STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted from the academic year 2019–20 & thereafter)

SUBJECT CODE: 19CH/PE/BC15

M. Sc. DEGREE EXAMINATION, APRIL 2023
BRANCH IV- CHEMISTRY
SECOND SEMESTER

COURSE : ELECTIVE
PAPER : ESSENTIALS OF BIOCHEMISTRY
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A

ANSWER ALL THE QUESTIONS: **(20 x 1= 20)**

I. FILL IN THE BLANKS: **(5X1 =5)**

1. Alkalosis is a condition when ---------- level increases without an increase in carbonic acid level in bicarbonate buffer system.
2. For exergonic reactions, ΔG is represented by ------- sign.
3. An example for sulphur containing amino acid ----------.
4. ----------is converted to urea by urea cycle.
5. ---------- are organic non-protein cofactors required by enzymes.

II. TRUE OR FALSE: **(5X1 = 5)**

6. Water has the highest surface tension of any known solvent.
7. Oxidative phosphorylation generates GTP
8. Transport proteins are globular type of proteins.
9. Anaerobic glycolysis leads to the generation of lactate.
10. Specificity of an enzyme is not conferred by active site.

III. MATCH THE FOLLOWING: **(5X1 = 5)**

11. Chloride shift	a. NADH
12. Phosphagen	b. Adenosine
13. Nucleoside	c. Creatine phosphate
14. TCA cycle	d. Hb buffer
15. Malate Dehydrogenase	e. Mitochondria

IV. ANSWER THE FOLLOWING: **(5X1 = 5)**

16. Define Buffer
17. What are catalytic amino acids?
18. Define standard free energy?
19. What are deoxyribonucleotides?
20. What are xenobiotics?

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SECTION – B

ANSWER ANY FIVE QUESTIONS: (5 x 8 = 40)

21. Discuss the role of water in maintaining the structure of biomolecules as universal solvent.
22. Explain the structural basis of high energy transfer potential observed in ATP hydrolysis.
23. Write notes on the secondary structures of protein.
24. Explain about the factors that influence the activity of enzymes.
25. Discuss the reactions of urea cycle and its significance.
26. Explain how fatty acids are oxidized by β-oxidation pathway.
27. Discuss the different methods for immobilizing enzymes.

SECTION - C

ANSWER ANY TWO QUESTIONS: (2 x 20 = 40)

28. Explain how fatty acids and triglycerides are synthesized.
29. Discuss about the regulation of allosteric enzymes with an example.
30. a. Explain membrane fluid mosaic model. (10)

    b. Discuss how bicarbonate buffer regulates acid-base balance in our system. (10)

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