

Reg. No. :

Name :

Fourth Semester B.Sc. Degree Examination, May 2021

Career Related First Degree Programme Under CBCSS

Botany and Biotechnology

Core Course BB 1471 : MOLECULAR BIOLOGY

(2019 Admission Regular)

Time : 3 Hours

Max. Marks : 80

SECTION – A

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

1. Name an inducible operon.
2. What is the importance of Hershey-Chase Experiments in molecular biology?
3. Which enzyme unwinds the DNA during replication?
4. Which enzyme is involved in the joining of DNA fragments?
5. Define introns.
6. What is Shine-Dalgarno sequence?
7. Which codon is known as the start codon?
8. Which RNA is responsible for bringing amino acids to ribosome during translation?
9. Define an operon.
10. What are transposons?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Which are the major components of eukaryotic transcription-initiation complex?
12. What is the importance of the post-transcriptional modification of mRNAs?
13. Briefly explain the Wobble hypothesis.
14. What is meant by an open reading frame?
15. Write briefly on mitochondrial DNA.
16. How the enhancer is different from a promoter?
17. Name any two post-transcriptional modifications.
18. What is the role of telomerase in DNA replication?
19. What is a genetic code?
20. What is the importance of the post-translational modification of proteins?
21. Name the three structural genes in *lac* operon.
22. Define central dogma.
23. What is function of snRNAs?
24. Differentiate between exons and introns.
25. Name two stop codons.
26. What is an inducible operon?

(8 × 2 = 16 Marks)

SECTION – C

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

27. Explain the organization of eukaryotic genome.
28. Comment on the chloroplast DNA.
29. Write a note on features of genetic code.
30. Write the differences in the DNA replication process between prokaryotes and eukaryotes.
31. Explain the nature of regulation in *lac* operon.
32. Give an account on three stages of transcription.
33. Explain the differences between prokaryotic and eukaryotic transcription.
34. Write a note on mRNA degradation after translation.
35. Explain the role of various enzymes involved in eukaryotic DNA replication.
36. Explain the experiment which proved DNA as the genetic material.
37. What are the major differences in prokaryotic and eukaryotic translation?
38. Explain the structure of nucleosome.

(6 × 4 = 24 Marks)

SECTION – D

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

39. Explain the structure, organization and regulation of *trp* operon.
40. With the help of diagrams, explain in details the various steps involved in DNA replication in eukaryotes.

41. Write an essay on eukaryotic translation and the role of different types of RNAs in the process.
42. Elaborate the process of translation in prokaryotes.
43. Explain the organization of a prokaryotic genome.
44. Write an essay on the post transcriptional modifications of mRNAs and post translational modifications of proteins.

(2 × 15 = 30 Marks)

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