

**MODEL QUESTION PAPER**

**MSC III SEM**

**BIOTECHNOLOGY**

**FIRST PAPER**

**GENETIC ENGINEERING**

**TIME: 3 HRS**

**MAXIMUM MARKS: 85**

**MINIMUM MARKS: 29**

*Note: The question paper consists of two sections: A and B. attempt all the questions according to the given instructions.*

**Section A**

**Short Answer Type Questions**

**Note: Attempt all questions. Each question carries five marks (5 X 5 = 25)**

Q1. Give concept and principle of cloning.

Or

Write a note on shuttle vector system.

Q2. Explain the design and characteristics of expression vectors.

Or

Write the features of Ti plasmid.

Q3. Write down the method for vector insert, ligation and transferring.

Or

Give an overview of gross anatomy of closed insert with respect to its size, restriction mapping and location.

Q4. Gives methods for locating cloned segment in genome?

Or

What are the methods for determination of copy number of a cloned gene in genome?

Q5. Write a short note on Northern blotting and its applications.

Or

What is gene silencing? Give its applications in agro industry.

## Section B

### Long Answer Type Questions

**Note: Attempt all questions. Each question carries twelve marks (5 X 12 = 60)**

Q6. What different types of enzymes are used in recombinant DNA technology? Give properties and role of each enzyme.

Or

What are the characteristics of vectors used for cloning in *E.coli*. Explain with taking plasmid as example.

Q7. What are the different methods of introduction of foreign DNA in animal system?

Or

Write notes on following vectors:

- a. Vaccinia virus
- b. Ri plasmid
- c. YAC
- d. PET based vector

Q8. How recombinant clones differ from transformed ones? What are the screening and selection criteria for obtaining recombinant clones?

Or

What are advantages and disadvantages of different types of libraries?

Q9. Write in detail the different methods of nucleotide sequence analysis.

Or

How mutants can be constructed and used in RDT

Q10. Write short notes on any two of the following:

- a. Gel mobility shift assay
- b. Chromosomal mapping
- c. Multiplex PCR

Or

Give in detail the applications of RDT in medicine and industry.