



Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF ENVIRONMENT AND HEALTH SCIENCES

DIPLOMA IN COMMUNITY AND HEALTH

(DCH 13S)

ABT 2101 : STRUCTURES OF BIOMOLECULES

SUPPLEMENTARY/SPECIAL: EXAMINATIONS

SERIES: MARCH 2014

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this paper

- *Answer booklet*

This paper consists of **FIVE** questions.

Answer Question **ONE (compulsory)** and any other **TWO** questions

QUESTION ONE

- a) (i) Define the following terms:
- Optical activity (2 marks)
- Asymmetric carbon atom (2 marks)
- (ii) Using harworth projection structures differentiate between α -D glucose and β -D glucose
(4 marks)
- (iii) Differentiate homopolysaccharides and heteropolysaccharides. (4 marks)
- b) (i) Give the structure of the simplest amino acid glycine. (2 marks)
(ii) Using the structure in b(i) illustrate the formation of a peptide bond. (4 marks)
(iii) State two main functions of proteins. (2 marks)
(iv) Define isoelectric point in protein (2 marks)
- c) (i) Define bound fats. (2 marks)
(ii) Illustrate the formation of a diglyceride using the structures of glycerol and general formular for free fatty acids. (4 marks)
(iii) Define the term rancidity. (2 marks)

QUESTION TWO

- a) Outline the two forms of classification of monosaccharides and give examples. (4 marks)
b) Using chemical structure differentiate the amylose and amylopectin components of starch.

(11

marks)

QUESTION THREE

- a) (i) What are essential amino acids (2 marks)
(ii) List the eight essential amino acids (4 marks)
- b) (i) Define denaturation as applied to proteins. (2 marks)
(ii) Outline seven characteristics of denatured proteins. (7 marks)

QUESTION FOUR

- a) Explain five nutritional functions of edible fats/ oils. (10 marks)
b) (i) Define an antioxidant (2 marks)
(ii) Classify antioxidants used in fats/oils based on their mode of action (3 marks)

QUESTION FIVE

- a) Describe the four structures of proteins **(12 marks)**
- b) Explain why all amino acids are referred to as α amino acids. **(3 marks)**