

M.Sc. (Micro) Semester - 3 (CBCS) Examination**Oct/Nov-2021 (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**1. Answer the following**

- A. Write a note on restriction modification system. **07**
- B. Explain the concepts of homopolymer tailing in DNA ligation. **07**

OR

1. Write a note on type of restriction endonuclease and mention its molecular applications. **14**

2. Answer the following

- A. Write a short note on pBR322. **07**
- B. Explain alpha complementation in detail. **07**

OR

2. Explain the M13 and lambda vector and mention its molecular advantages. **14**

3. Do as direct (any seven)

1. Define chimeric vector in brief.
2. Define the function of DNase.
3. Draw the labelled molecular map of Cosmid vector.
4. Define the function of IPTG in screening.
5. Describe the function of LacZ gene in cloning.
6. Define MCS.
7. Define the function of Proteinase K.
8. Explain the function of reverse transcriptase in molecular biology. **07**

SECTION-II

1. What is genomic cDNA library? Describe the methods in detail. **14**

OR**1. Answer the following**

- A. Write a note on nucleic acid hybridization. **07**
- B. Explain differential cloning in detail. **07**

2. Write a note on

- A. Describe PCR used as site direct mutagenesis. **07**
- B. Explain Phage display for protein engineering. **07**

OR**2. Answer the following**

- A. Write short on His tag protein purification. **07**
- B. Write a note on DNA microarray. **07**

3. Do as direct (any seven)

1. What is role of GMO in genetic engineering? **07**
2. List various types of protein purification techniques.
3. Explain electroporation.
4. What is hybridization? explain in brief.
5. What is site direct mutagenesis?
6. Define reporter genes?
7. Discuss the application of therapeutic protein.
8. Mention the application microarray.