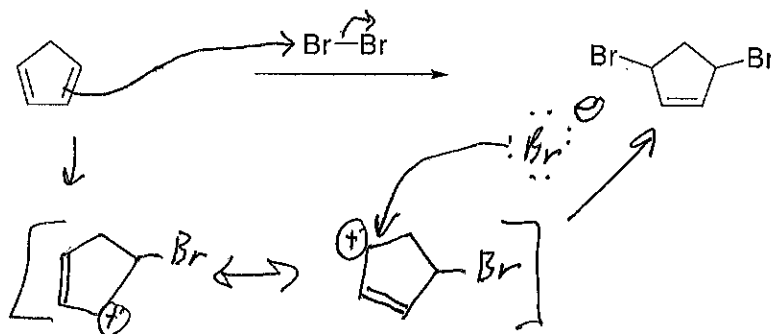


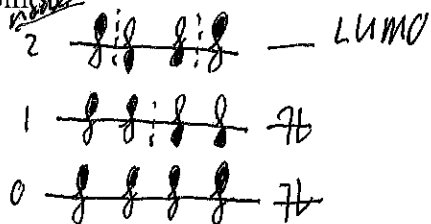
Name: Key

Organic II Lecture  
Fall 2012  
Quiz #2  
(10 points)

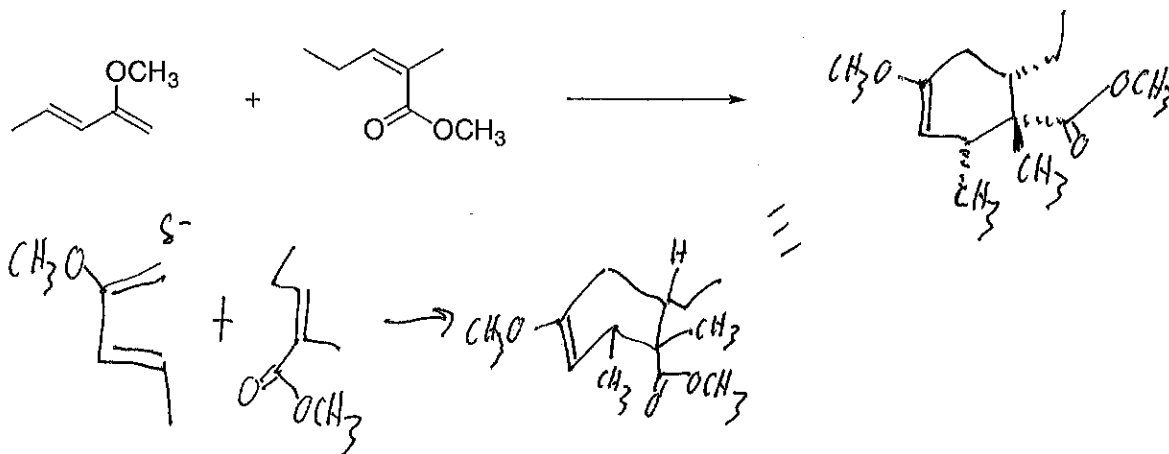
1. Provide a mechanism for the following reaction. Show all intermediates, formal charges and correct pushing of electrons. (4 points, problem 15-7c)



2. Draw the lowest unoccupied molecular orbital for the starting material in question #1. (2 points)



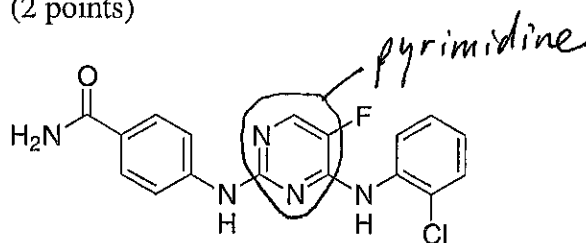
3. Complete the following reaction by filling in the missing product, complete with correct stereochemistry and regiochemistry. (4 points)



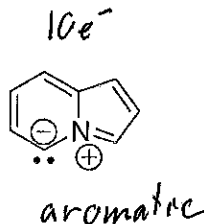
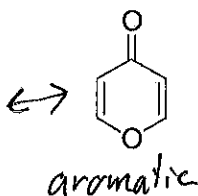
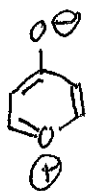
Name: Key

**Organic II Lecture**  
**Fall 2012**  
**Quiz #3**  
(10 points)

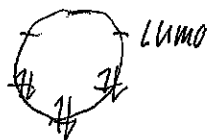
1. The following compound has been found effective in inhibiting the proliferation of breast cancer cells (J. Med. Chem. 2012, 7392). What aromatic heterocycle is contained in this structure? (2 points)



2. Classify the following compounds as aromatic, antiaromatic or nonaromatic. (4 points, problem 16-19e)

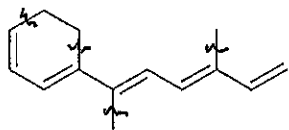
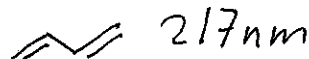


3. State the net bonding or antibonding of one of the degenerate lowest unoccupied molecular orbitals of benzene. (2 points)



2 anti bonding

4. Given that 1,3-butadiene has a  $UV_{max}$  value of 217 nm, predict the  $UV_{max}$  value of the following conjugated system.



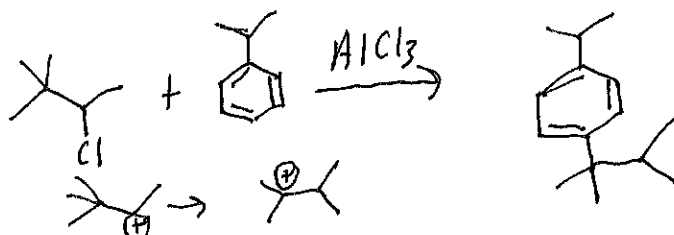
$$\begin{aligned} &217 \\ + &3(35) = 105 \\ + &5(4) = 20 \end{aligned}$$

342 nm

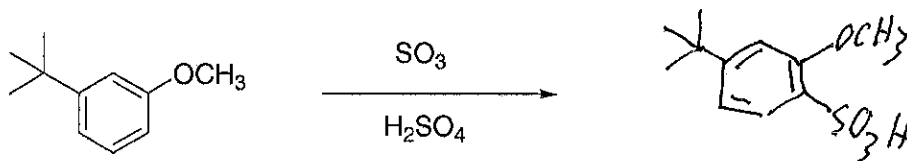
Name: Key

**Organic II Lecture**  
**Fall 2012**  
**Quiz #4**  
(10 points)

1. Propose products (if any) resulting from 3-chloro-2,2-dimethylbutane reacting with isopropylbenzene in the presence of an  $\text{AlCl}_3$  catalyst. (3 points, problem 17-17c)



2. Provide a common name for the following reactant and then draw a structure for the expected product of the reaction below. (5 points)



Common Name

m-t-butylanisole

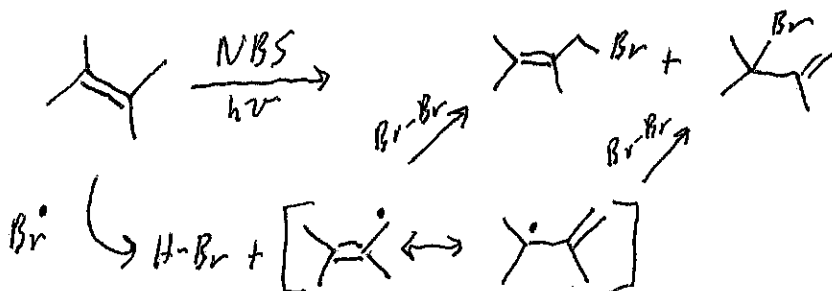
3. In uv/vis spectroscopy, what value corresponds to the benzenoid band of benzene. (2 points)

254 nm

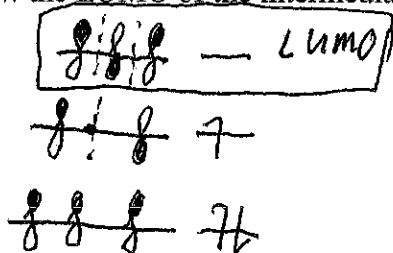
Name: Key

**Organic II Lecture**  
**Spring 2010**  
**Quiz #2**  
**(10 points)**

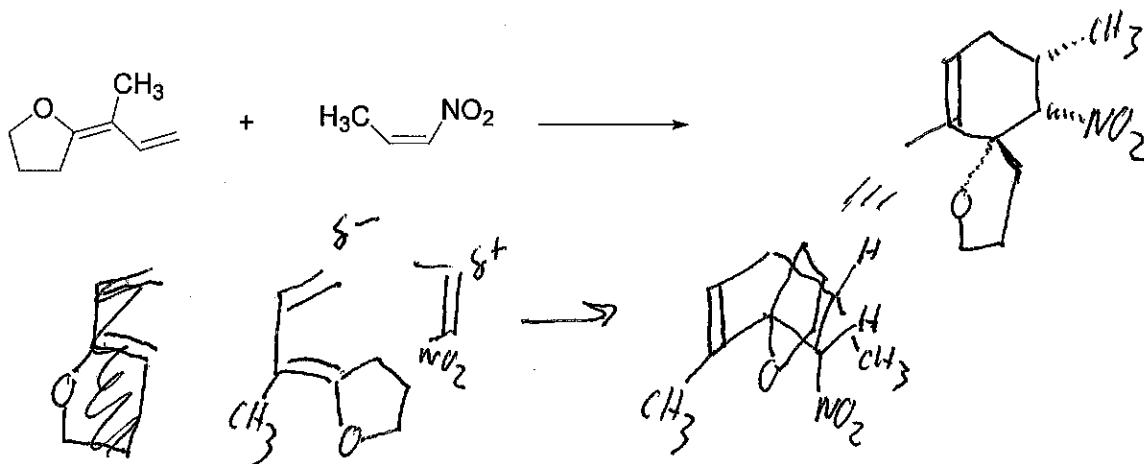
1. Predict all products resulting from treatment of 2,3-dimethyl-2-butene with NBS in the presence of light. (4 point, problem 15-11b)



2. Draw the LUMO of the intermediate from problem #1. (2 points)



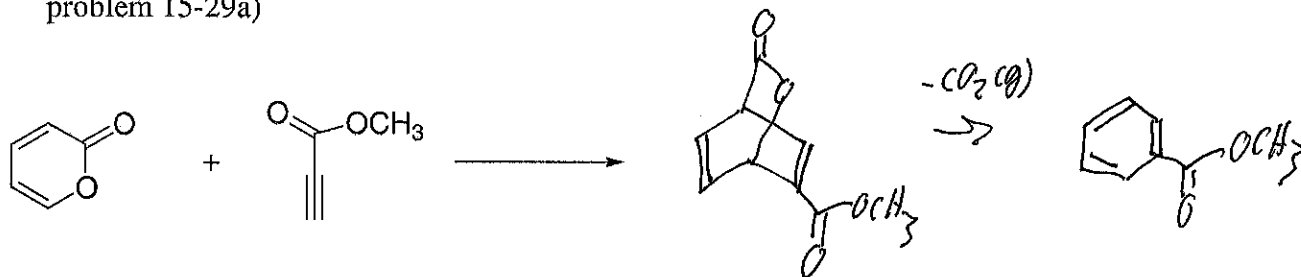
3. Complete the following reaction by drawing the product with correct stereochemistry. (4 points)



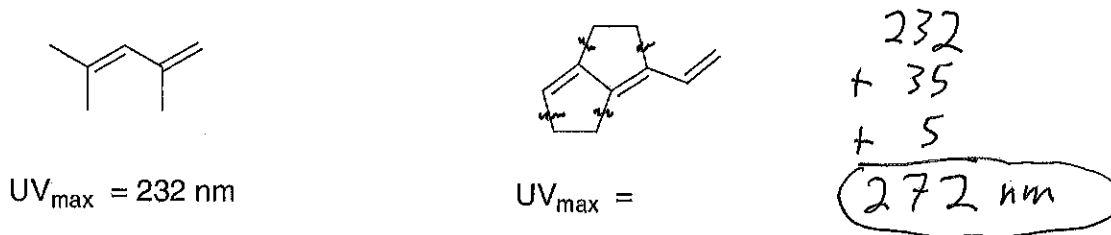
Name: Key

**Organic II Lecture**  
**Spring 2011**  
**Quiz #2**  
 (10 points)

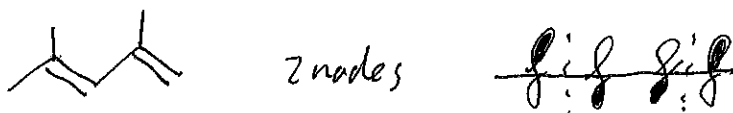
1. Predict the correct structure resulting from the following Diels-Alder reaction. (3 point, problem 15-29a)



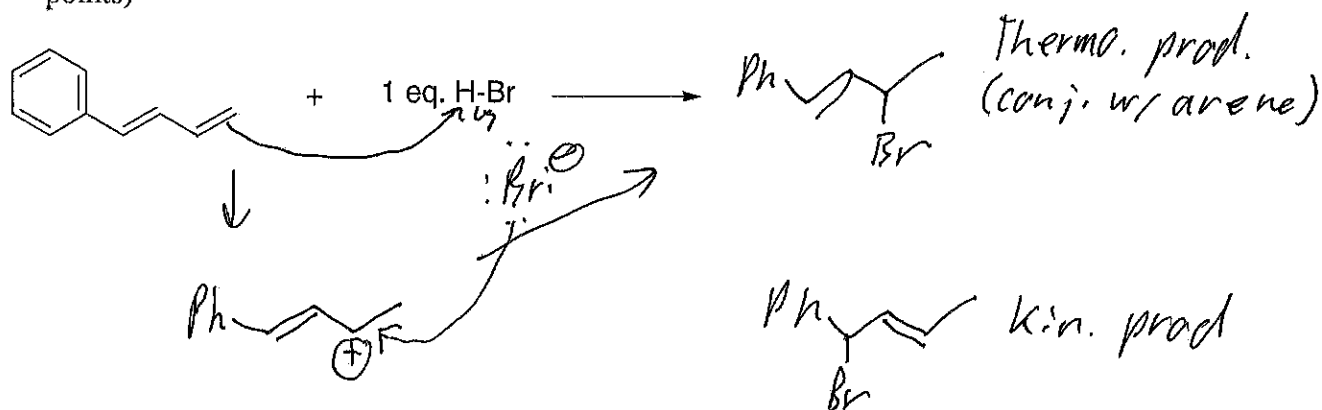
2. Given that the  $\text{UV}_{\text{max}}$  value of 2,4-dimethylpenta-2,4-diene is 232, predict the  $\text{UV}_{\text{max}}$  value for the following structure. (2 points)



3. Draw the LUMO for 2,4-dimethylpenta-2,4-diene. (2 points) *2,4-dimethylpenta-1,3-diene*



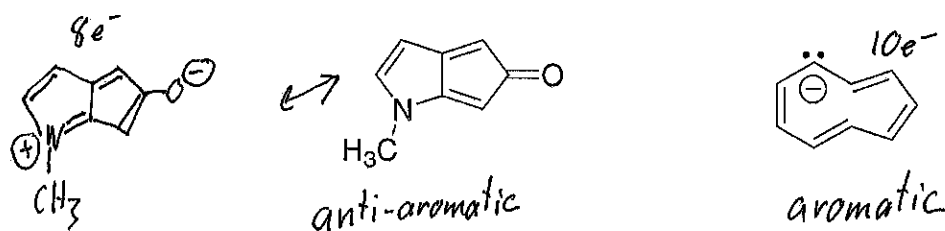
4. Complete the following reaction by drawing the thermodynamically favored product. (3 points)



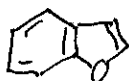
Name: Key

Organic II Lecture  
Spring 2011  
Quiz #3  
(10 points)

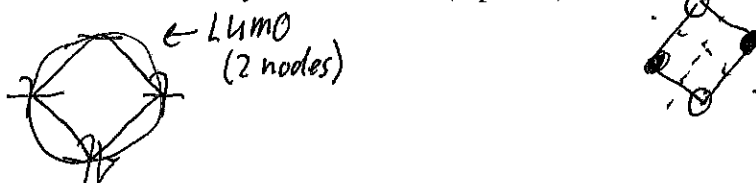
1. Label each of the following compounds as being aromatic, antiaromatic, or nonaromatic. (4 point, problem 16-32g)



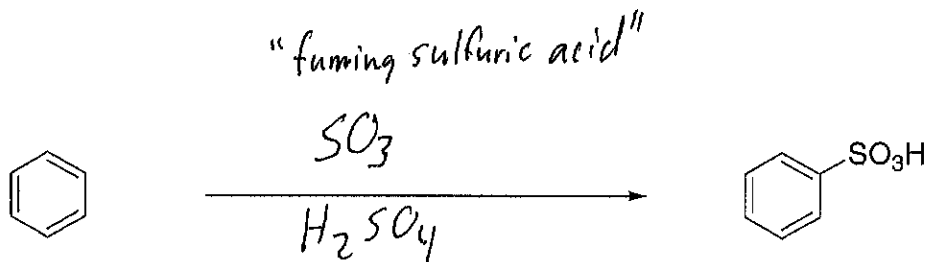
2. Draw a structure for benzofuran. (2 points)



3. Draw a LUMO for cyclobutadiene. (2 points)



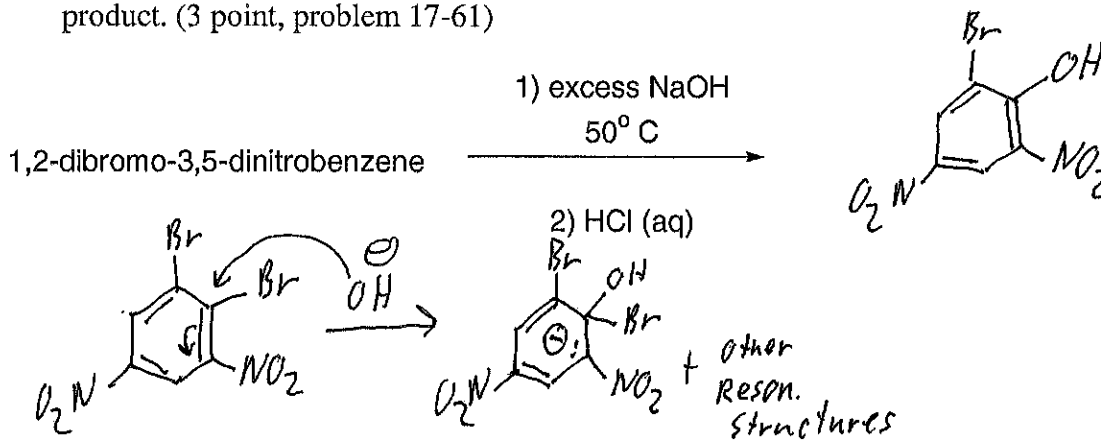
4. Complete the following reaction by filling in the necessary reagents. (2 points)



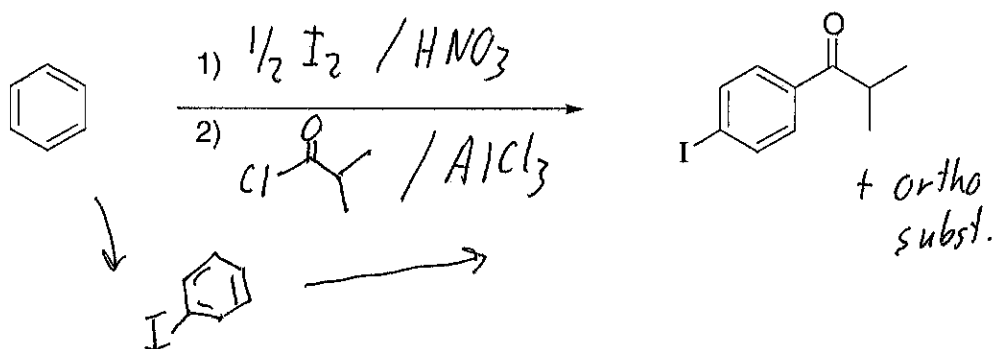
Name: Key

Organic II Lecture  
Spring 2011  
Quiz #4  
(10 points)

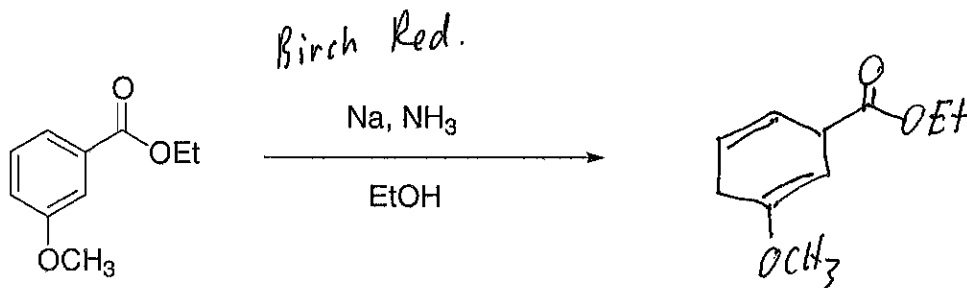
1. Only one bromine is substituted in the reaction below. Draw a structure for the expected product. (3 point, problem 17-61)



2. Complete the following reaction by filling in the missing reagents. (4 points)



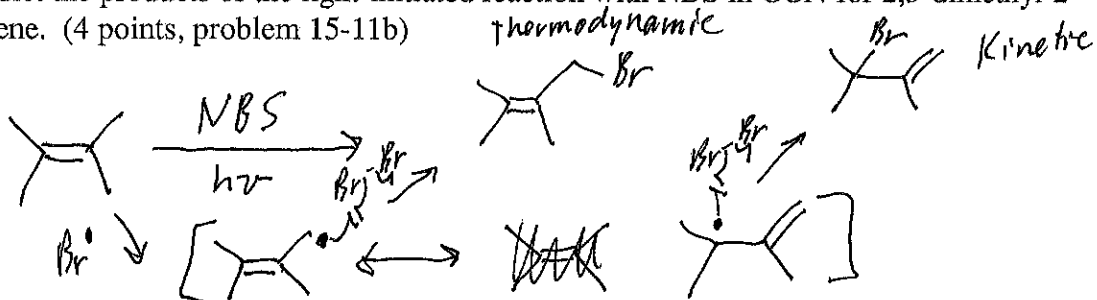
3. Provide a structure for the expected product of the reaction below. (3 points)



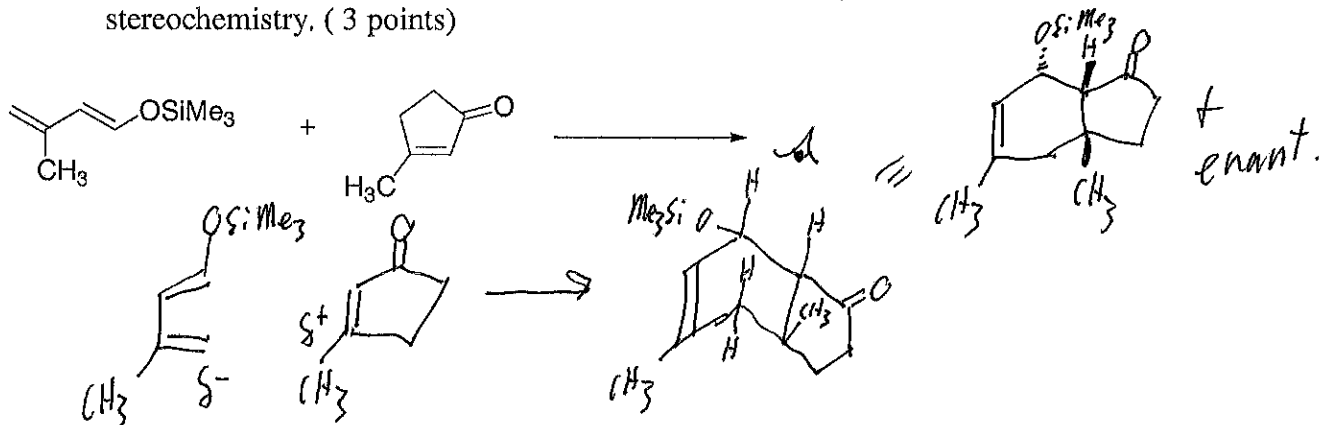
Name: Key

**Organic II Lecture**  
**Spring 2012**  
**Quiz #2**  
 (10 points)

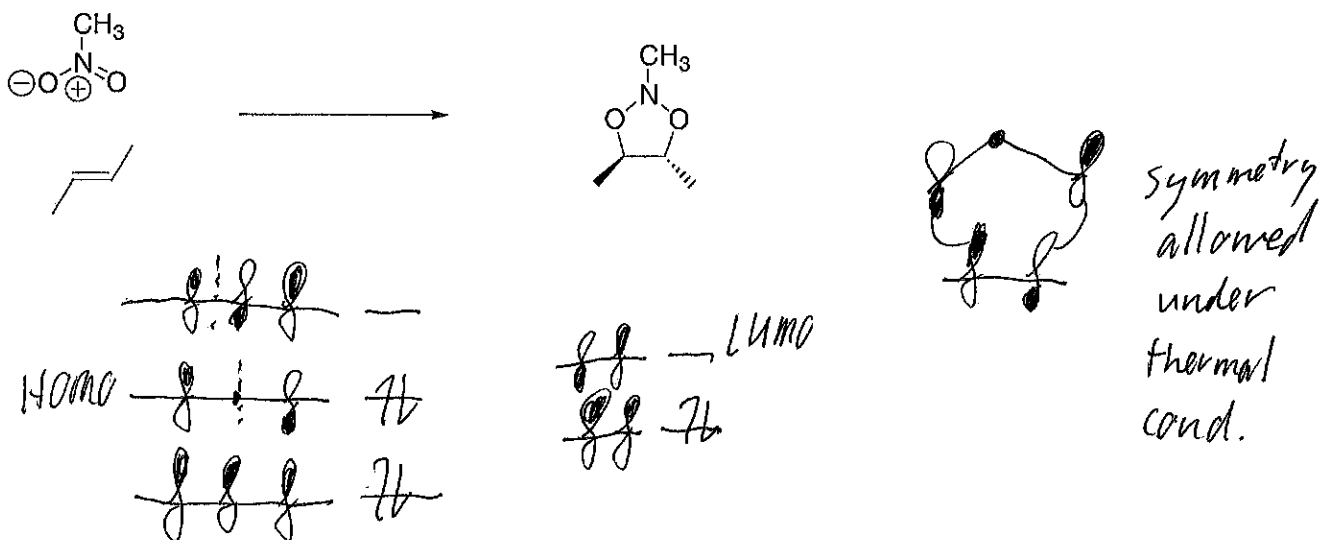
1. Predict the products of the light-initiated reaction with NBS in  $CCl_4$  for 2,3-dimethyl-2-butene. (4 points, problem 15-11b)



2. Draw a structure for the expected product of the following reaction. Include all relevant stereochemistry. (3 points)



3. State whether the following reaction would be allowed or forbidden under thermal conditions. Justify your answer by showing the overlap between the correct molecular orbitals. (3 points)

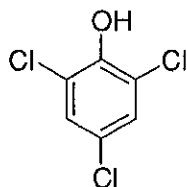




Name: Key

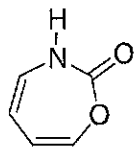
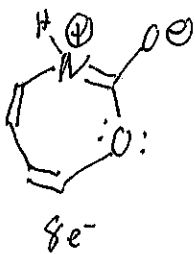
Organic II Lecture  
Spring 2012  
Quiz #3  
(10 points)

1. Name the following compound. (2 points, problem 16-28f)

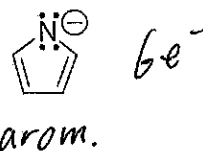


2,4,6-trichlorophenol

2. Classify the following compounds as aromatic, antiaromatic or nonaromatic. (4 points)

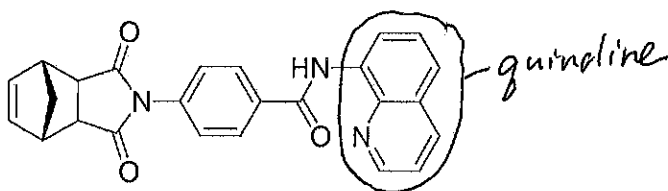


anti-arom.

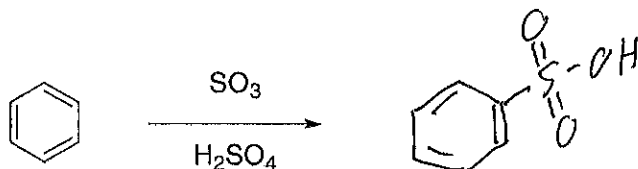


arom.

3. The following compound has been identified as a lead structure in producing human heart muscle cells from embryonic stem cells (*J. Med. Chem.* **2012**, 697). What heterocyclic aromatic compound is contained in this structure? (2 points)



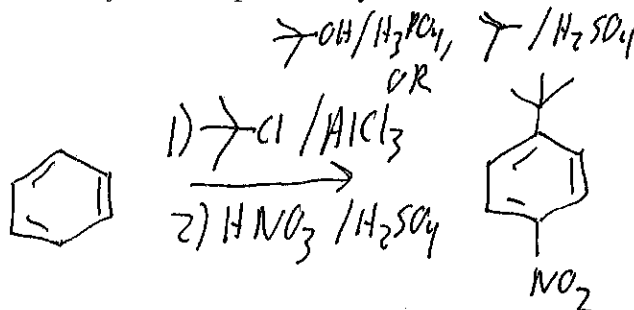
4. Complete the following reaction by drawing a structure for the expected product. (2 points)



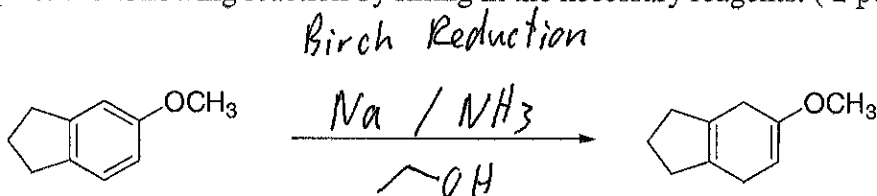
Name: Key

Organic II Lecture  
Spring 2012  
Quiz #4  
(10 points)

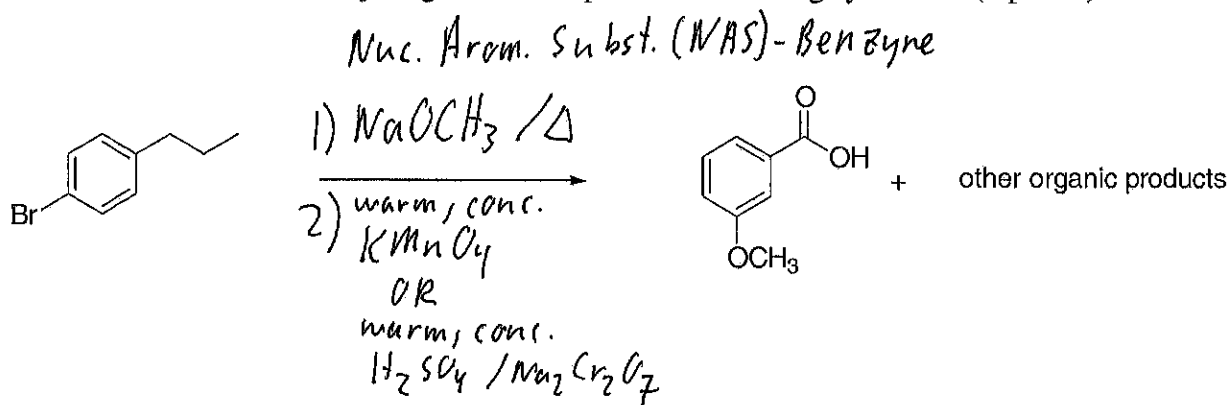
1. Show how to synthesize p-tert-butyl nitrobenzene from benzene. (4 points, problem 17-21a)



2. Complete the following reaction by filling in the necessary reagents. (2 points)



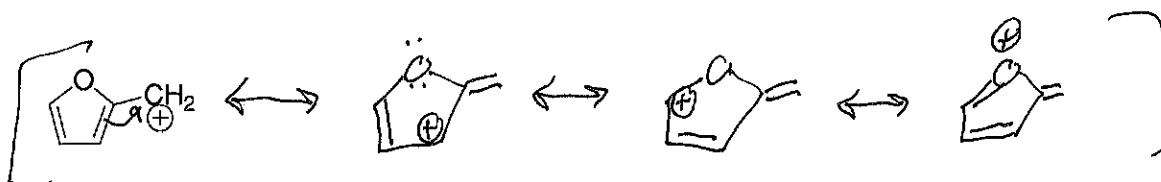
3. Provide the necessary reagents to complete the following synthesis. (4 points)



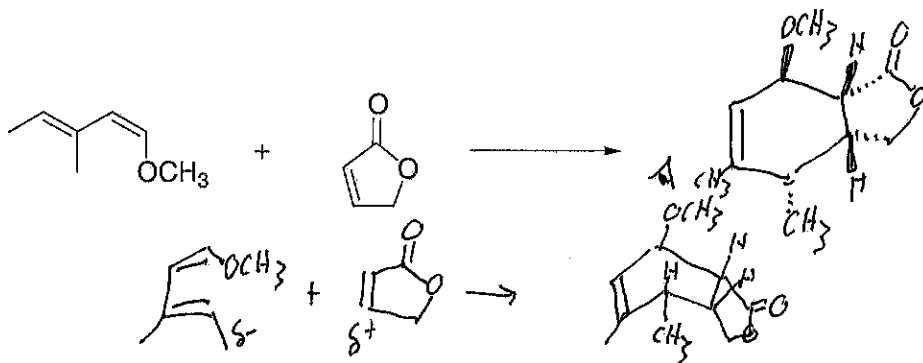
Name: Key

**Organic II Lecture  
Spring 2013  
Quiz #2  
(10 points)**

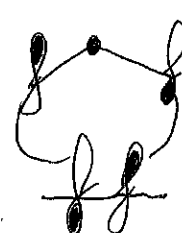
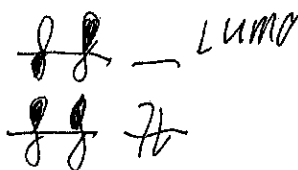
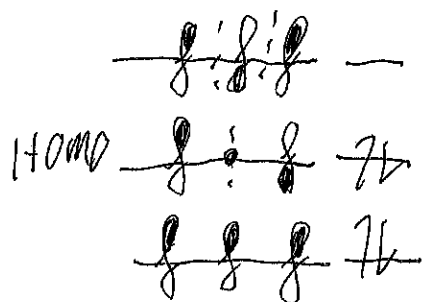
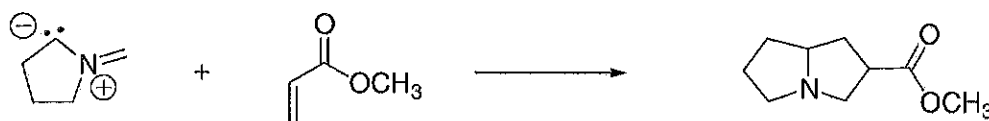
1. Draw all significant resonance contributors for the structure below. (3 points, problem 15-27g)



2. Predict the structure of the major product of the following reaction. Include any relevant stereochemistry. (4 points)



3. Would the following pericyclic reaction be favored under thermal conditions. Justify your answer by showing overlap of the correct orbitals. (3 points)



Symmetry allowed under thermal cond.

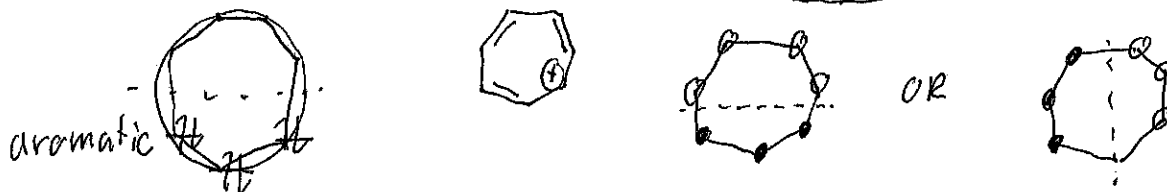
Name: Key

Organic II Lecture  
Spring 2013  
Quiz #3  
(10 points)

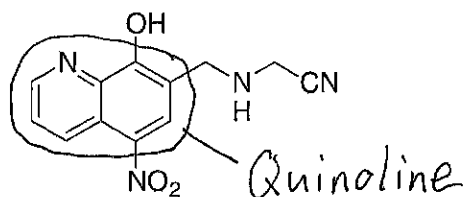
1. Using the polygon rule, state whether cycloheptatriene is aromatic, antiaromatic or nonaromatic. Provide a molecular orbital for one of the highest occupied molecular orbitals (HOMO). (4 points, problem 16-48)

(cation)

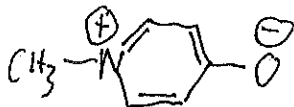
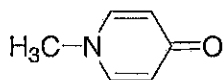
cycloheptatriene is nonaromatic



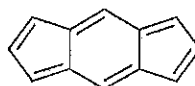
2. The following structure has been found to inhibit human cathepsin B, a regulator of protein production (*J. Med. Chem.* **2013**, 521). What aromatic heterocycle is contained in this compound. (2 points)



3. Label each of the following compounds as being aromatic, antiaromatic or nonaromatic. (4 points)



aromatic



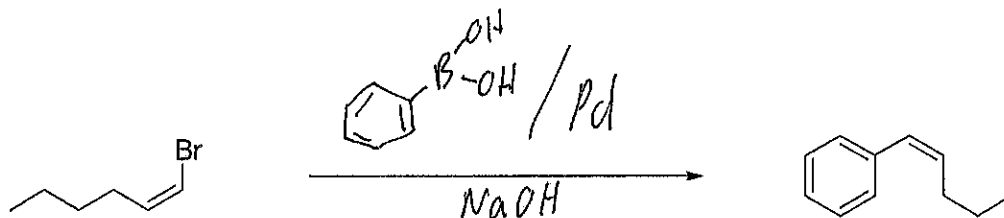
12e<sup>-</sup>

antiaromatic

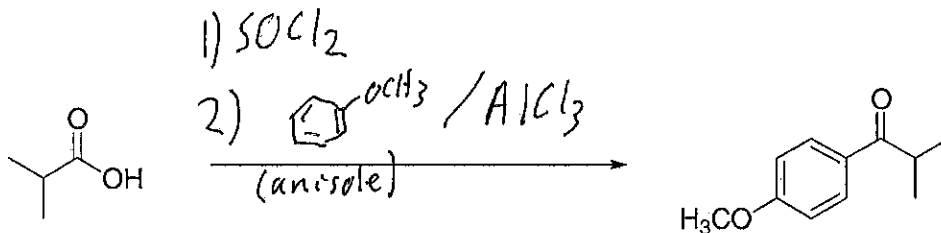
Name: Key

Organic II Lecture  
Spring 2013  
Quiz #4  
(10 points)

1. Use the Suzuki reaction to complete the following reaction.. (3 points, problem 17-31a)



2. Provide the necessary reagents to complete the reaction below. (4 points)



3. Complete the following reaction by drawing a structure of the major product. (3 points)

