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Reg. No.....

Name.....

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2022

Fourth Semester

Complementary Course—GENETIC ENGINEERING

[For B.Sc. Bioinformatics]

(2013—2016 Admissions)

Time : Three Hours Maximum Marks : 80

Part A (Short Answer Questions)

Answer **all** *questions.*
Each question carries 1 *mark.*

1. What is recombinant DNA ?
2. What is a selectable marker gene ?
3. What is the role of a restriction enzyme ?
4. What is a primer ?
5. Give 2 examples of 2 restriction endonucleases.
6. What is a cosmid ?
7. What is a RNA blot ?
8. What is a mutagen ?
9. What is a gene gun ?
10. What is HGT ?

(10 × 1 = 10)

Part B (Brief Answer Questions)

Answer any **eight** *questions.*
Each question carries 2 *marks.*

11. What are the advantages of genetic engineering ?
12. What is GMO ?

Turn over

13. What are polyclonal antibodies ?

14. What is conjugation ?

15. What is transfection ?

16. What is PCR ?

17. What is a plasmid ?

18. What is a bacteriophage ? What is it used for ?

19. What is the application of a DNA ligase ?

20. What is a protein immunoblot ?

21. What is electroporation ? On what organisms are they used on ?

22. What are the potential benefits of gene therapy ?

(8 × 2 = 16)

Part C (Descriptive/Short Essay Type Questions)

Answer any **six** *questions.*
Each question carries 4 *marks.*

23. What is a tumor-inducing plasmid ? How are they used in genetic and bio-engineering ?

24. What is a reverse transcriptase ? What is its role in genetic and bio-engineering ?

25. What are restriction endonucleases ? How are they beneficial for genetic engineering ?

26. Explain DNA-DNA hybridization briefly.

27. Explain gene transfer method in animals using Agrocbacterium.

28. Explain recombinant vaccines briefly.

29. Explain the role of various enzymes in genetic engineering.

30. Explain hybridoma technology for producing monoclonal antibodies.

31. Explain as a case study any one cDNA library.

(6 × 4 = 24)

Part D (Long Essay)

Answer any **two** *questions.*
Each question carries 15 *marks.*

32. Explain various approaches towards Site-directed Mutagenesis (SDM).

33. Explain various techniques of Polymerase Chain Reaction (PCR).

34. Explain western, northern and southern blotting techniques in detail.

35. Explain Sanger's method of nucleic acid sequencing.

(2 × 15 = 30)