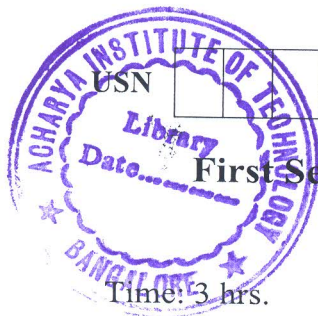


CBCS SCHEME

18BBT14



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Date...

First Semester M.Tech. Degree Examination, Dec.2019/Jan.2020

Biomolecules and Molecular Biology

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Give the characteristic features of alternate forms of DNA and describe the factors responsible for double helical structure of DNA. (10 Marks)
- b. Explain the peptide conformation using Ramachandran plot with a neat labeled diagram. (10 Marks)

OR

- 2 a. Describe the factors stabilizing the protein structures and geometries. (10 Marks)
- b. Give a brief account on thermodynamic aspects of protein folding and folding kinetics. (10 Marks)

Module-2

- 3 a. Explain the mechanism of DNA replication in Eukaryotes with a neat labeled diagram. (10 Marks)
- b. Explain different types of DNA repair mechanism. (10 Marks)

OR

- 4 a. Give a brief account on enzymes and accessory proteins required for Eukaryotic and Prokaryotic transcription. (10 Marks)
- b. Write note on:
 - (i) Homologous and non-homologous recombination
 - (ii) Replisome(10 Marks)

Module-3

- 5 a. (i) What are the general steps in the processing of hnRNA into mRNA?
(ii) Write a note on TATA box binding protein. (10 Marks)
- b. Give notes on:
 - (i) Eukaryotic promoters and enhancers
 - (ii) Activators and repressors(10 Marks)

OR

- 6 a. Write with neat labeled diagram the structure and functions of Eukaryotic and Prokaryotic RNA polymerase. (10 Marks)
- b. Explain the mechanism of Prokaryotic transcription. (10 Marks)

Module-4

- 7 a. Summarize the transcriptional and post-transcriptional gene silencing mechanisms and its applications. (10 Marks)
- b. Describe the processing of tRNA and rRNA. (10 Marks)

OR

- 8 a. Explain the mechanism of positive and negative regulation of operon with a suitable example. (10 Marks)
- b. Write notes on:
(i) Chi Sequences in Prokaryotes
(ii) FLP/FRT recombination (10 Marks)

Module-5

- 9 a. Define triplet codon. Explain the concept of triplet codon evolution and its salient features. (10 Marks)
- b. Explain post-translational modification of protein. (10 Marks)

OR

- 10 a. Define translation. Write in detail the difference between prokaryotic and eukaryotic protein synthesis. (10 Marks)
- b. Write notes on:
(i) Molecular chaperons
(ii) Protein turnover and degradation (10 Marks)
