SL No of QP :9330

Unique Paper Code	:	2494001001
Name of the course	:	B.Sc. (Hons.) Biochemistry
Name of the Paper	:	Molecules of Life (GE)
Semester	:	II
Duration	:	2 Hours
Maximum Marks	:	60 marks

Instructions for Candidates

There are 6 questions.
Attempt any 4 questions. All questions carry equal marks.
***Question no. 1** is compulsory*

1. Give one example for the following:

(i) A deaminated product of cytosine.
(ii) A reducing disaccharide.
(iii) Storage polysaccharide of animals.
(iv) An amino acid having phenol group.
(v) An amino acid having sulfur atom.
(vi) An unsaturated fatty acid.
(vii) RNA which codes for protein synthesis.
(viii) An optically inactive amino acid.
(ix) The polysaccharide found in exoskeleton of insects.
(x) An epimer of mannose.
(xi) An anomer of α-D lactose.
(xii) 16 carbon containing saturated fatty acid.
(xiii) A sugar found in fruits.
(xiv) A vitamin derived from cholesterol.
(xv) A nucleotide which is the energy currency of the cell.

(1x15=15)

2a) Identify whether the following statements are true or false and justify your answer:

(i) Glucose and Galactose are epimers of each other.
(ii) Histidine has buffering capacity at physiological pH.
(iii) Palmitic acid has a lower melting point than palmitoleic acid.
(iv) Glucose is stored as glycogen in animals.
(v) DNA has uniform positive charge.
(vi) All amino acids are optically active.

b) What is a buffer? Discuss the role of any two biologically important buffers.

c) Define the following:

(i) Chargaff's Rule.
(ii) Lipids as storage fuel.
(iii) Aromatic amino acids.

(9, 3, 3)

3. Differentiate between the following:

(i) Storage and Structural polysaccharides.
(ii) DNA and RNA
(iii) Standard and Non-standard amino acids.
(iv) Glycogen and Cellulose.
(v) Glycolipids and phospholipids.

(3 x 5=15)

4(a) Draw the structure of the following:

(i) D-Fructose
(ii) Lactose
(iii) Glycine
(iv) Adenine
(v) Palmitic acid
(vi) 2-deoxyribose

(b) Explain the role of biologically important nucleotides.

(c) Write a short note on the organization of DNA in chromatin.

(6, 4, 5)

5(a) Sucrose is non-reducing sugar, but lactose is reducing sugar. Why?

(b) Draw the structure of t-RNA.

(c) Mention the properties of water that make it an ideal solvent.

(5, 5, 5)

6(a) Explain why?

(i) Amino acids exist as zwitterions in solution.
(ii) Glycogen is a storage polysaccharide in animals.
(iii) Absorbance of DNA at 260 nm increases upon heating.
(iv) Linoleic acid is considered as an essential fatty acid in animals.
(v) Glycine is optically inactive amino acid.

(b) Explain the stereoisomerism in carbohydrates by giving suitable examples.

(10, 5)