



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

**B.Sc. (General) Degree in Applied Sciences
Second Year - Semester II Examination – November/December 2016**

CHE 2104 – INTRODUCTION TO BIOCHEMISTRY

Time: One (01) hours

Answer all questions

100 marks

1.

- a) Amino acids have properties that are well-suited to carry out a variety of biological functions. Name four (04) of them (05 marks)
- b) Draw the structure of Lysine and identify its α , β , γ , δ and ϵ carbons (05 marks)
- c) Describe the zwitter-ionic nature of the lysine residue (15 marks)

2.

- a) Using a flow chart briefly describe protein folding with respect to primary, secondary, tertiary and quaternary structures (05 marks)
- b) Compare the structural properties of α -helix and β -sheet of proteins (05 marks)
- c) Briefly describe the phenomenon of protein denaturation (15 marks)

3

- a) Briefly describe the specific role of Myoglobin (Mb) and how Mb binds to oxygen (10 marks)
- b) The process by which oxygen binds to hemoglobin (Hb) is cooperative. Briefly describe the aforementioned cooperative binding mechanism. (15 marks)

4

- a) Name 5 properties of enzymes (10 marks)
- b) Briefly explain the role of the active site in an enzyme catalyzed reaction (05 marks)
- c) The Michaelis-Menten equation is shown below. Rearrange the equation to give a straight line and show the x and y intercepts in the plot (10 marks)

$$v_o = \frac{V_{\max} [S]}{K_m + [S]}$$

where

v_o = initial reaction velocity

V_{\max} = maximal velocity

K_m = Michaelis constant = $(k_{-1} + k_2)/k_1$

$[S]$ = substrate concentration