SUBJECT CODE: 19BI/PC/AB44

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

COURSE   : CORE
PAPER   : ADVANCES IN BIOINFORMATICS
TIME   : 3 HOURS   MAX. MARKS: 100

SECTION – A

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

1. What is the Phred score?
2. How is Sanger sequencing different from NGS?
3. Write two platforms available for NGS technique.
4. What is SRA?
5. Why do we do trimming of the sequence file before analyzing it?
6. Define CIGAR.
7. What is lncRNA?
8. Name the two tools used in the analysis of microbiome.
9. What is p- value?
10. Explain the significance log odds ratio.
11. RIN is _____.
12. Euchromatin is _____ packed.
13. Post transcriptional erasers are involved in _____ of the alterations.
14. H3K79me2/3 is _____
15. Epigenetic changes do not depend on the DNA sequence. - True / False
16. Non coding RNAs block the translation of mRNA. - True / False
17. ZFN is _____.
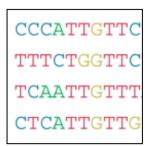18. CRISPR locus has Cas genes, leader sequences, _____ and _____
19. Formula for Z value is _____.
20. Glycosylation is _____

SECTION – B

**ANSWER ANY FOUR QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 500
WORDS. ALL QUESTIONS CARRY EQUAL MARKS.**   **(4 x 10 = 40)**

21. What are the two types of PCR methods used in NGS?

22. Write in short the mechanisms of post translational modifications.

23. Describe the methodology of shotgun metagenomics.

24. What is rarefaction curve? Explain the diversity indices used in metagenomics.

25. How do you calculate PWM for the following multiple sequence alignment?

26. Write in detail the steps involved in isolation of RNA.

27. Explain SAM file format.

SECTION – C

ANSWER ANY TWO QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 1200 WORDS. ALL QUESTIONS CARRY EQUAL MARKS.   (2 x 20 = 40)

28. Explain the four types of NGS sequencing methods. Write a note on the applications of NGS.

29. Describe the various types of RNA dynamics.

30. Write in detail the roles of domains involved in CRISPR CAS9 mechanism.

31. What is epigenetics? Explain the role of epigenetic modifications in pathology.

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