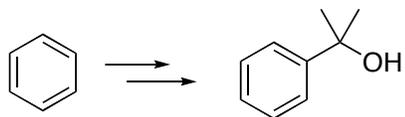
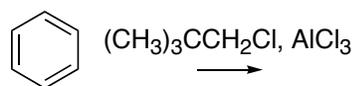


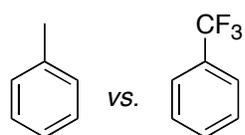
1. Propose a synthesis.



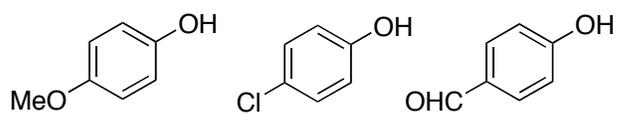
2. Provide the major products.



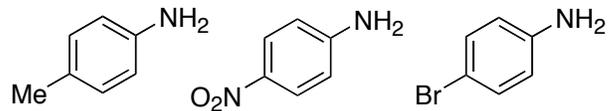
3. Toluene is ortho, para directing while trifluoromethylbenzene is meta directing. Explain, using resonance structures in your answer.



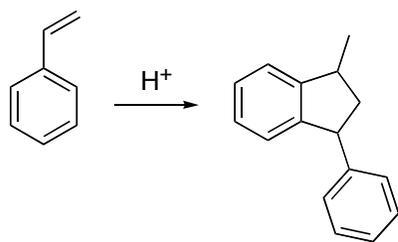
4. List the following compounds in order of acidity. (1 = most acidic)



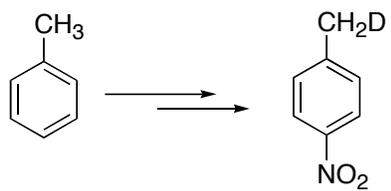
5. List the following compounds in order of basicity. (1 = most basic)



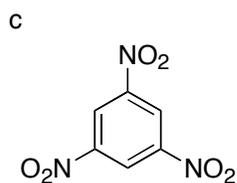
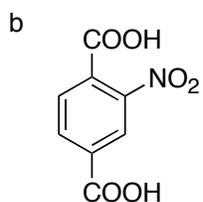
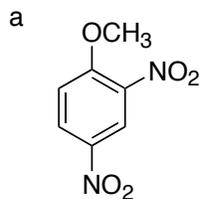
6. Propose a mechanism.



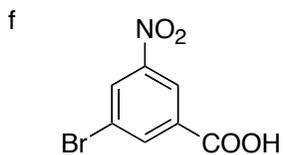
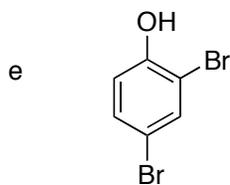
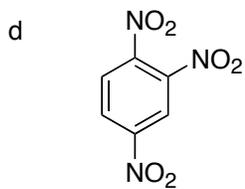
7. Outline a multistep synthesis of 1-ethyl-4-nitrobenzene from toluene.



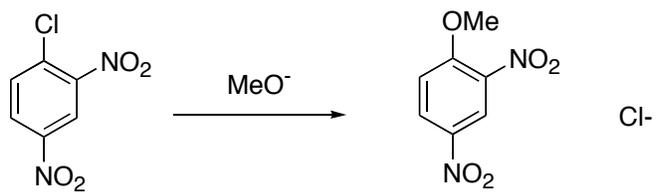
8.a-c Which of the following compounds can likely be prepared in a pure state by electrophilic substitution on a disubstituted benzene? Outline the method in each case.



8.d-f Which of the following compounds can likely be prepared in a pure state by electrophilic substitution on a disubstituted benzene? Outline the method in each case.



9. Provide a detailed stepwise mechanism for the following reaction.



10. Propose the mechanism of the following reaction and provide the MAJOR product.

