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(Pages : 2)

Name.....

Reg. No.....

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

(CBCSS)

Botany

BOT 4E 02.3—GENETIC ENGINEERING

(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 is genetic code ?
2. What do you mean by gene expression ?
3. Briefly describe recombinant DNA technology.
4. What are the significance of cloned genes ?
5. Define transgenic plants.
6. What is DNA profiling ?
7. Differentiate between RAPD and AFLP markers.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

8. Explain different types of gene therapy.
9. Discuss the process of microinjection for gene transfer in plants.
10. Differentiate between chemical and enzymatic methods of DNA sequencing.
11. Discuss the potential benefits and challenges associated with using genetically engineered micro-organisms for pollution abatement.

Turn over

12. Describe the techniques in gel electrophoresis and its advantages in molecular biology.
13. Describe the methodology of PCR. What are different types of PCR ?
14. What is the significance of genetic engineering ? Discuss the advantages and potential concerns associated with transgenic plants.

(4 × 3 = 12 weightage)

Section C (Long Essay Type Questions)

*Answer any **two** questions.*

Each question carries 5 weightage.

15. How can nanotechnology be utilized to improve the efficiency or effectiveness of genetic engineering techniques ? Explain.
16. Explain the methodology of genetic fingerprinting, including the use of specific markers.
17. Explain the process of cloning genes for the production of vaccines and drugs.
18. What are different blotting techniques used for the isolation and separation of genetic materials in recombinant DNA technology ? Briefly explain each techniques.

(2 × 5 = 10 weightage)