**ST JOSEPH’S UNIVERSITY, BENGALURU -27**

Registration Number:

Date & Session:

**M.Sc. MICROBIOLOGY – III SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2023**

**(Examination conducted in November /December 2023)**

**MB 9121: RECOMBINANT DNA TECHNOLOGY**

**(For current batch students only)**

**Time: 2 Hours Max Marks: 50**

**This paper contains 2 printed pages and 4 parts**

**I. Answer any Five of the following 5 x 3 = 15**

1. Differentiate polynucleotide kinase with alkaline phosphatase.
2. Draw a neat labelled structure of Ti plasmid.
3. What metals are used in microprojectile bombardment technique and why are they used?
4. What are mini cells? Write their significance.
5. List the applications of DNA finger printing.
6. Define gene therapy. Write a brief note on the types of gene therapy.
7. What are excretion vectors? What advantages do they have in genetic engineering?

**II. Answer any Two of the following 2 x 5 = 10**

1. What features of type II restriction endonucleases make them an ideal enzyme to be used in genetic engineering?
2. Describe a technique to analyze expression of cloned genes at protein level.
3. How are plants made resistant towards insecticides by genetic engineering?

**III. Answer any Two of the following 2 x 10 = 20**

1. a. How does PCR amplify specific DNA fragments? 5 marks

b. What are micro arrays? List their types and features. 5 marks

1. a. Describe CRISPR/-Cas 9 technique that can bring in desirable changes in the genetic material. 7 marks

b. What are the applications of chemical synthesis of DNA? 3 marks

1. a. What are the consequences of environmental release of Genetically modified microorganisms? 5 marks
2. Illustrate the principle involved in blotting techniques. 5 marks

**IV. Answer the following 1 x 5 = 5**

1. A fungus was found to produce a polypeptide that had antibacterial property. How will you exploit this property and industrially produce the polypeptide by recombinant DNA approach?