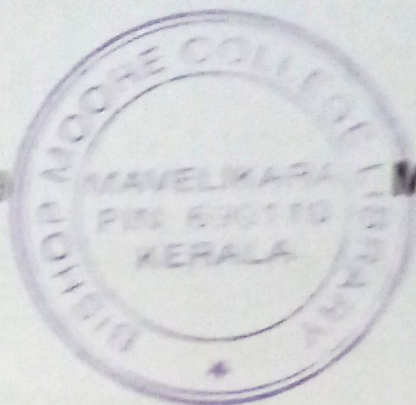


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M - 4504

Reg. No. : .....

Name : .....

Fourth Semester B.Sc. Degree Examination, February 2022

Career Related First Degree Programme under CBCSS

Group 2(a) Botany and Biotechnology

Core Course

BB 1471 : MOLECULAR BIOLOGY

(2019 Admission)

Special Examination

Time : 3 Hours

Max. Marks : 80

SECTION - A

Answer all questions in a word or one or two sentences. Each question carries 1 mark.

1. Who discovered the double helical structure of DNA?
2. Whose experiments proved DNA as the genetic material?
3. What is the role of DNA ligases?
4. Define exons.
5. Name any one of the universal stop codon.
6. Define miRNA.



7. Name any one post translational modification of proteins.
8. Give an example of an inducible operon.
9. Define a nucleosome.
10. What is the size of human mitochondrial genome?

(10 × 1 = 10 Marks)

### SECTION – B

Answer any eight questions. Each question carries 2 marks. (Answer not to exceed one paragraph)

11. What is the significance of Griffith's experiment?
12. Define a gene promoter.
13. Write a structural difference between prokaryotic and eukaryotic mRNAs.
14. What is the significance of polyA tail at the 3' end of the mRNA?
15. What are the components of eukaryotic translation initiation complex?
16. Write briefly on mRNA degradation.
17. What is the major difference between a lac and trp operon?
18. Write down the names of any two enzymes involved in DNA replication.
19. What are transposons?
20. What is a repressible operon? Give an example.
21. Define split genes.
22. What is meant by degeneracy of genetic code?
23. Write briefly on chloroplast genome.



24. What is mRNA splicing?
25. Brief a note on RNA interference.
26. How does translation in eukaryotes is different from prokaryotes?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** questions. **Each** question carries **4** marks. (Answer not to exceed **120** words)

27. Write a note on human mitochondrial genome.
28. Explain the kind of regulation in trp operon.
29. Explain the activities of DNA polymerase I.
30. Describe Hershey-Chase experiments and its importance in molecular biology.
31. Explain the organization of a prokaryotic gene.
32. Describe the mechanisms of gene regulation in eukaryotes.
33. Explain different types of RNAs.
34. Write the differences between prokaryotic and eukaryotic translation.
35. What are the major differences in prokaryotic and eukaryotic DNA replication?
36. How transcription is different in prokaryotes and eukaryotes?
37. Explain the structure of nucleosome.
38. Write a brief note on various regulatory sequences of eukaryotic genes.

(6 × 4 = 24 Marks)



## SECTION – D

Answer any **two** questions. Each question carries **15** marks. (Answer not to exceed **three** pages)

39. Explain the organization, regulation and mechanism of lac operon.
40. With the help of diagrams, explain in detail various steps involved in prokaryotic DNA replication.
41. Write an essay on eukaryotic translation and the role of different types of RNAs in the process.
42. Write an essay on the post transcriptional modifications of mRNAs and post translational modifications of proteins and its importance.
43. Give a detailed account on the different stages of transcription in eukaryotes.
44. Elaborate on the organization of a eukaryotic genome.

**(2 × 15 = 30 Marks)**