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MBC-006

M.SC. IN BIOCHEMISTRY
(MSCBCH)

Term-End Examination
December, 2025

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 figures and flowchart wherever required.

1. (a) Describe the *two* types of DNA ligation methods. 10
- (b) Write the characteristic features and advantages of pUC as cloning vector. 10
2. (a) What are the limitations of plasmids and phage vectors in cloning ? 10

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- (b) Describe *Agrobacterium tumefaciens* as a plant cloning vector. 10
- 3. (a) Discuss the physical methods of transfection. 10
- (b) Write a note on reverse-transcription PCR (RT-PCR). 10
- 4. (a) Explain digital PCR (d-PCR) and its applications. 10
- (b) Discuss Lac and Trp operon and their applications. 10
- 5. (a) Describe detection of oligonucleotide probe. 10
- (b) Give an overview of the applications of oligonucleotide probes. 10
- 6. (a) Explain the strategies for the construction of genomic DNA library. 10
- (b) Discuss the Maxam-Gilbert method of DNA sequencing. 10
- 7. (a) Describe site-directed mutagenesis and its applications in medicine. 10
- (b) Explain the role of *r*DNA technology in production of human growth factors. 10

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8. Write notes on the following :

- (a) Biosafety levels and primary containment for biohazards. 10
- (b) Herbicide Resistant Crops and their different types. 10

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