G-3/347/22 Roll No. .....

III Semester Examination, January 2022

M.Sc.

BIOCHEMISTRY

Paper I

(Genetic Engineering)

Time : 3 Hours] [Max. Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 Sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.*

SECTION A **1×8=8**

(Objective Type/Multiple Choice Questions)

Choose the correct answer :

1. Why does the restriction phenomenon in bacteria naturally occur ?

   (a) For efficient cloning

   (b) Bacteria produce an enzyme

   (c) Destruction of bacterium's own DNA

   (d) For survival

P.T.O.

2. Which type of DNA cleavage is done in the Maxam Gilbert method ?

(a) Edge (b) Interstitial

(c) Base-specific (d) Gene-specific

3. To make the recombinant plasmid permeable to DNA molecules, which of the chemicals is added ?

(a) $MgCl_2$ (b) $CaCl_2$

(c) NaCl (d) HCl

4. In which stage of genetic engineering a probe is used ?

(a) Cleaving DNA (b) Recombining DNA

(c) Cloning (d) Screening

5. Creation of mutant proteins with novel properties is called :

(a) Cloning (b) Protein engineering

(c) Mutagenesis (d) Sequencing

6. Which of the following properties improved by site directed mutagenesis ?

(a) Physical property

(b) Chemical property

(c) Kinetic property

(d) Integrity

7. Which of the following does not play any role in the infection of plant cell by the Ti plasmid of Agrobacterium tumefaciens ?

(a) T-DNA

(b) Virulence region

(c) Host specificity region

(d) 25 base pair repeats

8. The T-DNA contains how many genes for Cancer in the plant ?

(a) 2 (b) 4

(c) 6 (d) 8

SECTION B **6 × 4 = 24**

(Short Answer Type Questions)

Note : *Answer the following questions in* **250** *words.*

Unit-I

1. Describe methods of Gel Electrophoresis.

Or

Write procedure of Patenting of life forms and guide lines about genetic engineering.

Unit-II

2. Describe steps of construction of *c*-DNA.

Or

Describe characteristics of plasmids as a plasmid vectors.

Unit-III

3. Describe methods and techniques of site directed mutagenesis.

Or

Give steps of purification of recombinant Proteins.

Unit-IV

4. Write short note on methods of direct DNA transfer into cell.

Or

Write short note on pesticide resistance.

SECTION C **12×4=48**

(Long Answer Type Questions)

Note : *Answer the following questions in* 500 *words.*

Unit-I

1. Give explained account on classification and use of Restriction Endonucleases.

Or

Describe procedure of PCR.

Unit-II

2. Explain strategies of genomic DNA library construction.

Or

Explain vector engineering and codon optimization.

Unit-III

3. What are Gene knockout techniques ?

Or

What is Protein engineering ? Give methods and Use of Protein Engineering.

Unit-IV

4. Explain structure and mechanism of tumor formation by Ti plasmid.

Or

Give a detailed account of application of plant transformation methods.