



Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3of UGC Act 1956, Category A by MHRD (now MoE)

Re-accredited with an A++ Grade by NAAC CGPA 3.65/4, Category I by UGC

Coimbatore - 641043, Tamil Nadu, India

Bachelor's Degree Arrear Examination - May 2025

I Semester

Batch : 2024 / 2023

Major : Biochemistry and Biotechnology

Time : 3 Hours

Max. Marks : 100

23BBCC01 Introduction to Biochemistry and Biomolecules

Course Outcomes:

At the end of the course students will be able to

CO1. Understand the fundamental knowledge and basic concepts and principles of biochemistry.

CO2. Assess about the structure and functions of biomolecules in living system

CO3. Understand the physical and chemical properties of biomolecules.

CO4. To impart knowledge on the structure and biologically important complex biomolecules.

CO5. To study the nature, physical and electrochemical properties of amino acids in proteins.

Part A

10 x 1 = 10

Choose the Correct Answer

1. The Henderson – Hasselbalch equation CO1K3
 - a. Allows the graphic determination of the molecular weight of a weak acid from its pH alone
 - b. Does not explain the behavior of di- or tri-basic weak acids
 - c. Employs the same value for pKa for all weak acids
 - d. relates the pH of a solution to the pKa and the concentrations of acid and conjugate base
2. One of the following is not an aldose CO1K2
 - a. Glucose
 - b. Galactose
 - c. Mannose
 - d. Fructose
3. Peptidoglycan consists of all the three elements, EXCEPT CO2K1
 - a. Glycan backbone
 - b. Peptide cross linkage
 - c. Tetrapeptide side chain
 - d. Teichoic acid
4. Which of the following polysaccharide is not having α -glycosidic bond? CO2K2
 - a. Starch
 - b. Glycogen
 - c. Dextrin
 - d. Cellulose
5. The nitrogenous base present in lecithin CO3K2
 - a. Choline
 - b. Ethanolamine
 - c. Inositol
 - d. Serine
6. One of the following is an amphipathic lipid CO3K1
 - a. Phospholipids
 - b. Fatty acid
 - c. Bile salts
 - d. All of the above
7. The acid amino acid found in protein structure CO4K2
 - a. Arginine
 - b. Proline
 - c. aspartic acid
 - d. glutamine
8. The bonds in protein structure that are not broken on denaturation. CO4K2
 - a. Hydrogen bonds
 - b. Peptide bonds
 - c. Ionic bond
 - d. Disulfide bonds
9. The nitrogenous base not present in RNA structure CO5K1
 - a. Adenine
 - b. Guanine
 - c. Thymine
 - d. Uracil
10. The number of base pairs present in each turn (pitch) of A-form of DNA helix CO5K2
 - a. 8
 - b. 10
 - c. 11
 - d. 12

Count

Part B
Answer ALL questions

5 x 6 = 30

Each answer should not exceed 400 words or two pages

- 11.a. Illustrate the Henderson Hassel batch equation. CO1K2
- (or)
- 11.b. What is ionization of water? Discuss. CO1K2
- 12.a. Elaborate the biological importance of sucrose and maltose. CO2K2
- (or)
- 12.b. Interpret the composition of blood group polysaccharides. CO2K3
- 13.a. Discuss the structure of prostaglandins and its significance. CO3K1
- (or)
- 13.b. Give an overview of lipoproteins. CO3K4
- 14.a. List out the biological importance of glutathione. CO4K1
- (or)
- 14.b. Illustrate the colour reactions of amino acid. CO4K2
- 15.a. Discuss the structure and properties of nucleic acid. CO5K4
- (or)
- 15.b. Review on Watson-Crick model of DNA. CO5K2

Part C
Answer ALL questions

5 x12 = 60

Each answer should not exceed 800 words or four pages

- 16.a. Describe the weak interactions in aqueous systems. CO1K2
- (or)
- 16.b. Elaborate on water as a reactant and fitness of the aqueous environment. CO1K2
- 17.a. Illustrate the structure and biological importance of starch and glycogen. CO2K2
- (or)
- 17.b. Summarize the importance of structural polysaccharides with examples. CO2K3
- 18.a. Explain the structure and classification of lipid based on backbone. CO3K2
- (or)
- 18.b. Elaborate the structure and chemistry of phospholipids. CO3K2
- 19.a. Discuss in detail on classification and structure of amino acids CO4K2
- (or)
- 19.b. Explain reactions of amino acids due to amino groups, carboxyl groups and R groups. CO4K2
- 20.a. Illustrate the structure and functions of major species of RNA. CO5K3
- (or)
- 20.b. Explain the structure and active forms of fat soluble vitamins. CO5K2
