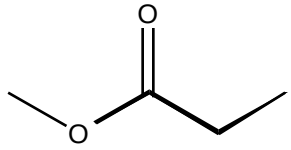
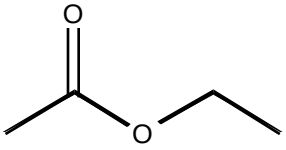
GTQ on Baeyer-Villiger Reaction. (20 points, stereochem., mech. and recogn. elements)

The Baeyer-Villiger reaction is a method for the preparation of _____esters___ via insertion of oxygen into one of the C-R bonds of a ketone. The reagent is a peroxycarboxylic acid R-CO_3H and F_3C-CO_3H is a commonly used good reagent. Let's review the Baeyer-Villiger reaction of ketones and then we'll think about the analogous reaction of aldehydes.

(a) In principle, methylethylketone can form two isomeric products when reacted with a peroxycarboxylic acid. Draw the structures of both of these potential products and circle the major product. Explain the preferential formation of one of the isomers over the other. (2 points for circle)

Isomer 1 (2 points)	Isomer 2 (2 points)	Explain (4 points):
	 circle this!	ethyl migrates better than methyl

(b) Now let's consider the Baeyer-Villiger reaction of an aldehyde. The issue is whether oxygen inserts into the C-H or the C-R bond. Experimentation teaches us that insertion into the aldehyde C-H bond occurs. Write the overall reaction of RCHO with R'CO_3H and a complete mechanism for the reaction.

Overall reaction (4):

RCHO + R'CO_3H -----> RCOOH + R'COOH

Mechanism (6 points):

Add the peroxyacid's H-OOC(O)R' across the aldehyde's C=O. Then rearrangement as shown.