No. of Printed Pages : 3

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

(b) Describe *Agrobacterium tumefacieas* 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

8. Write notes on the following :

   (a) Biosafety levels and primary containment for biohazards. 10

   (b) Herbicide Resistant Crops and their different types. 10

× × × × ×