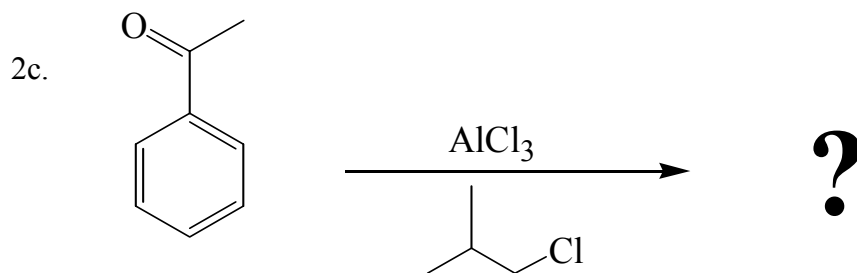
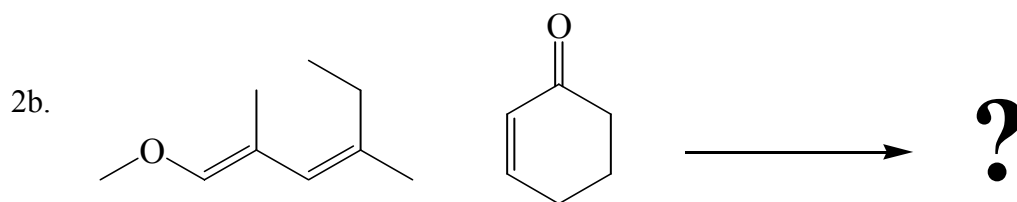
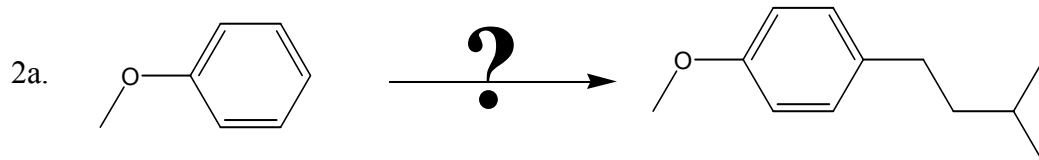
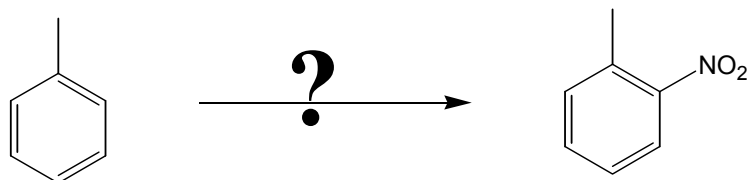




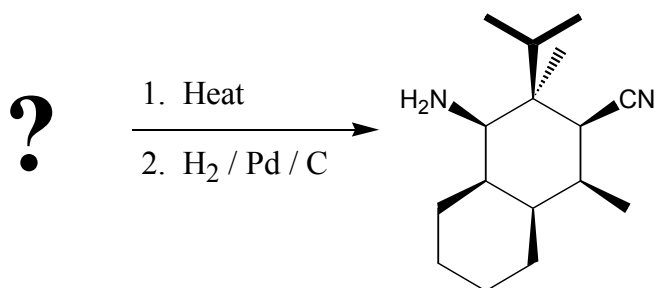
2. Predict the major products formed or reagents required for the following reactions and briefly comment on the reaction. Mechanisms are NOT required. Pay close attention to regio- and stereochemistry. More than one reaction may be required. (6 @ 7 pts = 42 points)



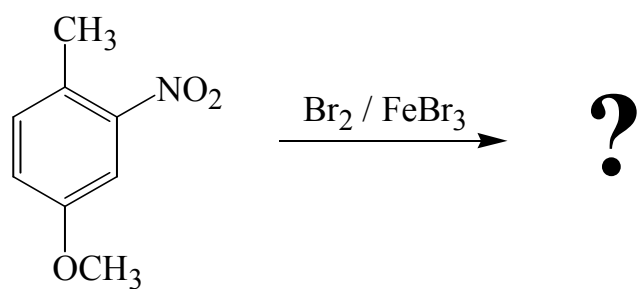
2d.



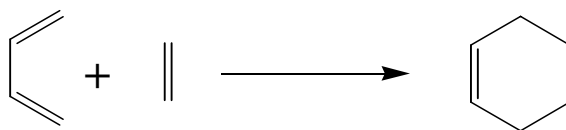
2e.



2f.



3. Consider the following reaction: (25 points)



3a. Write a mechanism that accounts for the formation of the observed product. Include a representation of the transition state(s) for this reaction. (4 pts)

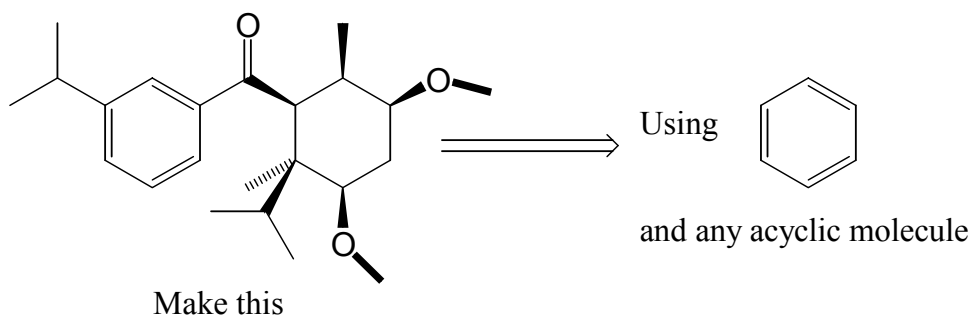
3b. Construct the molecular orbitals for each starting material. Show your work.

3c. Explain how investigating the molecular orbitals of this reaction help us understand how the reaction works.

3d. How can we make this reaction occur at a faster rate? Be specific and explain.

3e. When considering the Diels-Alder reaction, it is stated that electronics is the governing force in the outcomes of the reaction. Explain why sterics do not play a major role in the reaction. (8 pts)

4. Consider the following problem: (30 points)



4a. Conduct a retrosynthetic analysis for the above problem. Investigate MORE than two methods to make the desired molecule; the various methods do not have to be completely correct, but rather should show that you have thought of alternative routes. The reactions DO have to be REAL, but do not have to be perfect reactions. (25 points)

4b. Select the best approach and rewrite it in a retrosynthetic manner below. (5 points)

5. Provide a mechanism that accounts for the formation of the observed product for the following reaction. (15 points)

