

U.G. 6th Semester Examination-2023

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: $2 \times 5 = 10$
 - a) What is totipotency? Mention its application in Plant Biotechnology.
 - b) What is synthetic seed? Mention its application in plant Biotechnology.
 - c) How somatic embryo differs from normal zygotic embryo?
 - d) What is the significance of restriction function in Restriction enzyme in Bacterial system?
 - e) What is superbug?
 - f) Why *Agrobacterium* is known as natural genetic engineer?

[Turn Over]

- g) What is selectable marker? Write one example.
- h) How genomic library differs from cDNA library?

2. Answer any two questions: $5 \times 2 = 10$

- a) What is binary vector? Briefly describe of any binary vector with proper diagrammatic figure. $1 + 1 + 3 = 5$
- b) What is RT PCR? How it differs from regular PCR? $2 + 3 = 5$
- c) What are the principles of following two method of gene transfer in plant system:

- i) Electroporation
- ii) Microprojectile bombardment

$$2 \frac{1}{2} + 2 \frac{1}{2} = 5$$

- d) Write down the major application of following techniques:

- i) Micropropagation
- ii) Protoplast fusion

$$2 \frac{1}{2} + 2 \frac{1}{2} = 5$$

3. Answer any two of the following questions:

$$10 \times 2 = 20$$

- a) What do you mean by Flavr Savr tomato? What are the advantages of this tomato over normal tomato? How was this type of tomato developed?

$$2 + 2 + 6 = 10$$

- b) Describe the structure and applications of any two of the following vectors in Plant Genetic Engineering: $2 \frac{1}{2} \times 4 = 10$

- i) Lamda phage
- ii) M13 phagemid
- iii) Cosmid
- iv) YAC

- c) What is cDNA? How the cDNA Library is synthesized? $2 + 8 = 10$

- d) Write short notes on: $5 + 5 = 10$

- i) Bt Cotton
- ii) Golden rice