

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2026
(Sixth Semester)

Branch – BOTANY

MAJOR ELECTIVE COURSE - II PLANT TISSUE CULTURE

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	An explants is _____. (i) a part of plant grown under the soil (ii) any part of a plant grown in a test tube (iii) a specific part of a plant grown in a test tube (iv) leaves grown in a test tube.	K1	CO1
	2	Identify the cell that can be totipotent. (i) Xylem vessels (ii) Tracheids (iii) Meristems (iv) Cytodifferentiated cells	K2	CO1
2	3	The production of secondary metabolites requires the use of (i) Meristem (ii) Protoplast (iii) Axillary buds (iv) Cell suspension	K1	CO2
	4	Select the cryoprotectant for cryopreservation (i) KCl (ii) Dimethyl Sulfoxide (iii) Thidiazuron (iv) Liquid Nitrogen	K2	CO2
3	5	Growth regulator used for induction of somatic embryogenesis is : (i) IAA (ii) IBA (iii) NAA (iv) 2,4-D	K1	CO3
	6	Identify the technique that is used to produce synthetic seeds? (i) Tissue culture encapsulation (ii) Genetic modification (iii) Cross-pollination (iv) Soil enrichment	K2	CO3
4	7	The primary advantage of micropropagation over traditional propagation methods is (i) Slower multiplication rate (ii) Lower cost (iii) Higher genetic uniformity (iv) Greater susceptibility to diseases	K1	CO4
	8	Organogenesis is effected by : (i) Age of explant (ii) Composition of culture medium (iii) Genotype (iv) All of the above	K2	CO4
5	9	Hairy root cultures for secondary metabolite production are induced by transforming plant cells with (i) Virus (ii) <i>Agrobacterium tumefaciens</i> (iii) <i>Bacillus thuringiensis</i> (iv) <i>Agrobacterium rhizogenes</i>	K1	CO5
	10	Which of the following is considered as biotic elicitor in plant cell culture? (i) Cellulase (ii) Chitin (iii) 2,4 -D (iv) Mercuric chloride	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Preparation of MS medium is important for plant tissue culture – Explain.	K1	CO1
		(OR)		
	11.b.	Infer the protocol for callus culture.		
2	12.a.	Demonstrate how haploids are produced by tissue culture method and write their importance in plant breeding.	K2	CO2
		(OR)		
	12.b.	Illustrate the induced protoplasmic fusion.		
3	13.a.	Develop the protocol of embryo culture and explain how to overcome loss of morphogenetic potential.	K3	CO3
		(OR)		
	13.b.	Point out how meristem culture has been used for the production virus free plants.		
4	14.a.	Apply strategy for axillary bud culture and writes its significance.	K3	CO4
		(OR)		
	14.b.	Organize the process of organogenesis, plantlet formation and hardening.		
5	15.a.	Analyzethe methods of cell immobilization.	K4	CO5
		(OR)		
	15.b.	Examinethe role of elicitors in secondary metabolite production.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Discuss about the concept of totipotency in plant tissue culture.	K1	CO1
2	17	Indicate how protoplasts are isolated from the selected explants.	K2	CO2
3	18	Critically analyze the steps involved in somatic embryogenesis.	K3	CO3
4	19	Describe the stages of Micropropagation and its importance.	K3	CO4
5	20	Review the impact of commercial plant tissue culture industries in India.	K4	CO5

Z-Z-Z

END