

U.G. 6th Semester Examination-2022

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) What are chemostat and turbidostat?
- b) What is colony hybridization?
- c) Mention the sources of *psy* and *ctrl* genes used to produce the Golden Rice.
- d) What technique is used to screen a transgenic plant after a successful direct gene transfer?
- e) How does shuttle vector differ from YAC vector in gene cloning?
- f) What are Protoplast and Spheroplast?
- g) What is the role of agarose in Plant Molecular Biology?
- h) What is somaclonal variation? What do you mean by embryo rescue?

[Turn Over]

2. Answer any **two** of the following questions:

5×2=10

- a) Write a short note on micropropagation. 5
- b) What are oligonucleotide primers? How does you design primer for PCR? 2+3
- c) How T-DNA complex is generated?— Discuss with suitable diagram. 5
- d) Name the tools of recombinant DNA technology. Write a note on restriction enzymes. 3+2

3. Answer the following questions: 10×2=20

- a) What is androgenesis? Schematically illustrate the *in vitro* procedure of androgenesis. What are artificial seeds? How it can be prepared? Mention advantages of it over natural seeds.

1+5+1+2+1=10

- b) What do you mean by border sequences in T-DNA? What are the advantages of microprojectile bombardment method over microinjection method for gene transfer in plants? Give a short note for development of transgenic plant in herbicide resistance. What is the genetic constitution of M13 phagemid?

2+3+3+2=10