

12/8/22

Exam Roll Number

**B.Sc-M.Sc INTEGRATED PROGRAM
SEMESTER II EXAMINATION, 2022
PAPER NAME: BIOMOLECULES
PAPER CODE: BBT-CC03 TH**

(Write your Roll No on the top immediately on receipt of this question paper)

Time: Three Hours

Total Marks: 75

Attempt all the questions. All parts of the question must be attempted in continuation. Start answer of the fresh question on the new page. Cite examples and draw labelled diagrams wherever necessary.

Q1. Choose the Correct Answers to the following questions

[1 x15 =15]

- I. Proline is an imino acid?**
 - a) True
 - b) False
- II. D glucose and D Galactose are**
 - a) C2-epimers
 - b) C4-epimers
 - c) Anomers
 - d) None of the above
- III. Which of the following is not found in amylopectin**
 - a) α - 1,2 links
 - b) α - 1,6 links
 - c) α 1 ,4 links
 - d) None of these
- IV. The biologically active form of Vitamin A is**
 - a) Retinal
 - b) Retinol
 - c) Retinoic acid
 - d) All of the above.
- V. If OH group is below the ring in the cyclic structure of Glucose then configuration is**
 - a) β
 - b) α
 - c) D
 - d) None of the above
- VI. In RNA the sugar is**
 - a) ribose
 - b) deoxyribose
 - c) glucose
 - d) pentose
- VII. What is a bond between amino acids called?**
 - a) Ionic bond
 - b) Acidic bond
 - c) Peptide bond
 - d) Hydrogen bond
- VIII. Nucleoside contains**
 - a) Base-sugar
 - b) Base-phosphate
 - c) Base-sugar-phosphate
 - d) Sugar-phosphate

Fill in the blanks

- IX. Vitamin _____ undergoes a cycle of oxidation and reduction during the formation of active prothrombin, a blood plasma protein essential in blood clot formation.
- X. In cellulose the glucose residues have the _____ configuration
- XI. _____ acid is the precursor for the production of prostaglandin, leukotrienes, and thromboxane
- XII. In plasmalogen, glycerol moiety is linked to a fatty acid via _____ linkage
- XIII. In Gangliosides, a complex polysaccharide _____ sugar is present at the termini
- XIV. In glycoproteins, anomeric carbon through a glycosidic link to the -OH of a Ser or Thr residue are called _____ linked
- XV. In fatty acid _____ is the nomenclature that starts counting from the CH₃ carbon as C1

Q2. Attempt ANY THREE of the following.

[5x3 =15]

- A. Differentiate between Fischer and Haworth projection formulas. Cite one example. What is a glycosidic bond?
- B. Explain the importance of a buffer system. Cite examples. How does a buffer resist its change in pH?
- C. Differentiate between an alpha helix and a beta-sheet.
- D. Briefly explain the major noncovalent interactions present in a protein structure. Give examples of aromatic amino acids.
- E. What is a peptide bond? Briefly explain the properties of a peptide bond.

Q3. Attempt ANY THREE of the following.

[5x3 =15]

- A. Explain with structures different conformations of sugars.
- B. Write short notes on proteoglycan, their structure, and function.
- C. Describe how carbohydrates serve as informational molecules.
- D. Describe the process of formation of the glycosidic bond.
- E. What do you mean by reducing and non-reducing sugars and what are the tests used to distinguish them.

Q4. Attempt ANY ONE of the following.

[15x1=15]

- A. Briefly describe types of lipids in membrane and their distribution.
- OR
- B. Enumerate role of lipids and mechanism of lipids as a signaling molecule.

Q5. Attempt ANY THREE of the following.

[5x3 =15]

- A. Briefly describe the Watson and Crick model of DNA.
- B. What are the important features of a vitamin? Discuss with the help of examples the role of vitamin derived coenzymes.
- C. Name the cofactors that are derived from vitamin H and vitamin B6. Cite two examples each for their deficiency disorders.
- D. Briefly explain the synthesis of vitamin D in the skin.
- E. Differentiate between a nucleotide and a nucleoside. With the help of the experimental evidence prove that DNA is the genetic material.

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