

2123

M.Sc. (Bio-Informatics) First Semester
MBIN-8003: Fundamentals of Modern Biology

Time allowed: 3 Hours

Max. Marks: 60

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting atleast one question from each Unit.

X-X-X

I. Briefly explain the following:-

- a) Replication fork
- b) Functions of DNA polymerase I
- c) Degeneracy of genetic code.
- d) Structure of tRNA.
- e) Requirements of PCR experiment
- f) Colony hybridization

(6x2)

UNIT - I

II. a) What are the structural features present in Ori C (Origin of replication) and their importance?

b) Discuss termination of transcription in eukaryotes.

(2x6)

III. a) Discuss the stepwise process catalysed by telomerase.

b) Write a note on transcriptional factors.

(8,4)

UNIT - II

IV. Write notes on the following:-

- a) RNA splicing pathways
- b) Post translational modifications

(8,4)

V. a) Discuss Trp operon and its regulations.

b) Compare and contrast ribosomes of prokaryotes and eukaryotes.

(8,4)

P.T.O.

(2)

UNIT - III

VI. Differentiate between the following:-

- a) Genomic and cDNA libraries
- b) Plasmid and cosmid
- c) Expression and cloning vectors

(3x4)

VII. a) How are His-tags and GST-tag proteins generated?

b) Discuss applications of site-directed mutagenesis giving suitable examples. (2x6)

x-x-x