



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2009/2010

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF PHARMACY

HMB 110: BIOCHEMISTRY I

DATE: Monday 21st December, 2009

TIME: 11.00 a.m – 1.00p.m

INSTRUCTIONS: Answer any **FOUR (4)** questions

1. Discuss uncompetitive inhibition. (15 marks)
2. Describe the reaction schemes to explain bisubstrate reactions occurring via the ordered and ping pong mechanisms. (15 marks)
3.
 - a) Describe the Edman degradation process and the ninhydrin reaction of amino acids. (10 marks)
 - b) Give the structure of:
 - i) Glucogen (2 marks)
 - ii) D-erythrose (1 mark)
 - iii) Phosphatidylcholine (1 mark)
 - iv) Phosphatidylserine (1 mark)
4.
 - a) Draw a structure of a pentapeptide that contains an aliphatic R- group, aromatic R- group, an alcohol R- group and any other amino acids. (5 marks)
 - b) Identify each residue in your peptide, by name standard abbreviations and according to class. (5 marks)
 - c) Identify five uses of nucleoside triphosphate. (5 marks)

5. a) One nucleotide of NADH in the cytosol enters the mitochondrion respiratory chain via glycerol phosphate shuttle. How many molecules of ATP will it form? Clearly explain your answer using the chemosmotic theory.
- b) Write the reactions of triacylglycerol hydrolysis in adipose tissue and skeletal muscle.
6. How is the model proposed by Singer and Nicholson pivotal to our current understanding of the organization of membrane lipids? (15 marks)
7. a) With a relevant example, show how acidic buffers maintain the pH of a solution at a relatively constant value.
- b) How do the open chains of glucose and fructose undergo structural transformation to ring forms?