

S. Y. B. Sc. (Biotechnology) SEM – IV (CBCS - 2015 COURSE) :

WINTER - 2018

Subject: Fundamentals in Molecular Biology

Day: Wednesday

W-2018-1179

Time: 10.00 AM TO 01.00 PM

Date: 31/10/2018

Max. Marks: 60

N.B.:

- 1) Q1 and Q5 are compulsory.
 - 2) Answer ANY TWO questions from Q 2, 3, 4 in Section I.
 - 3) Answer ANY TWO questions from Q 6, 7, 8 in Section II.
 - 4) Answers to Both the sections to be written in SEPARATE answer books.
 - 5) Draw a labeled diagram WHEREVER necessary.
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SECTION - 01

Q.1) Answer the following: (ANY FIVE) (2 Marks X 5 = 10)

- a) Give two examples of structural damages in DNA
- b) Define leading and lagging strand
- c) State the role of Rec A protein
- d) Enlist three types of DNA polymerases in *E. coli*
- e) Define an operator
- f) Define an enhancer

Q.2) Answer the following: (5 Marks X 2 = 10)

- a) Discuss the structure and functions of DNA polymerase I
- b) Describe the structure and function of t-RNA

Q.3) Explain the following: (5 Marks X 2 = 10)

- a) Initiation of DNA replication in *E. coli*
- b) Describe initiation of transcription of tRNA genes in eukaryotes

Q.4) Write short notes on the following: (5 Marks X 2 = 10)

- a) Base excision repair
- b) spliceosomes

SECTION - 02

Q.5) Answer the following: (ANY FIVE) (2 Marks X 5 = 10)

- a) Explain "Coding strand"
- b) What are Upstream and downstream elements?
- c) State the difference in the initiator tRNA in prokaryotes and eukaryotes
- d) State the role of EF-Tu in protein synthesis
- e) Define operon
- f) Expand the terms cAMP and CAP

Q.6) Answer the following: (5 Marks X 2 = 10)

- a) Explain the important features of RNA polymerase II promoter in eukaryotes
- b) Give an outline of steps involved in elongation of protein synthesis

Q.7) Explain the following: (5 Marks X 2 = 10)

- a) Explain in detail the post transcriptional processing of mRNA in eukaryotes
- b) Justify "Arabinose operon is under dual control"

Q.8) Write short notes on the following: (5 Marks X 2 = 10)

- a) Release factors
- b) Lactose operon
