



VIT
Vellore Institute of Technology

Final Assessment Test – November 2024

Course: BBIT307L - Plant Biotechnology

Class NBR(s): 1238

Time: Three Hours

Slot: C2+TC2

Max. Marks: 100

- KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

Answer ALL Questions

(10 X 10 = 100 Marks)

1. ✓ You have been given 2000 bp upstream region sequence of Gene A. Perform a hypothetical promoter analysis experiment and explain the information that can be derived from this experiment.
2. ✓ Elaborate on the components of plant tissue culture media and explain any 2 types of plant tissue cultures.
3. ✓ *Agrobacterium tumefaciens* causes gall tumours in various plants. Explain in detail its natural infection process.
4. ✓ Selectable markers and reporter genes are important components to create transgenic plants. Justify this statement while describing both.
5. ✓ What is the mechanism of action of herbicide glyphosate? Explain any two strategies used for generating glyphosate tolerant plants.
6. ✓ Elaborate on the transgenic approaches used to improve shelf life of tomato plant.
7. ✓ What are molecular markers? Explain any two PCR-based molecular markers with appropriate diagram.
8. ✓ Using an example, explain in detail how foreign insecticidal genes can be used to generate pest resistant plant.
- 9.a) ✓ Analyse the approaches used for creating marker free plants. Mention its advantages.

OR

- 9.b) What is plastid transformation? Explain how it is performed, what is the vector design and discuss the advantages of plastid transformation.
- 10.a) ✓ Elaborate on the approaches used to develop plants tolerant to cold stress and heat stress.

OR

- 10.b) To combat Vitamin A deficiency, Golden Rice has been developed. Explain this transgenic technology.