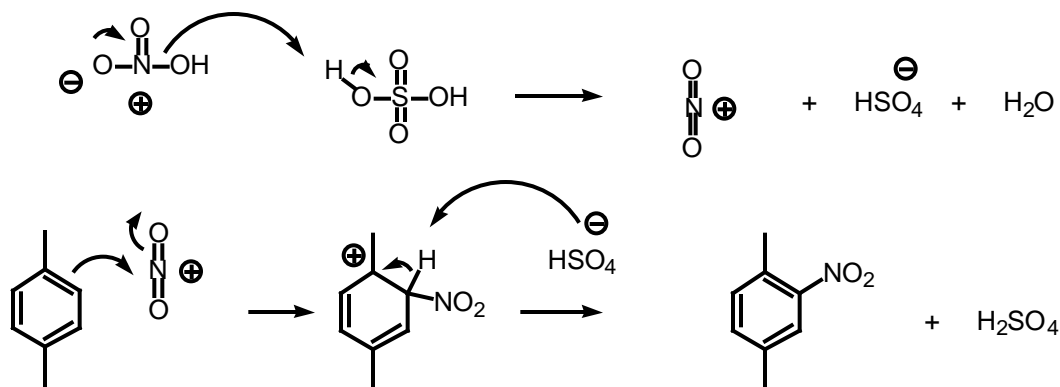
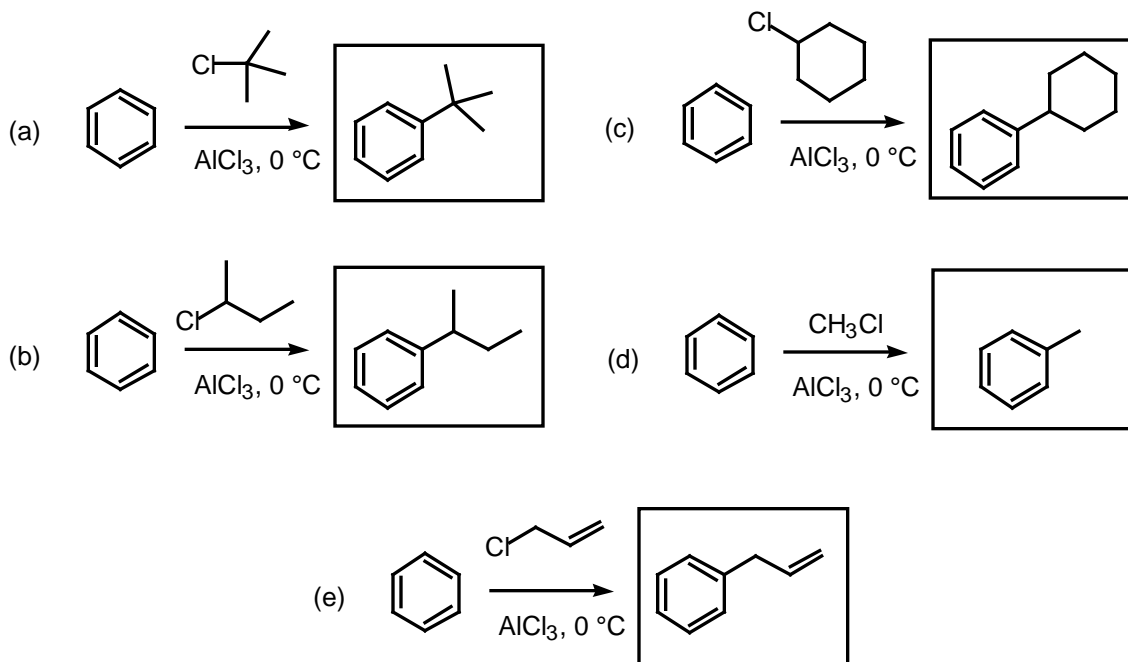


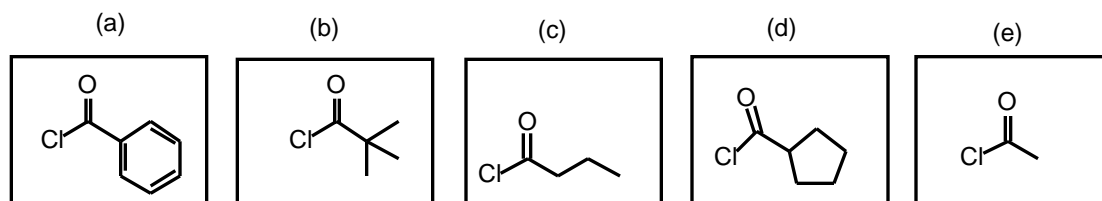
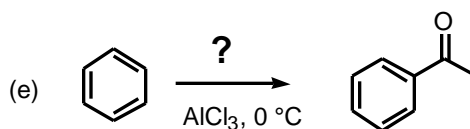
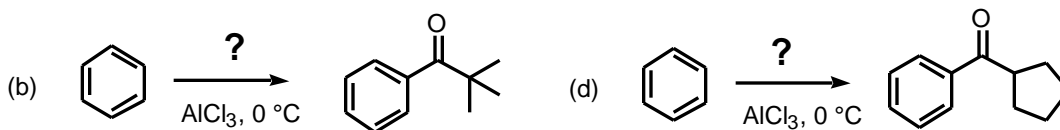
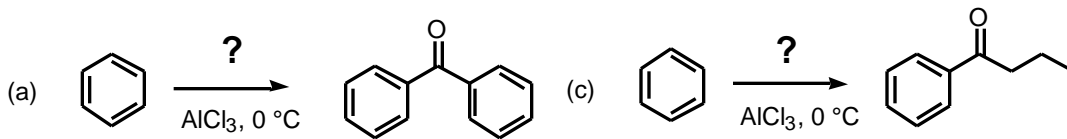
1. Show the mechanism of the reaction of p-xylene with nitric acid in the presence of a catalytic amount of sulfuric acid. (10 pts)



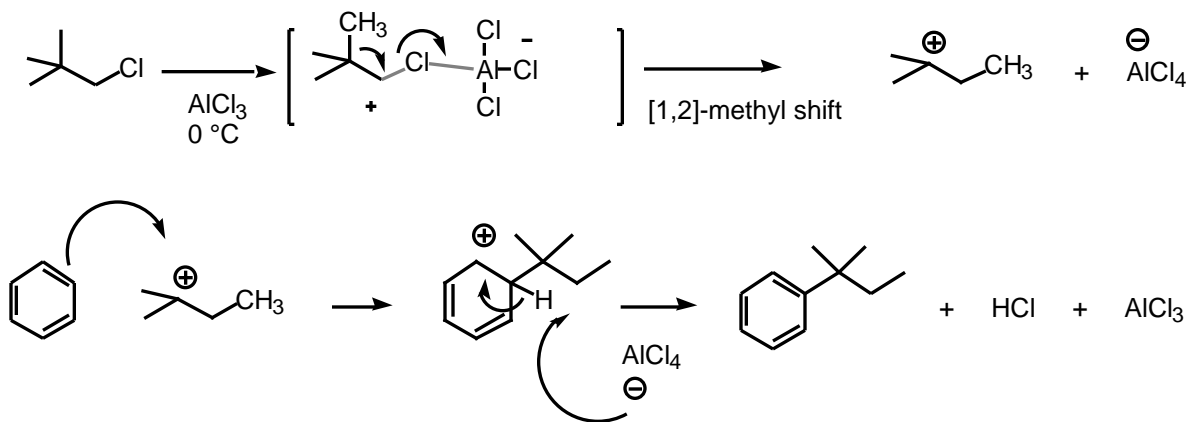
2. Predict the major organic product the will form from each of the following Friedel-Crafts alkylation reactions of benzene: (10 pts)



3. Show the acyl chloride that would need to be used to effect each of the Friedel-Crafts acylation reactions shown below:



4. Show a mechanism for the following reaction: (10 pts)



5. Show how you could carry out the following synthesis: (10 pts)
(No need to show the mechanisms here, just the synthetic steps)

