

This quiz is take-home and open book, and it is intended that all members of the group contribute to completing it. It is a violation of the Academic Honor Code to sign a quiz that you did not work on. **The quiz is due at the end of class on Thursday, March 25.**

**List names in alphabetical order, and give social security numbers! Put names on all pages, and staple pages together**

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Points

- (3) 1. For solutions with the following  $[H^+]$ , calculate the  $[OH^-]$ , the pH, and indicate whether the solution is **acidic** or **basic**.

(a)  $[H^+] = 5.7 \times 10^{-2}$

(b)  $[H^+] = 3.9 \times 10^{-8}$

- (3) 2. For solutions at the following pH, calculate the  $[H^+]$  and  $[OH^-]$ . Indicate if the solution is **acidic** or **basic**.

(a) pH = 4.2

(b) pH = 12.3

List names in alphabetical order. **Be sure to staple pages together!**

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- (6) 3. You dissolve 0.075 moles of sulfuric acid ( $\text{H}_2\text{SO}_4$ ) in 0.75 L of water.
- (a) What would be the pH if the sulfuric acid completely dissociated into two hydrogen ions and a sulfate ion? (Write the equation for this hypothetical reaction).
- (b) You measure the pH of the solution and, to your surprise, it measures 0.96. What is the actual  $[\text{H}^+]$  in the solution?
- (c) How would you explain the discrepancy between your calculation in (a) and your measurement in (b)? Write an equation that more closely describes the actual reaction.
- (3) 4. Sodium bicarbonate can be used to neutralize acid spills. Equation 6.29, page 207, describes this reaction. If you spilled on the floor 25 mL of 0.20 M hydrochloric acid (HCl), how many grams of sodium bicarbonate would you need to use to neutralize the spill?