

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024  
(Second Semester)

Branch- APPLIED MICROBIOLOGY  
PRINCIPLES OF GENETIC ENGINEERING

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 plasmid is used by Cohen and Boyer for transformation? a) pSC101                      b) pUC17 c) pBR322                      d) <i>E.coli</i> plasmid	K1	CO1
	2	Segment of DNA to be cloned is called a) Gene segment              b) DNA fragment c) DNA insert                 d) All of these	K2	CO1
2	3	The electroporation unit consists of an a) Electroporation            b) Two aluminum electrode c) Cuvette                      d) All of the above	K1	CO2
	4	A collection of clones each of which carries a DNA of an organism is called a) cDNA Library                b) Genomic Library c) Chromosome jumping      d) Transposon	K2	CO2
3	5	Separation of DNA molecules from a sample by blotting on a membrane is known as a) Northern blotting          b) Southern blotting c) Autoradiography          d) Western blotting	K1	CO3
	6	The set of DNAs generated by using random primers in a PCR reaction is called as a) RAPD                         b) RFLP c) AFLP                         d) In situ hybridization	K2	CO3
4	7	The study of all the proteins encoded by the genome of an organism is called a) Proteome                      b) Proteomic c) Translation studies         d) Genomics	K1	CO4
	8	In RT-PCR, the enzyme deoxynucleotidyl transferase adds poly-G residues in a) 5' end of end of RNA      b) 3' end of end of RNA c) 5' end of end of cDNA      d) 3' end of end of cDNA	K2	CO4
5	9	Who discovered the PCR technique? a) James Watson                b) Kary Mullis c) Thomas Crick                d) Anish Dutta	K1	CO5
	10	Frederick Sanger is credited for the invention of a) DNA sequence method    b) Protein sequence method c) Both                            d) RNA sequence method	K2	CO5

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**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 about plasmid PBR322.	K3	CO1
		(OR)		
	11.b.	Justify the screening method of blue-white selection.	K5	
2	12.a.	What is restriction mapping? Give its significance.	K3	CO2
		(OR)		
	12.b.	List out enzymes involved in cDNA construction. Explain its importance.	K4	
3	13.a.	Give an account on Biomarkers.	K4	CO3
		(OR)		
	13.b.	Explain DNA fingerprint with a view to identify parental disputes.	K3	
4	14.a.	Elucidate the process of Serial Analysis of Gene Expression.	K4	CO4
		(OR)		
	14.b.	Trace an account on DNA microarrays.	K5	
5	15.a.	Demonstrate whole genome shotgun sequencing.	K4	CO5
		(OR)		
	15.b.	List out the applications of PCR.	K3	

**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	Explain in detail about the methods Electroporation and Particle bombardment of gene transfer.	K5	CO1
2	17	Write an essay on construction of cDNA.	K4	CO2
3	18	Give a detailed account on methods and applications of blotting techniques.	K4	CO3
4	19	Summarize the role of reporter genes in recombinant analysis.	K5	CO4
5	20	Write an essay on primer designing and PCR methods.	K4	CO5

Z-Z-Z END