

M. SC. (BIOCHEMISTRY)
(MSCBCH)

Term-End Examination

December, 2024

**MBC–006 : RECOMBINANT DNA TECHNOLOGY
AND ITS APPLICATIONS**

Time : 3 Hours

Maximum Marks : 100

Note : Answer any **five** questions. All questions carry equal marks. Draw diagrams/flowchart wherever required.

1. (a) Give an account of enzymes used for manipulating DNA molecules in r-DNA technology. 10
- (b) Write the characteristic features and advantages of pBR322 as a cloning vector.

10

2. (a) Describe any *two* yeast vectors for cloning large DNA fragments. 10
(b) What is protoplast ? Explain the process of protoplast isolation. 10
3. (a) Give an account of methods by which transformed cells can be selected. 10
(b) Write a note on real time PCR (q-PCR) along with its applications. 10
4. (a) What is mutagenesis ? Discuss the applications of PCR based mutagenesis. 10
(b) Explain various components of an expression vector. 10
5. (a) What are synthetic oligonucleotide probes ? Explain their synthesis. 10
(b) Write applications of oligonucleotide probes. 10
6. (a) What is c-DNA ? Describe the construction strategy of c-DNA library. 10
(b) Explain various factors which affect the accuracy of RNA sequencing. 10

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7. (a) What is cassette mutagenesis ? List the applications of site-directed mutagenesis in agriculture. 10
- (b) Discuss somatic cell gene therapy and its types. 10
8. Write notes on the following : 10+10
- (a) Applications of plant genetic engineering in herbicide resistant crops
- (b) Regulatory aspects of r-DNA technology

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