

Exam. Code : 210004

Subject Code: 5465

M.Sc. Botany 4th Semester

PLANT TISSUE CULTURE & BIOTECHNOLOGY

Paper—BOTC-623

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 carries **1** mark. Explain in **3–4** lines.

Section—B : (21 Marks) It consists of **TEN** parts. Candidates are required to attempt **7** parts. Each part carries **3** marks. Answer to any part should not exceed **2** pages.

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

SECTION—A

- I. Discuss in brief (1 mark each) :— 1×8=8
- (a) Cellular totipotency
 - (b) Micropropagation.
 - (c) Growth regulators.
 - (d) Sterilization of nutrient medium.
 - (e) Cytodifferentiation.
 - (f) Cryobiology.
 - (g) Laminar Air Flow.
 - (h) Organogenesis.

SECTION—B

- II. Write short notes on any **SEVEN** of the following (3 marks each) : 3×7=21
- (1) Somaclonal variations.
 - (2) Anther culture.
 - (3) Method for encapsulation of synthetic seeds.
 - (4) Gene targeting tools.
 - (5) Crop improvement through tissue culture.
 - (6) Plant regeneration from callus.
 - (7) Risks of producing transgenic plants.
 - (8) Composition of MS medium.
 - (9) Role of Plant Tissue culture in medicine.
 - (10) Somatic Embryos.

SECTION—C

III. Answer any **THREE** of the following (7 marks each) :

$$7 \times 3 = 21$$

- (1) Draw a diagram to show layout of Plant Tissue culture laboratory. Discuss in detail.
- (2) Give a detailed account of different stages of micropropagation.
- (3) Discuss in detail method for production of pathogen free plants through tissue culture.
- (4) Discuss different factors affecting production of secondary metabolites in plant tissue culture.
- (5) Discuss different steps of cryopreservation of plant tissue cultures.