[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 9208 **J**

Unique Paper Code : 2163010007

Name of the Paper : Recombinant DNA Technology and Proteomics

Name of the Course : **B.Sc. (H) Botany / B.Sc. Life Science**

Semester : VI

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **Four** questions in all. Question **1** is compulsory.
3. **All** parts of the questions should be answered together.
4. **All** questions carry equal marks.
5. Draw well-labeled diagrams wherever necessary.

1. (a) Match the following : (1×5=5)

(i) Selectable marker	(a) Electroporation
(ii) Direct gene transfer	(b) Proteome
(iii) Complete set of proteins	(c) hptII
(iv) Multiple hosts	(d) M13
(v) Phagemid	(e) Shuttle Vector

(b) Fill in the blanks (attempt any **Five**) : (1×5=5)

(i) _____ are enzymes that transfer phosphate groups to other molecules, through a process called phosphorylation.

(ii) GFP is isolated from jellyfish _____ .

(iii) _____ gene was silenced in Flavr Savr Tomato.

(iv) 2D Gel electrophoresis helps in separation of complex mixtures of proteins based on two distinct properties: _____ and _____ .

(v) Artificial vesicles called used to deliver genetic material (like DNA or RNA) into cells are called _____ .

(vi) _____ is DNA molecule created by combining DNA segments from two or more sources, often from different organisms.

(vii) _____ is an enzyme that converts RNA to cDNA.

P.T.O.

(c) Expand the following terms (attempt any **Five**) : (1×5=5)

(i) Ti plasmid
(ii) YEp
(iii) ELISA
(iv) YAC
(v) X-Gal
(vi) GUS
(vii) IPTG

2. Write short notes on the following (any **three**) : (3×5=15)

(a) PCR
(b) Mass Spectrometry
(c) Chromatography based methods of protein purification and identification
(d) Delta endotoxin
(e) Applications of SDS-PAGE

3. Differentiate between the following (any **three**) : (3×5=15)

(a) ELISA and Western blotting
(b) cDNA library construction and genomic DNA library construction
(c) Native PAGE and SDS-PAGE
(d) Insertion Vectors and Replacement Vectors
(e) Cosmids and Phagemids

4. (a) Discuss the applications of recombinant DNA technology and proteomics in the fields of medicine and agriculture. (7)

(b) Explain *Agrobacterium* mediated gene transfer? Give its limitations and applications. (8)

5. (a) Discuss in detail the types and significance of restriction endonucleases in recombinant DNA technology. (7)

(b) Explain the strategies used for the selection and identification of transformants in recombinant DNA experiments. (8)

(100)