its significance in crop improvement.

14. What measures are in place to ensure biosafety in the cultivation of genetically modified crops ?

(4 × 3 = 12 weightage)

Section C (Long Essay Type Questions)

Answer any **two** *questions.*
Each question carries 5 *weightage.*

15. Describe the challenges and potential solutions in breeding crops for abiotic stress resistance.

16. Describe the genetic mechanisms underlying nitrogen fixation in plants, focusing on legumes. Discuss the role of symbiotic relationships and specific genes involved.

17. Discuss the role of seed certification and variety release procedures in ensuring seed quality and diversity.

18. Analyze the merits and demerits of genetically modified crops from environmental, economic, and ethical perspectives.

(2 × 5 = 10 weightage)