C/L/TX

Reg. No:

Final Assessment Test – November 2024

VIT
Vellore Institute of Technology

Course: **TBIT203L - Genetic Engineering**

Class NBR(s): **1191 / 4124**

Slot: **D1+TD1**

Time: **Three Hours**

Max. Marks: **100**

➢KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
➢DON'T WRITE ANYTHING ON THE QUESTION PAPER

Answer ALL Questions

(10 X 10 = 100 Marks)

1. Explain the different types of restriction enzymes known to us? Which type of restriction enzyme is most suitable for genetic engineering purposes? Give your justification.

2. Some of the restriction endonucleases produce blunt ends after digestion. How will you add a sticky end to such a blunt-ended DNA molecule? Explain those methods with proper diagrams.

3. Distinguish the structural difference between the yeast artificial chromosome and bacterial artificial chromosome with diagram.

4. Outline the structure and discuss the key components of the lambda phage vector.

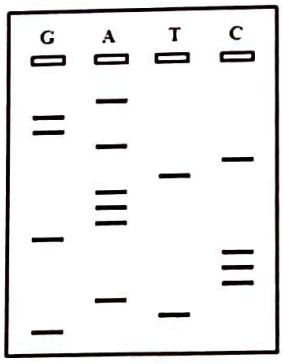
5. Demonstrate the chemical methods of gene transfer/delivery process.

6. Interpret the key steps involved in constructing genomic library and mention its applications.

7. Describe how the Southern blotting technique is used to detect target DNA fragment and list out its applications.

8. Identify a molecular biology method extensively employed for the amplification of DNA molecules. Discuss its fundamental principles, key components, and its significance in research and diagnostics.

9.a) Elaborate the Sanger's chain termination method of DNA sequencing. Also, interpret the sequence of the DNA sample from the given below sequencing result.



OR

9.b) A research team is planning to sequence a genome of a newly discovered bacterial strain. They are looking for an Ion semiconductor sequencing. Analyse the sequencing chemistry and data output of this platform?

10.a) Elucidate the recombinant DNA steps involved in the expression of insulin protein.

OR

10.b) Illustrate the different level of biosafety regulations and guidelines followed in the laboratory.

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