**Acid, Bases, and Equilibrium TEST REVIEW Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Acids and Bases**

**1. All acids are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, strong acids are better conductors of electricity.**

**2. A water solution that conducts electricity is called a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**3. Acids taste \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ while bases taste \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**4. Bases feel \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and are commonly found in most household \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**5. A reaction between an acid and base, called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, forms water and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**6. What ion is produced when an acid ionizes in water?**

**7. What is the difference between a strong acid and a weak acid and the degree of ionization? Give some examples of each.**

**8. A titration took 60 mL of 0.5 M HCl to neutralize 250 mL of a base with an unknown concentration. Using this information, what was the concentration of the base?**

**9. During a titration, it takes 55.0 mL of a 0.12 M HCl solution to reach the equivalence point with an unknown concentration of NaOH. What is the molarity of the NaOH solution?**

**10. 25.2 mL of HCl was titrated with 0.0146 M NaOH. Using the titration curve below, calculate the concentration of HCl.**



**11. Identify the range for an acid and base on the pH scale.**

 **1 2 3 4 5 6 7 8 9 10 11 12 13 14**

**12. Identify as acid, base, or salt, and then name.**

* **NaNO3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **H2SO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **MgCl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_­**
* **NH3OH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **HCl \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **NaOH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **HC2H3O2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**



**13. A solution of unknown pH was tested with two indicators. Methyl orange turned yellow and bromcresol green turned blue. Which of these could be the pH of the solution?**

 **a. 3.1 b. 5.4 c. 4.0 d. 8.0**

**14. Calculate the pH of 2.3 x 10-5 M HCl solution.**

**15. Calculate the hydronium ion concentration of a solution that has a pOH of 12.5.**

**16. Find the pH and determine whether it is an acidic or a basic solution.**

1. **if the pOH is 4**
2. **if the [H3O+] is 1.0 × 10-6**
3. **if 0.001 M H3O+**
4. **if the [H3O+] is 3.5 × 10-3**

**17. The diagrams below show a 0.1 M aqueous solution of HCl and a 0.1 M aqueous solution of HF**



**How does the concentration of beaker B compare to beaker A. Explain.**

**EQUILIBRIUM**

**1. For any reaction that is *at* chemical equilibrium, the concentration of the products and reactants \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the rate of the forward reaction \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the rate of the reverse reaction. When an equilibrium value is very high, such as K=350, it indicates that the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are favored in the reaction.**

**2. Write the equilibrium expression for the reaction**

**4 NO (g) + 2 O2 (g) 2 N2O4 (g)**

**3. Suppose the reaction in #2 above occurs at 1500 K and is determined to consist of 0.15 mol/L NO, 0.43 mol/L O2, and 0.055 mol/L SO3. What is the equilibrium constant for the system at this temperature?**

**4. In the equation in #2 above, what is the effect (shift) on the equilibrium with:**

 **a. increased pressure?**

 **b. decreased oxygen concentration?**

**5. Write the equilibrium expression for the representation of a reaction:**

**2A + B 3C + 2D + energy**

**6. If heat is added to the reaction above, which way will the equilibrium shift?**