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RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree in Applied Sciences
Second Year Semester II Examination – January / February 2023

CHE 2104 – INTRODUCTION TO BIOCHEMISTRY

Time: One (01) hour

Answer all questions.

1. a) Explain why the Tyrosine and tryptophan are significantly more polar than phenylalanine using relevant chemical structures?

(9 marks)

b) State two health benefits of Vitamin C.

(6 marks)

c) List the three characteristic components in nucleotides.

(6 marks)

d) What is the major structural difference in DNA and RNA in terms of above components.

(4 marks)

2. a) Draw and label, the Energy vs Reaction profile to compare the reaction with and without enzymes.

(6 marks)

b) How does a prosthetic group differ from a cofactor?

(5 marks)

c) Briefly describe the geometry of the binding site of the hemoglobin molecule with aid of a suitable diagram.

(8 marks)

d) Briefly explain why amino acids are called ampholytes. Use glycine as an example.

(6 marks)

3. a) State major differences of α-helix and β-sheets.

(5 marks)

b) Pka of the dissociation of -COOH group of Methionine is 2.28. If the isoelectric point of the Methionine is 5.74, calculate the Pka of the dissociation of the ammonium group.

(10 marks)

c) Briefly describe the Bohr effect.

(10 marks)

4. a) What are the different types of linkages present in amylopectin? Where do they find in polymers?

(6 marks)

b) State the major difference between amylopectin and glycogen.

(3 marks)

c) What factors determine the hydrophilic or hydrophobic nature of the phospholipids. Illustrate using a suitable diagram.

(10 marks)

d) Give two usages of cholesterol in humans.

(6 marks)

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