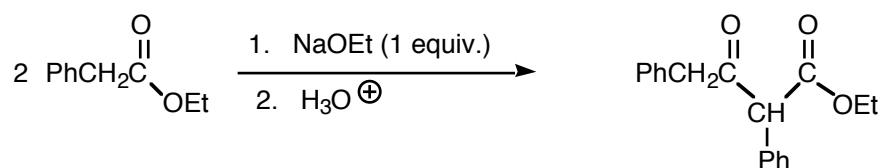


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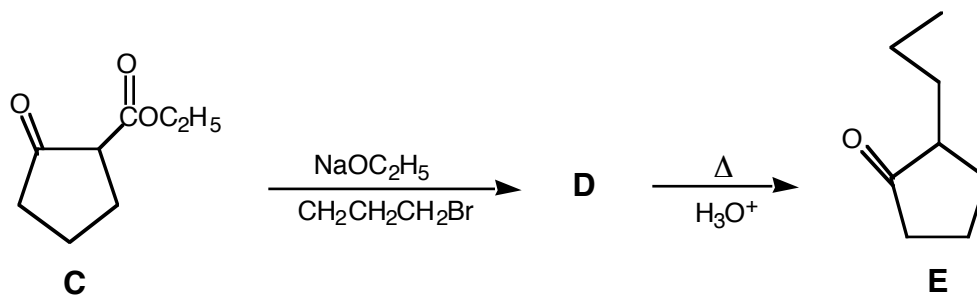
Chem 227/ Dr. Rusay

Enolate Chemistry Continued
Synthesis and Reactions of β -Dicarbonyl Compounds

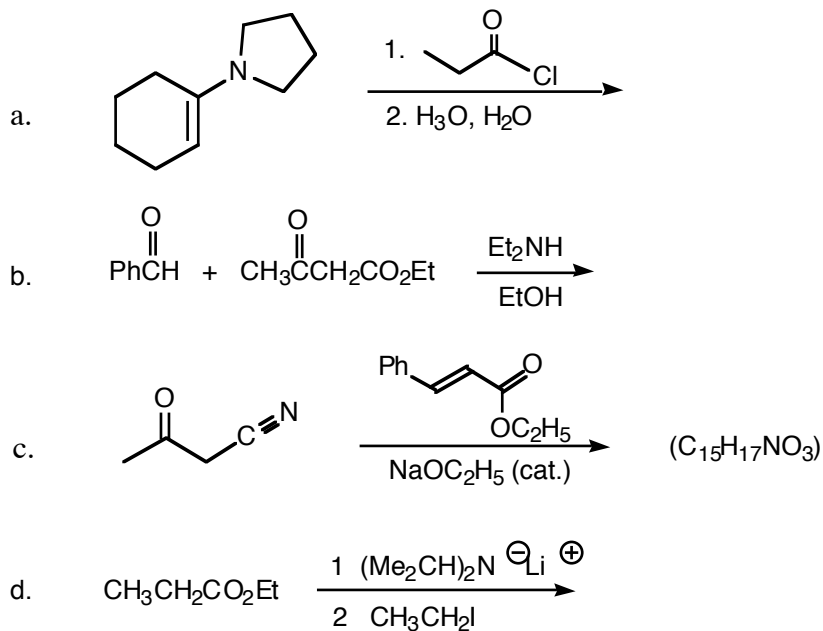
1. Give a reasonable mechanism for the following reaction, clearly showing all important intermediates and resonance structures. Use curved arrows to show the movement of electron pairs.



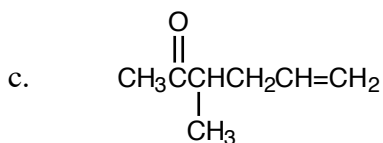
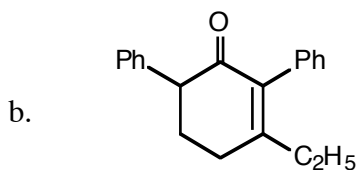
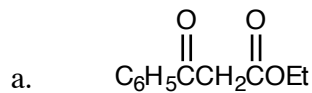
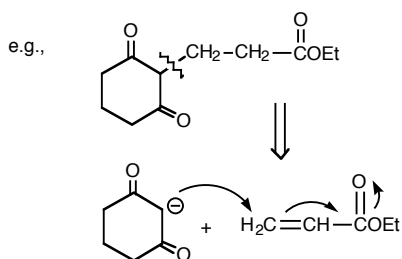
2. When compound **C** in ethanol is stirred with one molar equivalent of NaOC_2H_5 and one equivalent of $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br}$, a new compound **D** is formed. When **D** is refluxed with 3M H_2SO_4 , the ketone **E** is formed. Propose a structure for **D**, and give a stepwise electron-pushing mechanism leading from **C** to **D** to **E**.



3. Provide structures for the major products of each of the following reactions. In each case, circle the nucleophile in the carbon-carbon bond-forming steps.



3. Disconnect the following compounds into components that would condense (assemble) to give the designated compounds. Use the electron-pushing formalism to show the condensation steps.



4. Having available ethyl acetoacetate, diethyl malonate, benzene, any compounds with three carbons or fewer, and any inorganic reagents, show how to synthesize the following compounds.

