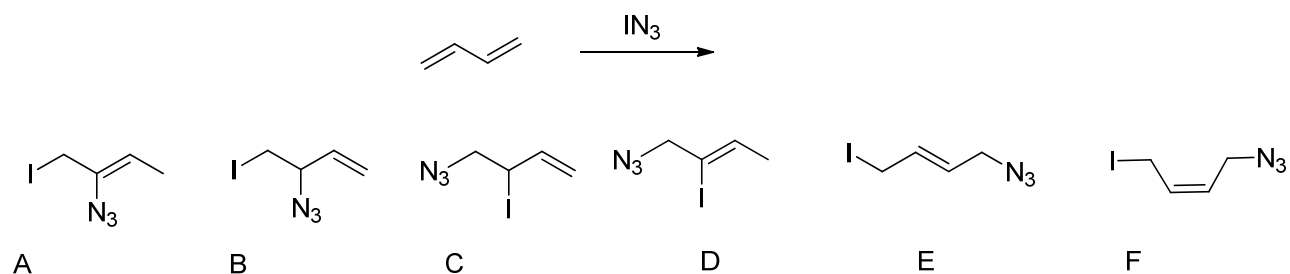
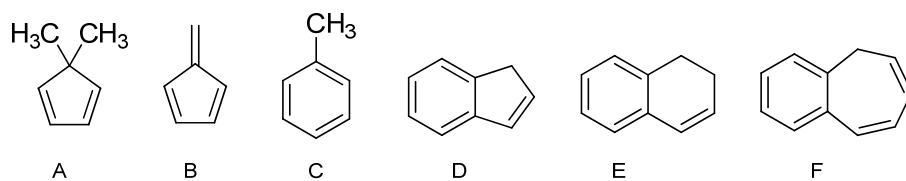


Back when Professor Fowler was a young guy like you, he played around with the compound IN_3 . Consider the reaction of butadiene with the diatomic molecule IN_3 .

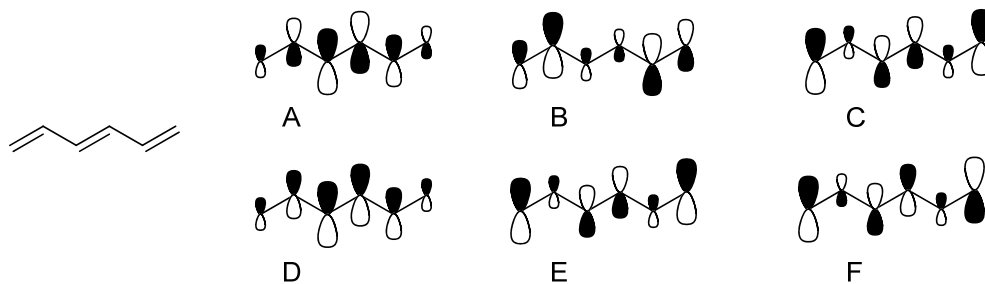


- Which of the above products represents the predicted kinetic product? **B**
 - Which of the above products represents the predicted thermodynamic product? **E**
-

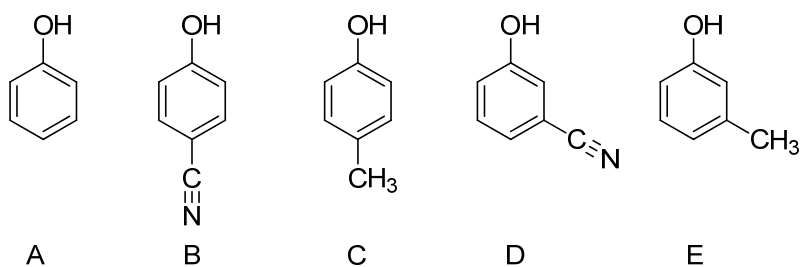
Consider the following compounds



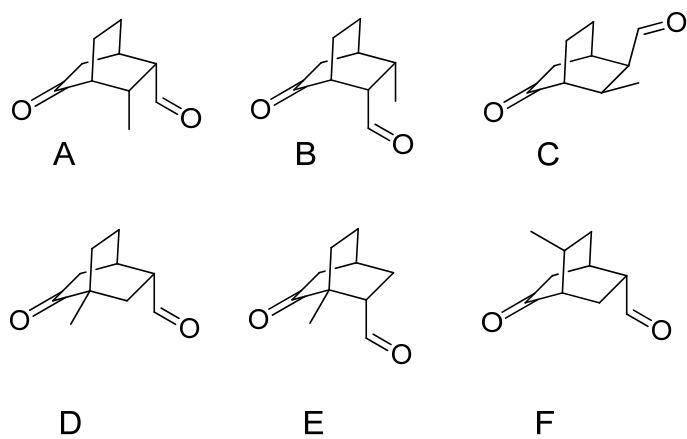
- Which of the compounds is the most acidic (lowest $\text{p}K_a$)? **D**
 - Which of the compounds would most readily lose a hydride, H^- , to form a cation? **F**
-



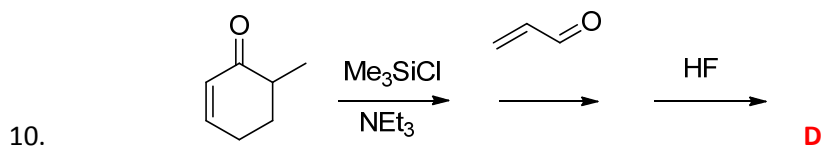
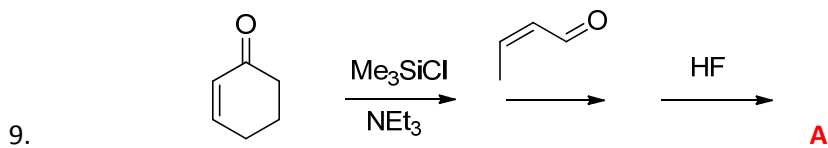
- Which of the above orbitals represents the HOMO of 1,3,5-hexatriene? **C or E**
- Which of the above orbitals represents the LUMO of 1,3,5-hexatriene? **F**



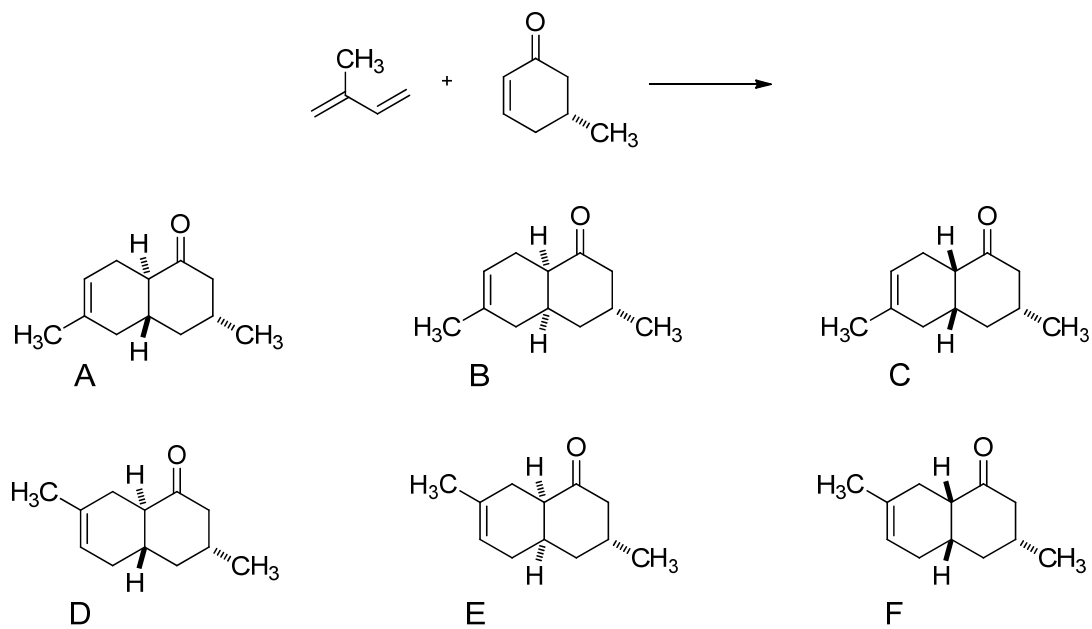
7. Which of the above phenols is the most acidic (lowest pK_a)? **B**
8. Which of the above phenols is the least acidic (highest pK_a)? **C**



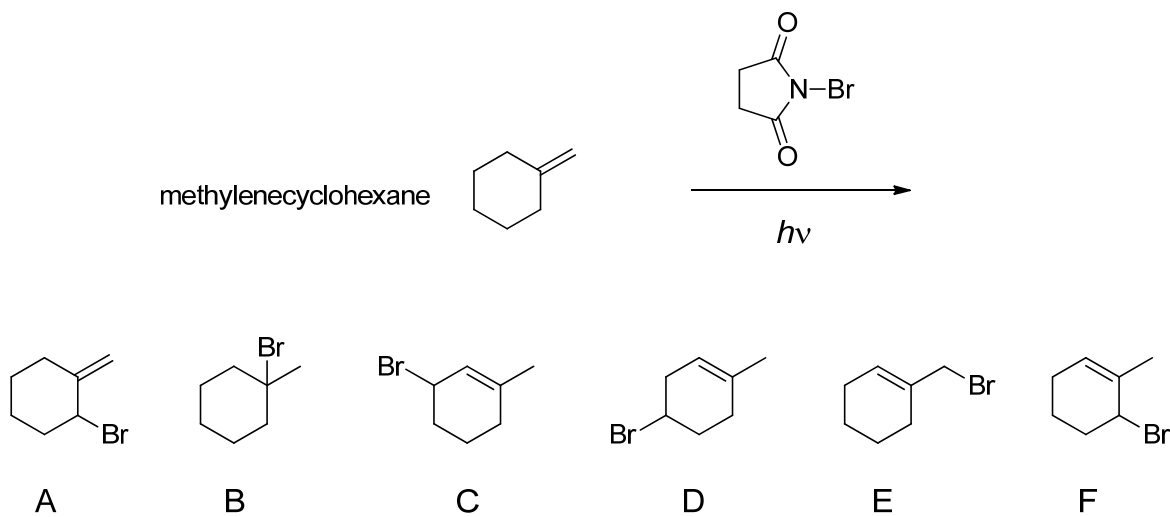
Which of the above products would be the product of each of the following two reaction schemes?



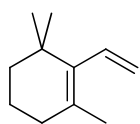
11. The synthesis of a complex alkaloid published just last month by workers from Japan began with the following Diels Alder reaction. Predict the product.

**B**

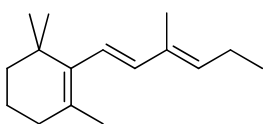
12. Predict the major product of the following reaction.

**E**

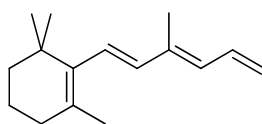
13. Which of the compounds show below would have the longest wavelength absorption maximum?



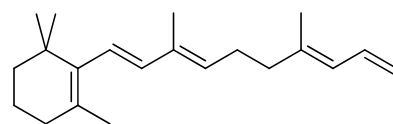
A



B



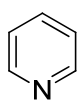
C



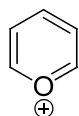
D

c

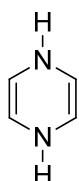
14. Which of the following compounds is not aromatic?



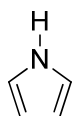
A



B



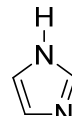
C



D



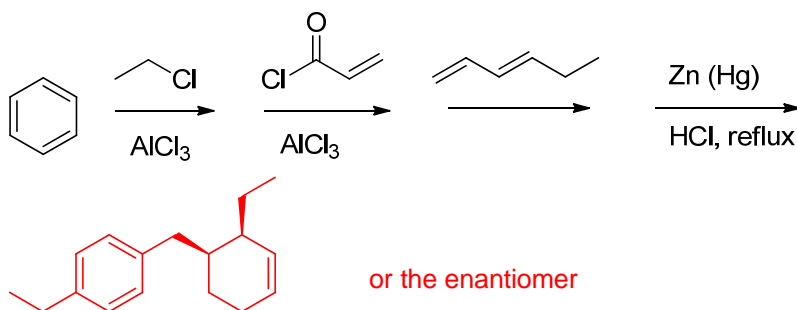
E



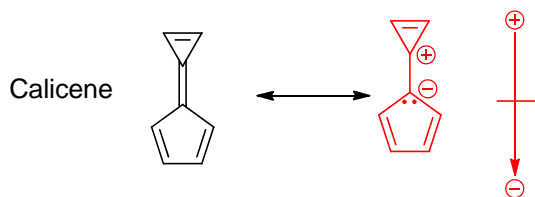
F

c

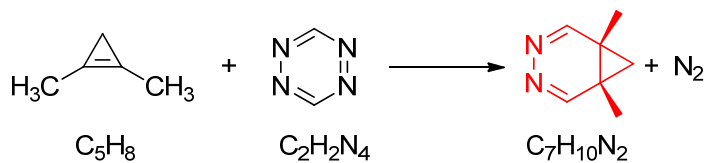
15. Predict the major product of the following reaction sequence. (5 pts)



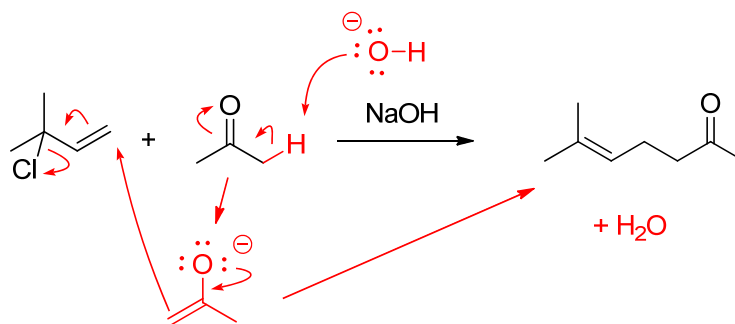
16. Calicene has a very large dipole moment (5.6 D). From an understanding of aromaticity draw an important resonance structure for calicene and indicate the negative and positive end of the dipole moment on this molecular structure. (5 pts)



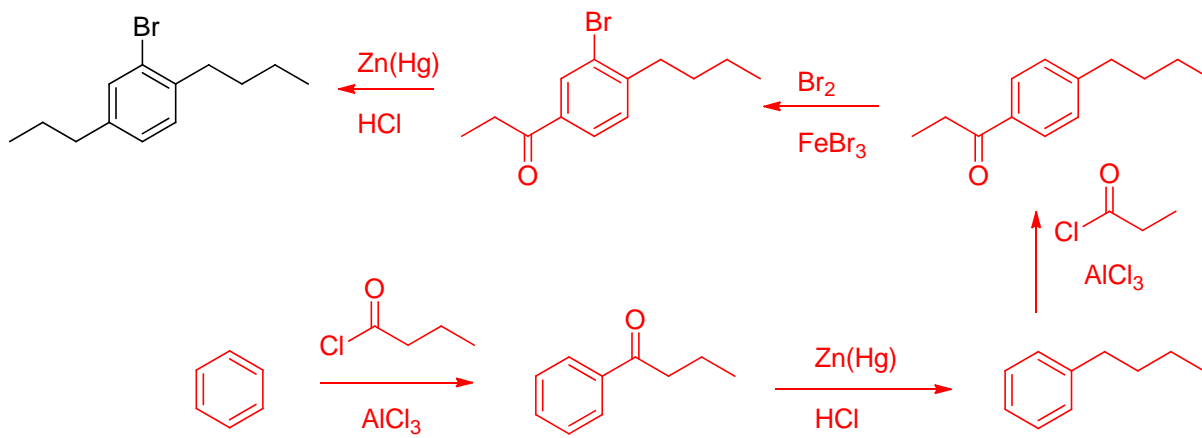
17. In a recent paper workers from UC Irvine reported a variation of the following reaction. Predict the product **X**. Clearly indicate all stereochemistry. (5 pts)



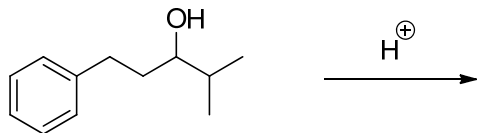
18. Draw a curved arrow mechanism for the reaction shown below. (This was the first posted homework problem for the term. 5 pts)



19. Give a synthesis of the following compound starting from benzene. You may use any other reagents. (Note: this compound was the Daily Synthesis problem for Feb 11, 10 pts)

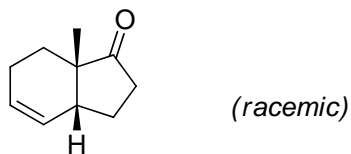


20. When the compound below is treated with H_2SO_4 it forms a bicyclic compound. Draw a curved arrow mechanism and predict its structure. Clearly draw all intermediates. (10 pts)



Friday's Lecture Problem

21. Give a synthesis of the compound shown below. All your starting materials should have four or fewer carbon atoms. (10 pts)



Friday's Lecture Problem