STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086
(For candidates admitted from the academic year 2019 – 2020 & thereafter)

SUBJECT CODE: 19BI/PC/MB24

M. Sc. DEGREE EXAMINATION, APRIL 2022
BIOINFORMATICS
SECOND SEMESTER

COURSE : CORE
PAPER : MOLECULAR BIOLOGY
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A

ANSWER ALL QUESTIONS **(20 X 1=20)**

Choose the correct answer:

1. Which one of the following is not true about Klewnow fragment?
   a) It is a proteolytic cleavage product of DNA polymerase I
   b) It has 5'-3' polymerase activity
   c) It has 3'-5' exonuclease activity
   d) It has 5'-3' exonuclease activity
2. The TATAAT sequence, present in the eukaryotic promoter, is recognized and initially bound by which of the following transcription factors?
   a) TFIIA b) TFIIB c) TFIID d) TFIIH
3. rRNA is transcribed by _____
   a) RNA polymerase II b) RNA polymerase I c) RNA polymerase III d) DNA
4. The end of all tRNAs is _____
   a) 5' ACC 3' b) 5' CCA 3' c) 3' CAC 5' d) 3' GAG 5'
5. Which of the following is not a type of post translational modification?
   a) Proteolysis b) Protein folding c) Glycosylation d) Lipid addition

Fill in the blanks:

6. SINES stand for _____
7. Histone proteins have a _____ charge
8. VDJ domain denotes _____
9. Ribosome type in eukaryotes is _____
10. Autocrine signaling is _____

Define the following:

11. Okazaki fragment
12. Comment on metastasis
13. Define Operons
14. Draw the tRNA structure
15. State the significance of homeotic genes in humans
16. Comment on post transcriptional modifications
17. Mention the types of mutations
18. Comment on Hyperplasia
19. DNA methylation
20. Chloroplast genome

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SECTION – B

ANSWER ANY FOUR QUESTIONS. DRAW DIAGRAMS WHEREVER NECESSARY (4 x 10 = 40)

21. Describe the concept of DNA replication in prokaryotes.
22. Briefly the mechanism of cell signaling and mention the types of cell surface receptors.
23. Discuss the mitochondrial genome organization and transcription.
24. Write short notes on transposable elements.
25. Explain the bacterial operons and gene expression pattern with example.
26. What are the different types of DNA and how are they organised?
27. Elaborate the genetic mechanisms in vertebrate immune system.

SECTION – C

ANSWER ANY TWO QUESTIONS. DRAW DIAGRAMS WHEREVER NECESSARY (2 x 20 = 40)

28. Explain the stages of translation and add note on post-translational modifications.
29. Discuss the detailed process of cancer initiation, progression and genes involved.
30. Illustrate the process of Mitosis and Meiosis and explain the cell cycle regulation.
31. Write short notes on i) homeotic genes ii) heat shock genes iii) types of RNA.

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