

**140MDT321011**  
**267(N)/321511-NEP**

**B.Sc. (First Semester)**  
**EXAMINATION, 2024-25**

**BIO CHEMISTRY**  
**(Molecules of Life)**  
**(SOLS/BC/MD—01)**

**Time : Two hours]**

**[Maximum Marks : 70**

*Notes: (i) Attempt any **five** questions from Section A and any **three** questions from Section B.*

*(ii) Answer each question of Section A within 50 words.*

*(iii) Limit your answers within the given answer book. Additional answer book (B-Answer book) should not be provided or used.*

**Section-A**

**Note:** *Attempt any **five** questions. Each question carries 5 marks.*

- 1.** Explain the role of water as a biological solvent and its importance in biochemical reactions.

2. ✓ What is rancidity? What factors contribute to the rancidity of fats?
3. ✓ What are oligosaccharides? Give examples of common oligosaccharides.
4. What is the saponification number? What is the significance of the saponification number in fats and oils?
5. ✓ What is a buffer in a biological system? What is the significance of buffering in cellular metabolism? Give an example.
6. ✓ What are amino acids? What is the general structure of an amino acid? Give an example.
7. ✓ What is a nucleoside? How do nucleosides differ from nucleotides?

### Section-B

**Note:** *Attempt any three questions. Each question carries 15 marks.*

1. ✓ Differentiate between the proteins' primary, secondary and tertiary structures and provide examples of each type.

2. Discuss the importance of cellulose. What is the composition of cellulose and how does its unique structure contribute to its role in providing rigidity and strength to plant cell walls?
3. Explain the Henderson-Hasselbalch equation and its significance in acid-base chemistry. Discuss the limitations of the Henderson-Hasselbalch equation.
4. Discuss the role of triacylglycerols in cellular structure and function. How do triacylglycerols contribute to membrane integrity and signalling pathways?
5. Discuss the structure and function of transfer RNA (tRNA) in protein synthesis.
6. Write notes on  
(a) Essential fatty acids, (b) Chitin,