

Exam. Code : 210004

Subject Code : 8448

M.Sc. (Botany) Semester—IV

BOTC-623 : PLANT TISSUE CULTURE AND BIOTECHNOLOGY

Time Allowed—3 Hours]

[Maximum Marks—50

Note :—The question paper consists of **three** Sections. Candidates are required to attempt all the Sections.

Section—A : (8 marks) It consists of **ONE** question having **8** parts. Candidates are required to attempt all the parts. Each part carrying **1** mark. Explain in **3-4** lines.

Section—B : (21 marks) It consists of **TEN** parts. Candidates are required to attempt **SEVEN** parts. Each part carrying **3** marks. Answer to any of the parts should not exceed **2** pages.

Section—B : (21 marks) It consists of **FIVE** questions. Candidates are required to attempt **THREE** parts. Each part carrying **7** marks. Answer to any of the questions should not exceed **4** pages.

SECTION—A

1. Define :

- (a) Asynchronous callus
- (b) Gametoclone
- (c) Secondary Metabolites
- (d) Stunted shoots
- (e) Hyperhydricity
- (f) Explant
- (g) Monoploid
- (h) Friability.

1×8=8

SECTION—B

2. Write notes on :

- (a) Microspore cultures
- (b) Somatic embryogenesis
- (c) Applications of Biotechnology in crop improvement
- (d) Callus cultures and their applications
- (e) Cytodifferentiation
- (f) Flavanoid production *in vitro*
- (g) Gene targeting tools
- (h) Cryoprotectants
- (i) Terminator Technology
- (j) Prospects of Genetic Engineering.

3×7=21

SECTION—C

3. Describe factors responsible in developing an efficient Micropropagation protocol. 7
4. Discuss significance of cryopreservation in germplasm conservation. 7
5. Describe Shikonin biosynthesis in detail. 7
6. Comment on the impact and acceptance of transgenics as commercial crops. 7
7. Describe Anther culture in detail and its applications in Biotechnology. 7