

TECHNICAL UNIVERSITY OF MOMBASA
DEPARTMENT OF ENVIRONMENT AND HEALTH SCIENCES
DIPLOMA IN COMMUNITY HEALTH
DCHM16S
ABT 2201 STRUCTURES OF BIOMOLECULES

SERIES: DECEMBER SERIES

TIME: 2 HOURS

INSTRUCTIONS:

QUESTION **ONE** IS COMPULSARY. ANSWER ANY OTHER **TWO** QUESTIONS

SECTION 1

Question ONE

- a) Define the following terms: (2 marks)
- i. Asymmetric carbon atom (2 marks)
 - ii. Optical activity (2 marks)
 - iii. Essential amino acids
- b) i. State **FOUR** physical properties of monosaccharides. (4 marks)
- ii. Illustrate the following functional groups of monosaccharides (4 marks)
- i. Ketone group
 - ii. Aldehyde group
 - iii. Carboxylic acid group
 - iv. Hydroxyl group
- c) Differentiate between
- i. Simple glycerides and mixed glycerides (4 marks)
 - ii. Homopolysaccharides and Heteropolysaccharides (4 marks)
- d) Name the **EIGHT** essential amino acids (4 marks)
- e) Draw the Haworth structures of the following
- i. Glucose (2 marks)
 - ii. Fructose (2 marks)

Question TWO

- a) Give the chemical structures of amylose and amylopectin component of starch and state the major differences between the two. (12 marks)
- b) State THREE functions of carbohydrates in human nutrition (3 marks)

Question THREE

- a) Describe the FOUR structures of proteins (12 marks)
- b) Illustrate the formation of a peptide bond using glycine structure (3 marks)

Question FOUR

- a) Explain FIVE uses of carbohydrates in the food industry (10 marks)
- b) Explain the nutritional classification of proteins (5 marks)

Question FIVE

- a) Describe FIVE nutritional functions of fats (10marks)
- b) Illustrate formation of a triglyceride (5 marks)

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