

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022  
(Sixth Semester)

Branch – BOTANY

**DISCIPLINE SPECIFIC ELECTIVE - II : PLANT TISSUES CULTURE**

Time: Three Hours

Maximum: 75 Marks

**SECTION-A (10 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks (10 x 1 = 10)

1. Which of the following plant cells show totipotency?  
(i) Cork cells (ii) Meristem  
(iii) Sieve tube (iv) Xylem vessels
2. Find the main application of embryo culture.  
(i) Clonal propagation (ii) Production of embryoids  
(iii) Induction of somaclonal variations (iv) Overcoming hybridisation barriers
3. Name the Growth hormone which produces apical dominance.  
(i) Ethylene (ii) Cytokinin  
(iii) Auxin (iv) Gibberellin
4. Mention the gaseous plant hormone.  
(i) IBA (ii) Ethylene  
(iii) Abscisic acid (iv) NAA
5. Which culture produces virus free – plants?  
(i) Organ culture (ii) Meristem culture  
(iii) Protoplasm culture (iv) cell suspension culture
6. Indicate the name for an Excised piece of stem tissue or leaf used in micropropagation.  
(i) scion (ii) explants  
(iii) medium (iv) microshoot
7. What is protoplast?  
(i) Cell wall + Plasma membrane  
(ii) Plant cell - cell wall  
(iii) Cytoplasm + cell wall  
(iv) Plasma membrane – cytoplasm
8. Choose the correct choice for the given statement: “Cryopreservation means it is a process to preserve plant cells, tissues or organs \_\_\_\_\_”.  
(i) at very low temperature by using ether  
(ii) at very high temperature by using liquid nitrogen  
(iii) at very low temperature of -196 by using liquid nitrogen  
(iv) at very low temperature by using liquid nitrogen
9. Immobilized cell bioreactors are based on  
(i) cells cultures in solid medium (ii) cells cultured in liquid medium  
(iii) cells entrapped in gels (iv) all of these
10. All of the following are plant derived elicitors except.  
(i) chitin (ii) pectin (iii) cellulose (iv) pectic acid

Cont...

**SECTION - B (35 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 7 = 35)

11. (a) What is totipotency? How can we exploit totipotency in plant tissue culture  
(OR)  
(b) Outline the applications of callus culture.
12. (a) Narrate the commercial applications of Abscisic Acid.  
(OR)  
(b) Explain the bioassay of Auxins and cytokinins.
13. (a) Explain the procedure of micropropagation.  
(OR)  
(b) Discuss the meristem culture for virus free plant production.
14. (a) Describe the method of cryopreservation.  
(OR)  
(b) Outline the Acclimatisation of TC plants.
15. (a) State the role of hairy root in secondary metabolite production.  
(OR)  
(b) Discuss the commercial production of Banana crop.

**SECTION - C (30 Marks)**

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

16. Analyse sterilization techniques employed in plant tissue culture.
17. Highlight the bioassay, mode of action and commercial application of Gibberellins..
18. Elucidate the application of somatic embryogenesis and synthetic seeds production.
19. Assess the method of isolation and fusion of protoplasts.
20. Examine the impact of plant tissue culture industries in India on national economy.

Z-Z-Z

END