Reg. No. : ....

Name : ....

Sixth Semester B.Sc. Degree Examination, April 2022

First Degree Programme under CBCSS

Botany

Core Course

BO 1642 : MOLECULAR BIOLOGY, GENERAL INFORMATICS AND BIOINFORMATICS

(2019 Admission)

Time : 3 Hours   Max. Marks : 80

(Draw diagrams wherever necessary)

SECTION – A

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

1.   State chargaff's rule.

2.   What are exons?

3.   Name any two academic softwares.

4.   What are Okazaki fragments?

5.   What are housekeeping genes?

6.   Define transposones.

7.   What is operating software? Give an example.

8.   What is genetic code?

9. Define operon.

10. What is plagiarism?

SECTION – B

Answer any **eight** of the following: **Each** question carries **2** marks.

11. Write an account on open access software movement.

12. Describe the chemical composition of DNA.

13. Explain the different forms of DNA.

14. What is reverse transcription? Explain.

15. Write a note on digital divide.

16. Distinguish copy right and patent.

17. Eukaryotic DNA replication is bidirectional. Justify the statement.

18. What are the various types of biological databases?

19. What is satellite DNA?

20. What are cellular oncogenes?

21. Explain comparative genomics.

22. What is molecular phylogeny?

23. Explain the role of primase in DNA replication.

24. Draw the structure of tRNA.

25. What is meant by RNA interference?

26. What are spliceosomes?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six** of the following: **Each** question carries **4** marks.

27. Explain the semi-conservative mode DNA replication.

28. What are sequence alignment tools? Explain its applications.

29. Write an account on various protein data bases.

30. Briefly explain the post transcriptional modification of pre-mRNA in Eukaryotes.

31. Explain the *Lac* operon and its regulation.

32. What are DNA replication errors? How they are repaired?

33. Discuss the experiments to prove DNA as genetic material.

34. What are the applications of informatics in biological science?

35. What are the features of genetic code?

36. Briefly explain the transcriptional gene regulation in eukaryotes.

37. Write an account on applications of nucleic acid databases.

38. Comment on Intellectual property rights.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two** of the following: **Each** question carries **15** marks.

39. Describe the Watson-Crick model of DNA and the experiment to prove semi-conservative replication.

40. Explain the process of protein synthesis and post translational modifications.

41. Discuss the impact of information overload in society and related social issues.

42. What are the general features of a personal computer and discuss major application softwares.

43. Explain the structure and functions of various types of RNA.

44. Give an account on different gene expression regulation mechanisms in prokaryotes and eukaryotes.

(2 × 15 = 30 Marks)

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