

# **FOURTH SEMESTER EXAMINATION 2021-22**

## **M.Sc. Botany**

### **Paper - III**

### **Biotechnology - Genetic Engineering**

Time : 3.00 Hrs.

Max. Marks : 80

Total No. of Printed Page : 03

Mini. Marks : 29

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**Note:- Question paper is divided into three sections. Attempt question of all three section as per direction Distribution of marks is given in each section.**

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#### **Section 'A'**

##### **Very short answer question (in few words)**

Q.1 Attempt any six questions from the following :

6x2=12

- (i) What is cosmid ?
- (ii) Define IPR.
- (iii) What is competent cell ?
- (iv) Give 2 examples of Genetically Modified plants.
- (v) What are important tools used in Recombinant DNA Technology.
- (vi) Give examples of blunt end & sticky ends of DNA.
- (vii) What is genome editing ?
- (viii) What are different type of DNA libraries ?
- (ix) Give two example of plasmid vectors used in gene cloning in bacteria.
- (x) What is the role of T-DNA ?

(2)

## Section 'B'

### Short answer type question (in 200 words)

- Q.1 Attempt any four questions from the following : 4x5=20
- (i) Discuss restriction enzyme & give example with restriction site.
  - (ii) Describe the process of Sanger's sequencing method.
  - (iii) Write short note on gene tagging.
  - (iv) Discuss working principle of PCR.
  - (v) What is transformation & how it is useful for genetic manipulation ?
  - (vi) Write short note on ecological concerns regarding genetically modified organisms.
  - (vii) Explain selectable markers & its role in gene cloning.

## Section 'C'

### Long answer/Essay type question.

- Q.3 Attempt any four questions from the following questions : 4x12=48
- (i) Describe in detail, essential steps for obtaining a clone of specific fragment of DNA.
  - (ii) Write an essay on genetic improvements in microbes for industrial uses, give examples.
  - (iii) Discuss how Intellectual property Right (IPR) is useful in biological sciences with one case study.
  - (iv) Write short notes :

(3)

- (a) Agrobacterium
- (b) Nitrogen fixers
- (v) What is DNA finger printing ? Explain the process with its major applications.
- (vi) Describe the process of chloroplast transformation. Discuss why this is better than nuclear genome transformation ?
- (vii) How fermentation technology can be used for the benefit of humankind ? Discuss in detail with examples ?

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