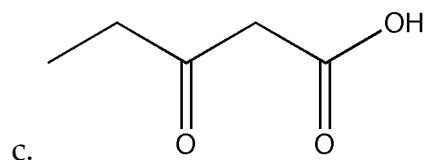
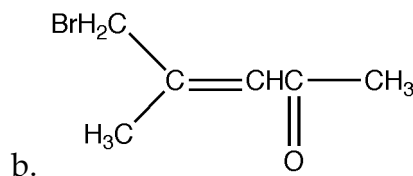
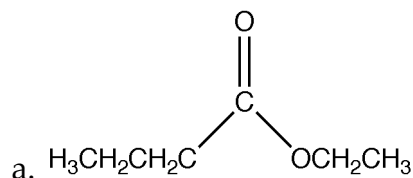


Sample midterm exam 1 (Chapters 16 and 17)

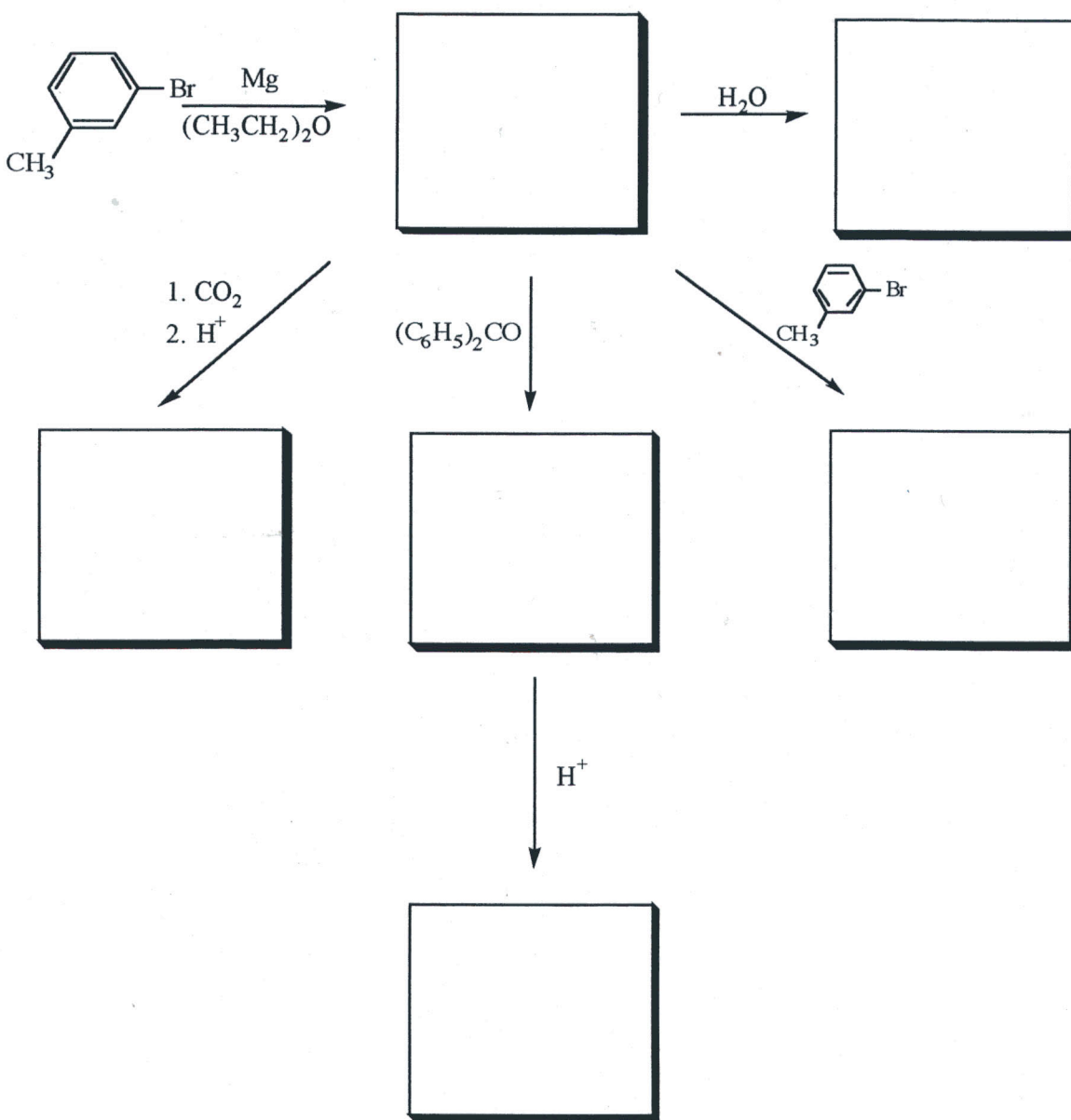
Exam is 50 minutes long; there are 50 points possible. The exam is closed books (textbooks and other books) and websites, open notes, class handouts, lab notebooks, homework and exercises. There is to be no collaboration.

1. Give the IUPAC (systematic) names for the following compounds:

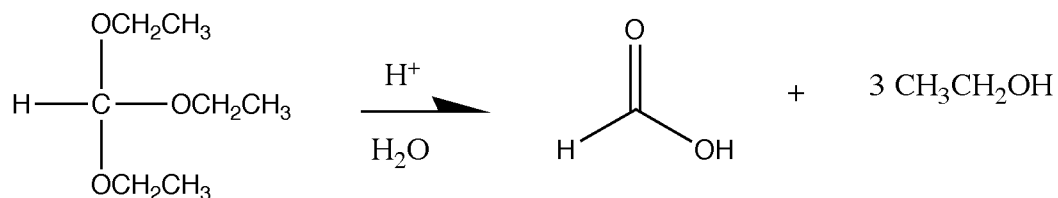


2. Which is more reactive with water: **acetone** (2-propanone) or **acetyl chloride** (ethanoyl chloride — CH_3COCl)? Why? Give a good mechanistic explanation.

3. Predict the products in the following scheme. Make sure to include all the inorganic products as well.



5. Ethyl orthoformate (common name) hydrolyzes into formic acid (methanoic acid) and 3 equivalents of ethanol, as shown:



Draw the mechanism for this reaction.

6. Compound X (formula $\text{C}_4\text{H}_6\text{Cl}_2\text{O}$) is reacted with one equivalent of methanol to yield another compound that has the following NMR spectrum:

Chemical shift	Peak splitting	Integration
2.1	A rough quintet	2
2.5	Triplet	2
3.65	Triplet	2
3.7	Singlet	3

a. Draw the structure of the product compound (the one that the NMR was taken of), and assign the NMR peaks to the appropriate set of equivalent hydrogens.

b. Draw the structure of compound X.

7. Predict the products:

