

B.Sc. Sem.-5 Examination

CC-301

Biotechnology

March-2025

Time : 2-30 Hours]

[Max. Marks : 70

Q.1. What are molecular markers? Describe RAPD, SNP and AFLP in detail with proper diagrams. (14)

OR

Q.1.A. Write an account of the genetic map of *E. coli*. (7)

Q.1.B. Write in detail various applications of the Human Genome Project. (7)

Q.2. Discuss Maxham-Gilbert and Sanger dideoxy sequencing method with a suitable diagram. (14)

OR

Q.2.A. Differentiate between DNA Finger printing and DNA foot printing. (7)

Q.2.B. Write the steps of Isolation of DNA from *E. coli*. (7)

Q.3. Explain in detail the steps and applications of Recombinant DNA Technology. (14)

OR

Q.3.A. Write a note on cDNA libraries. (7)

Q.3.B. Describe criteria for the selection of a good vector and explain plasmid vector with diagram (7)

Q.4. Explain operon models citing examples of positive and negative types of control (14)

OR

Q.4.A. Explain the Concept of Intron and Exon concerning controls in Eukaryotes. (7)

Q.4.B. Explain in short the regulatory mechanism involved in the lytic-lysogenic decision in bacteriophages. (7)

Q.5. Short Questions (Any 7) (14)

- 1) Write the importance of cytogenetic mapping.
- 2) Give the full form of RFLP and SSR
- 3) What is the application of FISH technology?
- 4) Define Pyrosequencing.
- 5) Name different types of restriction enzymes.
- 6) Name few tools of rDNA technology.
- 7) What is the difference between BAC and YAC?
- 8) What is the role of DNA methylation?
- 9) Write the genes present in Lac operon.
- 10) Draw the diagram of a plasmid vector.
- 11) What is the importance of blue-white screening?
- 12) Give two examples of virus based vectors.