

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: MTech/ PrePHD  
BRANCH: Biotech**

**SEMESTER : 1  
SESSION : MO/2025**

**SUBJECT: BE502 rDNA TECHNOLOGY & GENETIC ENGINEERING**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Categorize the top three Restriction Modification systems.	[5] 1	IV
Q.1(b)	Illustrate a technique widely used to study DNA-Protein interactions.	[5] 1	III
Q.2(a)	Distinguish between Prokaryotic and Eukaryotic expression vectors.	[5] 2	IV
Q.2(b)	Explain shuttle vectors with a suitable example.	[5] 2	II
Q.3(a)	Summarize the basics of PCR primer designing for successful amplification.	[5] 3	II
Q.3(b)	Assess the principle of T/A based cloning.	[5] 3	V
Q.4(a)	Design the biogenesis pathway of MicroRNAs along with their modes of action in plants and animals.	[5] 4	VI
Q.4(b)	Compare Short Interfering (Si) and Micro (mi) RNAs	[5] 3	IV
Q.5(a)	Describe the concept of Terminator Seed Technology.	[5] 3	II
Q.5(b)	Explain the working principle of mRNA vaccines	[5] 4	II

**:::::20/11/2025:::::E**