

(i) Printed Pages : 3

Roll No.

(ii) Questions : 9

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Exam. Code :

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B.A./B.Sc. (General) 5th Semester
(2125)

BIOTECHNOLOGY

Paper : Plant and Animal Biotechnology (BIOT-Elect-Sem-V-T)

Time Allowed : Three Hours]

[Maximum Marks : 75

Note :— Attempt **FIVE** questions in total. Section C is compulsory.
Attempt **TWO** questions each from Sections A and B.

SECTION—A

1. (a) Explain the principle and applications of endosperm culture.
(b) Discuss the role of somaclonal and gametoclonal variations in crop improvement. 8,7
2. (a) Describe the process of protoplast isolation, culture, and regeneration.
(b) Explain somatic hybridization and its significance in plant biotechnology. 8,7
3. (a) Describe direct and indirect methods of plant transformation.
(b) Explain the mechanism of T-DNA transfer in *Agrobacterium tumefaciens*. 7,8

4. (a) Write a note on genetic manipulation of plants for pest and virus resistance.
- (b) Explain applications of transgenic plants in agriculture and environment. 7,8

SECTION—B

5. (a) Define primary and secondary cultures with examples.
- (b) Describe the essential requirements for setting up an animal cell culture laboratory. 6,9
6. (a) Explain different types of contamination in cell culture and their control measures.
- (b) Explain cryopreservation and germplasm storage. 9,6
7. (a) Describe the large-scale production of animal cells in bioreactors.
- (b) Describe the applications and ethical issues of cloning. 8,7
8. (a) Discuss the applications of stem cells in medicine.
- (b) Write short notes on (i) Biofarming (ii) Cytodifferentiation. 7,8

SECTION—C

9. (a) Define micropropagation.
- (b) What is somatic embryogenesis?
- (c) Name two applications of protoplast fusion.

- (d) What is the role of *Agrobacterium tumefaciens* in gene transfer?
- (e) Give two examples of transgenic plants.
- (f) Define contact inhibition in animal cell culture.
- (g) What is anchorage dependence?
- (h) Explain gene banks.
- (i) What are stem cells?
- (j) Define monolayer culture. 10×1.5