

U.G. 6th Semester Examination-2021

BOTANY

[HONOURS]

Course Code : BOT-H-CC-T-14

(Plant Molecular Biology and Biotechnology)

Full Marks : 40

Time : 2½ Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **five** of the following questions: 2×5=10
 - a) Define Organogenesis.
 - b) Which type of tissue is used as explant in plant tissue culture and why?
 - c) What is shuttle vector? Give example.
 - d) Name two restriction enzymes which cause blunt end digestion.
 - e) Name two thermostable DNA polymerases commonly used in PCR. What are their sources?
 - f) What is alpha complementation in genetic engineering?

- g) What is the strategy used in creating FlavrSavr tomato?
 - h) What is a reporter gene? Give one example.
2. Answer any **two** questions: 5×2=10
 - a) Briefly describe the application and limitation of somaclonal variation.
 - b) Describe the various applications of micropropagation.
 - c) State the differences between genomic DNA library and cDNA library.
 - d) What is Ti plasmid? Explain its mechanism of function and importance in plant biotechnology. 2+3
 3. Answer any **two** of the following questions: 10×2=20
 - a) Briefly describe the sterilization techniques employed in plant tissue culture. State the role of different plant growth regulators in tissue culture. 5+5
 - b) What is totipotency? How can we exploit totipotency in plant tissue culture? Discuss two common plant regeneration methods used in tissue culture. 2+2+3+3

- c) Explain in brief the significance of the following steps involved in Gene Cloning: 2×5
- i) PCR
 - ii) Restriction digestion
 - iii) Ligation
 - iv) Transformation
 - v) Selection
- d) Discuss in brief the different steps involved in creating: $5+5$
- i) Golden Rice
 - ii) Round up Ready soyabean
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