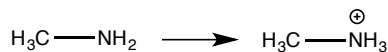
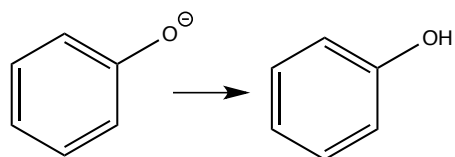
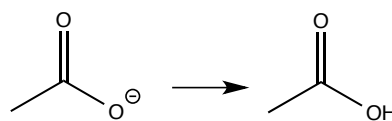
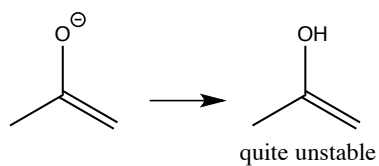
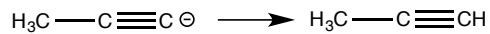
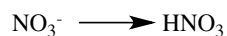
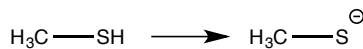
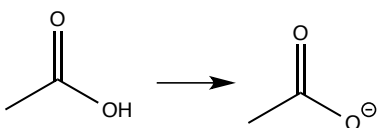
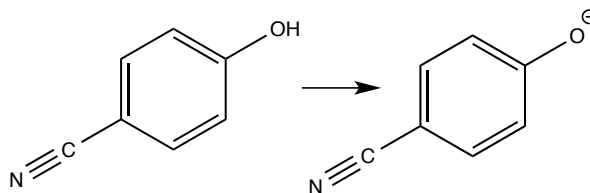
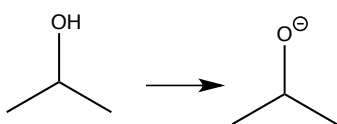
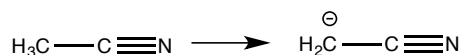
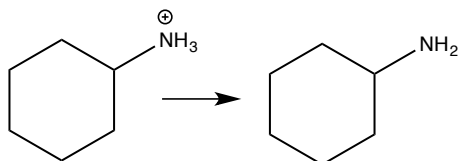


Practice Problems - Answers

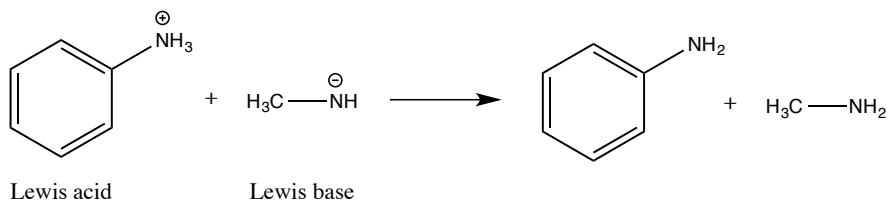
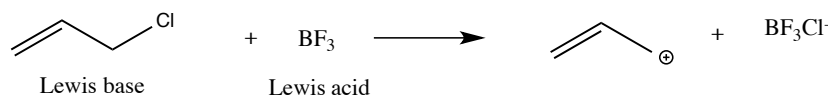
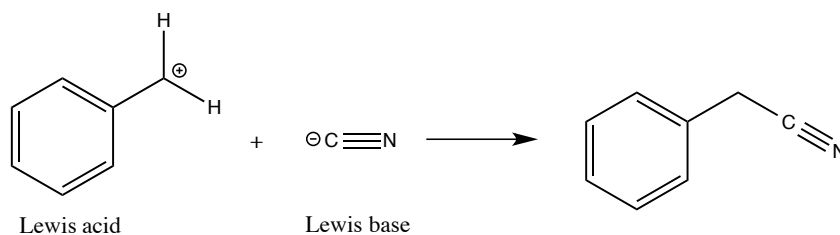
1. Draw the structure of the conjugate acid of each of the following ions or compounds.



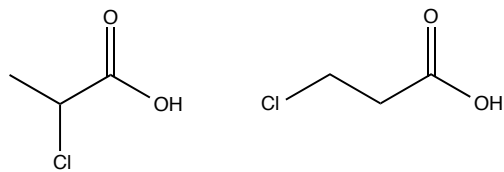
2. Draw the structure of the conjugate base of each of the following ions or compounds.



3. Classify each compound as a Lewis acid or Lewis base in the reactants.



4. Assign the pK_as to the structures; pK_a = 3.98 and 2.83.



A

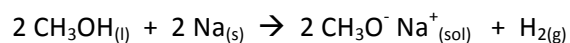
B

$$pK_a = \underline{2.83}$$

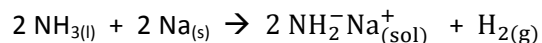
$$pK_a = \underline{3.98}$$

The inductive (polarity) effect is responsible for the pK_a difference.

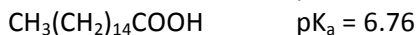
5. When sodium metal reacts with methanol hydrogen gas evolves from the solution and sodium methoxide is formed according to the following reaction:



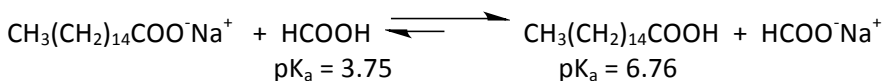
Write a similar chemical reaction with NH₃.



6. The pK_as of two acids are shown below.



Will a chemical reaction occur if CH₃(CH₂)₁₄COO⁻Na⁺ is added to a solution of HCOOH? Explain.



The stronger acid is on the reactant side of the chemical reaction. All systems favor the formation of the weaker acid. The Gibbs free energy (ΔG°) value for the written reaction is negative, that is, product favored.