

Register No:.....

Name :

MODEL QUESTION PAPER

IV SEMESTER B.Tech DEGREE EXAMINATION BRANCH: BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING

13.403: MOLECULAR BIOLOGY & GENETICS (B)

Time: 3 Hours

Marks: 100

PART A

(Answer *all* questions, each question carries 2 marks)

1. What is the role of Sugar pucker in DNA structure?
2. Mention any four main differences between prokaryotic and eukaryotic Translation.
3. Explain Wobble hypothesis. How it contributes for the degeneracy of genetic code?
4. Distinguish between 'σ' and 'θ' model of DNA Replication.
5. What do you mean by 'Semi conservative mode of replication'?
6. What are Zinc Finger and Leucine Zipper?
7. Name any four proteins involved in the DNA replication in eukaryotes.
8. Name any Inhibitor of translation and its mode of action.
9. How Arabinose Operon is different from other operones?
10. Illustrate sex linked inheritance with a suitable example.

PART B

(Answer any *ONE* question from each module, carries 20 marks.)

MODULE I

11. a) Write notes on Structural Polymorphism in DNA. How will you convert B-DNA into other DNA forms. (12 Marks)
b) Briefly describe the process of DNA Replication in *E.coli*. (8 Marks)
12. a) Elucidate different Post transcriptional modifications (10 Marks)
b) Illustrate detailed structure of DNA with suitable diagram. (10 Marks)

MODULE II

13. a) How will the lengthy linear DNA molecule be accommodate in the nucleus as condensed chromosomal structures? (10 Marks)
- b) Explain the process of Translation in prokaryotes. State any four differences from eukaryotic translation. (10 Marks)
14. a) Briefly describe the process of regulation of gene expression in Lac Operon. (10 Marks)
- b) Comment on various characteristic motifs in DNA binding proteins. (10 Marks)

MODULE III

15. a) Elucidate different types of Transposons. (10 Marks)
- b) Give characteristic features of tumor cells in comparison with normal cells. (10 Marks)
16. a) Elaborate genetic recombination in bacteria. (12 Marks)
- b) Explain Reverse transcription. What are the different activities shown by Reverse Transcriptase enzyme (8 Marks)

MODULE IV

17. a) Explain monohybrid inheritance with suitable cross as example. (8 Marks)
- b) Illustrate Multiple Alleles with ABO blood group as an example. A woman homozygous for blood type B marries a man who is heterozygous for blood type A. State the possible phenotypic ratio of the offspring. (12 Marks)
18. a) What is Sex Linked Inheritance? A hemophiliac women has a mother who is phenotypically normal. What are the genotypes of her parents? (10 Marks)
- b) Elaborate Linkage and Crossing Over. (10 Marks)