

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022
(Sixth Semester)

Branch – BIOTECHNOLOGY

DISCIPLINE SPECIFIC ELECTIVE - II

PLANT TISSUE CULTURE AND TRANSGENIC TECHNOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

- Who is known as the father of tissue culture?
(i) Bonner (ii) Laibach
(iii) Haberlandt (iv) Gautheret
- The pair of hormone required for a callus to differentiate are _____
(i) Ethylene and Auxin (ii) Auxin and Abscisic acid
(iii) Auxin and Cytokinin (iv) Cytokinin and Gibberellin
- The formation of embryoids from the pollen grains in the tissue medium is due to _____
(i) Organogenesis (ii) Test tube culture
(iii) Double fertilisation (iv) Cellular totipotency
- Which of the following is the main application of embryo culture?
(i) Clonal propagation (ii) Production of embryoids
(iii) Induction of somaclonal variations
(iv) overcoming hybridization barriers
- In which of the following condition the somaclonal variations appear.
(i) Plants raised in tissue culture (ii) Plants exposed to gamma rays
(iii) Plants growing in polluted soil or water
(iv) Plants transferred by a recombinant DNA technology
- Which of the following plant cells shows totipotency?
(i) Cork cells (ii) Meristem
(iii) Sieve tube (iv) Xylem vessels
- Which of the following vectors is used to crop improvement and crop management?
(i) Agrobacterium (ii) Cosmid
(iii) Plasmid (iv) Phasmid
- Which of the following is not an application of tissue culture
(i) Rapid clonal propagation (ii) Somaclonal variations
(iii) Embryo rescue (iv) Transgenic plants
- What is the name of the bacteria known as natural genetic engineer of plants?
(i) *Escherichia coli* (ii) *Agrobacterium tumefaciens*
(iii) *Pseudomonas aeruginosa* (iv) *Aspergillus niger*

Cont...

10. Agrobacterium based gene transfer is efficient
- a) Only with dicots
 - b) Only with monocots
 - c) With both monocots and dicots
 - d) With majority monocots and few dicots

SECTION - B (25 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

11. a) Brief on embryogenesis
(OR)
b) Outline Suspension culture?
12. a) Write the Application of endosperm culture.
(OR)
b) Mention the types of protoplast fusion.
13. a) Write an account on meristem culture.
(OR)
b) Write about somaclonal variations.
14. a) Write a note on edible vaccines.
(OR)
b) What are the genes involved in the pathogenesis of *Agrobacterium tumefaciens*?
15. a) How do you develop the herbicide resistant plants?
(OR)
b) Give a note on therapeutic applications of transgenic plants?

SECTION - C (40 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

16. a) Discuss in detail about the techniques involved in tissue culture?
(OR)
b) Give a detailed account on the surface sterilization, inoculation and incubation of explant?
17. a) Write an essay on Haploid production?
(OR)
b) What are the steps involved in embryo culture?
18. a) Write an essay on micropropagation?
(OR)
b) Elucidate the hairy root culture in plants and its applications
19. a) Give an elaborate account on transgenic plants
(OR)
b) Give an elaborate account on transgenic plant vectors and its benefits.
20. a) Discuss in detail the application of molecular techniques in plant propagation?
(OR)
b) How do you develop the pest resistance plants?

Z-Z-Z END