

758102**January 2023****M.Sc. (Life Sciences) - Ist Semester****Structure and Functions of Biomolecules (MLS-102)**

Time: 3 Hours]

[Max. Marks. : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. Write short notes on the following :

- (a) Henderson-Hasselbalch equation. (1.5)
- (b) Proteoglycans. (1.5)
- (c) Disaccharides. (1.5)
- (d) Titration curve of Glycine. (1.5)
- (e) Secondary structure of proteins. (1.5)
- (f) Iodine Number. (1.5)

- (g) Sterols. (1.5)
- (h) Chargaff's rules. (1.5)
- (i) Nucleotides. (1.5)
- (j) RNA. (1.5)

PART-B

- 2. (a) Explain structure, occurrence and biological importance of monosaccharides? (10)
- (b) What is the importance of Glycosaminoglycans? (5)

- 3. (a) What is the significance of Ramachandran plot? (5)
- (b) Explain basis of classification and different structural levels (Primary, secondary, tertiary & quaternary) found in proteins. (10)

- 4. Explain the Watson and Crick's Double Helix Model of DNA Structure and give explanation on DNA's structural polymorphism (A, B and Z-DNA). (15)

- 5. (a) What are the various types of sphingolipids present in biomembranes? (5)
- (b) Explain the structure and properties of different types of phospholipids found in biomembranes. (10)

- 6. (a) Discuss the experimental evidences (Griffith and Avery/Macleod and McCarty) put forward to prove nucleic acids as the genetic material. (10)
- (b) Draw the structure and explain the properties of purines and pyrimidine bases. (5)

7. Write short notes on the following :

- (a) Role of chaperones in Protein folding.
- (b) Polysaccharides. (15)