

M. Sc. (Biotechnology) Sem-II (2012 Course)(Choice Based Credit System) : WINTER - 2018

SUBJECT: MOLECULAR BIOLOGY

Day: Monday
Date: 22/10/2018

W-2018-1207

Time: 02.00 PM TO 05.00 PM
Max Marks. 60

N.B. :

- 1) **Q. No.1 and Q. No.5 are COMPULSORY.** Attempt **ANY TWO** from Q. No. 2, 3 and 4 and from Q. No.6, 7 and 8.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Draw suitable diagrams **WHEREVER** necessary.
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SECTION-I

- Q.1** Answer **ANY FIVE** of the following in brief. **(10)**
- a) What are hypochromic and hyperchromic effects?
 - b) What are insertion sequences?
 - c) Define C-value paradox.
 - d) What is a patch recombinant?
 - e) How DNA replication in *E. coli* is terminated?
 - f) State the role of Lex-A protein in SOS response.
- Q.2** a) Describe the structure and role of telomere. **(05)**
b) Give an account on types and role of histone proteins. **(05)**
- Q.3** a) Explain the role of various DNA binding proteins in priming of DNA replication in *E. coli*. **(05)**
b) Describe the mechanism of homologous recombination. **(05)**
- Q.4** Write short notes on (**ANY TWO**): **(10)**
- a) Mismatch repair
 - b) Excision repair
 - c) Retroelements

SECTION-II

- Q.5** Attempt **ANY TWO** of the following. **(10)**
- a) Describe the structure of prokaryotic RNA polymerase enzyme and state the role of each subunit.
 - b) What are 'TATA', 'DPE' and 'CAAT' Boxes? Justify their significance in initiation of eukaryotic transcription.
 - c) Define the terms:
i) Universal factor ii) Enhancer iii) Activator iv) Silencer v) Repressor
- Q.6** a) How synthesis of proteins in *E. coli* is initiated? **(05)**
b) What is a Branch Site? What is its significance in splicing of introns. **(05)**
- Q.7** a) Explain catabolite repression giving example of Lactose Operon. **(05)**
b) Describe the mechanism for 3' end cleavage and polyadenylation of primary transcript in eukaryotic transcription. **(05)**
- Q.8** Write short notes on (**ANY TWO**): **(10)**
- a) Rho – dependent termination of transcription
 - b) CpG islands
 - c) Protein translocation

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