Exam. Code : 107405

Subject Code : 1854

B.Sc. Biotechnology 5th Semester

rDNA TECHNOLOGY–A

Paper : BT-1

Time Allowed—3 Hours] [Maximum Marks—40

SECTION—A

1. Attempt **ALL** questions :— (1 mark each)

   (i) What is the function of RNase-H ?

   (ii) Who discovered restriction enzymes ?

   (iii) What are cosmids ?

   (iv) Write a short note on features of plasmids.

   (v) What is genetic transformation ?

   (vi) Why microprojectile is also called biolistic method of transformation ?

   (vii) How non isotopic probes are labelled using indirect method ?

   (viii) Write in two points the advantages of non-radioactive labelling.

SECTION—B

Note :— Attempt **FIVE** questions by selecting **ONE** from each unit. (4 marks each)

UNIT—I

2. Which DNA modifying enzymes are used to add or delete chemical groups to DNA ? Explain it.

3. How the catalytic activity of alkaline phosphatase is different from polynucleotide kinase ? Discuss the application of these enzymes.

UNIT—II

4. What are cosmids and phagemids vectors ? Discuss the critical difference between them along with their applications.

5. How genetic selection based on Hfl and Spi would allow the selection of recombinant phage ? Explain it.

UNIT—III

6. What is Northern blotting ? Explain the principle and method.

7. How nitrocellulose membrane is different from nylon membrane ? Write down their salient features and discuss the application.

UNIT—IV

8. Why probes need to be labelled ? How they are labelled and detected ?

9. Explain the direct and indirect method of non-isotopic probe labelling.

SECTION—C

Note :— Attempt any **TWO** questions. (**6** marks each)

10. What are the restriction enzymes ? Discuss the types, nomenclature and their cleavage patterns.

11. How lytic and lysogenic cycle in Lambda phage is different ? Explain and discuss it.

12. How electoporation method is different from $CaCl_2$ method of transformation ? Discuss the principle and their uses.

13. Explain the concept and labelling of non-radioactive gene probes.