3. Give the starting material and reagents over the arrow needed to accomplish the following syntheses.

(a) \[ \text{NaOEt} \]
\[ \text{EtO}_2\text{H} \]
\[ \text{H}_2\text{O} \]

(b) \[ \text{NaBH}_3\text{CN} \]
\[ \text{HCl buffered} \]

(c) \[ \text{NaOH} \]
\[ \text{H}_2\text{O} \]
\[ \text{heat} \]

4. Draw the major product(s) of the following reactions showing stereochemistry in 3-D where appropriate.

(a) \[ \text{H}_2\text{O}^+, \text{xs} \]
\[ \text{H}_2\text{O} \]

(b) \[ \text{NaCN} \]
\[ \text{CH}_3\text{OH} \]

(c) \[ \text{NaBH}_3\text{CN} \]
\[ \text{buffered HCl} \]

(d) \[ 1. \text{LiAlH}_4 \]
\[ 2. \text{H}_2\text{O}^+ \]

1. Circle the strongest base. Box the weakest base.

2. Give an example of each of the following.

- Lactam
- Imine
- Ammonium salt
- Enamine