



ELIZADE UNIVERSITY

ILARA-MOKIN

ONDO STATE

**FACULTY: BASIC AND APPLIED SCIENCES**

**DEPARTMENT: PHYSICAL AND CHEMICAL SCIENCES**

**FIRST SEMESTER EXAMINATIONS** *(2<sup>nd</sup> Stream)*

**2017/2018 ACADEMIC SESSION**

**COURSE CODE:** CHM 203  
**COURSE TITLE:** Organic Chemistry II  
**DURATION:** 2 hours

**HOD's SIGNATURE**

**TOTAL MARKS: 60**

**INSTRUCTION: Answer only three questions**

### Question One

- a. Mention any four factors that may influence the melting point of an organic compound. [8marks]
- b. Give a detailed explanation of how any of the factors mentioned in 1(a) affect the melting point of an organic compound [4marks]
- c. Give a brief explanation of each of the following terms [3marks]
  - i. Hybridization
  - ii. Isomerism
- d. i. Distinguish between Sigma and Pi bond [2marks]
  - ii. Predict the nature of hybridization exhibited by  $C_2H_2$  and determine the number of sigma and pi bonds found in molecule [3marks]

### Question Two

- a. Enumerate all the possible factors that contribute to the exceptional attributes of carbon. [5marks]
- b. Mention the major intermolecular forces of attraction found in molecules and arrange them in increasing order of strength [4marks]
- c. Write short notes on each of the following classes of isomerism and give one example in each case. [7marks]
  - Chain isomerism
  - Positional Isomerism
  - Functional
  - chain-cycle isomerism
- d. Classify the isomerism mentioned in 2(c) above under Structural and Geometric types of isomerism [4marks]

### Question Three

- a. With suitable illustrations differentiate between Heterolytic and Homolytic bond breaking [4marks]
- b. Differentiate between elimination and substitution reaction [2marks]
- c. i. What do you understand by rearrangement reaction? [3marks]
  - ii. Discuss the major types of rearrangement reactions [6marks]
- d. Compare and contrast unimolecular and bimolecular reactions [5marks]

### Question Four

- a. Write out all the possible geometric isomers of butene. Why are these isomers rigid in their structure? [5mks]
- b. Why are racemic compounds optically inactive? [2marks]
- c. Give a brief explanation for the following statements: [9marks]
  - (i) The more symmetrical a molecule is, the higher its melting point
  - (ii) The melting point of Benzoic acid is relatively higher than that of Benzyl alcohol
  - (iii) Cyclopentanethiol has a markedly *lower* melting point than cyclopentanol even though it has a higher molecular weight
- d. Predict which of the following molecules is/are capable of exhibiting hydrogen bonding: [4marks]
  - $H_2O$
  - Dimethyl ether,
  - Ethanol,
  - Amine.