

5. What is protoplast? How we can isolate protoplast from the cell and check its viability? Briefly explain the complete process of protoplast culture and protoplast fusion. (15)
6. (a) Brief note on the production of disease free plants. (7.5)
- (b) What is somaclonal and gametoclonal variations? Illustrate the causes and effect of somaclonal variation. (7.5)

[This question paper contains 4 printed pages.]

.Your Roll No.....

Sr. No. of Question Paper : 3002

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Unique Paper Code : 2164002004

Name of the Paper : Plant Tissue Culture

Name of the Course : Botany

Semester : III

Duration : 2. Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
 2. Attempt **Four** Questions in all including Question No. 1, which is **COMPULSORY**.
 3. Attempt all parts of the question together.
 4. Draw the diagram/s wherever is required.
1. (a) Define the following (**any five**) : (1×5=5)
- (i) Somaclones
 - (ii) Orthodox seeds
 - (iii) Totipotency

- (iv) Callus
- (v) Embryogenesis
- (vi) Cybrids

(b) Explain precisely the role of **any five** of the following during *in vitro* culture. (1×5=5)

- (i) HEFA
- (ii) Agar
- (iii) Adjuvants
- (iv) Chelators
- (v) EDTA
- (vi) Sucrose
- (vii) Ethanol
- (viii) Laminar Air Flow

(c) Write briefly the significant research contributions of **any five** of the following : (1×5=5)

- (i) Reinert & Steward
- (ii) Murashige & Skoog
- (iii) White
- (iv) Guha & Maheshwari
- (v) Haberlandt
- (vi) E.C. Cocking

2. Write short notes on (**any three**) : (5×3=15)

- (i) Plant secondary metabolites
- (ii) Role of micronutrients and macronutrients in tissue culture
- (iii) Production and Significance of Haploids
- (iv) Anther culture
- (v) Micropropagation and its applications

3. (a) Briefly explain the principle and working of autoclave in tissue culturing. (5)

(b) Define plant tissue culture. Elaborate the steps involve in plant tissue culturing with the help of diagram and its applications. (10)

4. (a) Enumerate the different kinds of strategies to conserve elite germplasm through different techniques. (7.5)

(b) Illustrate the technique used for the encapsulation of live material using plant tissue culture and its applications. (7.5)