RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. Honours in Chemistry
Third Year – Semester II Examination – January / February 2023

CHE 3202 – ADVANCED BIOCHEMISTRY

Time: Two (02) hours

Answer all questions.

1.

a) Briefly discuss the importance of Lineweaver-Burk kinetics hence derive the Lineweaver Burk equation from Michaelis-Menten equation.

(20 marks)

b) Compare the uncompetitive inhibitors and noncompetitive inhibitors in terms of binding sites.

(30 marks)

c) Graphically compare the kinetics of competitive, uncompetitive and noncompetitive inhibitors using the same Lineweaver-Burk plot. Clearly indicate the Km and Vmax in the plot.

(30 marks)

d) Illustrate Homotropic effectors giving suitable examples.

(20 marks)

2.

a) Describe the active co-transport of Na^+ and K^+ in animal cells using suitable diagrams. Clearly indicate the two conformations involved.

(50 marks)

b) Discuss the chemical reactions taking place in Glycolysis in both energy investment phase and energy generation phase. Chemical modifications and respective enzymes in each step are expected.

(50 marks)

3.

a) Pentose phosphate pathway doesn't involve in direct production or consumption of energy. However, it is an important metabolic fate of glucose. Explain.

(50 marks)

b) Discuss the Amino acid catabolism in vertebrate liver.

(50 marks)

4.

a) How the DNA fingerprinting can be used to find the identity of a person using gel electrophoresis?

(40 marks)

b) The affinity chromatography is advantageous over other chromatographic methods. Explain.

(30 marks)

c) Briefly explain the chemistry of salt and solvent precipitation.

(30 marks)

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