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

SUBJECT CODE: 19BI/PC/BM14

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

COURSE : CORE
PAPER : BIOMOLECULES AND BIOCHEMISTRY
TIME : 180 MINUTES **MAX. MARKS: 100**

SECTION - A

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

1. Name any two chemical bonds.
2. Draw the structure of purine and pyrimidine
3. Mention the energetics of glycolysis
4. Define xenobiotics
5. Classify the amino acids based on their functional groups.
7. How enzymes are regulated?
8. Draw the Vmax and Km in the case of competitive inhibition.
9. Define enthalpy and entropy
10. Write any two applications of spectroscopy in biology.

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. Comment on the importance of salvage pathway in nucleotide synthesis.
12. (i) Elucidate the importance of Ramachandran Plot in protein structure prediction.
    (ii) Sketch the Ramachandran plot describing the different regions
13. Describe the following and highlight its impact on enzyme kinetics
    a) Competitive inhibition b) Non-competitive inhibition
    c) Feedback inhibition d) Allosteric modulation

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14. Brief the β-oxidation pathway in fatty acid metabolism.

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. Substantiate the energetics obtained from Kreb's cycle and highlight the pathway regulation.

16. Elaborate the principle, instrumentation and application of UV-Visible spectrometry.

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