

M.Sc. (Micro) Semester - 3 (CBCS) Examination**Oct/Nov-2022 (NEW COURSE)****Genetic Engineering and Protein Engineering (Core (New))****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

SECTION-I**Q.1 Answer the following**

- A. Write a note on homopolymer tailing. **07**
B. Explain the enzymes DNA polymerase, reverse transcriptase, RNA polymerase and proteinase K used in genetic engineering. **07**

OR

- Q.1 Explain the types, cleavage site, and variant of restriction endonuclease. **14**

Q.2 Answer the following

- A. Explain the YAC with molecular functions of each gene. **07**
B. Explain pET vector and explain its advantage. **07**

OR

- Q.2 Discuss Cosmid and M13 phage with suitable mechanism and mention its application. **14**

Q.3 Do as direct (any seven)

- 07**
1. Describe applications of recombinant microbes.
2. Give advantages of BAC.
3. Explain the molecular function of Topoisomerase.
4. Define Alpha complementation.
5. What is the function and advantage of MCS?
6. Give the example of plant vector.
7. Explain the function of kinase.
8. Draw the labelled molecular map of pUC18 vector.

SECTION-II

- Q.1 Describe the genomic and cDNA library with molecular mechanism. **14**

OR**Q.1 Answer the following**

- A. Explain the southern blotting techniques. **07**
B. Explain PCR used as alternative library construction. **07**

Q.2 Write a note on

- A. Describe PCR used as site direct mutagenesis. **07**
B. Write about GST-tag purification. **07**

OR**Q.2 Answer the following**

- A. Write short on His-tag protein purification. **07**
B. Explain DNA microarray with its tools and techniques. **07**

Q.3 Do as direct (any seven)

- 07**
1. Biotechnological importance of GMO.
2. Give the examples of therapeutic protein.
3. Application of phage display systems for protein engineering.
4. Mention the uses of blotting in rDNA technology.
5. What are tools used in site direct mutagenesis?
6. Enlist the techniques used for bacterial typing.
7. What is inteins and exteins? explain its function.
8. What is reporter gene explain the function of it?
