

**B.Sc. (Part-III) Semester—VI Examination**

**6S : BIOTECHNOLOGY (R/V)**

**(Plant Biotechnology)**

Time : Three Hours]

[Maximum Marks : 80

- N.B. :—** (1) All questions are compulsory.  
(2) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

- (i) The part of the plant used for culturing in plant tissue culture is known as \_\_\_\_\_.
- (ii) The ability of a plant to develop into a complete plant is called \_\_\_\_\_.
- (iii) Anther culture will produce all \_\_\_\_\_ plants.
- (iv) Osmosis is the process of diffusion of \_\_\_\_\_ across a membrane. 2

(B) Choose correct alternative :

- (i) The *in vitro* variation in plant tissue culture is called :
  - (a) *In vitro* variation
  - (b) Mutation
  - (c) Somaclonal variation
  - (d) Recombination
- (ii) The culturing of cells in liquid agitated medium is called :
  - (a) Liquid culture
  - (b) Suspension culture
  - (c) Micropropagation
  - (d) Agar culture
- (iii) Meristem culture helps in developing :
  - (a) Hybrid plants
  - (b) Virus free plants
  - (c) Disease resistant plants
  - (d) Tall plants
- (iv) All the cells in a callus are :
  - (a) Genetically homogenous
  - (b) Genetically heterogenous
  - (c) Similar in size
  - (d) Inefficient to grow organs 2

- (C) Answer in **one** sentence each :
- (i) Define active transport.
  - (ii) What is phototropism ?
  - (iii) Define endosperm.
  - (iv) Name the basal media used for plant tissue culture. 4
2. Explain the following :
- (A) Any two methods of measuring growth 4
  - (B) Geotropism 4
  - (C) Apical dominance. 4
- OR**
- (D) Any two effects of environmental factors on growth 4
  - (E) Growth curve 4
  - (F) Photoperiodism. 4
3. Describe :
- (A) Role of cytokinins in plant growth 4
  - (B) Use of plant growth substances in agriculture 4
  - (C) Physiological effect of ethylene. 4
- OR**
- (D) Role of auxins in plant growth 4
  - (E) Use of plant growth substances in horticulture 4
  - (F) Physiological effect of Abscisic acid. 4
4. Explain :
- (A) Major constituents of culture medium 4
  - (B) Applications of organ culture 4
  - (C) Role of Laminar air flow in media preparation. 4
- OR**
- (D) Design of tissue culture laboratory 4
  - (E) Role of autoclave in media preparation 4
  - (F) Commercialization of tissue culture. 4

5. Describe :
- (A) Micropropagation from axillary bud 4
  - (B) Hardening of tissue cultured plants 4
  - (C) Embryo rescue. 4

**OR**

- (D) Somaclonal variation and its applications 4
  - (E) Pollen and anther culture 4
  - (F) Meristem culture. 4
6. Describe in detail single cell suspension cultures and their applications in selection of mutants. 12

**OR**

- Describe in detail active and passive transport across the membrane in plants. 12
7. Describe in detail any two methods of genetic manipulations in plants. 12

**OR**

What are markers ? Explain in detail the markers used for selection of hybrid cells. 12

