

(i) Printed Pages : 3

Roll No. ....

(ii) Questions : 9

Sub. Code : 

2	5	9	4	8
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Exam. Code : 

0	4	3	7
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M.Sc. Bio-Technology 3<sup>rd</sup> Semester  
(2125)

**PLANT BIOTECHNOLOGY**

**Paper : MBIO-303**

**Time Allowed : Three Hours]**

**[Maximum Marks : 80**

**Note :—** (1) Question No. 1 is compulsory.

(2) Attempt **five** questions in all by selecting any **one** from each Unit.

1. Explain the following :

- (a) What is Biotransformation?
- (b) Give the use of Cybrids in plant breeding methods.
- (c) What are plant vitrified solutions (PVS), and what is their purpose?
- (d) Give the details of Flavr Savr tomato.
- (e) What are Substrate utilization selection markers?
- (f) What is oleosin partitioning technology?
- (g) Totipotency and its importance in plant tissue culture.
- (h) What are the problems faced with micropropagation?

8×2=16

## UNIT—I

2. (a) What is clonal propagation? Give various stages of in vitro clonal propagation. Explain the mass multiplication stage in detail.
- (b) Explain plant tissue culture media and the role of its components in detail. 16
3. (a) What is germplasm? Discuss different steps involved in long-term conservation of germplasm in detail by giving specific examples.
- (b) Give the production and uses of an artificial seed. 16

## UNIT—II

4. (a) What are reporter genes? Explain scorable markers by giving suitable examples in detail.
- (b) Make a well-labeled diagram of Ti plasmid. 16
5. (a) What are promoter sequences? Explain the different types of promoters used in transgenic plants by giving suitable examples.
- (b) Give different types of herbicides and their mechanism of action. 16

### UNIT—III

6. (a) Define primary and secondary metabolites. How are secondary metabolites commercially produced? List some key industrial biochemicals derived from plant cells.
- (b) Discuss Zenk strategy for the production of high-producing cell clones. 16
7. (a) What are edible vaccines? State the advantages and describe the production of edible vaccines and antibodies in plants.
- (b) Discuss strategies for chloroplast transformation with well-labeled diagrams. 16

### UNIT—IV

8. (a) Define molecular markers. Provide a detailed discussion of Randomly Amplified Polymorphic DNA (RAPD) markers and their applications.
- (b) What is the principle of a greenhouse? Give distinct types of glasshouses used in plant propagation. Discuss the advantages and disadvantages of greenhouse technology in agriculture. 16
9. (a) What are QTL? Explain the marker-assisted selection in plant breeding with QTL molecular marker.
- (b) Give details of SCAR marker and its importance. 16