

B.Sc. Semester - 4 (NEP-2020) Examination**March/April-2026****MIC: Molecular Biology and Bioengineering (Major-8)****Time: 2:00 Hours****Marks:50****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1	1) Write a note on DNA as a universal genetic material.	(05)
	2) Discuss DNA replication.	(05)
OR		
	1) Discuss Gene Cistron relationship in Prokaryotes & Eukaryotes in brief.	(05)
	2) Write a note on Units of genetic structure.	(05)
Que.2	1) Write a note on Transcription.	(05)
	2) Write a note on post transcriptional modifications.	(05)
OR		
	1) Write a note on Regulation of lactose utilization – The lac operon.	(05)
	2) Write a note on Regulation of tryptophan biosynthesis –The trp operon.	(05)
Que.3	1) Discuss Homologous recombination.	(05)
	2) Write a note on Natural transformation in bacteria.	(05)
OR		
	1) Discuss Artificial induced competence and electroporation.	(05)
	2) Discuss the Transduction.	(05)
Que.4	1) Write a note on Applications of Genetic engineering.	(05)
	2) Write a note on Isolation of DNA.	(05)
OR		
	1) Discuss Plasmids as Vectors of Recombinant-DNA Technology: pBR322 & pUC,	(05)
	2) Discuss Bacteriophages & Cosmid as vectors of Recombinant-DNA Technology	(05)
Que.5	1) Discuss Gene structure.	(05)
	2) Write a note on translation.	(05)
OR		
	1) Write a note on Transposable genetic elements.	(05)
	2) Write a note on Site directed mutagenesis.	(05)
