



Technical University of Mombasa

Faculty of Applied and Health Sciences

DEPARTMENT OF **ENVIRONMENT AND HEALTH SCIENCE**

DIPLOMA IN COMMUNITY HEALTH AND HIV MANAGEMENT

DIPLOMA IN NUTRITION AND HEALTH

(DCHM 12S/ DNH 12S)

ABT 2101: STRUCTURAL BIOCHEMISTRY

SPECIAL/SUPPLEMENTARY: EXAMINATIONS

SERIES: FEBRUARY 2013

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

This paper consists of 2 **PRINTED** pages

Question ONE

- a) Define the following terms :
- (i) Optical activity (2marks)
 - (ii) Rancidity (2marks)
 - (iii) Asymmetric carbon atom (2marks)
 - (iv) Isoelectric point (2marks)
- b) Using chemical structures differentiate between mono and diglycerides. (4marks)
- c) State FOUR physical properties of monosaccharides (4marks)
- d) (i) Explain the term anomers (2marks)
- (ii) Using Haworth projection structures differentiate between α -D and β -D-glucose. (4marks)
- e) Explain the term essential nutrients (4marks)
- f) Give FOUR nutritional functions of fats (4marks)

Question TWO

- a) (i) Illustrate the chemical structures of amylose and amylopectin components of starch molecules. (4marks)
- (ii) State FOUR differences between amylose and amylopectin components of starch. (8marks)
- b) Use a chemical equation to illustrate fermentation of hexoses. (3marks)

Question THREE

- a) Name and explain three major groups of carbohydrates based on number of monosaccharides units in their molecules and give one example in each. (9marks)
- b) Illustrate the formation of the following bonds using Haworth projection formula of glucose
- (i) α (1,4) glucosidic bond (3marks)
 - (ii) β (1,4) glucosidic bond (3marks)

Question FOUR

- a) Name eight agents that cause denaturation of proteins (4marks)
- b) State seven characteristics of denatured proteins (7marks)
- c) Give FOUR properties of proteins at isoelectric point. (4marks)

Question FIVE

- a) Describe FIVE uses of carbohydrates in food industry (10marks)
- b) Differentiate homo polysaccharides for heteropolysaccharides. (5marks)