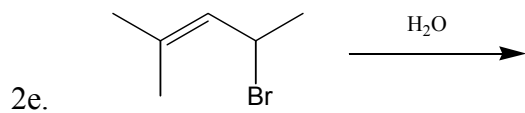
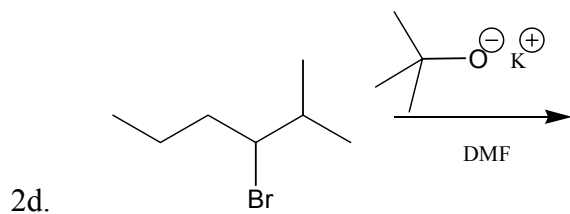
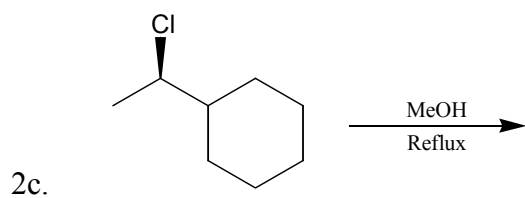
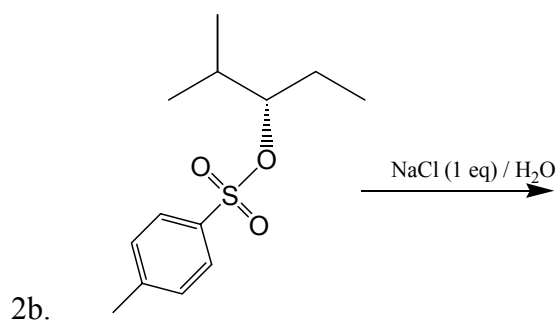
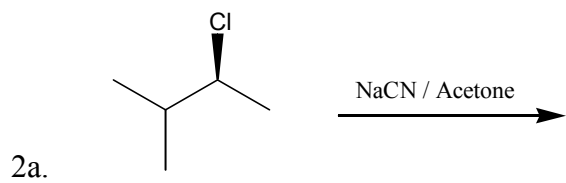
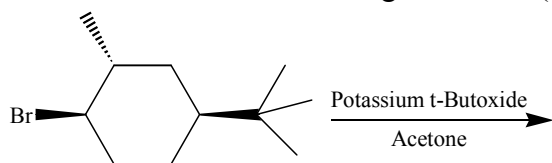




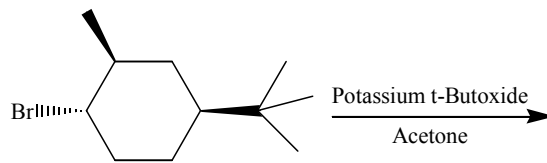
2. Predict products for the following reactions and briefly explain your answer. (5 @ 8 pts = 40 points)



3. Consider the following reactions: (32 points)



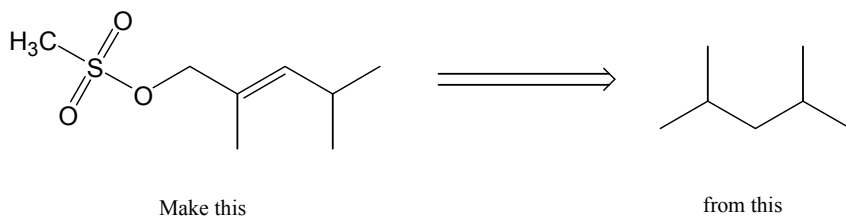
Compound A



Compound B

- 3a. What is the product for the reaction of [1R,2R,4S] 1-bromo-4-tert-butyl-2-methyl cyclohexane (Compound A)? (4 points)
- 3b. What is the mechanism for the formation of this product? Include any drawings of relevant transition states. (8 points)
- 3c. What would you expect the rate law for the reaction to be? Explain briefly. (3 points)
- 3d. When the reaction of the Compound A is compared to the reaction of Compound B (the [1S,2S,4S] stereoisomer), it is noted that the reaction of Compound A occurs at a much faster rate. Explain this observation. (7 points)
- 3e. When this reaction is heated in only t-butanol (no t-butoxide or acetone), both compound A and compound B give the same product and the product is formed with nearly the same rate. Explain this observation. (7 points)
- 3f. What would you expect the rate law for the reaction to be? Explain briefly (3 points)

4. Consider the following problem: (26 points)



4a. Conduct a retrosynthetic analysis for the above problem. It will be beneficial to think about more than one method to make the desired molecule; the various methods do not have to be completely correct, but rather should show that you have thought of alternative routes.. (13 points)

4b. Using the best approach from problem 4a, synthesize the desired molecule. Mechanism are not required, but reagents and conditions are required. (13 points)