STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2023 – 2024 & thereafter)

M. Sc. DEGREE EXAMINATION, NOVEMBER 2024
BIOINFORMATICS
FIRST SEMESTER

COURSE : CORE
PAPER : BIOMOLECULES AND BIOCHEMISTRY
SUBJECT CODE : 23BI/PC/BM14
TIME : 3 HOURS MAX. MARKS: 100

Q. No.	SECTION A (10 x 1 = 10 marks) ANSWER ALL QUESTIONS	CO	KL
1	The nucleus of the atom consists of ————. (a) Protons and neutrons (b) Protons and electrons (c) Neutrons and electrons (d) Protons, neutrons and electrons	1	1
2	Which of the following is the smallest carbohydrate – triose? (a) Ribose (b) Glucose (c) Glyceraldehyde (d) Dihydroxyacetone	1	1
3	The bond between amino acids is called ————.	1	1
4	Pectinases belong to which class of enzyme? (a) Ligases (b) Hydrolases (c) Lyases (d) Transferases	1	1
5	Drugs are xenobiotics (T/F).	1	1
6	The anomalous temperature of water is ————.	1	2
7	Fatty acids are said to be amphipathic by nature as they have both polar and nonpolar ends (T/F).	1	2
8	Ramachandran plot ———— quantity is taken into consideration along the Y-axis	1	2
9	The molecule which acts directly on an enzyme to lower its catalytic rate is _____.	1	2
10	The molecular structure of an organic compound is determined by_____ technique.	1	2
Q. No.	**SECTION – B (10 x 2 = 20 marks)** **ANSWER ALL QUESTIONS**	**CO**	**KL**
11	Present buffer.	2	3
12	Compute the structure of an epimer.	2	3
13	Classify purines and pyrimidines.	2	3
14	Solve Michaelis-Menten equation.	2	3
15	Discuss xenobiotics. Give examples.	2	3

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16	Examine entropy.	3	4
17	Outline the structure of PUFA.	3	4
18	Analyze enzyme specificity.	3	4
19	Investigate how cofactors play a role in enzyme activity.	3	4
20	Organize Beer-Lambert's law.	3	4
Q. No.	**SECTION C (4 x 10 = 40 marks)** **ANSWER ALL QUESTIONS**	**CO**	**KL**
21	a) Research why water is the universal solvent. **(or)** b) Examine the types and functions of carbohydrates.	3	4
22	a) Investigate protein folding pathway. **(or)** b) Outline the strategies of enzyme regulation.	3	4
23	a) Convince how ATP is generated by TCA cycle. **(or)** b) Convince the structural hierarchy of protein.	4	5
24	a) Recommend the applications of enzymes. **(or)** b) Evaluate the principles and applications of UV-spectroscopy.	4	5
Q. No.	**SECTION – D (2 x 15 = 30 marks)** **ANSWER ANY TWO QUESTIONS**	**CO**	**KL**
25	Produce bioenergetics with the laws of thermodynamics.	5	6
26	Propose the fate of glucose in glycolysis.	5	6
27	Plan enzyme extraction and purification.	5	6
28	Construct how mass spectrometry is used in protein analysis.	5	6

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