

7. Discuss briefly the following with suitable examples : $7 \times 2 = 14$

- (a) Principle and method for ligase chain reaction and inverse PCR
- (b) Applications of PCR in biotechnology.

Unit IV

8. Discuss briefly the following with suitable examples : $7 \times 2 = 14$

- (a) Molecular marker types and their applications
- (b) Microarray and its applications.

9. Discuss briefly the following with suitable examples : $7 \times 2 = 14$

- (a) Whole genome sequencing and functional genomics
- (b) Applications of genomics in *Arabidopsis*.

Roll No.

Exam Code : M-21

Subject Code—52992

M. Sc. EXAMINATION

(Main) (Batch 2018 Onwards)

(Third Semester)

BIOTECHNOLOGY

MBL-531

Genetic Engineering

Time : 3 Hours

Maximum Marks : 70

Note : Attempt *Five* questions in all. Q. No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. Write short notes on all of the following. Illustrate your answers with suitable examples/ drawings wherever necessary : $2 \times 7 = 14$

- (a) Restriction mapping
- (b) Cosmids and Phagemids

- (c) Binary and Shuttle vectors
- (d) Chromosome walking
- (e) Labelling of probes
- (f) DNA Chip technology
- (g) Principle of whole genome sequencing.

Unit I

2. Discuss briefly the following with suitable diagrams wherever required : $7 \times 2 = 14$
 - (a) Addition of poly dA and poly dT tails in gene cloning
 - (b) Principle and method of gene cloning.
3. Discuss briefly the following with suitable diagrams wherever required : $7 \times 2 = 14$
 - (a) Plasmids and Bacteriophages
 - (b) Expression vectors—use of promoters and expression cassettes.

Unit II

4. Discuss briefly the following with suitable examples : $7 \times 2 = 14$
 - (a) Principle and method of gene isolation
 - (b) Principle and method of construction and screening of cDNA library.
5. Discuss briefly the following with suitable examples : $7 \times 2 = 14$
 - (a) Principle and method of Sanger's Dideoxy chain termination method of DNA sequencing.
 - (b) Principle and method of Automated DNA sequencing.

Unit III

6. Discuss briefly the following with suitable examples : $7 \times 2 = 14$
 - (a) Molecular Probes and their applications
 - (b) Asymmetric PCR and RT-PCR.