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Name.....

Reg. No.....

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2026**

(CBCSS)

Botany

BOT4E01.6—GENETICS AND CROP IMPROVEMENT

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Section A (Short Answer Type Questions)*Answer any **four** questions.*

1. Describe the origin and variability of rice.
2. Define crop genetic resources.
3. What is a mating system, and how does it influence plant reproduction and genetic diversity?
4. Define IPR.
5. What is the role of genetics in photosynthesis ?
6. Define intensive farming.
7. Differentiate between sexual and asexual reproduction in plants.

(4 × 2 = 8 weightage)

Section B (Short Essay Type questions)*Answer any **four** questions.*

8. Describe polyploidy breeding.
9. Describe the importance of gene banks in conserving crop genetic resources.
10. Discuss distant hybridization and its significance in crop improvement.
11. What is the major achievement in genetically modified crops ? Discuss with suitable example.

Turn over

12. What are the crop research institutes under CGIAR and their role in crop research ?
13. Describe the challenges and potential solutions in breeding crops for abiotic stress resistance.
14. Can you explain the difference between self-pollination and cross-pollination in plants, and what are the advantages and disadvantages of each mating strategy ?

(4 × 3 = 12 weightage)

Section C (Long Essay Type Questions)

*Answer any **two** questions.*

15. Describe mechanisms of nitrogen fixation in plants. Discuss the role of symbiotic relationships and specific genes involved.
16. Explain how genetic advancements and biotechnological approaches contribute to the production of improved seeds.
17. Discuss the merits and demerits of genetically modified crops. What measures are in place to ensure biosafety in the cultivation of genetically modified crops ?
18. What is mutation breeding, and how is it different from conventional breeding ? Explain.

(2 × 5 = 10 weightage)