M. Sc. (Medical Biotechnology) Sem-I (Choice Based Credit System) : SUMMER - 2019

SUBJECT: MOLECULAR BIOLOGY

Day : Tuesday
Date : 02/04/2019

Time: 02.00 PM TO 05.00 PM
Max. Marks: 60

S-2019-1502

N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Answers should be written in **SAME** answer book.

SECTION – I

Q.1 Attempt **ANY FIVE** of the following: **[10]**

a) Name any two repair mechanisms
b) State the role of Rec A and Lex A proteins in SOS repair
c) State the role of ligase and helicase in DNA replication
d) Name two mechanisms of termination of transcription in prokaryotes
e) What is site specific recombination? Name the proteins involved in it.
f) Give the role of Cdc 6 and MCM protein in eukaryotic replication.

Q.2 Attempt **ANY TWO** of the following: **[10]**

a) Give an overview of how DNA is folded to form the compact state of chromatin in chromosome
b) Describe the structure of a typical bacterial promoter and σ^{70} of *E.coli.* Add a note on interaction between them
c) State the role of bacterial Rec BCD complex in recombination

Q.3 Write short notes on **ANY TWO** of the following: **[10]**

a) Centromere
b) Autonomous replicating sequence (ARS)
c) Base excision repair

SECTION – II

Q.4 Attempt **ANY FIVE** of the following: **[10]**

a) Name the two unusual bases in tRNA
b) State the role of 3′ poly (A) tail in mRNA
c) Differentiate between prokaryotic and eukaryotic ribosomes
d) State the role of Ribosome recycling factor (RRF) in translation
e) What is Shine Dalgarno (SD) sequence?
f) What are split genes?

Q.5 Attempt **ANY TWO** the following: **[10]**

a) Enlist the transcription factors required for initiation of eukaryotic mRNA synthesis and state their role
b) Describe the steps involved in initiation of translation in *E.coli*
c) Explain attenuation control in Tryptophan operon.

Q.6 Write short notes on **ANY TWO** of the following : **[10]**

a) Spliceosomes
b) Signal peptide
c) Repressor protein

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