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KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR**

**SECOND YEAR SECOND SEMESTER
MAIN EXAMINATIONS**

FOR THE DEGREE OF B.ED (SCIENCE)

COURSE CODE: SCH 214


COURSE TITLE: BIOCHEMISTRY

DURATION: 2 HOURS

DATE: 1/8/2018 APRIL 2018 TIME: 9-11AM

INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other two (2) Questions.
 - Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of 3 printed pages  Please Turn Over

KIBU observes ZERO tolerance to examination cheating

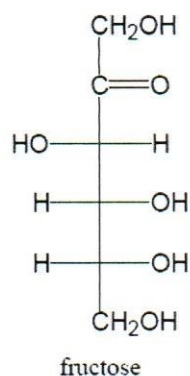
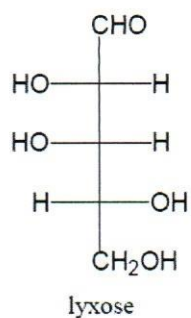
QUESTION ONE [30 MARKS]

1 a). Define the following terms. (5marks)

- I). Carbohydrates
- II). Enzymology
- III). Zwitterion ion
- IV). Steroids
- V). Biogenic substances

b). Differentiate between Lock and Key model and Induced fit model (4marks)

c) Identify the following compounds as D or L isomers, and draw their mirror images. (4marks)



d). Differentiate between the following terms.(4marks)

- i. Hemiacetal and Hemiacetal
- ii. Fats and Oils

e). Name and draw the sugars present in nucleic acid.(4marks)

f). What is the structural difference between an aldose and a ketose(2marks)

g). State four kinds of intramolecular interactions that are important in stabilizing proteins

Tertiary structures (4marks)

h). Draw the Fischer projections of D and L isomers of alanine and show chiral carbon in

alanine

(3marks)

QUESTION TWO [20MARKS]

- a). State and explain in detail the levels of proteins structures (8marks)
- b). State four main classes of biomolecules (2marks)
- c). The absorption spectrum of a molecule is primarily determined by the chemical structure of the chromophore, environmental factors can also affect λ_{\max} and ϵ .
Explain how these environmental factors affect the λ_{\max} and the ϵ (5marks)
- d). Explain the occurrence carbohydrates (5marks)

QUESTION THREE [20MARKS]

- a). Briefly explain the concept of enzyme inhibition by the following. (5marks)
- i). Reversible
 - ii). Irreversible
- b). Explain the following reactions of triglycerides (6marks)
- i). Catalytic hydrogenation
 - ii). Oxidation with Ozone
- c). Describe the separation and identification of amino acids by electrophoresis (8marks)
- d). State the three steps followed in an enzymatic catalysis (3marks)

QUESTION FOUR [20MARKS]

- a). i). Name the type of covalent bonds joining monomers in these biopolymers (3marks)
- i). polysaccharides
 - ii). Nucleic acids
 - iii). Proteins
- ii). Explain the four types of amino acids giving examples (8marks)
- b). Differentiate between the following terms. (4marks)
- i). Amylose and Amylopectin
 - ii). A nucleoside and nucleotide (2marks)

c) Draw the open – chain structures of a ketotetrose and aldotetroses(3marks)

QUESTION FIVE [20MARKS]

a) Explain the process of glycolysis.(20marks)