(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2023 ONLY)

23UBY405

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY - 2025

B.Sc.-BOTANY **MAXIMUM MARKS: 75**

SEMESTER: IV **TIME : 3 HOURS**

PART - III

BIOCHEMISTRY, BIOPHYSICS & BIOINSTRUMENTATION

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. (K1)

1. Which of the following is **NOT** a disaccharide?
   (a) Galactose (b) Sucrose (c) Maltose (d) Lactose

2. Enzymes that catalyze the transfer of atom or group between two molecules is called ____.
   (a) Ligases (b) Isomerases (c) Transferases (d) Oxidoreductases

3. Molecular weight is the ratio of _____.
   (a) Mass and Mass (b) Mass and Mole (c) Weight and Mass (d) Mole and Mole

4. _____ bond formation involves complete electron transfer between atoms?
   (a) Ionic bond (b) Metallic bond (c) Covalent bond (d) Partial covalent bond

5. Buffers react with _____ ions.
   (a) Sodium (b) Potassium (c) Magnesium and Calcium (d) Hydrogen and hydroxyl

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. Define biomolecules.

7. Give a note on enzymes.

8. Differentiate atomic weight and molecular weight.

9. Define triple covalent bond with an example.

10. Explain the principle of centrifugation.

SECTION – B (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Describe the physical and chemical properties of lipids.

(OR)

b) List out the functions of proteins.

12. a) Differentiate between Apo enzyme and co-factor.

(OR)

b) Enumerate what are the factors affecting the enzyme activity?

(CONTD……2)

13. a) Analyse difference between molarity and normality and how will you find the concentration of solution?.

(OR)

b) Explain the concept of pH and How can you determine the hydrogen ion concentration in solution.

14. a) State the laws of thermodynamics.

(OR)

b) What is electron spin? Bring out its applications.

15. a) Examine the working principle of spectrophotometer and its applications.

(OR)

b) Describe the paper chromatography and its applications.

SECTION – C (5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

16. a) Outline the classification of carbohydrates and illustrate with suitable structure.

(OR)

b) Give a detailed account on the classification of proteins.

17. a) Discuss in detail about the steps involved in enzyme action.

(OR)

b) What are enzyme inhibitors? Examine the difference between reversible and irreversible enzyme inhibitors.

18. a) A solution is prepared using 20 g of sodium sulphate. The volume of the solution is 150 mL. Calculate the molarity of the given solution of sodium sulphate.

(OR)

b) Calculate the pH and pOH of the following solutions.

(i) 0.025 M HCl

(ii) 0.35 M LiOH

19. a) Write a detailed account on the types of chemical bonds.

(OR)

b) Describe the Pauli’s exclusion principle and its applications.

20. a) Discuss in detail about different types of centrifuges and highlight its applications.

(OR)

b) Elucidate the working principle of polyacrylamide gel electrophoresis and its importance.

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