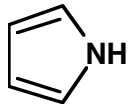
JASPERSE CHEM 341 TEST 4 VERSION 2
Conjugation, Aromatic Compounds, Reactions of Aromatic Compounds

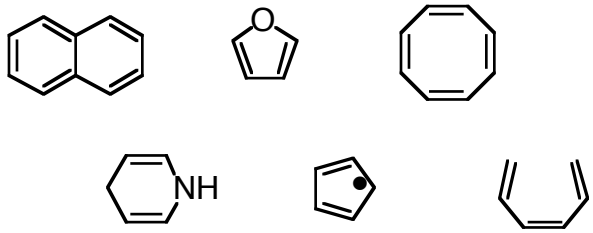
1. Provide the Name of Structure for the following. (7 points)

a. 3-nitroaniline

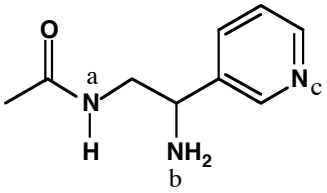
b. o-isopropyltoluene

c. 

2. Circle the aromatic molecules. (7 points)

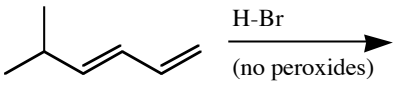


3. The molecule has 3 different nitrogens. For each of them, classify the hybridization of the nitrogen atom, the hybridization of the nitrogen lone pair, and whether the basicity of the nitrogen is "normal" or "low". (6 points)

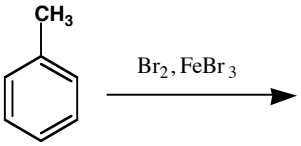


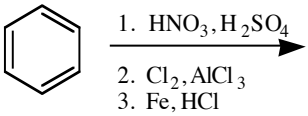
	Nitrogen Hybridization	Lone-Pair Hybridization	Nitrogen Basicity
N^a			
N^b			
N^c			

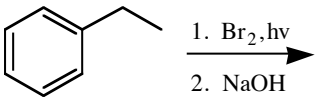
4. Draw the major products of the following reaction (4 points).

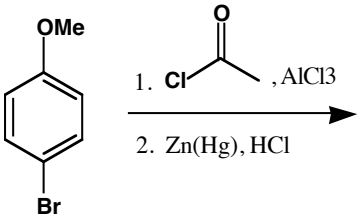


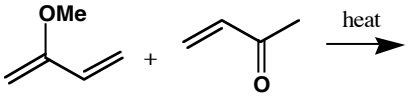
5. Draw the Major Product of the Following Reactions. Note: I want one major product in each case. (3 points each)

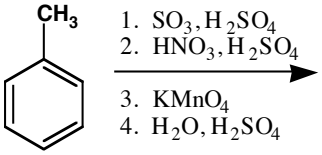




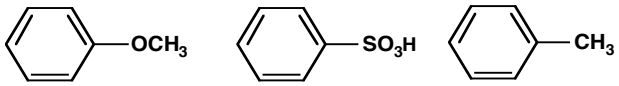




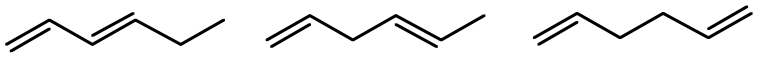




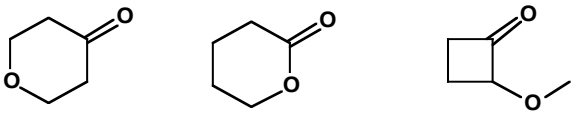
6. Rank the following, with 1 being highest/most. (2 points each)



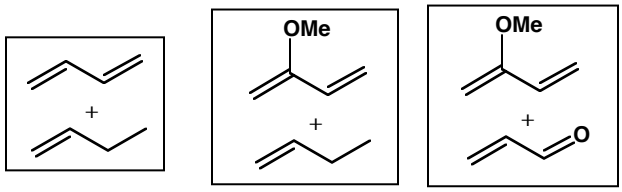
Reactivity toward Br_2, $FeBr_3$



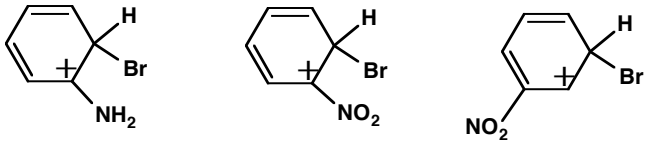
Heat of hydrogenation



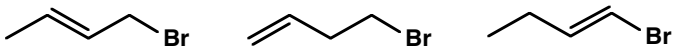
Stability



Combined Diels-Alder Reactivity



Cation Stability

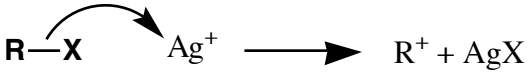


Reactivity toward NaOMe

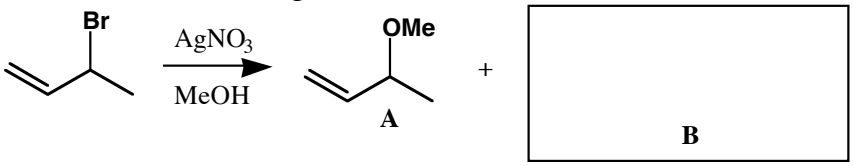
7. Outline the π-molecular orbitals of cyclopentadiene cation (use a Frost diagram), indicate which are occupied by electrons, and indicate whether the species is unusually stable or not. (6 points)

Nonbonding line ----------

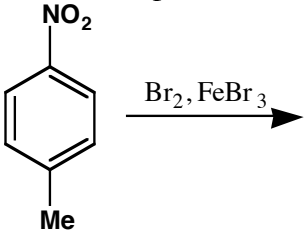
8. Treatment of an alkyl halide with methanolic $AgNO_3$ often promotes ionization, via the following:



When 3-bromo-1-butene undergoes this reaction, two isomeric products **A** and **B** are formed. Draw the structure for product **B** and the detailed mechanism for formation of product **B**. (7 pts)



9. Draw the product for the following reaction and draw the mechanism for its formation. Identify the slow step. Draw all the resonance structures for the cation intermediate and circle the most important contributor. (7 points)

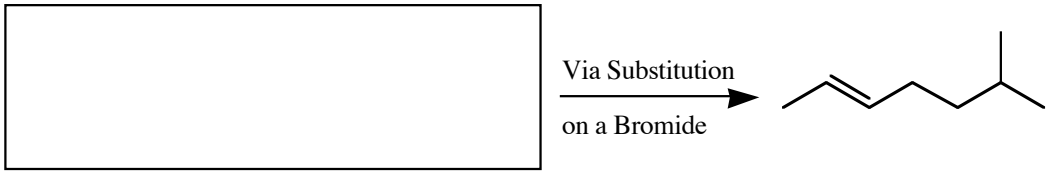


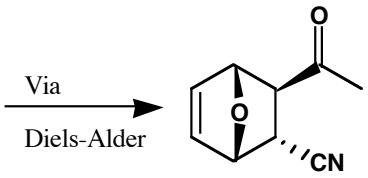
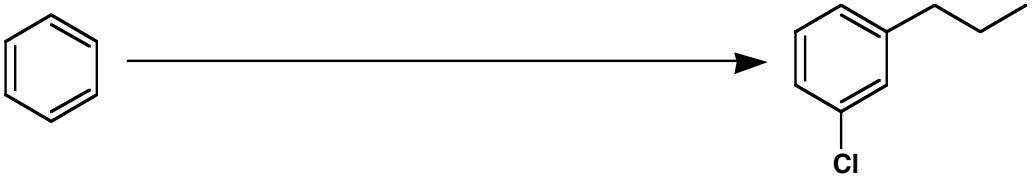
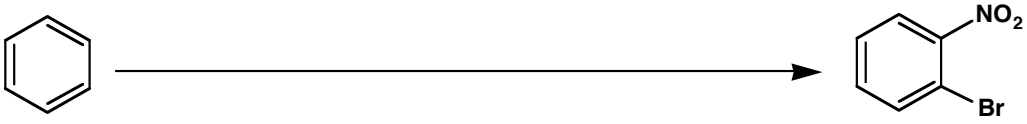
10. (6 pt) When comparing cyclopentadiene (**A**) versus 1,3-pentadiene (CH_2=CH-CH=CH-CH_3, **B**),

a. One is much more acidic. Which is it, and why?

b. One is a much more reactive diene. Which is it, and why?

11. Draw the Reactants for the Following Reactions (7 points)





12. Provide reagents for the following transformations. (5 points each)