

(i) Printed Pages : 3

Roll No.

(ii) Questions : 9

Sub. Code :

2	5	9	3	7
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Exam. Code :

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M.Sc. Bio-Technology 1st Semester
(2125)

BIOMOLECULES

Paper-MBIO-102

Time Allowed : Three Hours] [Maximum Marks : 80

Note :— Attempt **FIVE** questions from all sections, including question number 1 which is compulsory. Attempt at least **ONE** question from each Section.

1. Give very brief answer :

- (1) Write the name and structure of a sugar with no chiral carbon.
- (2) What are structural components of sucrose?
- (3) Give the names of glucose epimers.
- (4) Write the names of two aromatic amino acids.
- (5) Give the names of two components of mammalian membrane.
- (6) What are two non-standard nucleotides?
- (7) Write the names of two ketone bodies.
- (8) Give names of non-coding RNAs. 8×2=16

SECTION-I

2. (a) Briefly describe the five chemical reactions of hexoses. 8
(b) What is a hetero polysaccharide? Write the structure and functions of two hetero-polysaccharides. 8
3. (a) Write the difference between starch and glycogen. 8
(b) Why is the pentose phosphate pathway so significant in the body? 8

SECTION-II

4. (a) Briefly describe the various roles of proteins in the biological system with examples. 8
(b) What is a peptide bond and its relationship with the Ramachandran plot? 8
5. (a) What are the secondary structural motifs? Explain a helix with a diagram in protein structure. 8
(b) Briefly describe the structure of myoglobin. Explain why myoglobin is the best protein to establish the relationships between structure and functions of proteins. 8

SECTION-III

6. (a) What are the membrane lipids? Write the structure of five membrane lipids. 8
(b) Write a short note on the acid values of a fat sample. 8
7. (a) What is β -oxidation? Write the β -oxidation pathway and why it is essential for energy production. 8
(b) Briefly describe about ketone bodies. Also, write the significance of ketone bodies in metabolism. 8

SECTION-IV

8. (a) Write the experiment that proves that nucleic acid is genetic material. 8
- (b) Write the structural features of the Watson and Crick model of DNA. 8
9. (a) Write differences between A, B, and Z DNA. 8
- (b) Briefly describe *de novo* biosynthesis of nucleosides. Why is this important? 8