

SL No of QP 9872

Sr. No. of question paper:
Unique Paper Code: 2163010011
Name of the Paper: Plant Tissue Culture
Name of Course: Botany
Semester: VII

Duration: 2 hours

Maximum marks - 60

Instructions for candidates:

- Write your roll number on the top immediately on receipt of this question paper.
- All parts of the question must be answered together.
- Attempt four questions in all.
- Question no. 1 is compulsory
- All questions carry equal marks.
- Draw well-labelled diagrams wherever necessary.

Q.1. a) Expand the following (any five) (1x5=5)

- i) LS
- ii) IAA
- iii) 2,4-D
- iv) HEPA
- v) LAF
- vi) BAP

b) Define the following (any five) (1x5)

- i) callus
- ii) *in vitro*
- iii) hybrid
- iv) explant
- v) protoplast
- vi) plant growth regulators

c) Write the significant research contribution of any five of the following (1x5)

- i) Guha & Maheshwari
- ii) Haberlandt
- iii) E.C. Cocking
- iv) F.W. Went
- v) Skoog & Miller
- vi) P. Maheshwari

Q.2. Write short notes on (any three) (5x3=15)

- i) Micropropagation and its applications
- ii) Anther culture
- iii) Principle & working of the autoclave in plant tissue culture
- iv) Virus elimination techniques in plant tissue culture

Q.3. a) Describe the principle and types of bioreactors for secondary metabolite production in plant tissue culture. (7.5)

b) Define somatic embryogenesis. Explain its types, process and advantages. (7.5)

Q.4. a) What is the principle and procedure of cryopreservation. How it is used for long-term germplasm conservation? (5)

b) Write briefly on protoplast fusion and its applications in crop improvement. (5)

c) Describe the steps involved in the aseptic preparation and inoculation of explants, highlighting the role of sterilizing agents, autoclave and laminar flow chamber (5)

Q.5. a) How does the composition of MS medium support in vitro plant growth? Describe the role of macro- and micronutrients, vitamins, hormones, and gelling agents. (7.5)

b) What are artificial seeds? Enumerate the detailed methodology of its production and write few advantages and applications of these seeds. (7.5)