

B.Sc. (Part-III) Semester-VI Examination**6S : BIOTECHNOLOGY (R/V)****(Plant Biotechnology)**

Time : Three Hours]

[Maximum Marks : 80

Note :— (1) All questions are compulsory.

(2) Draw neat and well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

- (i) The movement of ions across cell membrane without need of cellular energy is _____. ½
- (ii) Exchange of CO₂ and O₂ in plants takes place through _____. ½
- (iii) T-DNA is found in _____ plasmid. ½
- (iv) Use of electric pulse for gene transfer is called _____. ½

(B) Multiple choice questions :

- (i) Hormone responsible for Apical Dominance is : ½
 - (a) Auxin
 - (b) Cytokinin
 - (c) Ethylene
 - (d) GA
- (ii) Aseptic inoculation of explant on Nutrient medium requires : ½
 - (a) Centrifuge
 - (b) Growth chamber
 - (c) Laminar Air flow
 - (d) Autoclave
- (iii) Enzymes required for protoplast isolation are : ½
 - (a) Invertases
 - (b) Cellulase and Pectinase
 - (c) Nucleases
 - (d) Zymase
- (iv) Triploids are produced by : ½
 - (a) Pollen culture
 - (b) Anther culture
 - (c) Endosperm culture
 - (d) All of the above

(C) Answer in **one** sentence each :

- (i) Define Organogenesis. 1
- (ii) What is Somaclonal variation ? 1
- (iii) Give the role of Autoclave in Tissue culture. 1
- (iv) What is Geotropism ? 1

2. Describe :

- (a) Growth curve. 4
- (b) Structure of stomata. 4
- (c) Geotropism. 4

OR

- (e) Radiant energy. 4
- (f) Phototropism. 4

3. Explain in detail the physiological roles of Auxin. 12

OR

Explain in detail the physiological roles of Gibberellins. 12

4. Explain in brief :

- (a) Practical applications of Tissue culture. 4
- (b) Growth chamber. 4
- (c) Composition of MS medium. 4

OR

- (d) Design of Tissue Culture Laboratory. 4
- (e) Commercialization of Tissue Culture. 4
- (f) Autoclave. 4

5. Describe :

- (a) Micropropagation. 4
- (b) Hardening methods of Tissue cultured plants. 4
- (c) Embryo rescue. 4

OR

- (d) Anther culture. 4
- (e) Applications of somaclonal variation. 4
- (f) Callus culture. 4

6. Describe techniques of Single cell suspension culture and its applications. 12

OR

Describe protoplast isolation and regeneration in detail. 12

7. Describe :

- (a) Ti-plasmid. 4
- (b) Somatic hybridization. 4
- (c) Gene gun method of gene transfer. 4

OR

- (d) Electroporation. 4
- (e) Markers for selection of hybrid cells. 4
- (f) Cybrids. 4