

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE (BIOMEDICAL, BIOCHEMISTRY, CHEMISTRY,
BIOLOGY & MATHEMATICS) AND BACHELOR OF EDUCATION (SCIENCE)

CHEM 231: ORGANIC CHEMISTRY II

STREAMS: B.Sc B.Ed (SCI)

TIME: 2 HOURS

DAY/DATE: THURSDAY 7/12/2017

11.30 A.M - 1.30 P.M

INSTRUCTIONS:

- Answer Question ONE and any other TWO Questions
- Do not write on the question paper

QUESTION ONE: [30 MARKS]

- (a) Draw the possible stereoisomers of 3-bromopentan-2-ol [4 Marks]
- (b) Name the following compounds including R and S designation. [3 Marks]

CHEM 231

- (c) Explain how chromatography is used in resolution of enantiomers. [3 Marks]
- (d) Fixing carbon two of butane and rotating carbon three in 60° increments in clockwise direction, various conformers are obtained. Draw and name each of them. [6 Marks]
- (e) Name the following compounds using IUPAC system of nomenclature. [7 Marks]

CHEM 231

(f) Give the main products of the following reactions.

[7 Marks]

QUESTION TWO [20 MARKS]

- (a) Explain physical properties of alkylhalide [8 Marks]
- (b) Explain the SN1 reaction in terms of kinetics, mechanisms and stereochemistry using the reaction between $(CH_3)_3CBr$ and CH_3COO^- [12 Marks]

QUESTION THREE [20 MARKS]

- (a) Briefly discuss synthesis of alcohols via Grignard reagent (giving general reaction equations for 1°, 2° and 3° alcohols synthesis. [10 Marks]
- (b) Discuss reaction of ethers and show it with clear mechanism using ethoxyethane. [10 Marks]

QUESTION FOUR [20 MARKS]

Briefly discuss the following

- (a) Effect of substituents on reactivity and orientation in electrophilic aromatic substitution. [5 Marks]
- (b) Reactions of alcohols as acids. [5 Marks]
- (c) Types of polar solvents used during substitution reaction. [6 Marks]
- (d) Preparation of alkylhalides from alcohols. [4 Marks]
-