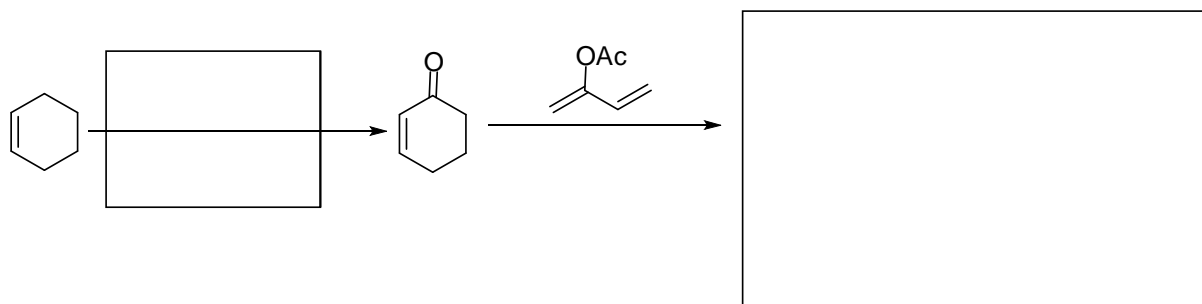


1. Provide the reagents and the product to complete the following reactions. (3 pts. per question)



2. Suggest a synthesis to take the starting material on the left to the product on the right. This will require more than one step. You may use any inorganic reagent and any organic reagent of four carbons or less. (6 pts.)



3. The reaction shown below is regularly conducted in my research lab. This reaction is quite chemoselective, that is only one of three possible alkenes reacts with the H_3O^+ (6N HCl) electrophile. Using the reaction principles discussed in class recently, determine which alkene will react most rapidly (Hint: find the best nucleophile!). Explain your answer using the concepts discussed in class. You may want to use resonance structures to assist you with your explanation. (1,000,000 pts.)

