



(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

**MAIN CAMPUS
UNIVERSITY EXAMINATIONS**

**2021/2022 ACADEMIC YEAR
SECOND/THIRD YEAR SECOND SEMESTER SPECIAL/SUPPLEMENTARY EXAMS
FOR DIPLOMA IN GENERAL AGRICULTURE AND HORTICULTURE**

**COURSE CODE: DAG 059
COURSE TITLE: BASIC ORGANIC CHEMISTRY**

DATE: 21ST APRIL 2022

TIME: 12-2 PM

INSTRUCTIONS TO STUDENTS

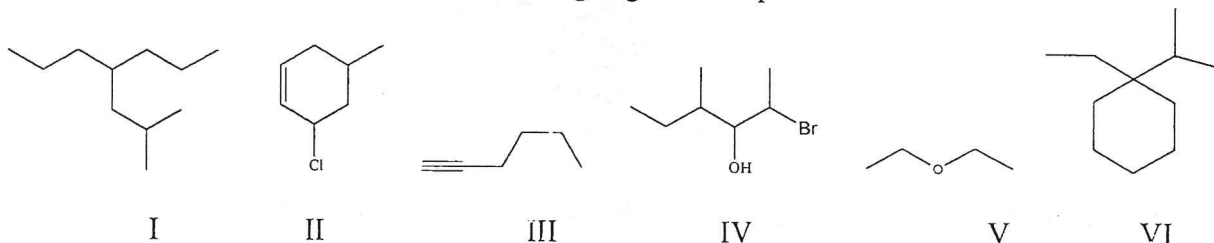
Answer all questions

Total marks=70

MMUST observes ZERO tolerance to examination cheating

QUESTION 1

a. Give the IUPAC names of the following organic compounds:



(6mks)

b. Draw the structural formulae for the following compounds:

- 4-ethyl-2-fluoro-3-methylheptane
- 2,3-dimethylhexanoic acid
- 4-sec-butyl-5-ethylnonane
-

(3mks)

c. With reasons, state which of the following compounds have:

- Higher boiling point:
 - 2,2-dimethylbutane and 2-methylpentane
 - Pentane and Octane

(4mks)

(ii) Higher solubility in water:

- But-1-ene or Butan-1-ol
- Alkanes and Alcohols

(4mks)

QUESTION 2

a. Write balanced equation for the complete combustion of the following compounds

- Methane
- Ethane

(3mks)

b. Discuss the physical and chemical properties of alkanes

(10mks)

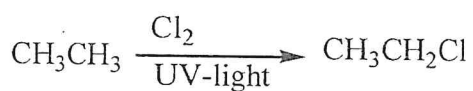
QUESTION 3

a. What are the products of the reactions below?

- $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3 + \text{HBr}$
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl} + \text{CH}_3\text{OH}$

(4mks)

b. Outline a mechanism that accounts for the following reaction indicating the initiation, propagation and termination steps.



(6mks)

QUESTION 4

- a) Differentiate the following;
- (i) Saturated and Unsaturated Hydrocarbons
 - (ii) Constitutional and Geometric Isomers
- (4mks)
- b) Name and draw structural formulae of the 3rd and 4th members of
- (i) Ketone
 - (ii) Carboxylic acid
- (4mks)
- c) Give two uses of ethanol
- (2mks)

QUESTION 5

- a) Discuss petroleum as a source hydrocarbon indicating the major distillation products together with their corresponding uses
- (8mks)
- b) Describe simple chemical test that would distinguish alkanes and alkenes
- (2mks)

QUESTION 6

- a) Draw and name structural isomers for the following compound; $\text{C}_4\text{H}_9\text{Br}$
- (2mks)
- b) With aid of structures differentiate between primary, secondary and tertiary alcohol
- (4mks)
- c) Discuss synthesis of aldehyde and ketone from alcohols
- (4mks)

