



DEDAN KIMATHI UNIVERSITY OF TECHNOLOGY

UNIVERSITY EXAMINATIONS 2019/2020

YEAR ONE SEMESTER TWO EXAMINATION FOR THE DEGREE OF BACHELOR  
OF SCIENCE IN BUILDING AND CONSTRUCTION TECHNOLOGY

SCH 2108 CHEMISTRY II

April 2020

Time: 2 Hours.

INSTRUCTIONS: Answer all questions

QUESTION ONE

[25 MARKS]

a) Define or explain the following terms;

[5 Marks]

- i. Polymer;
- ii. Alkanes.
- iii. *Lpids*;
- iv. Amines:
- v. Detergents:

b) Draw structures corresponding to the following IUPAC names:

[4 Marks]

- i) 3-Ethyl-4,4-dimethylheptane;
- ii) 4-Chloropentan-2-one;
- iii) ethane-1,2-diol;
- iv) *m*-Chloronitrobenzene

c) Write the IUPAC name of each of the following structures

[4 Marks]

i)  $\text{CH}_3(\text{CH}_2)_2\text{C}\equiv\text{CCH}_3$

ii)

iii)

iv)

d) Explain how a soap cleans

[4 Marks]

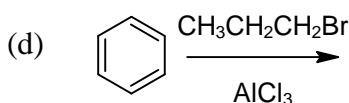
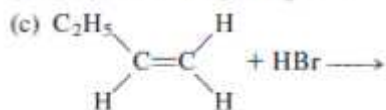
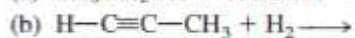
e) Differentiate between thermoset and thermoplastics

[2 marks]

f) What is chain growth polymerization, give an example

[2 Marks]

g) Predict the products for each of the following reactions: [4 Marks]

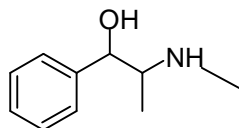


### QUESTION TWO (15 MARKS)

- a) With balanced equation to illustrate saponification process [4 marks]  
b) Differentiate between fats and oils [2 Marks]  
c) With aid of examples differentiate between aldose and ketose [4 Marks]  
d) Synthetic polymers have found widespread application in our life. List two consequences of use of polymers? [2 Marks]  
e) List three sources of alkanes [3 Marks]  
Natural gas, petroleum refining, Coal

### QUESTION THREE (15 MARKS)

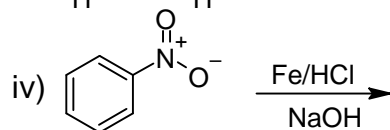
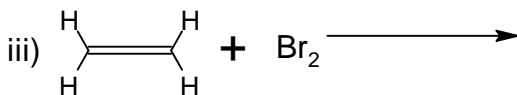
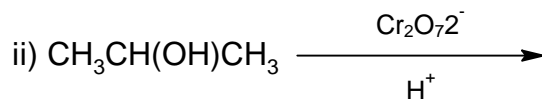
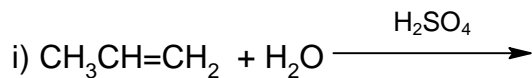
- a) 2-Phenyl-2-butanol can be synthesized by a combination of a Grignard reagent and a ketone. Show the reaction and the product [3 Marks]  
b) Name any three(3) polymers used in construction industry [3 Marks]  
c) Draw the structures of D-glucose and D-Manose [2 Marks]  
d) Draw structures for the *cis* and *trans* isomers of 4-methyl-2-hexene. [2 Marks]  
e) List three common fatty acids [3 Marks]  
c). Ephedrine (shown below) is used as a decongestant in cold remedies. Identify the functional [2 mark]



### QUESTION FOUR (15 MARKS)

a) Complete the following reactions

[4 Marks]

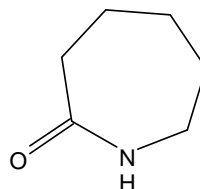
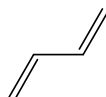
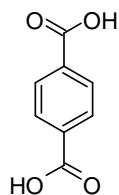
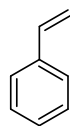
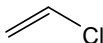


b) Describe a simple chemical test to tell the difference between  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}=\text{CH}_2$  and its isomer cyclopentane

[2 Marks]

c) Name the following monomers used in polymer synthesis.

[5 Marks]



i)

ii)

iii)

iv)

v)

d) List any three uses of higher molecular alkanes

[3 Marks]

e) Draw the structure of myristic acid

[1 Mark]