

**M. Sc. (Biotechnology) Sem-I / M. Sc. (Medical Biotechnology) Sem- I**  
**(CBCS 2018 Course) : WINTER - 2018**  
**SUBJECT : MOLECULAR BIOLOGY**

**Day** : Thursday  
**Date** : 01/11/2018

**W-2018-1224**

**Time** : 10.00 AM TO 12.00 Noon  
**Max. Marks** : 60

**N.B.**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer book.

**SECTION – I**

- Q.1** Attempt **ANY FIVE** of the following. (10)
- a) What is hemi-methylated DNA?
  - b) State the role and location of RNA polymerase-I in eukaryotes.
  - c) Name the proteins involved in excision repair mechanism.
  - d) Explain 5' to 3' exonuclease activity of DNA polymerase.
  - e) What is Klenow fragment?
  - f) Diagrammatically represent tRNA.
  - g) Enlist any two modifications of mRNA during its maturation.
- Q.2** Attempt **ANY TWO** of the following. (10)
- a) Describe initiation of transcription of rRNA genes in eukaryotes.
  - b) Explain in detail the D-loop model of homologous recombination.
  - c) Explain in detail the excision repair pathway in mammalian cells.
- Q.3** Write short notes on **ANY TWO** of the following. (10)
- a) Structure of RNA polymerase – II promoters.
  - b) Initiation of replication in *E.coli*.
  - c) CpG islands

**SECTION - II**

- Q.4** Attempt **ANY FIVE** of the following. (10)
- a) Define operator and repressor.
  - b) What is Kozak sequence?
  - c) State the unusual bases in t-RNA.
  - d) What is monocistronic and polycistronic mRNA?
  - e) Give the role of H1 histone protein in chromosome compaction.
  - f) What is attenuation?
  - g) What are leading and lagging strands in DNA.
- Q.5** Attempt **ANY TWO** of the following. (10)
- a) State the role of leader sequence in translocation of protein.
  - b) Explain the organization of nucleosome.
  - c) State the molecular events involved in termination of translation.
- Q.6** Write short notes on **ANY TWO** of the following. (10)
- a) 3' Poly (A) tail of mRNA.
  - b) Epigenomics
  - c) Dual control in operon

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