



*J. Sambal*

**Avinashilingam Institute for Home Science and Higher Education for Women**  
 (Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD)  
 Re-accredited with 'A++' Grade by NAAC. Recognised by UGC Under Section 12B  
 Coimbatore - 641 043, Tamil Nadu, India

**Bachelor's Degree Examination - November 2024**  
**I Semester**

**Class : I UG / 2023 Batch**  
**Major : Biochemistry and Biotechnology**

**Time : 3 Hours**  
**Max. Marks : 100**

**23BBCC01 Introduction to Biochemistry and Biomolecules**

**Course Outcomes :**

- 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**

- Bond angle in water is \_\_\_\_\_.  
 a. 102.5°  
 b. 104.5°  
 c. 107.5°  
 d. 109.5°  
 CO1K1
- Water molecule that gains a hydrogen ion becomes \_\_\_\_\_.  
 a. hydroxide ion  
 b. deuterium ion  
 c. hydronium ion  
 d. tritium ion  
 CO1K1
- Glycosaminoglycans present in the synovial tissues and fluids is \_\_\_\_\_.  
 a. chondroitin sulphate  
 b. heparin  
 c. hyaluronic acid  
 d. keratin sulphate  
 CO2K1
- The disaccharide which does not show mutarotation is \_\_\_\_\_.  
 a. sucrose  
 b. cellobiose  
 c. maltose  
 d. lactose  
 CO2K1
- The degree of adulteration of butter is determined by \_\_\_\_\_.  
 a. ~~saponification~~ saponification  
 b. acid number  
 c. iodine number  
 d. RM number  
 CO3K1
- PGE2 is a derivative of \_\_\_\_\_.  
 a. oleic acid  
 b. palmitic acid  
 c. arachidonic acid  
 d. stearic acid  
 CO3K1
- The primary level of protein structure organization is the \_\_\_\_\_.  
 a. pleated sheet organization of amino acids  
 b. helical orientation of amino acids  
 c. linear arrangement of amino acids  
 d. complexity of amino acids  
 CO4K1
- Peptide linkages are identified by \_\_\_\_\_.  
 a. ninhydrin test  
 b. paulys test  
 c. million nasse test  
 d. biuret test  
 CO4K1
- Denaturation of DNA results in \_\_\_\_\_.  
 a. loss of hydrogen bonds  
 b. loss of helical structure  
 c. increase in  $T_m$   
 d. an increase in molecular weight  
 CO5K1
- Megaloblastic anaemia develops due to the defective utilization of \_\_\_\_\_.  
 a. vitamin B12 & B9  
 b. vitamin B1 & B2  
 c. vitamin B1 & B6  
 d. vitamin B1 & B12  
 CO5K1

**Part B**  
**Answer ALL questions**  
**Each answer should not exceed 400 words or two pages**

**5 x 6 = 30**

- 11.a. How does the ionization of water contribute to homeostasis in living organisms?  
(or)  
11.b. Briefly explain the properties of water that facilitate the cellular processes.
- 12.a. Explain why sucrose does not form osazone.  
(or)  
12.b. What are glycosaminoglycans? Outline their biological importance.
- 13.a. Interpret on the chemical tests to check the oil quality.  
(or)  
13.b. Explain in detail the structure and function of phospholipids.
- 14.a. Discuss about essential and non essential amino acids.  
(or)  
14.b. Discuss on the Sanger's and Edman degradation methods.
- 15.a. Elaborate on the role of nucleotides as source of energy and as second messengers.  
(or)  
15.b. Explain the features and functions of various types of RNA.

**Part C**  
**Answer ALL questions**  
**Each answer should not exceed 800 words or four pages**

**5 x 12 = 60**

- 16.a. Discuss in detail the uniqueness of water molecules that contribute to the chemical foundations of life.  
(or)  
16.b. Comment on the statement -Aqueous environment is considered fit for supporting life.
- 17.a. Elaborate on biological significance of structural polysaccharides.  
(or)  
17.b. Highlight the importance of bacterial cell wall polysaccharides.
- 18.a. Discuss in detail about the eicosanoids.  
(or)  
18.b. Elaborate on the lipoproteins.
- 19.a. Outline on the structural organization of proteins.  
(or)  
19.b. Elaborate in detail the importance of biologically active peptides.
- 20.a. Brief about the salient features of Watson and Crick model of DNA.  
(or)  
20.b. Elaborate on the sources and deficiency diseases of water soluble vitamins.

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