Exam.Code:0005
Sub. Code: 0461

2121

B.A./B.Sc. (General) Fifth Semester

Biochemistry

Paper -A: Molecular Biology - I

Time allowed: 3 Hours Max. Marks: 45

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

*x-x-x*

I. Briefly answer the following:-

a) Comment on mitochondrial DNA.

b) Briefly describe the role of histones in DNA packaging.

c) What are telomeres and what is the function of telomerase?

d) Briefly describe the mechanism of action of-(i) Rifampicin(ii) Actinomycin D

e) Briefly describe the function of topoisomerase and DNA gyrase.

f) Draw a labeled diagram of tRNA. (6x1½)

## UNIT - I

II. Give an account of the experiments conducted by the following scientists:-

a) Griffith

b) Hershey and Chase

c) Avery, MacLeod and McCarty (9)

III. Discuss in detail the structure of A, B and Z- DNA. Highlight the differences Among these. (9)

## UNIT - II

IV. Write short notes on the following:-

a) Excision repair system

b) DNA polymerase III

c) Transposons (3x3)

V. Discuss in detail different types of mutations and their biochemical basis. (9)

P.T.O.

## UNIT - III

VI. Describe the following with respect to transcription:-

a) Transcription bubble

b) Rho dependent termination

c) Prokaryotic promoters (3x3)

VII. a) Write a short note on the posttranscriptional modifications of mRNA.

b) Discuss in detail the elongation step of transcription in prokaryotes. (6+3)

## UNIT - IV

VIII. a) Describe the activation of tRNA by aminoacyl- tRNA synthetases. How do they ensure the fidelity of protein synthesis?

b) Comment on the role of ribosomal RNAs in protein synthesis. (6+3)

IX. a) Describe the role of EF-Tu factor in elongation of protein synthesis with the help of an illustrated diagram.

b) Explain the features of a genetic code. (5+4)

*x-x-x*