

G-3/311/21

Roll No.....

M.Sc. III Semester Examination, April-2021

BOTANY

Paper III

(Biotechnology-I)

Time : 3 Hours]

[Maximum 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

(Multiple Type Questions)

Choose the correct answer :

- 1.** Genomic libraries are :
 - (a) Organism's genome sequences stored in databases
 - (b) Clones possessing different DNA fragments from the same organism bound to vector
 - (c) Techniques which describes DNA isolation
 - (d) Library where the information of organisms genetic information is kept

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3. Give the method of DNA finger printing.

Or

Give the method of Naxam Gilbert method of DNA sequencing.

4. Write about bioinformatics.

Or

Write about molecular markers used in gene mapping.

SECTION 'C'

12×4=48

(Long Answer Type Questions)

Note : Answer the following questions in 500 words.

1. Describe various steps involved in gene cloning.

Or

Describe the properties of various enzymes used in recombinant DNA technology.

2. Describe various methods involved in selection of recombinants.

Or

Describe the steps involved in the transfer of T DNA from Agrobacterium to host cell.

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(c) dNTPs for chain recognition

(d) ddNTPs for chain elongation

7. The unit of genetic map is :

(a) Centimeter (b) Nanometer

(c) Base pairs (d) Centimorgan

8. The complete set of proteins expressed at a specific time in a particular cell or tissue type is called :

(a) Transcriptome (b) Metabolome

(c) Proteome (d) Genome

SECTION 'B'

4×6=24

(Short Answer Type Questions)

Note : Answer the following questions in 250 words.

1. Give the properties and uses of restriction endonuclease enzymes.

Or

Give the principle and method of Agarose gel electrophoresis.

2. Give genome organisation of Ti plasmid.

Or

Describe marker genes involved in selection of recombinants and transformants.

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2. Type of restriction endonucleases which cut the DNA with in the replication site is :
 - (a) Type-I
 - (b) Type-II
 - (c) Type-III
 - (d) Type-IV
3. Genes for virulence in *Agrobacterium tumefaciens* is present on :
 - (a) Chromosomal DNA
 - (b) Within T DNA of Ti plasmid
 - (c) Outside T DNA of Ti plasmid
 - (d) Plant genome
4. Transformed colonics can be identified by which one of the following :
 - (a) Probe
 - (b) Primer
 - (c) Promoter gene
 - (d) Marker gene
5. The requirement of PCR is :
 - (a) Primers
 - (b) dNTPs
 - (b) Thermostable polymerases
 - (d) All of the above
6. Sanger's method of DNA sequencing uses :
 - (a) dNTPs for chain termination
 - (b) ddNTPs for chain termination

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3. Describe principle, method and types of polymerase chain reaction (PCR).

Or

Describe the method of synthesis of whole gene.

4. Describe the techniques involved in isolation and identification of protein.

Or

Describe the types and significance of micro arrays.

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