

- (b) Describe various methods of introducing DNA into host cells (bacterial and plant systems) and compare their efficiencies. 7
5. (a) Explain different types of cloning vectors (plasmids, bacteriophage vectors, artificial chromosomes) with suitable examples. 8
- (b) Explain PCR and its applications in generation of target DNA for cloning. 7
6. (a) A recombinant clone needs to be identified from a genomic library. Explain how DNA hybridization and immunological methods can be used for its screening and confirmation. 7
- (b) Discuss applications of recombinant DNA technology and proteomics in medicine with suitable example. 8

[This question paper contains 4 printed pages]

Your Roll No. :

Sl. No. of Q. Paper : **258** **I**

Unique Paper Code : 2163010007

Name of the Paper : Recombinant DNA
Technology and
Proteomics

Name of the Course : **B. Sc. (Hons.) Botany**

Semester : VI

Time : 2 Hours **Maximum Marks : 60**

Instructions for Candidates :

- (a) Write your Roll No. on the top immediately on receipt of this question paper.
 - (b) Attempt **four** questions in **all**. Question **NO.1** is compulsory.
 - (c) Attempt **all** parts of every question together.
 - (d) Illustrate your answer wherever possible.
1. (a) Define the following (any **five**): 1×5=5
- (i) Liposomes
 - (ii) Expression vector
 - (iii) cDNA library

- (iv) Competent cells
- (v) Reporter gene
- (vi) Proteomics
- (vii) Electroporation

(b) Expand (any **five**): $1 \times 5 = 5$

- (i) BAC
- (ii) GFP
- (iii) MCS
- (iv) X-Gluc
- (v) YeP
- (vi) ELISA
- (vii) YAC

(c) Match the following (any **five**): $1 \times 5 = 5$

- | | |
|-----------------------------|--|
| (i) Isoschizomers | a. Selection of transformants |
| (ii) Reverse transcriptase | b. Separation based on pl and molecular weight |
| (iii) Antibiotic resistance | c. First widely used artificial plasmid cloning vector |
| (iv) Ligase | d. Same recognition sequence, different origin |
| (v) 2D electrophoresis | e. RNA dependent DNA polymerase |

- | | |
|---------------------|--------------------------------|
| (vi) pBR322 | f. Plasmid with a phage origin |
| (vii) pBluescriptII | g. Molecular glue |

2. Differentiate between the following (any **three**):

$5 \times 3 = 15$

- (i) Linkers and adapters
- (ii) Cosmids and Phagemids
- (iii) Genomic library and cDNA library
- (iv) 2D Gel Electrophoresis and SDS-PAGE
- (v) Insertion and Replacement Vectors

3. Write short notes on the following (any **three**):

$5 \times 3 = 15$

- (i) Antisense strategy in tomatoes
- (ii) Alpha-complementation
- (iii) Western Blotting
- (iv) Affinity chromatography
- (v) Mass spectrometry

4. (a) Describe restriction endonucleases and explain their role in recombinant DNA technology. 8