

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

(d) Apical dominance.	4
(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