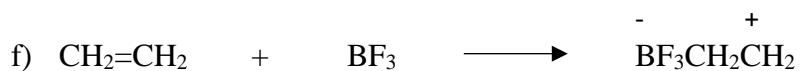


- All the following compounds are acids. Rank them in order from lowest to highest acidic strength. (*Don't use the pKa table*)
 $\text{CH}_3\text{CH}_2\text{SO}_3\text{H}$ $\text{CH}_3\text{CH}_2\text{OH}$ $\text{CH}_3\text{CH}_2\text{COOH}$ $\text{CH}_3\text{CHClCOOH}$ $\text{ClCH}_2\text{CH}_2\text{COOH}$
- Rank the following in increasing order of acidity.
 NH_3 HF H_2SO_4 CH_3OH CH_3COOH H_3O^+ H_2O
- Rank the following in increasing order of basicity.
 NH_3 CH_3O^- H_2O NaOH NH_2^- CH_3COO^- HSO_4^-
- Label the reactants in the following reactions as Lewis acids and bases. Use curved arrows to show the movement of electrons.
 - $$\text{CH}_3\text{O}^- + \text{CH}_3\text{Cl} \longrightarrow \text{CH}_3\text{OCH}_3 + \text{Cl}^-$$
 - $$\begin{array}{c} \text{CH}_3\text{O}^+\text{CH}_3 \\ | \\ \text{CH}_3 \end{array} + \text{HOH} \longrightarrow \text{CH}_3\text{OCH}_3 + \begin{array}{c} \text{CH}_3\text{O}^+\text{H} \\ | \\ \text{H} \end{array}$$
 - $$\begin{array}{c} \text{O} \\ || \\ \text{HCH} \end{array} + \text{:NH}_3 \longrightarrow \begin{array}{c} \text{O}^- \\ | \\ \text{HCH} \\ | \\ \text{}^+\text{NH}_3 \end{array}$$
 - $$\text{CH}_3\text{NH}_2 + \text{CH}_3\text{CH}_2\text{Cl} \longrightarrow \text{}^+\text{CH}_3\text{NH}_2\text{CH}_2\text{CH}_3 + \text{Cl}^-$$
 - $$\begin{array}{c} \text{O} \\ || \\ \text{CH}_3\text{CCH}_3 \end{array} + \text{H}_2\text{SO}_4 \longrightarrow \begin{array}{c} \text{}^+\text{OH} \\ || \\ \text{CH}_3\text{CCH}_3 \end{array} + \text{HSO}_4^-$$



5. Predict the products of the following acid-base reactions.

