MAASAI MARA UNIVERSITY

REGULAR UNIVERSITY EXAMINATION
2017/2018 ACADEMIC YEAR
FIRST YEAR SECOND SEMESTER

SCHOOL OF SCIENCE & INFORMATION SCIENCE
BACHELOR OF SCIENCE IN WILDLIFE MANAGEMENT

COURSE CODE: CHE 1251
COURSE TITLE: BASIC ORGANIC CHEMISTRY

DATE: 25TH APRIL, 2018 **TIME: 1100 - 1300 HRS**

INSTRUCTIONS

Answer Question One and Any Other Two

QUESTION ONE (30 MARKS)

a) Define the following terms **(5MARKS)**

(i) Geometric isomers

(ii) Regioselectivity

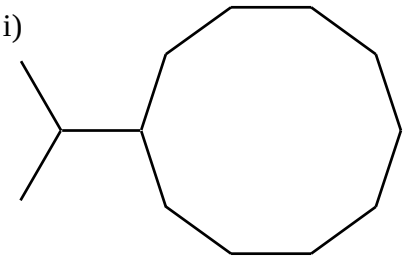
(iii) Polar covalent bond

(iv) Carbocation

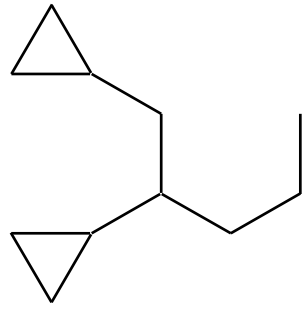
(v) Radical

b) Give the IUPAC name of the following compounds **(6 MARKS)**

i)



ii)



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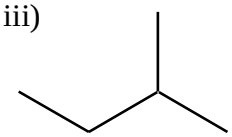

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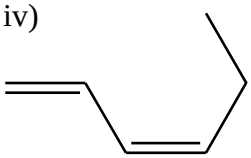

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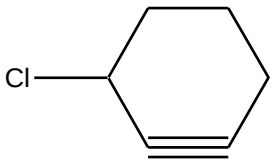
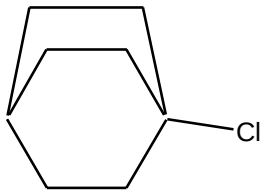


vi) 

c) Draw the structural formula of the following organic compounds **(6 Marks)**

i. *trans*- 2,3-Dichloro 2- butene

ii. 5- Chloro 2-methyl pent-2-ol

iii. 1,2 Propane diol

iv. Butyl dimethyl amine

v. 3-Bromo pentanal

vi. 1-Cyclohexyl cyclohexane

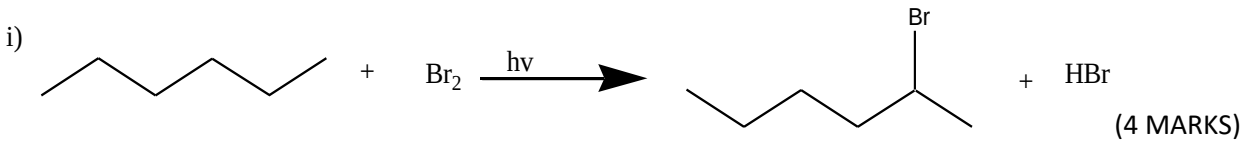
d) Give atleast four isomers of C_5H_{10} **(4 MARKS)**

e) Give three uses of alkanes **(3 MARKS)**

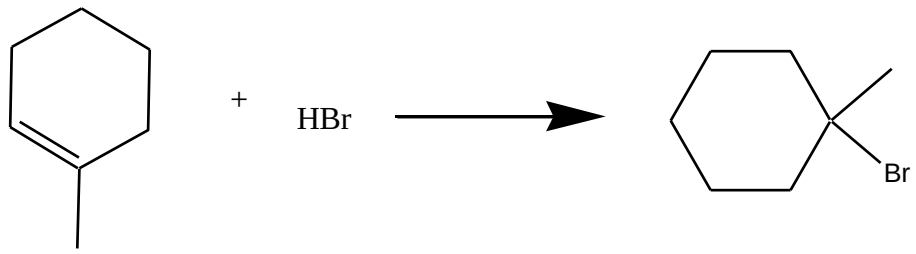
f) Discuss the uniqueness of carbon that makes it a very important in organic chemistry **(6 MARKS)**

QUESTION TWO (20 MARKS)

a) Give the mechanism for the following reactions

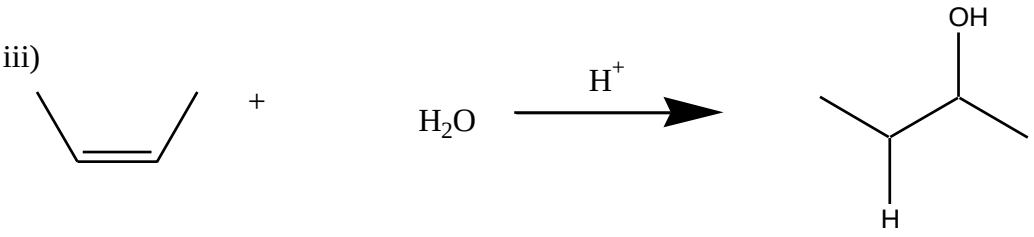
i) 

(4 MARKS)

ii) 

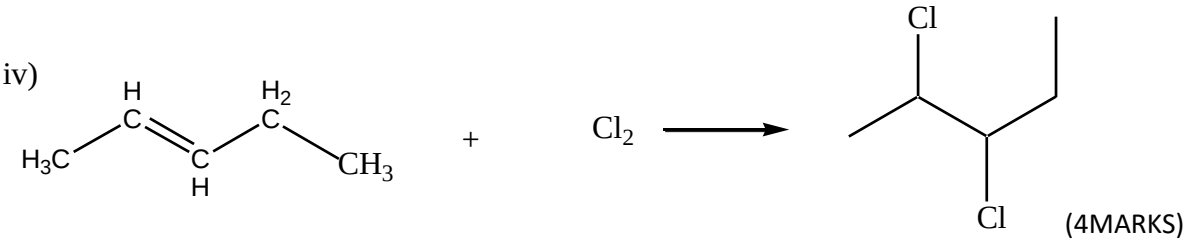
(4 MARKS)

iii)



(4 MARKS)

iv)



(4MARKS)

b) Compare the reactivity of alkanes to that of the alkynes **(2 MARKS)**

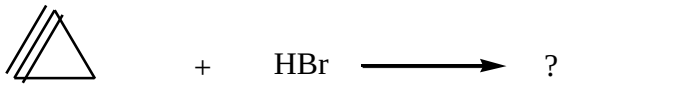
c) State and explain any two methods that can be used to prepare alkenes

(2 MARKS)

QUESTION THREE (20MARKS)

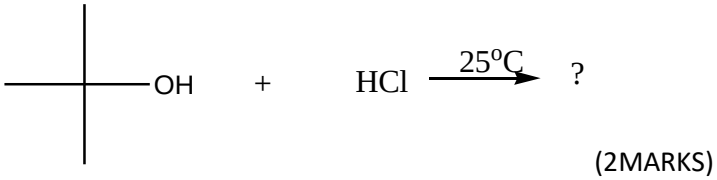
Give the products for the following reactions

i)



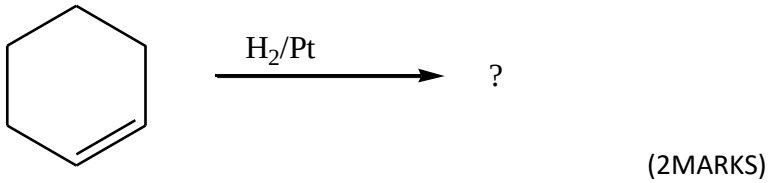
(2MARKS)

ii)

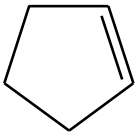


(2MARKS)

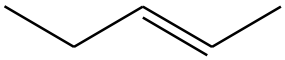
iii)



(2MARKS)

iv)  + H_2O $\xrightarrow{H_2SO_4}$?

(2MARKS)

v)  + Cl_2 + H_2O ⟶ ?

(2MARKS)

d) A compound was found to contain 42.9% carbon 2.4% Hydrogen, 16.7% Nitrogen and Oxygen by weight. Find the empirical formula and molecular formulae given that the molecular mass is170g/mol **(4 MARKS)**

C=12; H=1, N=14, O=16

e) Differentiate between primary, secondary and tertiary alcohols giving example in each case. **(6 MARKS)**

QUESTION FOUR (20 MARKS)

i) Using examples discuss primary, secondary and tertiary carbocation and arrange them in the order of increasing stability. (**6 MARKS)**

ii) State the markovnikov rule **(2 MARKS)**

iii) Differentiate between aldehydes and ketones giving an example in each case **(4 MARKS)**

iv) Branched alkanes have lower boiling points than their un branched counterparts **(2 MARKS)**

v) *trans* 2,2-Dichloroethene melts at (-50^{O}c) while *cis* 2,2-Dichoroethene melts at (-80^{O}c). Explain this disparity and draw the structures of the compounds. **(4 MARKS)**

vi) Carboxylic acids have a higher boiling point as compared to aldehydes and ketones of comparable molecular weight **(2 MARKS)**

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