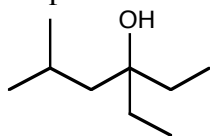


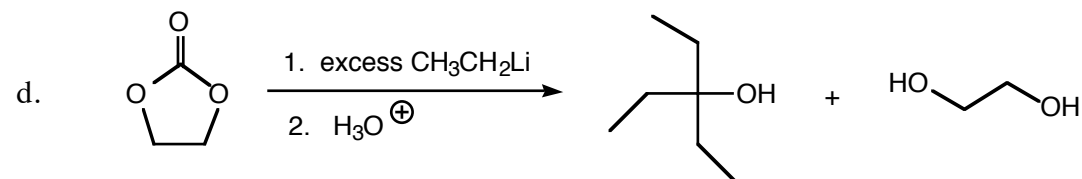
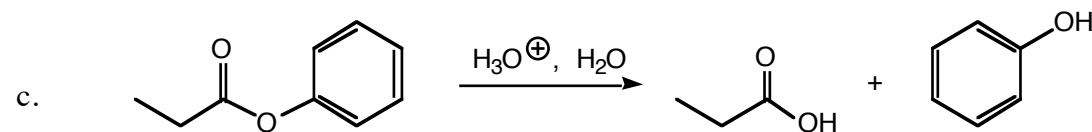
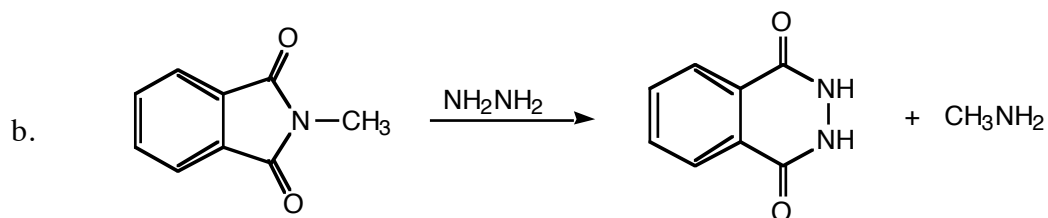
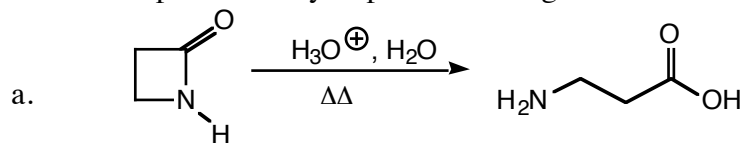
WORKSHOP, Chapter 20

Carboxyl Derivatives

1. Provide structures that satisfy the following descriptions:
 - a. the structure of the compound, $C_6H_{10}O_3$, that exhibits strong absorption in the infrared spectrum at 1754 cm^{-1} and 1818 cm^{-1} and the following $^1\text{H NMR}$ spectrum: δ 1.19 (t, rel. area 3, $J = 7.0\text{ Hz}$) and 2.48 (q, rel. area 2, $J = 7.0\text{ Hz}$).
 - b. the stereoisomer of 3-hydroxycyclohexanecarboxylic acid that is capable of forming a lactone.
 - c. the structure of the compound, $C_6H_{12}O_2$, that would undergo reaction with excess ethyl magnesium bromide to give the compound shown below.



2. Propose a plausible mechanism for each of the following reactions. Provide all important Lewis structures that contribute to the resonance hybrid for delocalized intermediates, and point out any important driving forces.



3. Give the structure(s) of the major organic product(s) for the following reactions.

