

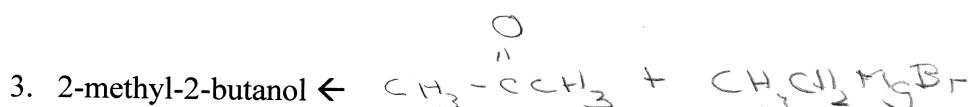
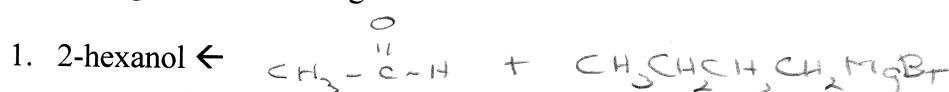
Chapter 18: Aldehydes and Ketones II Worksheet

REACTIONS:

1. formaldehyde + (conc.) NaOH \rightarrow $\text{H}-\overset{\text{O}}{\underset{\text{H}}{\text{C}}}-\text{O}^- + \text{CH}_3\text{OH}$
2. acetone + NaCN, H⁺ \rightarrow $\text{CH}_3-\overset{\text{OH}}{\underset{\text{CN}}{\text{C}}}=\text{CH}_3$
3. methanal + (xs) ethanol, dry HCl \rightarrow $\text{CH}_3\text{CH}_2-\text{OCH}_2-\text{OCH}_2\text{CH}_3$
4. acetaldehyde + NH₂NHCONH₂ (semicarbazide) \rightarrow $\text{CH}_3-\overset{\text{H}}{\underset{\text{H}}{\text{C}}}=\text{N}-\text{NH}-\overset{\text{O}}{\underset{\text{H}}{\text{C}}}-\text{NH}_2$
5. ethanal + alcoholic silver nitrate (Tollen's reagent) \rightarrow $\text{CH}_3-\overset{\text{OH}}{\underset{\text{O}}{\text{C}}}-\text{O}^- + \text{Ag}^{(\text{ppf})}$
Silver mirror
6. acetophenone + H₂, Ni \rightarrow $\text{CH}_3-\overset{\text{H}}{\underset{\text{O}}{\text{C}}}-\text{CH}_2-\text{C}_6\text{H}_5$

SYNTHESIS OF ALCOHOLS USING GRIGNARD REAGENTS AND CARBONYL COMPOUNDS:

Draw the structures of the Grignard reagent and the carbonyl compound that can be combined to give the following alcohols.



Outline a possible laboratory synthesis of each of the following compounds starting with alcohols of four-carbons or less, benzene, cyclohexanol and any needed inorganic reagents.

1. cyclohexylmethanol

