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)
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.

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

Figure by MIT OCW.
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.

In the concerted Tiffeneau-Demjanov rearrangement, the migrating bond must be **antiperiplanar** to the leaving group.

(Bolded bonds are antiperiplanar)
5. Please provide a detailed mechanism for the following transformation. Show all arrow pushing.

Think about common disconnection...

Figure by MIT OCW.
6. Please provide a detailed mechanism for the following transformation. Show all arrow pushing.

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

Figure by MIT OCW.
8. Please provide a synthesis of the indicated compound. All of the carbon atoms should be derived from isopropanol.

OR:

Figure by MIT OCW.
9. (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.
10. (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.