

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

**SUMMER - 2019**

**Subject: Fundamentals in Molecular Biology**

Day: Wednesday

Date: 10/04/2019

**S-2019-1381**

Time: 10.00 AM TO 01.00 PM

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 'SAME' answer books.
- 5) Draw a labeled diagram WHEREVER necessary.

**SECTION - 01**

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

- a) What are thymine dimers?
- b) Comment on the role of Dna A and Dna B proteins in DNA replication
- c) State two types of damages in DNA with examples
- d) State the role of primer in DNA replication
- e) Explain "5' UTR"
- f) State the role of DNA ligase

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

- a) Name and explain the functions of proteins involved in DNA replication
- b) Explain in detail SOS response

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

- a) Bidirectional DNA replication
- b) Explain in detail 5'capping of mRNA and its significance

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

- a) Nucleotide excision repair.
- b) Termination of DNA replication

**SECTION - 02**

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

- a) Define an activator protein
- b) What are Introns and exons?
- c) Define operon
- d) Diagrammatically represent the organization of Lactose operon
- e) State the role of sigma factor in transcription
- f) State the role of 3' poly(A) tail

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

- a) Explain the difference between rho dependent and rho independent termination of transcription in prokaryotes
- b) Explain attenuation control in tryptophan operon

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

- a) Explain in detail how each subunit of RNA polymerase in *E.coli* interacts with the various promoter elements
- b) With respect to translation state the role of the following
  1. 16S rRNA
  2. RRF
  3. 23S rRNA
  4. P site
  5. 5' Cap of mRNA
  6. A site
  7. Poly (A) tail
  8. EF-G
  9. RFs
  10. EF-Tu

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

- a) t-RNA accommodation
- b) Ribosomal RNA

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