

Name _____

AP Chem

___/___/___

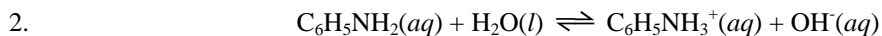
Chapter 14 HW - #7 (Due 4/13/2016)

Complete both free response questions. One will be graded. Show all work. Box and clearly label all final answers

1. Monochloroacetic acid, $\text{HC}_2\text{H}_2\text{ClO}_2$, is a skin irritant that is used in “chemical peels” intended to remove the top layer of dead skin from the face and improve complexion. The value of K_a for monochloroacetic acid is 1.35×10^{-3} .

- a. Calculate the pH for a 0.30 M solution of monochloroacetic acid.
- b. Calculate the percent dissociation 0.30 M solution of monochloroacetic acid.
- c. Calculate the pH for a 0.025 M solution of monochloroacetic acid.
- d. Calculate the percent dissociation 0.025 M solution of monochloroacetic acid.
- e. Even though percent dissociation increases as the concentration of a weak acid decreases, the $[\text{H}^+]$ decreases. Explain.

www.Sartep.com



In aqueous solution, aniline reacts as represented above. In 0.0220 M $\text{C}_6\text{H}_5\text{NH}_2(aq)$ at 25°C, the hydroxide ion concentration, $[\text{OH}^-]$, is $2.89 \times 10^{-6} \text{ M}$. In answering the following, assume that temperature is constant at 25°C.

- Write the equilibrium-constant expression for the reaction represented above.
- Determine the pH of 0.0220 M $\text{C}_6\text{H}_5\text{NH}_2(aq)$.
- Determine the value of the base ionization constant, K_b , for $\text{C}_6\text{H}_5\text{NH}_2(aq)$.
- Determine the percent ionization of $\text{C}_6\text{H}_5\text{NH}_2$ in 0.0220 M $\text{C}_6\text{H}_5\text{NH}_2(aq)$.
- In a separate experiment a student adds 42.0 grams of the salt anilinium chloride, $\text{C}_6\text{H}_5\text{NH}_3\text{Cl}$ to 690. mL of water. All of the salt dissolves. Calculate the pH of this solution.

www.sartep.com