

**G-4/405/21**

Roll No. ....

**M.Sc. IV Semester Examination, 2021****BIOTECHNOLOGY****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 Questions)**

Choose the correct answer :

**1.** Hind III is :

- (a) Type I restriction enzyme
- (b) Type II restriction enzyme
- (c) Type III restriction enzyme
- (d) Type IV restriction enzyme

**2.** Eukaryotic DNA polymerase works :

- (a) Polymerization only
- (b) Proofreading only
- (c) Polymerization + proofreading
- (d) No polymerization, No proofreading P.T.O.

**3.** The role of  $MgCl_2$  in PCR is :

- (a) Primer binding
- (b) Temperature control
- (c) Taq polymerase activity
- (d) dNTPs binding

**4.** The capacity of YAC is upto :

- (a) 30 kb
- (b) 300 kb
- (c) 3,000 kb
- (d) 30,000 kb

**5.** Molecular beacons are :

- (a) Primer
- (b) Probe
- (c) Polymerase
- (d) Restriction enzyme

**6.** Joseph Gall is related with :

- (a) Molecular hybridization
- (b) PCR
- (c) Restriction enzyme
- (d) Vectors

**7.** Human Genome project was initially funded by :

- (a) World Bank
- (b) US Government
- (c) USSR Government
- (d) WHO

**8.** The first successful nuclear gene transfer in human approved by NIH was performed in :

- (a) 1970
- (b) 1980
- (c) 1990
- (d) 2000

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**SECTION B****4×6=24****(Short Answer Type Questions)****Note :** *Attempt one question from each unit.***Unit-I**

1. Write short note on Calf Intestinal Phosphatase.

*Or*

Describe the mode of action of methylase.

**Unit-II**

2. Explain the significance of SV-40 vector.

*Or*

List 4 advantages of microarray.

**Unit-III**

3. What are maxi cells ?

*Or*Explain plus and minus screening of *mRNA*.**Unit-IV**

4. List any 4 diseases possibly treated by gene therapy.

*Or*

List 4 outcomes of human genome project.

**SECTION C****4×12=48****(Long Answer Type Questions)****Note :** *Attempt one question from each unit.***Unit-I**

1. Explain the recognition site of restriction enzymes.

*Or*

Explain the mode of action of reverse transcriptase.

**Unit-II**

2. What are cosmid ? Give some advantages and disadvantages at cosmid.

*Or*

Describe the working at real time PCR.

**Unit-III**

3. Explain DNA footprinting with suitable diagram.

*Or*

Describe any one method for screening of recombinants.

**Unit-IV**

4. Describe any one strategy for gene delivery.

*Or*

What is colony hybridization ? Explain it.

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