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Name.....

Reg. No.....

**FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2024**

(CBCSS)

Botany

BOT4E02 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. Differentiate between prokaryotes and eukaryotes in their gene structure.
2. What is genetic code ?
3. Describe the process of gene expression.
4. What is recombinant DNA technology ?
5. What is nanotechnology, and how does it relate to genetic engineering ?
6. What is restriction mapping ?
7. Name the vaccines produced from-cloning-of genes.

(4 × 2 = 8 weightage)

Section B (Short Essay Type Questions)

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

8. What are the different types of gene therapy ? Explain.
9. Briefly explain southern, northern and western blotting techniques.
10. Describe the Agrobacterium-mediated gene transfer method in plants.

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11. Describe enzymatic methods of DNA sequencing.
12. What are the applications of DNA profiling in forensic science, paternity testing, and ecology?
13. Discuss the potential benefits and challenges associated with using genetically modified micro-organisms for pollution abatement.
14. Describe the techniques in gel electrophoresis.

(4 × 3 = 12)

Section C (Long Essay type questions)

Answer any two questions.

Each question carries 5 weightage.

15. Explain the different molecular markers and their significance in plant research and breeding programs.
16. Describe the methodology of PCR. What are the variations of PCR from the basic method? reverse transcriptase PCR, nested PCR, and inverse PCR?
17. Explain the process of cloning genes for the production of drugs and growth hormones.
18. Describe genetic engineering in creating transgenic plants. Discuss the advantages of transgenic plants.

(2 × 5 = 10)