Further Practice Sn1 and Sn2

Sn Example:



In order to make the above reaction occur, a stronger base (such as sodium methoxide) must be used to drive the forward reaction.

Example:

 $\begin{array}{c} H-C\equiv N \\ pK_{a}=9 \end{array} \xrightarrow[NaOH]{H_{2}SO_{4}} \begin{array}{c} \oplus \\ Na \\ Highly Toxic \end{array} \xrightarrow[Toxic]{H_{2}SO_{4}} \begin{array}{c} \oplus \\ Na \\ C\equiv N \\ Sodium cyanide \\ Toxic \end{array} \xrightarrow[Toxic]{S_{N}2} \begin{array}{c} H_{3}C-C\equiv N \\ Acetonitrile \end{array} \xrightarrow[Toxic]{H_{3}C-C\equiv N} \xrightarrow[Toxic]{H_{3}C-C\equiv N} \begin{array}{c} H_{3}C-C\equiv N \\ Acetonitrile \end{array} \xrightarrow[Toxic]{H_{3}C-C\equiv N} \begin{array}{c} H_{3}C-C\equiv$

The above reaction will not occur unless hydrogen cyanide is converted into sodium cyanide using NaOH.

The product is acetonitrile, a common laboratory solvent.

<u>REVIEW</u>: S_N2 yes or no ? Examples



Example: Tertiary Halide -No S_N2 possible, sterically crowded – does work by S_N1



No S_N2





Ex #2)



Mechanism:





Secondary Alkyl Halide

Ex #3) This one can work in principle



2-Bromobutane

Ex #4) The one below does NOT work



In this reaction, the NH_2 species will pull off the most acidic proton (the one on the alcohol) to from an **alkoxide** instead of undergoing an $S_N 2$ reaction,

Sn1 Reaction

