

**MASTER OF SCIENCE (BIOTECHNOLOGY) (CBCS-2018 COURSE) M.Sc
(Biotechnology) Sem - II : WINTER : 2021
SUBJECT: GENETIC ENGINEERING**

Day : Tuesday

Date : 28-12-2021

W-19745-2021

Time : 10:00 AM-01:00 PM

Max.Marks 60

N.B.:

- 1) All Questions are **COMPULSORY**.
- 2) Both sections should be written in the same answer book.
- 3) Draw neat and labelled diagrams wherever necessary.

SECTION-I

- Q.1** Do as directed. (Attempt **Any Five**) **(10)**
- a) Write two important features of λ DNA
 - b) Define 'Genomic Library.'
 - c) Briefly explain the principle of Maxam-Gilbert Method.
 - d) Diagrammatically represent the use of adaptors in blunt end ligation.
 - e) Explain in brief 'tag vectors'.
 - f) Write four applications of multiplex PCR.
- Q.2** Answer the following (Attempt **Any Two**) **(10)**
- a) Explain the use of following enzymes in gene manipulation i) Nucleases ii) Polymerases iii) Kinases iv) Phosphatases v) Ligases.
 - b) Explain in detail different methods for cloning in plant cells.
 - c) Justify: DNA labelling is necessary in hybridization experiments.
- Q.3** Answer the following (Attempt **Any Two**) **(10)**
- a) What is full length c DNA cloning? Diagrammatically explain two strategies for the same.
 - b) State the principle of ' pyrosequencing'. Draw a neat & labelled diagram.
 - c) Explain in detail different genetic mapping techniques.

SECTION-II

- Q.4** Do as directed (Attempt **Any Five**). **(10)**
- a) State the principle of si RNA technology.
 - b) Write the names of four techniques used for transcript analysis.
 - c) Enlist four advantages of 'yeast' for production of recombinant proteins.
 - d) State the principle of " DGGE" technique.
 - e) Write four different non-viral gene delivery systems for gene therapy.
 - f) What is biopharming?
- Q.5** Answer the following (Attempt **Any Two**) **(10)**
- a) What are "reporter genes"? Give examples. Explain their application in analysis of gene regulation.
 - b) Explain in detail two mutagenesis techniques with the help of neat & labelled diagrams. Write two applications of mutagenesis.
 - c) What is " yeast two hybrid" system? Explain with suitable diagram. Write two applications of this technique.
- Q.6** Write Short Notes (**Any Two**) **(10)**
- a) Production of recombinant proteins in *E. coli*.
 - b) Transgenic animals.
 - c) SSCP & MCC techniques.
