

EXAM #4 MORE PROBLEMS

DO THESE PROBLEMS BEFORE THE OTHER SET OF EXTRA PROBLEMS!

(they are more relevant to the exam material)

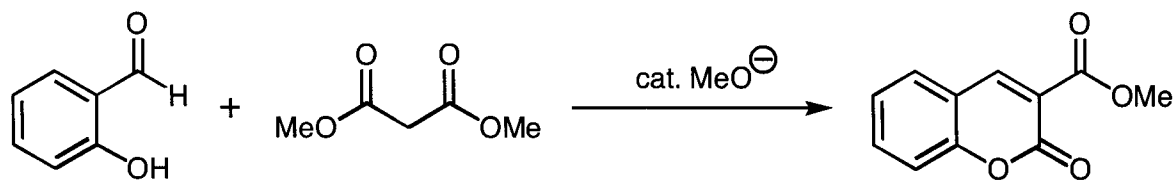
What to expect on Exam #4:

1. pK_a s of ketones, diketones, esters, etc.
2. ~3 Transformations - supply missing reagents
3. ~10 Transformations - supply missing product
4. ~2 Mechanisms
5. ~2 Synthesis

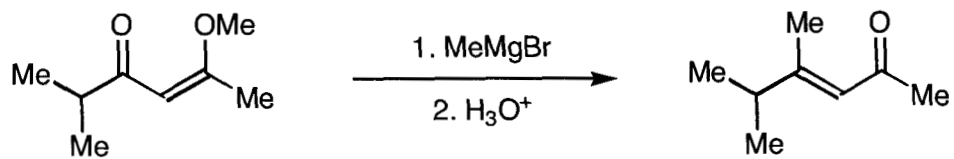
What NOT to expect on Exam #4:

1. Determine mechanism by crossover and stereochemical experiments (end of Friday's lecture)
2. Neighboring Group Participation - **Do not work through problems #8, 24, & 25 on the Extra Problem set.**

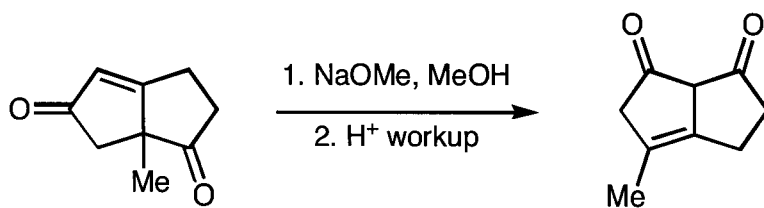
1. Please provide a detailed mechanism for the following transformation. Show all arrow pushing.



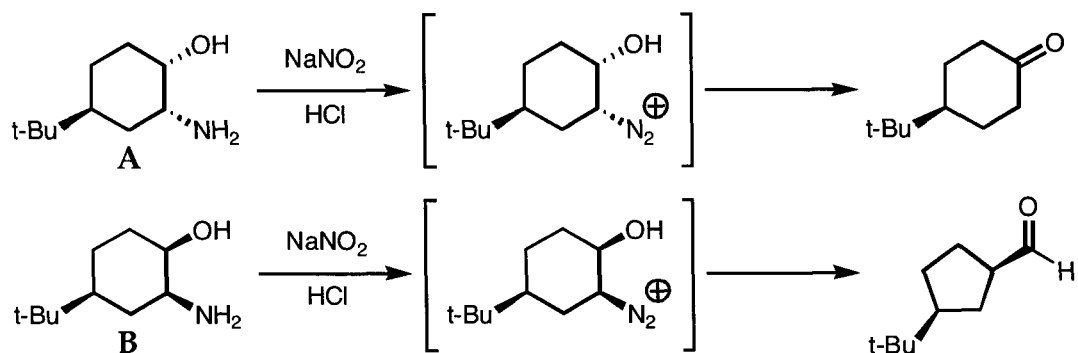
2. (10 points) Please provide a detailed mechanism for the following transformation. Show all arrow pushing.



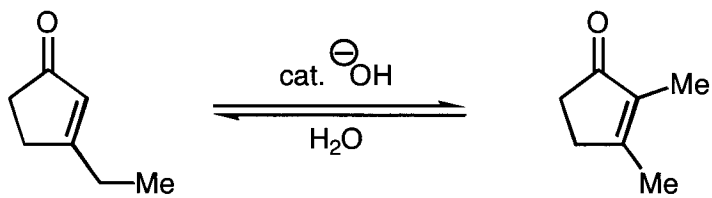
3. (10 points) Please provide a detailed mechanism for the following transformation. Show all arrow pushing. Hint: This mechanism is from problem set 6.



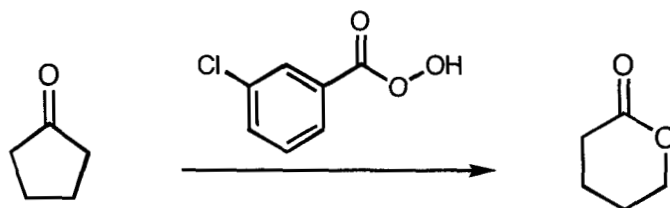
4. (10 points) Diastereomers **A** and **B** provide different products upon diazotization. Please explain why only one product is formed selectively in each reaction. Your explanation should include a **3-dimensional** mechanism for the formation of each product from the corresponding diazonium salt.



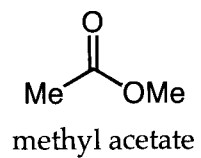
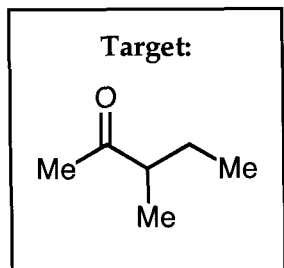
5. Please provide a detailed mechanism for the following transformation. Show all arrow pushing.



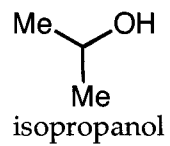
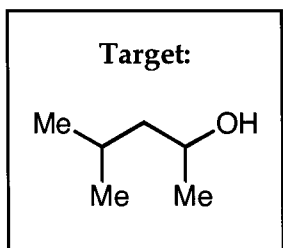
6. Please provide a detailed mechanism for the following transformation. Show all arrow pushing.



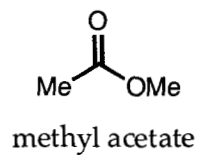
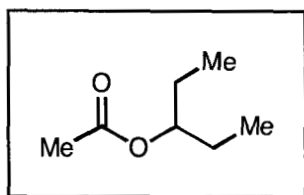
7. Please provide a synthesis of the indicated compound. All of the carbon atoms should be derived from methyl acetate.



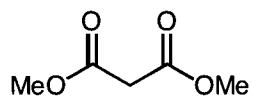
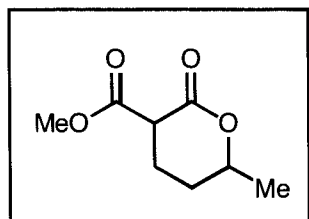
3 . Please provide a synthesis of the indicated compound. All of the carbon atoms should be derived from isopropanol.



↑ (12 points) Please provide a synthesis of the indicated compound. All of the carbon atoms should be derived from **methyl acetate**. You will receive partial credit for a complete retrosynthesis.



16. (12 points) Please provide a synthesis of the indicated compound. All of the carbon atoms should be derived from **dimethyl malonate** and **alcohols containing three or fewer carbons**. You will receive partial credit for a complete retrosynthesis.



dimethyl malonate

R-OH

alcohols containing
three or fewer carbons