ELIZADE UNIVERSITY

ILARA – MOKIN

NIGERIA

FACULTY OF BASIC AND APPLIED SCIENCES

DEPARTMENT OF PHYSICAL AND CHEMICAL SCIENCES

2020/2021 ACADEMIC SESSION: FIRST SEMESTER EXAMINATIONS

COURSE TITLE: ORGANIC CHEMISTRY II

COURSE CODE: CHM 303

QUESTIONS WITH MARKING GUIDE

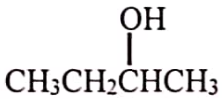
SECTION A

ANSWER TWO QUESTIONS FROM THIS SECTION

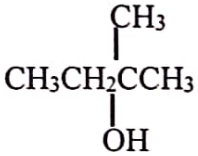
QUESTION ONE [15 Marks]

A. What products will be formed when 2-methyl-3-pentanol is dehydrated in the presence of heat? Identify both the major and minor products formed in the reaction. [7 Marks]

B. Identify the class of the listed alcohols [3 marks]

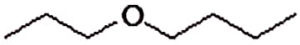
I. 

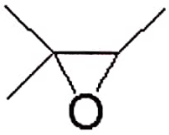
II. $CH_3CH_2CH_2$-OH

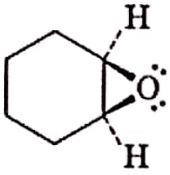
III. 

C. With chemical compounds, differentiate between ether and epoxide [2 Marks]

D. Give the IUPAC name of the following compounds [3 Marks]

I. 

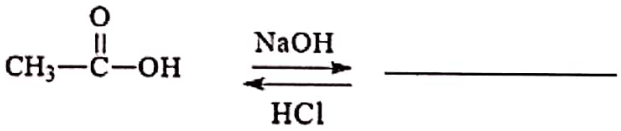
II. 

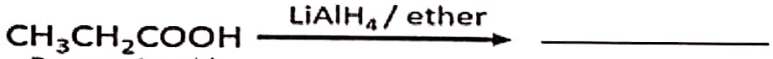
III. 

QUESTION TWO [15 Marks]

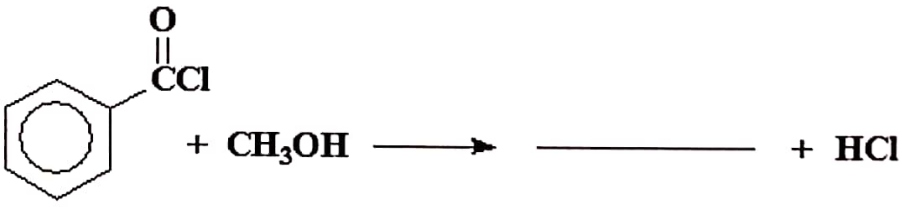
A. Discuss the solubility of carboxylic acids [4 Marks]

B. Complete the following chemical reactions [5 Marks]

I. 

II. 

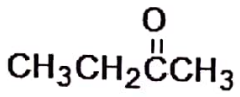
III. 

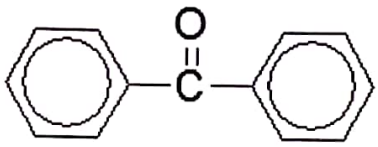
IV. 

C. Write out the common names of the listed chemical compounds [4 Marks]

I. $CH_3CH_2CH_2CH{=}O$

II. $CH_3CHCH{=}O$ (with CH_3 branch)

III. 

IV. 

D. Mention two physical properties of ketone [2 Marks]

QUESTION THREE [15 Marks]

A. List all the factors determining the rate of an S_N2 reaction [4 Marks]

B. Arrange the alkylhalides in the following series in an increasing order of reactivity towards S_N1 reactions: [5 Marks]

i. $CH_3\ CH_2\ CH_2\ CH_2Br$; $CH_3\ CH_2\ CH(Br)\ CH_3$; $(CH_3)_3C\text{-}Br$

ii. $(CH_3)_2CHBr$; $(CH_3)_2CHCl$; $(CH_3)_2CHI$

C. Discuss solvent effect on SN2 reaction [6 Marks]

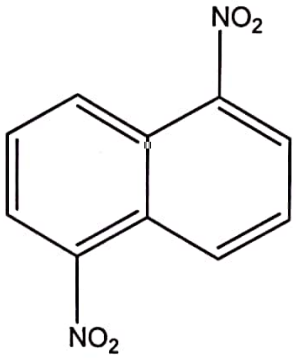
SECTION B

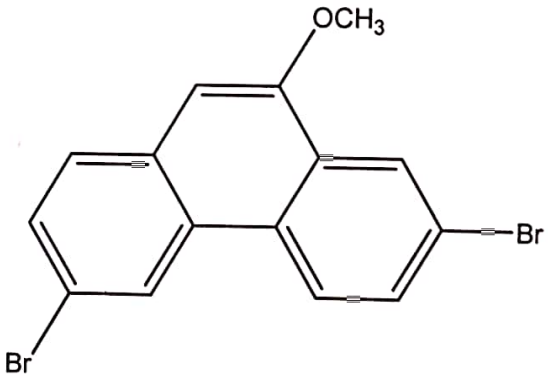
ANSWER ALL QUESTIONS FROM THIS SECTION

1. a. Write the structures of the following compounds

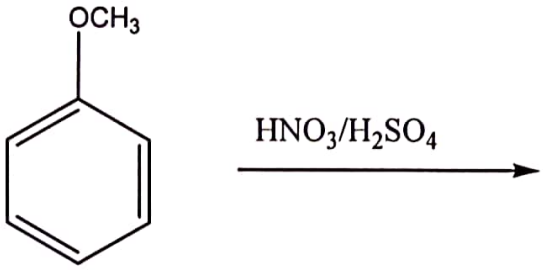
i. 1,7-dichloronaphthalene ii. 1-bromo-5-methylanthracene iii. 3-hydroxyanisole

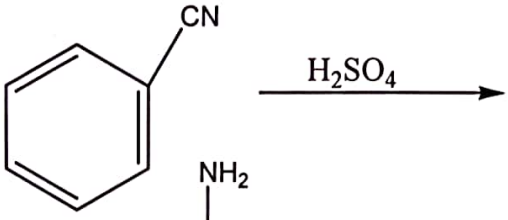
b. What is the IUPAC name of each of the following:

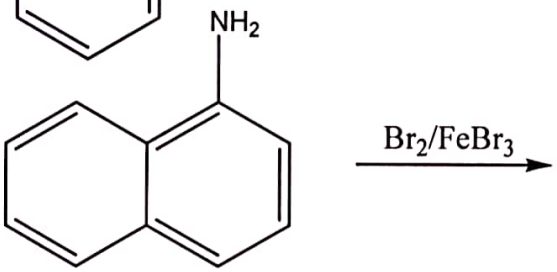
i. 

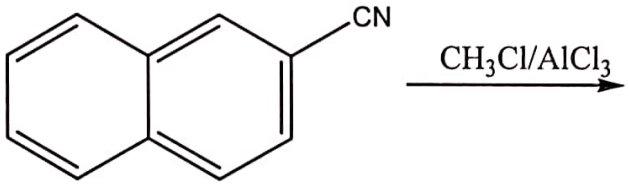
ii 

c. Predict the major products formed in the following reactions.

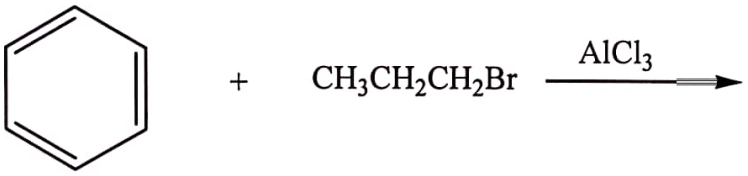
i. 

ii 

iii 

iv 

2. a. i. Provide the major and minor products in the following reaction:



ii. Outline the mechanism of formation of the major product

b. With the aid of resonance structures, explain why aminobenzene brominates in the ortho and para positions and at a faster rate than benzene whereas nitrobenzene brominates in the meta position and at a slower rate than benzene.