

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. 1 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.

(2)

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