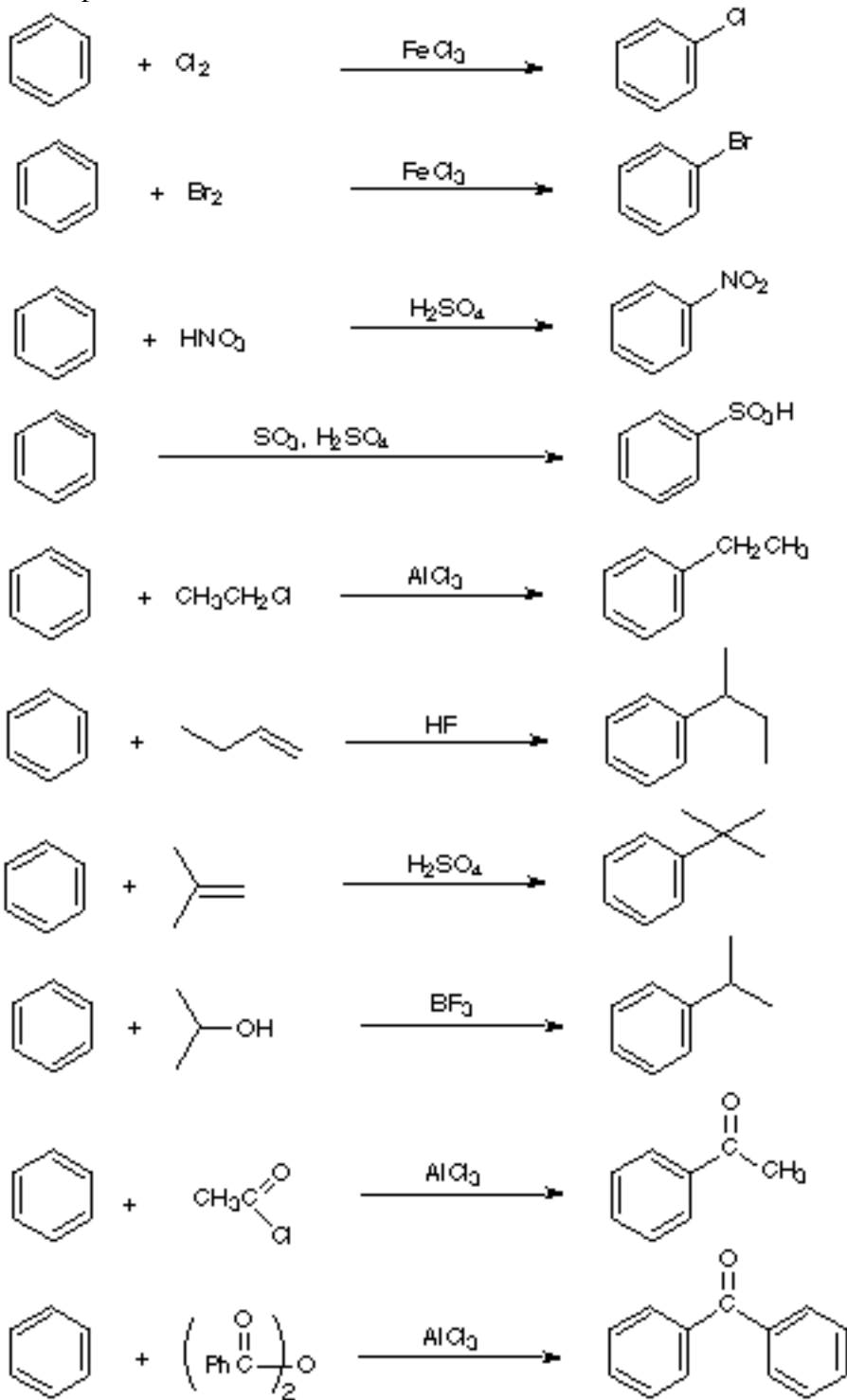
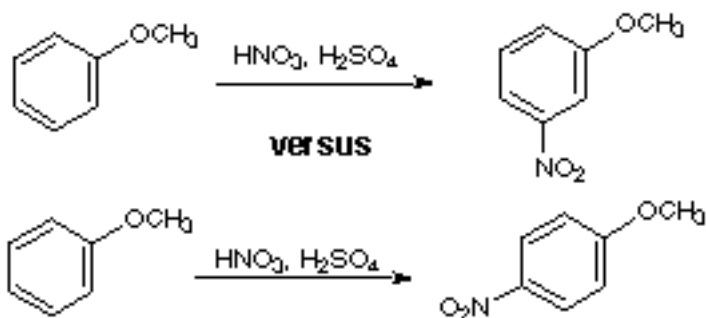


WORKSHOP, Chapter 12
Electrophilic Aromatic Substitution

1. Each of the following are classified as reactions that occur by an electrophilic aromatic substitution mechanism. Write a general two-step mechanistic scheme (use curved arrows to show movement of electron pairs) for these reactions. Construct a table showing the electrophile and the electrophilic substitution intermediate for each reaction.



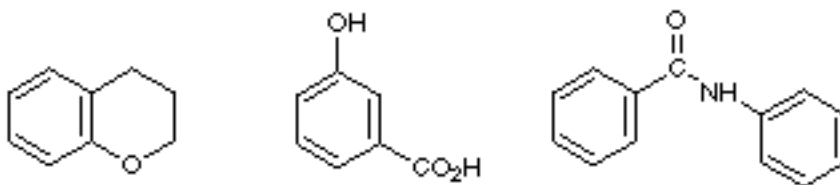
2. a. Predict which of the reactions shown below will occur at a faster rate:



b. What does your answer in part a imply about the major product of the nitration of anisole?

c. Show detailed mechanism(s) for the reactions in part a and give energy diagrams (reaction coordinate diagrams) for the two mechanisms. Take care to show all important resonance structures. Explain how your energy diagrams account for your predictions in parts a and b.

d. Draw an arrow to indicate the position where the major amount of mononitration will occur on each of the following compounds. For each compound, explain why the position you have selected is preferred over other possible positions.



3. Give convincing explanations for the following observations:

