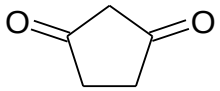
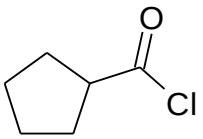
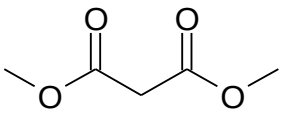
CHM 2211 – Ch 22 Homework

1. For the following molecules, provide the systematic names and show *all* acidic protons, along with their approximate pKa's. (See Table 22.1) Note that one compound has two different types of acid protons, each with a different pKa.







2. Diagram the complete mechanism (including applicable curved arrows) that will create α-bromopropanoic acid from propanoic acid. Name all intermediates and reaction steps. Refer to section 17.6 of McMurry for the formation of the acid bromide from the carboxylic acid.

3. Diagram the mechanism which creates bromoform and the acetate anion from acetone. Include the mechanism for each bromide α-substitution and Nu acyl substitution step separately. Also, include all applicable curved arrows.

4. Show how to create 2-ethylbutanoic acid with a malonic ester synthesis. Provide details for the complete mechanism, including the hydrolysis and decarboxylation steps. Also, include the systematic names of the ester reactant and all intermediates.

5. Show how to create 3-methyl-2-butanone with an acetoacetic ester synthesis. Provide details for the complete mechanism, including the hydrolysis and decarboxylation steps. Also, include the systematic names of the ester reactant and all intermediates.