KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2020/2021 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER
MAIN EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE

COURSE CODE: SCH 314

COURSE TITLE: CHEMISTRY OF AROMATIC COMPOUNDS

DATE: 4/10/2021 **TIME:** 8:00-10:00AM

INSTRUCTIONS TO CANDIDATES

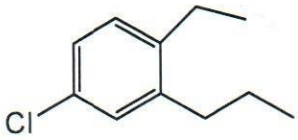
TIME: 2 Hours

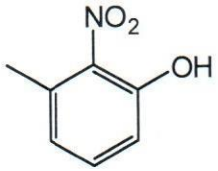
Answer question ONE and any TWO of the remaining

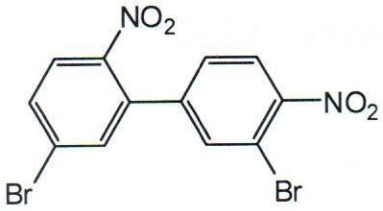
Question 1 (30 marks)

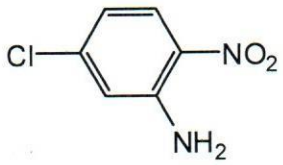
a) Give the systematic (IUPAC) names of the following compounds. [10 marks]

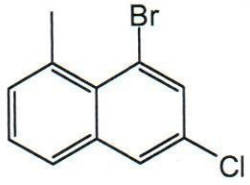
i) 

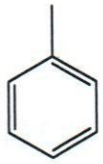
ii) 

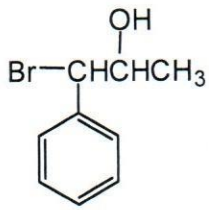
iii) 

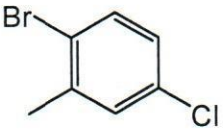
iv) 

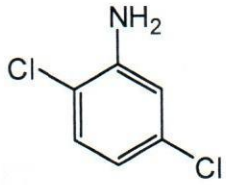
v) 

vi) 

vii) 

viii) 

ix) 

x) 

b) Draw the structures of the following compounds [10 marks]

i). 1,2-dimethyl-3-nitrobenzene

ii). 2,3-dimethylbiphenyl

iii). 2-butylanthracene

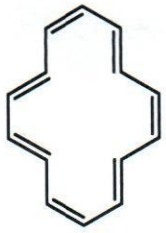
iv). 2,3-diethylnaphthalene

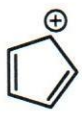
v). 2-bromo-4-methylphenol

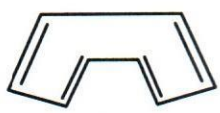
c) Classify with reasons, the following structures as aromatic, nonaromatic or antiaromatic [10 marks]

i) 

ii) 

iii) 

iv) 

v) 

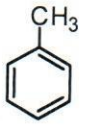
Question 2 (20 marks)

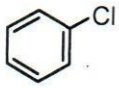
a) What is an *electrophilic aromatic substitution reaction*? [1 mark]

b) Name any three common electrophilic substitution reactions [3 marks]

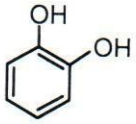
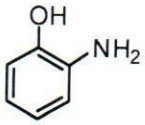
c) Using reaction schemes, suggest how the following aromatic compounds can be prepared starting from the given compounds. (show the reagents and intermediates)

[16marks]

i)  from 

ii)  from 

iii)  from 

iv)  from 

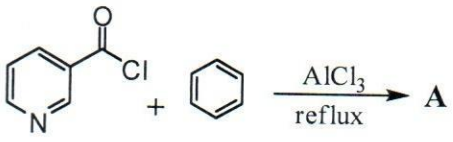
Question 3 (20 marks)

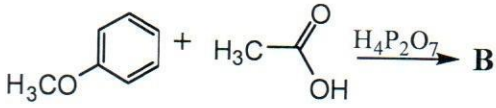
a) Explain the following observations [8 marks]

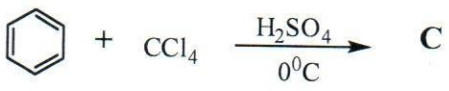
i). 4-Nitrophenol has a pka value of 7.14 while 3-nitrophenol has pka of 8.39

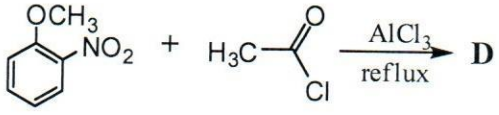
ii). 2-Nitrophenol has a lower boiling point that 4-nitrophenol

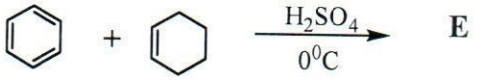
b) Suggest the major organic compounds (A – F) in the following reactions [12marks]

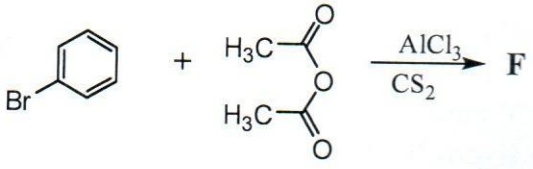
i) 

ii) 

iii) 

iv) 

v) 

vi) 

Question 4 (20 marks)

a) Explain why all the carbon – carbon bonds in Benzene exactly the same (approximately 0.139 nm)? [2 marks]

b) Explain why Benzene is a major public health concern. [2 marks]