(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2026

(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	Find the odd one out (i) *Hae*III (ii) *Eco*RI (iii) *Pst*I (iv) *Sal*I	K1	CO1
	2	Cells are protected from self-endonucleases by (i) Methyl transferases (ii) nucleases (iii) topoisomerases (iv) SSBPs	K2	CO1
2	3	2-micron (μm) vector refers to (i) YAC (ii) YIp (iii) YEp (iv) YRp	K1	CO2
	4	Shuttle vectors are able to function in two host due to different (i) antibiotic gene (ii) Ori sequences (iii) polyclonal sites (iv) viral genes	K2	CO2
3	5	Smallest gene libraries are _____ libraries (i) Genomic DNA (ii) RNA (iii) cDNA (iv) mRNA	K1	CO3
	6	Identification of transgene in the host organism is termed (i) Hybridization (ii) Screening (iii) Expression (iv) Cloning	K2	CO3
4	7	Sequencing involved with transcriptomics is (i) Chemical method (ii) Protein based (iii) DNA based (iv) RNA based	K1	CO4
	8	PCR role in forensics meets all Except (i) paternity testing (ii) mtDNA analysis (iii) STRs (iv) mutations	K2	CO4
5	9	Hemophilia A is treated by recombinant (i) Insulin (ii) TPA (iii) Growth Hormone (iv) Factor VIII	K1	CO5
	10	CRISPR/Cas system employs _____ to detect target DNA sequence (i) DNA (ii) RNA (iii) Proteins (iv) Enzymes	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.	Classify restriction endonucleases.	K2	CO1
		(OR)		
	11.b.	Demonstrate the process of DNA ligation.		
2	12.a.	Organize types of plasmids with applications.	K3	CO2
		(OR)		
	12.b.	Identify tagging of proteins and its need.		
3	13.a.	Analyze construction of cDNA library.	K4	CO3
		(OR)		
	13.b.	Distinguish selection of recombinants.		
4	14.a.	Explain the purpose of RNA sequencing.	K5	CO4
		(OR)		
	14.b.	Appraise the application of PCR in forensics.		
5	15.a.	Conclude the applications of genetically engineered enzymes.	K5	CO5
		(OR)		
	15.b.	Justify 'CRISPR/cas gene editing is a promising technology'.		

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	Summarize the functions of DNA modifying enzymes.	K2	CO1
2	17	Construct expression vector system.	K3	CO2
3	18	Compare jumping and hopping libraries.	K4	CO3
4	19	Simplify automated DNA sequencing.	K5	CO4
5	20	Validate the role of genetic engineering in production of therapeutics.	K5	CO5

Z-Z-Z END