

**S. Y. B. SC. (BIOTECHNOLOGY) SEM – IV (CBCS - 2015
COURSE) : SUMMER - 2018**

Subject: Fundamentals in Molecular Biology

Day: **Tuesday**
Date: **10/04/2018**

S-2018-1055

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

SECTION - 01

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

- a) Name any two types of repair mechanisms
- b) Explain 3' to 5' exonuclease activity of DNA polymerase
- c) State the role of Lex A protein
- d) State the role of single stranded binding proteins
- e) Define a promoter
- f) Explain monocistronic mRNA

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

- a) Explain in brief methyl directed mismatch repair
- b) Explain the multi-subunit structure of DNA polymerase III and its role in DNA replication

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

- a) Role of *uvr* proteins in DNA repair
- b) Explain in detail the various enzymes involved in adding a poly (A) tail to mRNA. State the functions of poly (A) tail

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

- a) Semi-conservative and semi-discontinuous mode of DNA replication
- b) RNA polymerase III promoter structure

SECTION - 02

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

- a) What are snRNA?
- b) What are cis acting elements?
- c) Define structural and regulatory genes
- d) State the role of permease and β -galactosidase in Lactose operon
- e) State the role of peptidyl transferase and IF-3 in protein synthesis
- f) Define translation

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

- a) Explain in detail the role of catabolite activator protein in Lactose operon
- b) Give an outline of steps involved in initiation of protein synthesis in eukaryotes

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

- a) Explain in detail the mechanisms of termination of transcription in prokaryotes
- b) Describe in detail termination of protein synthesis

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

- a) Tryptophan operon
- b) Ribosomal recycling factor
