

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

SUBJECT CODE: 19CH/AC/FB33

B.Sc. DEGREE EXAMINATION, NOVEMBER 2023
BRANCH V(a) – PLANT BIOLOGY & PLANT BIOTECHNOLOGY
BRANCH VI(a) – ADVANCED ZOOLOGY & BIOTECHNOLOGY
THIRD SEMESTER

COURSE : ALLIED CORE
PAPER : FUNDAMENTALS OF BIOCHEMISTRY - I
TIME : 3 HOURS **MAX.MARKS :100**

SECTION – A **(30x1=30)**
ANSWER ALL QUESTIONS

I. CHOOSE THE CORRECT ANSWER:

1. During diarrhea, excess of output of water leads to -----
a. Edema b. Dehydration c. Puffiness of face d. No symptoms
2. The main electrolyte in our body -----
a. Iron b. Mercury c. Sodium d. Hydrogen
3. Leukopenia - lower normal number of -----
a. Lysosomes b. RBC c. WBC d. Macrophages
4. Sickle cell disease is a genetic disorder caused by mutations in the -----
a. Beta globin gene b. His gene c. Alpha globin gene d. None
5. If ΔG is positive, the reaction is -----
a. Endergonic b. Exergonic c. Neutral d. Both a and b
6. Hydrolysis of 1M of ATP into ADP and inorganic phosphate, releases -----
a. -1.3 kcal/mol b. 1.3 kcal/mol c. -7.3 kcal/mol d. 7.3 kcal/mol
7. The increase in blood glucose level leads to the release of ----- hormone
a. Parathormone b. Thyroxine. c. Insulin d. Glucagon
8. ----- is a reducing sugar
a. Glucose b. Fructose c. Both a and b d. None
9. ----- is an example for ribozyme
a. Glucosidase b. Lipase c. Nucleotidase d. RNase
10. The flexible nature of the active site is explained by -----
a. Rigid template model b. Induced fit model c. Tight model d. Loose model

II. FILL IN THE BLANKS:

11. The colour of phenolphthalein in acidic condition is -----.
12. ----- resist the change in pH upon the addition of a small amount of acid or alkali.
13. ----- is usually an inherited bleeding disorder in which the blood does not clot properly.
14. The red colour of the blood is due to -----.
15. Energy possessed by the system to do the work is -----
16. The degree of disorder of the system is -----.
17. Oxidative phosphorylation leads to the production of -----.
18. An example for structural polysaccharide is -----.
19. Alanine transaminase belongs to ----- enzyme classification type.
20. $K_m = [S]$ when ----- is $\frac{1}{2}$ of V_{max} .

III. MATCH THE FOLLOWING:

- | | |
|---------------------|--------------------------|
| 21. TPP | a. Aldose |
| 22. Blood clotting | b. coenzyme |
| 23. Energy currency | c. Lactate Dehydrogenase |
| 24. Glucose | d. Platelets |
| 25. Oxidoreductase | e. ATP |

IV. DEFINE THE FOLLOWING:

26. pH
27. Anemia
28. Standard free energy
29. Invert sugar
30. Enzyme Specificity

SECTION – B**(5x6=30)****Answer any FIVE questions:**

31. How bicarbonate buffer maintains the pH of blood?
32. Explain the mechanism behind coagulation of blood.
33. Discuss the role of ATP as a high energy compound.
34. How are carbohydrates classified?
35. Demonstrate the sequential steps involved in Glycogenesis
36. a) Explain about Fischer's lock and key model to explain the mechanism of enzyme action.
- b) Give the significance of HbA1c (4 +2)
37. Elaborate on the digestion and absorption of carbohydrates

SECTION – C**(2x20=40)****Answer any TWO questions:**

38. a) Discuss the structure and physical properties of water
- b) Explain the enzymes and reactions involved in TCA cycle.
- c) Distinguish between exergonic and endergonic reactions (6 +10+4)
39. a) Discuss the electron transport mechanism
- b) Explain the role of Liver and hormones in maintenance of blood glucose level.
- c) Draw the Haworth's structure of Glucose and Sucrose (10 +6+4)
40. a) Explain how enzymes are classified according to IUB system (10)
- b) Discuss the factors that influence enzyme activity (10)
