

Exam. Code : 210004

Subject Code : 4232

M.Sc. (Botany) 4th Semester

**PLANT TISSUE CULTURE AND
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 Section.

Section A : (8 Marks) — It consists of **one** question having **8** Parts. Candidates are required to attempt all 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 question carrying **7** marks. Answer to any of the questions should not exceed **4** pages.

SECTION—A

- I. Discuss in brief (1 marks each) : 1×8=8
- (a) Callus
 - (b) Androgenesis
 - (c) Disease resistant plants
 - (d) Role of autoclave in Plant Tissue Culture
 - (e) Transgenesis
 - (f) Secondary metabolites
 - (g) Verminator technology
 - (h) Biotechnology.

SECTION—B

- II. Write short notes on any **seven** of the following (3 marks each) : 3×7=21
- (1) Applications of plant tissue culture in crop improvement.
 - (2) Differentiation in cell and tissue culture.
 - (3) Stages of Clonal propagation.
 - (4) Role of Shoot tip culture in production of pathogen free plants.
 - (5) Isolation of somaclonal variants for herbicide resistance.

- (6) Production of flavonoids using cell culture.
- (7) Gene targeting tools.
- (8) Macronutrients used in culture medium for Plant tissue culture.
- (9) Prospects of Genetic engineering of plants.
- (10) Cryopreservation.

SECTION—C

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

7×3=21

- (1) What do you understand by Somatic Embryogenesis ? With the help of suitable diagrams. Give different steps for the process of somatic embryogenesis and discuss its usefulness.
- (2) Give an account of procedure for isolation of somaclonal variants for salt tolerance.
- (3) What do you understand by Transgenic Plants ? Give an account of benefits and risks for production of transgenic plants.
- (4) What do you understand by “Synthetic seeds” ? Give an account of production of synthetic seeds, and their applications.
- (5) What do you understand by “Terminator technology” ? Discuss the method, its applications and apprehensions.