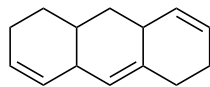
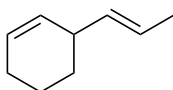
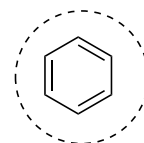
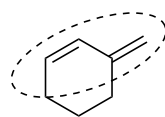
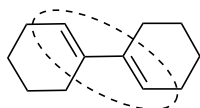


CEM 252 (730)
Problem set 2 (chapter 20-21)—Key

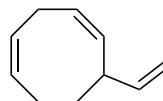
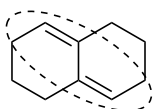
1. Circle the conjugated pi system of the compound listed below:



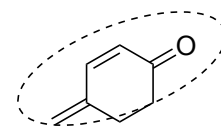
No conjugated pi system



No conjugated pi system

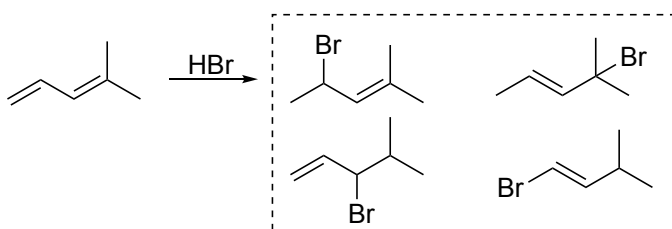


No conjugated pi system

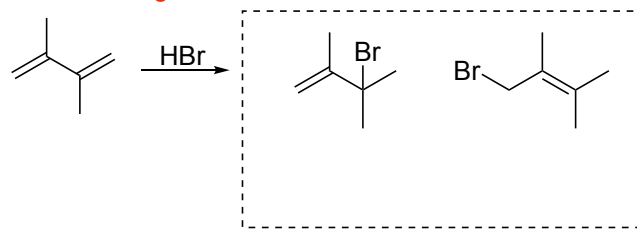


2. Consider the following two dienes. When treated with HBr, one of the diene yields **four** products, while the other diene yields only **two** products. Propose the corresponding **mechanism** to explain why.

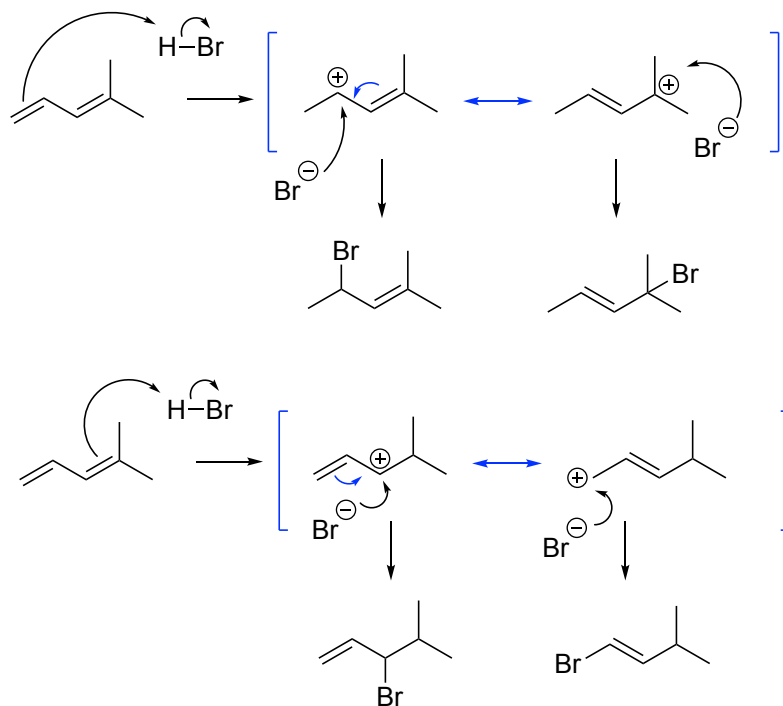
C1 and C4 gave same carbocation



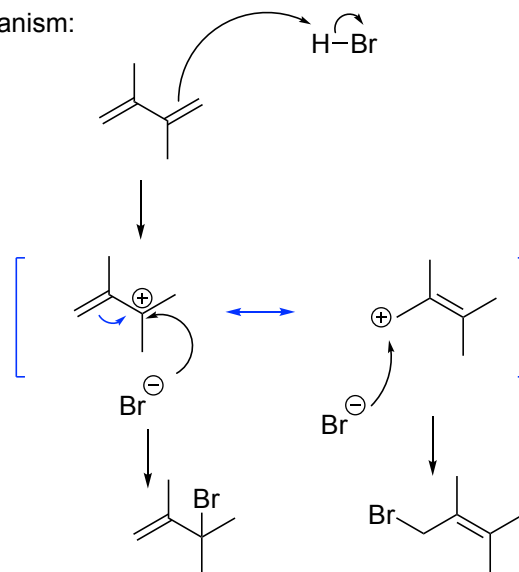
protonation at C1 and C4 gave resonance stabilized carbocation



Mechanism:

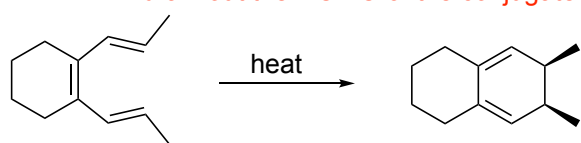


Mechanism:

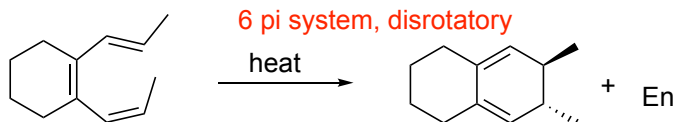
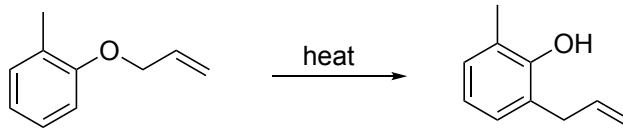


3. Predict the major product of the following reactions.

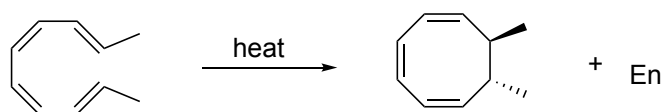
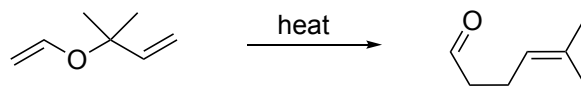
draw out the HOMO of the conjugated pi system



6 pi system, disrotatory (meso)

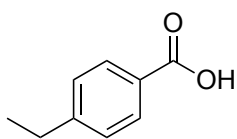


6 pi system, disrotatory



8 pi system, conrotatory

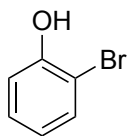
4. Provide a systematic name for each of the following compounds.



para-ethylbenzoic acid

or

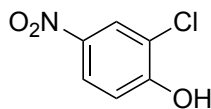
4-ethylbenzoic acid



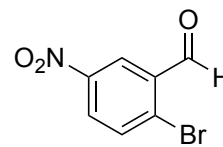
ortho-bromophenol

or

2-bromophenol

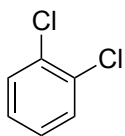


2-chloro-4-nitrophenol

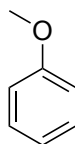


2-bromo-5-nitrobenzaldehyde

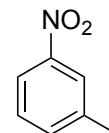
5. Draw a structure for each of the following compounds.



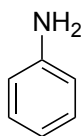
ortho-Dichlorobenzene



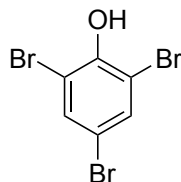
Anisole



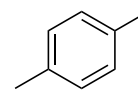
meta-Nitrotoluene



Aniline

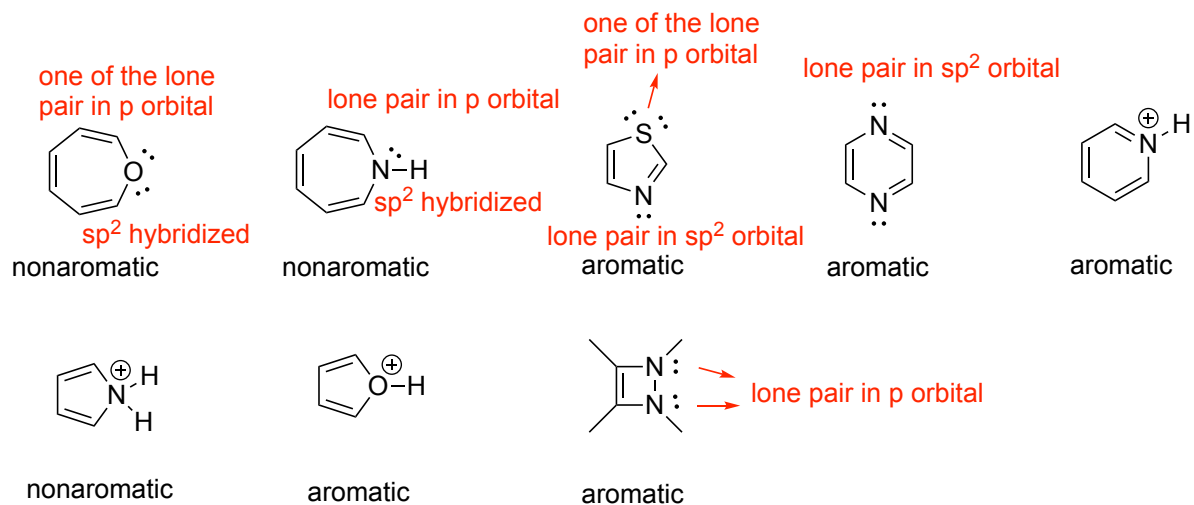


2,4,6-Tribromophenol

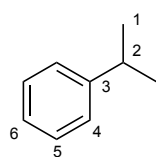


para-Xylene

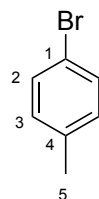
6. Identify each of the following as aromatic, nonaromatic, or antiaromatic, explain your choice.



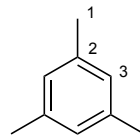
7. How many signals do you expect in the ¹³C NMR spectrum of each of the following compounds?



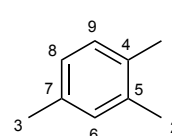
6 signals



5 signals



3 signals



9 signals