

Seat No. : _____

AH-132

April-2022

B.Sc., Sem.-VI

307 : Microbiology

(Genetic Engineering)

Time : 2 Hours]

[Max. Marks : 50

- Instructions :** (1) All questions in **Section – I** carry equal marks.
(2) Attempt any **three** questions in **Section – I**
(3) **Section – II** is *Compulsory*.

SECTION – I

1. (A) Explain the characteristics and advantages of phage vector (λ) as a cloning vector. 7
(B) Describe the applications of enzymes Alkaline phosphatase and DNA ligases used in rDNA technology. 7
2. (A) Define cloning vectors and discuss the criteria for selection of cloning vector. 7
(B) Discuss the applications of enzymes Restriction endonucleases and Terminal transferase used in rDNA technology. 7
3. (A) Describe the process and applications for Sanger's dideoxy chain termination method. 7
(B) Discuss the Principle, method and applications of Southern blotting technique. 7
4. (A) Explain the stepwise process of Polymerase Chain Reaction and give their applications. 7
(b) Write a short note on “DNA microarray” technique. 7
5. (A) Describe the stepwise process of construction of cDNA library. 7
(B) Explain the use of reporter gene for selection of recombinant clone. 7

6. (A) Discuss the Protocol for joining isolated DNA fragment with cloning vector. 7
 (B) Deliberate the Gene gun and Microinjection method for transfer of rDNA in to suitable host cell. 7
7. (A) Describe the process and applications of metagenomics. 7
 (B) Explain the process for creation Transgenic plants resistant to insect pests and their applications. 7
8. (A) Write a short note on “Social impacts of rDNA technology”. 7
 (B) Describe the synthesis of Recombinant insulin protein and their advantages. 7

SECTION – II

9. Answers the following in **1- 2** lines (Answer any **Eight**) 8
- (1) Define 2-micron circle.
 - (2) What is T-DNA?
 - (3) Define Oligonucleotide probes.
 - (4) Write any two properties of good host cloning.
 - (5) Define Site directed Mutagenesis.
 - (6) Draw the structure of 2', 3' dideoxynucleotides.
 - (7) Name any two thermostable DNA polymerases enzyme and their source.
 - (8) Define DNA-Chip.
 - (9) What is Protoplast Fusion ? Give their use in rDNA.
 - (10) Define selectable marker genes and give few examples.
 - (11) Give the use of Colony hybridization technique.
 - (12) Define linkers and adapters.
 - (13) Name any two recombinant protein products.
 - (14) What is Environmental genomics ? Give any one application.
 - (15) What is ELSI ?
 - (16) What is the use of Antisense RNAs in making transgenic plants ?