



**TECHNICAL UNIVERSITY OF MOMBASA**  
**FACULTY OF APPLIED AND HEALTH SCIENCES**  
**DEPARTMENT OF PURE & APPLIED SCIENCES**

**UNIVERSITY EXAMINATION FOR:**

BACHELOR OF SCIENCE FOOD TECHNOLOGY AND QUALITY ASSURANCE

BACHELOR OF SCIENCE IN ENVIRONMENTAL PUBLIC HEALTH

**ABT4201: BIOCHEMISTRY 1**

**END OF SEMESTER EXAMINATION**

**SERIES: APRIL 2016**

**TIME: 2 HOURS**

**DATE:** Pick Date Select Month Pick Year

**Instructions to Candidates**

You should have the following for this examination

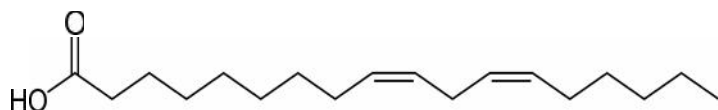
-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

**Do not write on the question paper.**

**Question ONE**

- a) Draw and name the structure of trehalose (2mks)
- b) What type of linkage that connects the two sugars in above (1mks)
- c) Cellulose and alpha amylose are both unbranched homopolysaccharides found in plants. How does the linkage between the glucose monomers in each polymer change its structure and its function? (3mks)
- d) Give the alpha numeric name and common name of the following fatty acid (2mks)



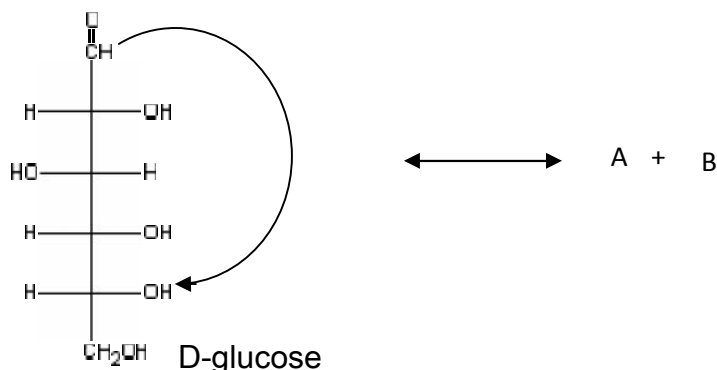
- e) Draw the structure of the pentapeptide Ser-Gly-Tyr-Ala-Leu. (3mks)

- f) What is the effect of a double bond on fatty acid structure and its melting point? Explain?  
(4mks)
- g) Explain why a glycogen molecule has only one reducing end, and yet have many non-reducing ends.  
(2mks)
- h) Name the types of reactions catalysed by the following classes of enzymes (3mks)
- I. Oxidoreductases
  - II. Transferases
  - III. Hydrolases
- i) The successive nucleotides of DNA are covalently linked through phosphate-group linkages. Using a diagram describe how these linkages are formed. (6mks)
- j) Describe how a peptide composed of glycine and Alanine is formed (4mks)

### Question TWO

- a) Using structures differentiate between adenosine and adenylate (4mks)
- b) Describe the Watson crick model for DNA structure (12mks)
- c) Distinguish between DNA and RNA molecules (4mks)

### Question THREE



- a) complete the reaction above giving the structure of A and B (4mrks)
- b) Draw the structure of sucrose and maltose clearly indicating the type of glycosidic linkages (6mrks)

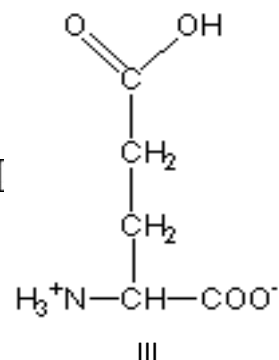
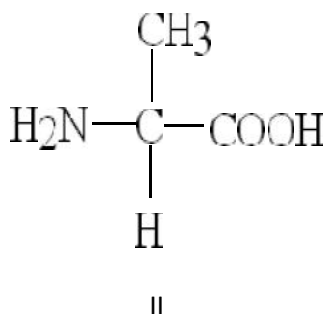
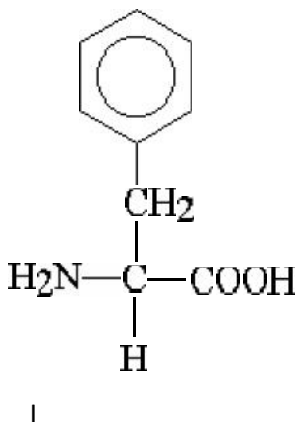
- c) Give reasons why sucrose is the only non-reducing disaccharide (2mks)
- d) State the functions of the following polysaccharides
- Starch
  - Cellulose
  - Glycogen (3mrks)
- e) Distinguish between amylose and amylopectin (5mrks)

#### Question FOUR

- a) Give the functions of fatty acids (4mrks)
- b) Draw the structure of the following fatty acids
- 1-Stearoyl, 2-linoleoyl, 3-palmitoyl glycerol
  - Phosphatidylcholine
  - Sphingomyelin (6mrks)
- c) Using an example, describe how phospholipids are hydrolysed by phospholipases

#### Question FIVE

- a) Name the following amino acids (3mks)



- b) Discuss the secondary structure of proteins (14mrk)
- c) Define active site of an enzyme (3mrks)