CBCS SCHEME

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BBT401

Fourth Semester B.E./B.Tech. Degree Examination, June/July 2025
Molecular Biology and Genetic Engineering

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain DNA Replication initiation and elongation process in Prokaryotes with neat diagram.	10	L1	CO1
	b.	What is DNA damage? Explain the mechanism of excision of DNA damage repair in detail.	10	L2	CO1
		OR			
Q.2	a.	Illustrate on mechanism of transcription initiation and termination in prokaryotes.	10	L2	CO2
	b.	Explain the process of translation elongation and termination in detail.	10	L1	CO1
		Module – 2			
Q.3	a.	Illustrate on positive and negative gene expression regulation in lac operon system.	10	L2	CO1
	b.	Explain post transcriptional control of gene expression in eukaryotes.	10	L1	CO1
		OR			
Q.4	a.	What is gem silencing? Explain Antisense oligenucleotech and Ribozyme Technology of gem silencing.	10	L1	CO1
	b.	Illustrate on trp operon control of synthesis of trypthophan in prokaryotes.	10	L2	CO1
		Module – 3			
Q.5	a.	What are vectors? Explain construction and working of plasmid DNA as cloning vector.	10	L2	CO2
	b.	Write a short note on : (i) Linkers and adopters (ii) Ligare free cloning	10	L3	CO2
		OR			
Q.6	a.	Explain mechanism of action of ligare and reverse transcriptors.	10	L2	CO2
	b.	Explain the construction and working of phage DNA as cloning vector.	10	L3	CO2
		Module – 4			
Q.7	a.	What are competent cells? Explain preparation of competent cells in detail.	10	L3	CO3
	b.	Inspect and Illustrate on methods of construction of cDNA libraries.	10	L4	CO3
		OR			
Q.8	a.	Define PCR. Explain in detail any two variants of PCR. Add a note on its applications.	10	L3	CO3
	b.	Inspect and explain southern hybridization technique used to detect specific DNA sequence.	10	L4	CO3

Module – 5					
Q.9	**a.**	Paraphrase on engineered microbes for the production of Antibiotics.	**10**	**L3**	**CO4**
	b.	Infer and explain transgenic animal as Bioreactor for recombinant proteins.	**10**	**L4**	**CO4**
OR					
Q.10	**a.**	Define gene editing? Explain mechanism of CRISPR Cas 9 gene editing technology to make precise change in DNA.	**10**	**L3**	**CO4**
	b.	Elaborate in detail on physical method of gene transfer technology in plants.	**10**	**L4**	**CO4**

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