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22BOP419N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2025
(Fourth Semester)

Branch – **BOTANY**

PLANT BIOTECHNOLOGY

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	What is plant biotechnology? a. Cell division and Multiplication b. Creating thousands of plants through tissue culture c. Somatic Hybridization d. Introduction to desirable traits into the plant parts through genetic modification	K1	CO1
	2	What role do phytohormones play in plant biotechnology? a. Improving plant taste b. Controlling plant color c. Regulating plant growth and development d. Enhancing plant fragrance	K1	CO1
2	3	Which of the following factor does not influence totipotency? a. Non reduced nitrogen b. Source of explants c. Relative Humidity d. Light intensity	K1	CO1
	4	What are somaclones? a. Plants genetically identical to the original plant b. Plants automatically identical to the original plant c. Plants morphologically identical to the original plant d. Plants chemically identical to the original plant	K1	CO1
3	5	What is protoplast? a. Cell wall + Plasma membrane b. Plant cell- Cell wall c. Cytoplasm + Cell wall d.Plasma membrane- Cytoplasm	K1	CO1
	6	Give example of somatic hybrids? a. Hybrid protoplasts b. Protoplasts c. Fused plasmids d. Fused chloroplast	K2	CO2
4	7	The enzyme which cleaves RNA is ---------- a. DNA ase b. Ribonuclease c. Ligase d. Protease	K2	CO2
	8	Why is a eukaryotic cloning required? a. Cloning gene b. Variety c. Availability d. Large scale production	K2	CO2
5	9	The first genomic libraries were cloned in? a. Plasmid b. Bacteria c. Human d. Plants	K2	CO2
	10	What is the primary goal of DNA sequencing ? a. To study protein protein interacting b. To identify protein structures c. To determine the order of nucleotides in a DNA molecule d. To analyze gene expression patterns	K2	CO2

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.	Explain the scope and concept of plant tissue culture.	K2	CO2
		(OR)		
	11.b.	Summarize the physiological roles of Gibberellins.		
2	12.a.	Illustrate the process of Organogenesis method.	K3	CO2
		(OR)		
	12.b.	Build the techniques of somaclonal variation.		
3	13.a.	Predict the production of haploids and its significance in crop improvement.	K3	CO3
		(OR)		
	13.b.	Determine the methods and *invitro* conservation of Germplasm.		
4	14.a.	Analyze the tools of genetic engineering.	K4	CO4
		(OR)		
	14.b.	Simplify the development of shuttle vector.		
5	15.a.	Summarize the role cDNA libraries.	K4	CO4
		(OR)		
	15.b.	Focus the Maxam Gilbert method of DNA sequencing.		

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	Simplify the types of sterilization.	K4	CO4
2	17	Simplify the techniques of callus culture and cell suspension culture.	K4	CO4
3	18	Categorize the isolation fusion and culture of protoplast.	K4	CO4
4	19	Illustrate enzymes and cloning vectors in Recombinant DNA technology.	K3	CO3
5	20	Interpret the techniques of southern and Northern hybridization.	K3	CO3

Z-Z-Z END