

1127

B.Sc. (Hons.) Bio-Informatics

Third Semester

BIN-3001: Fundamentals of Molecular Biology

Time allowed: 3 Hours

Max. Marks: 60

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) What is the structure of a nucleosome?
- b) What is the function of sigma factor in RNA polymerases?
- c) Briefly explain catabolite repression.
- d) What are transposons?
- e) Name any two physical agents and the mechanism by which they damage DNA.
- f) Draw a well-labeled diagram of a tRNA.

UNIT – I

- II.
 - a) Discuss DNA replicated in prokaryotes?
 - b) Enlist the various DNA Polymerases of Eukaryotes and give their functions. (2x6)
- III.
 - a) Discuss initiation of transcription in Prokaryotes.
 - b) What is RNA splicing and its mechanism? (2x6)
- IV.
 - a) Explain the process of excision repair of DNA.
 - b) How is 5'- CAP and polyA tail added to RNA? (2x6)

UNIT – II

- V.
 - a) Discuss mechanism of translation.
 - b) Discuss an inducible operon and its regulation. (7,5)
- VI. Write notes on the following:-
 - a) Enzyme induction and repression.
 - b) Frame shift mutations and their implications (2x6)
- VII.
 - a) Discuss Trp operon.
 - b) Discuss the degeneracy of the genetic code. (7,5)

x-x-x