

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

MSc DEGREE EXAMINATION MAY 2025
(Second Semester)

Branch – BIOTECHNOLOGY

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 one of the following belongs to Type III restriction enzymes? a) EcoKla b) EcoPI c) HindIII d) McrBC	K2	CO1
	2	DNMT1 is multi-modular protein is made up of _____. a) 1620 amino acids b) 1310 amino acids c) 1120 amino acids d) 980 amino acids	K2	CO1
2	3	_____ gene enables bacteria to transfer genetic material to other bacteria. a) pit-gene b) fac-gene c) tra-gene d) cas-gene	K3	CO2
	4	_____ can propagate in two different hosts. a) Shuttle vector b) Cosmid c) Plasmid d) Phagemid	K3	CO2
3	5	_____ contains all the sequences that are present in the genome of an organism. a) c-DNA library b) Exon library c) Genomic DNA library d) Transcriptomics	K4	CO3
	6	Green fluorescent protein used as _____ in screening of recombinants. a) Operator gene b) Promoter gene c) Repressor gene d) Reporter gene	K4	CO3
4	7	The first fully automated DNA sequencer _____ a) ABI 370 b) AB-7 c) PacBio SMRT d) MinION	K5	CO4
	8	_____ is a quick and inexpensive method for screening bacterial or yeast colonies to verify the correct assembly of a cloned DNA. a) Nested PCR b) Colony PCR c) Multiplex PCR d) RT-PCR	K5	CO4
5	9	_____ is used to dissolve blood clot. a) TPA b) Factor VIII c) Erythropoietin d) Insulin	K6	CO5
	10	The process that regulates gene expression in a cell to prevent a specific gene from being expressed is called _____. a) Gene Editing b) Gene silencing. c) Gene splicing d) Gene expression	K6	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.	Write about the nomenclature of restriction endonucleases.	K2	CO1
		(OR)		
	11.b.	Give a brief note on polynucleotide kinase and Phosphatase.		
2	12.a.	Enlist the properties of plasmids.	K3	CO2
		(OR)		
	12.b.	Outline the advantages of YAC.		
3	13.a.	Explain the construction of cDNA library.	K4	CO3
		(OR)		
	13.b.	Give a note on marker assisted selection.		
4	14.a.	Explain in detail about RNA sequencing.	K5	CO4
		(OR)		
	14.b.	Write a brief note on Multiplex PCR.		
5	15.a.	Describe the significance of recombinant vaccine.	K6	CO5
		(OR)		
	15.b.	Comment on CRISPR/ cas.		

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	Describe in detail about DNA methylation and its significance in genetic engineering.	K2	CO1
2	17	Explain in detail about different hosts employed for gene cloning.	K3	CO2
3	18	Discuss about the jumping and hopping libraries.	K4	CO3
4	19	Outline the steps and applications of Reverse transcriptase and Real Time PCR.	K5	CO4
5	20	Write an essay on RNA interference (RNAi).	K6	CO5

Z-Z-Z

END