

### Section D

8. (a) Discuss the concept of hormone replacement therapy and provide examples of its applications in the treatment of hormone-related disorders or imbalances. **8**
- (b) Discuss the functions and mechanisms of action of adrenal hormones, including glucocorticoids and mineralocorticoids. **8**
9. (a) Describe the functions of the hypothalamus and pituitary gland in hormone regulation, including the release of growth hormones, antidiuretic hormone (ADH), and oxytocin. **8**
- (b) Explain the concept of pheromones and provide examples of how they are used in nature, including their role in social and reproductive interactions among animals. **8**

Roll No. ....

Total Pages : 04

**LMDE/D-23**

**6031**

STRUCTURES AND FUNCTION OF  
BIOMOLECULES  
(Wef 2023-24 LOCF)  
BCH-101

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all. Q. No. **1** is compulsory. Attempt *four* more questions, selecting *one* question from each Section. All questions carry equal marks.

1. (i) Explain O-linked and N-linked glycosylation ?
- (ii) Illustrate Triglycerides. Classify and explain with structures.
- (iii) What are complex lipids ? Explain any *two* with structure and function.
- (iv) Describe Cori's Cycle along with its significance.
- (v) Discuss the importance of the thyroid hormone in maintaining metabolic rate and overall health.
- (vi) Define the interactions that contribute to the stabilization of secondary protein structures like alpha helices and beta sheets.

- (vii) Illustrate three catabolic routes of anaerobic pathways.
- (viii) Define the term "endocrine disruptors" and provide an example of a chemical that can act as an endocrine disruptor. **8×2=16**

### Section A

- 2. (a) Describe the structure and function of three biochemically important disaccharides. **8**
- (b) Define glycosaminoglycans. Explain *three* important GAGs with suitable structures and functions. **8**
- 3. (a) Describe the structure of bacterial cell wall polysaccharides. **8**
- (b) Discuss the physicochemical properties of water and their significance in biological systems. Also, explain the concept of stereoisomerism in carbohydrates. **8**

### Section B

- 4. (a) Explain in detail the structural organization of proteins. Write functional properties of proteins. **8**
- (b) Discuss the importance of optical activity in amino acids and its relationship to the chiral nature of amino acids. **8**

- 5. (a) Describe the structural characteristics of purines and pyrimidines, including their ring structures and chemical compositions. **8**
- (b) Explain the difference between enantiomers and diastereoisomers, and provide examples of each in the context of amino acids. How does stereochemistry impact the function of proteins in living organisms ? **8**

### Section C

- 6. (a) Explore the structure, properties, and functions of phospholipids in cell membranes. **8**
- (b) Describe the chemical composition and biological role of lipoproteins, including their role in cholesterol transport and the implications for cardiovascular health. **8**
- 7. (a) Discuss the structure and functions of fat-soluble Vitamins. Explain how these Vitamins are absorbed and utilized in the body and the consequences of deficiencies or excess intake. **8**
- (b) Describe the structure and functions of sphingolipids, including sphingomyelins and glycosphingolipids. **8**