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**The Assam Royal Global University, Guwahati**  
Royal School of Bioscience  
M.Sc. in Microbiology, 2<sup>nd</sup> semester  
Semester End Examination, June 2023  
Course Title: Molecular biology and Recombinant DNA technology  
Course Code: MIB154C202

Time: 3 Hours

Maximum Marks: 70

Note: Attempt all questions as per instructions given.

*The figures in the right-hand margin indicate marks.*

Section – A

**Q.1. Attempt all questions. (Maximum word limit 50)**

2x8

- What is the reading frame?
- Define the role of primer.
- What are pseudogenes?
- What is the split gene concept?
- Write at least two codons for leucine.
- Define non-sense mutation.
- What is the role of vector in molecular biology?
- What is the role of antibiotic resistant gene in cloning?

Section – B

**Q.2. Attempt any two questions.**

6x2

- Explain the structure and function of transfer RNA.
- Write short note on Okazaki fragments and semi-discontinuous DNA replication.
- Discuss proofreading activity during replication.

**Q.3. Attempt any two questions.**

7x2

- Discuss the role of different agents in DNA damage.
- Explain the transition and transversion process.
- Describe base excision repair in bacteria.

**Q.4. Attempt any two questions.**

7x2

- Explain the abortive initiation process during transcription.
- Explain the role of sigma factors during transcription.
- Write a short note on alternate sigma factors.

**Q.5. Attempt any two questions.**

7x2

- Describe the blue white screening technique and its role in recombinant DNA technology.
- Write a short note on the working principle of different types of vaccine.
- Describe the roles of interferon in cells.