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

SUBJECT CODE: 19BI/PE/AP23

M. Sc. DEGREE EXAMINATION, NOVEMBER 2021
BIOINFORMATICS
THIRD SEMESTER

COURSE : ELECTIVE
PAPER : APPLICATIONS OF BIOINFORMATICS
TIME : 3 HOURS **MAX. MARKS:100**

SECTION - A

ANSWER ALL THE QUESTIONS IN A LINE OR TWO (10 x 2 = 20 MARKS)

1. Mention different data formats in databases.

2. Write the one letter code for the following:

    i) Purines ii) Aspartic acid iii) Proline iv) Uracil

3. Explain sequence submission methods in NCBI.

4. What is OMIM database used for? State any two applications.

5. Differentiate innate and adaptive immunity with examples.

6. Comment on how SNP is different from mutation?

7. What are the challenges in pharmacogenomics?

8. Illustrate the mechanism of Class II MHC antigen presentation.

9. Define drugs. Mention any 2 softwares for drawing chemicals.

10. Expand the following:

    i) EMBL ii) DDBJ iii) IMGT iv) SRS

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SECTION - B

ANSWER ANY TWO QUESTIONS. EACH ANSWER SHOULD NOT EXCEED 500 WORDS. ALL QUESTIONS CARRY EQUAL MARKS. DRAW DIAGRAMS WHEREVER NECESSARY (2 x 20 = 40 MARKS)

11. Discuss the ways to search chemicals on the internet. Explain Pubchem and e-molecules database.
12. Write short notes on sequence retrieval systems.
13. What is genetic variation? Explain in detail the various types of genetic variants.
14. Elaborate on the MHC complexes structure, polymorphism and function.

SECTION - C

ANSWER ANY ONE QUESTION. EACH ANSWER SHOULD NOT EXCEED 1200 WORDS. ALL QUESTIONS CARRY EQUAL MARKS. DRAW DIAGRAMS WHEREVER NECESSARY (1 x 40 = 40 MARKS)

15. Discuss in detail on about nucleotide sequence databases and their types. Also enlist the applications of bioinformatics in human disease.
16. Explain in detail the concepts of i) pharmacokinetics and ii) pharmacodynamics in pharmacogenomics.

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