

MSc Sem.-2 Examination

408

Biomedical Technology

May-2025

Time : 2-30 Hours]

[Max. Marks : 70

Q-I	1	Write a note on Cas9.	(14)
	2	Explain the process of plasmid transformation in bacteria.	
	OR		
	1	Explain the functioning of CRISPR/Cas9 with one example.	
	2	Explain BP and LR reactions.	
Q-II	1	Give the detailed explanation of the applications of vectors used in r-DNA technology.	(14)
	2	Write a note on enzymes used in recombinant DNA technology.	
	OR		
	1	Write the applications of GMOs.	
	2	What is cDNA library? Explain in detail.	
Q-III	1	Explain in depth the probe-based detection system for real-time PCR.	(14)
	2	Describe only the process of DNA foot-printing with a diagram.	
	OR		
	1	Write about critical variables for primer selection.	
	2	Provide a detailed explanation of the steps involved in the DNA isolation process from blood.	
Q-IV	1	Describe DNA sequencing by synthesis using the M13 vector.	(14)
	2	Draw the diagram and briefly explain the Western blotting technique.	
	OR		
	1	Provide a comprehensive explanation of the capillary sequencing technique with a diagram.	
	2	What is RFLP? Explain in detail.	
Q-V	Answer any SEVEN out of TWELVE.		(14)
	1	Draw the structure of CRISPR/Cas9 and its association with template DNA.	02
	2	Give the difference between the donor and the destination vector.	02
	3	Explain the process of selecting the plasmid-transformed bacterial cells.	02
	4	Give the limitation of Taq polymerase.	02
	5	What are two types of artificial vectors?	02
	6	What are expression vectors?	02
	7	Give the names of four different dyes used in qPCR.	02
	8	What are the three main steps, and their temperature, used in PCR?	02
	9	Give the full form of VNTR and STR.	02
	10	What are the three main fundamental steps involved in executing Southern blotting?	02
	11	Which chemical treatment is necessary to break the glycosidic bond between ribose and guanine during chemical degradation sequencing?	02
12	Give names of any two methods among the several methods used to determine the exact order of the restriction segments on the original piece of DNA.	02	