

Reg. No. :

Name :

Fifth Semester B.Sc. Degree Examination, December 2023

Career Related First Degree Programme under CBCSS

Botany and Biotechnology

Vocational Course

BB 1571 : RECOMBINANT DNA TECHNOLOGY

(2019 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions in a **word** or **one** or **two** sentences.

Each question carries **1** mark.

1. What is meant by DNA restriction?
2. Name the bacteria from which Taq DNA polymerase is extracted.
3. Which enzyme is used for adding phosphate groups to nucleic acid during cloning?
4. Name a pUC series vector.
5. What is a shuttle vector?
6. Expand cDNA.
7. Name an antibiotic used for screening transformed cells.

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8. Expand RFLP.
9. Name the hybridisation technique used to identify specific proteins.
10. What is HGP?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight** questions. **Each** question carries **2** marks (Answer not to exceed **one** paragraph)

11. Differentiate between a sticky and blunt end cut.
12. What is the role of alkaline phosphatase in gene cloning?
13. What is bioethics?
14. Mention the function of reverse transcriptase.
15. What are adaptors used in gene cloning?
16. What is phagemid?
17. What is BAC? List its advantages.
18. Name any two restriction sites present in pBR322.
19. What is recombinant DNA?
20. How does calcium chloride make bacteria competent?
21. What is a binary vector in plant transformation?
22. State the significance of lac Z in cloning.

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks. (Answer not to exceed **120** words)

23. What is RAPD? Discuss the role of RAPD markers in crop improvement.
24. Write brief notes on the following enzymes.
(a) DNA ligase; (b) T4 Polynucleotide kinase and (c) Terminal transferase.
25. What are the characteristic features of a cloning vector?
26. Why are restriction enzymes important in cloning?
27. Enlist the similarities and differences between lambda phage and M13 phage.
28. Explain the vector mediated gene transfer in transgenic plants.
29. Describe the Sanger method of DNA sequencing.
30. Discuss on microarray technique used to study gene expression.
31. Explain the principle and applications of Southern blotting.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** questions. **Each** question carries **15** marks. (Answer not to exceed **three** pages)

32. Explain in detail Polymerase Chain Reaction and its applications.
33. Discuss various steps involved in the construction of a cDNA library. What are its applications?
34. What is DNA sequencing? Give a detailed account of Maxam-Gilbert method of DNA sequencing.
35. Explain various screening methods of recombinant clones.

(2 × 15 = 30 Marks)