

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2024
(Third Semester)

Branch - BIOCHEMISTRY

MOLECULAR 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	Which among the following are the smallest plasmid and an ideal cloning vector? a) ColE1 b) RP4 c) PUC8 d) F	K1	CO1
	2	In which region in the YAC vector is the new DNA inserted in a cloning experiment? a) TEL b) CEN4 c) ORIGIN d) SUP4	K2	CO1
2	3	Nucleic acid hybridization is used to identify _____ a) RNAs b) DNAs c) Complementary base sequences d) Proteins	K1	CO2
	4	The first genomic libraries were cloned in _____ a) Plasmid b) Bacteria c) Human d) Plants	K2	CO2
3	5	Transgenic animals have _____ a) foreign protein b) foreign gene c) foreign lipid d) foreign amino acid	K1	CO3
	6	Today transgenic model exist for disease like _____ a) fatigue b) influenza c) Alzheimer's d) pneumonia	K2	CO3
4	7	Name the first transgenic virus resistant plant. a) Rice b) Cotton c) Tobacco d) Tomato	K1	CO4
	8	Natural genetic engineer is _____ a) <i>Pseudomonas putida</i> b) <i>Escherichia coli</i> c) <i>Agrobacterium tumefaciens</i> d) <i>Bacillus subtilis</i>	K2	CO4
5	9	Embryonic stem cells are _____ a) pluripotent b) small c) large d) medium-sized	K1	CO5
	10	In gene therapy, the gene defects are cured in a child or _____ stage. a) adult b) teenage c) old d) embryo	K2	CO5

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.	Illustrate the importance of linkers and adapters in the construction of recombinant molecule.	K2	CO1
		(OR)		
	11.b.	Infer the gene cloning vectors and the properties of natural vectors.		

Cont...

2	12.a.	Develop the method of colony hybridization in gene cloning.	K3	CO2
	(OR)			
	12.b.	Construct the principle and process of shotgun cloning of gene sequence.		
3	13.a.	Organize the method and uses of microinjection technique.	K3	CO3
	(OR)			
	13.b.	Identify the concepts of gene knock out technique.		
4	14.a.	Examine the biosafety of GM food.	K4	CO4
	(OR)			
	14.b.	Analyze the characteristics of marker genes.		
5	15.a.	Categorize the advantages and disadvantages of stem cells.	K4	CO5
	(OR)			
	15.b.	Examine the various vectors used for gene therapy.		

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	Analyze the types & target sites of restriction enzymes.	K4	CO1
2	17	Examine the types and applications of microarray techniques.	K4	CO2
3	18	Assess the methods developed for the production of transgenic mice and its applications.	K5	CO3
4	19	Explain the methods of gene transformation in <i>Agrobacterium tumefaciens</i> .	K5	CO4
5	20	Elaborate the culture, maintenance and differentiation of stem cells.	K6	CO5

Z-Z-Z

END