

**BACHELOR OF SCIENCE (BIOTECHNOLOGY) (2010 COURSE)**  
**S.Y.B.Sc. (Biotechnology) Sem-IV : WINTER :- 2021**  
**SUBJECT: MOLECULAR BIOLOGY-II**

Day : Thursday  
Date 27-01-2022

W-6278-2021

Time : 10:00 AM-01:00 PM  
Max. Marks: 80

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Both sections should be written in **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.

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**SECTION - I**

- Q.1** A) Answer any **ONE** of the following (06)
- a) Discuss the steps involved in synthesis of lagging strand.
  - b) What is DNA proof reading? Discuss the mechanism of proof reading.
- B) Answer any **TWO** of the following (10)
- a) Discuss the structure and functions of DNA polymerase I.
  - b) Discuss semi-conservative replication of DNA.
  - c) Discuss the role of Rec A protein in SOS response.
- Q.2** Write short notes on any **FOUR** (16)
- a) Telomer replication
  - b) Recombination repair in *E. coli*.
  - c) Replication fork
  - d) DNA repair using recombination
  - e) Replisomes

**SECTION - II**

- Q.3** A) Answer any **ONE** of the following (06)
- a) Explain the process of synthesis of mRNA in eukaryotes.
  - b) Discuss the steps involved in transcription by RNA polymerase.
- B) Answer any **TWO** of the following (10)
- a) Explain the structure of prokaryotic RNA polymerase.
  - b) Explain Lac operon
  - c) Discuss the role of ribosomes in protein synthesis.
- Q.4** Answer any **FOUR** of the following (16)
- a) What are activator and repressor?
  - b) What are polysomes?
  - c) Differentiate between prokaryotic and eukaryotic translation.
  - d) Explain the process of mRNA splicing in brief.
  - e) Write a short note on TATA binding protein.
- Q.5** Write short notes on any **FOUR** (16)
- a) Pre initiation complex
  - b) Spliceosomes
  - c) Shine Dalgarno sequence
  - d) Prokaryotic promoters
  - e) Rho factor