Chemistry lab: hydrolysis of salts flashcard

Concepts/Application: Writing chemical formulas, writing ionic equations, determining solubility, measuring acidity and basilica. Pre-Lab Discussion A salt is an ionic compound containing positive ions other than H+ and negative ions other than OH-. Most salts will dissociate to some degree when placed in water. In many cases, ions from the salt will react with water molecules to produce hydration ions (HUH+) or hydroxide ions.

Any chemical reaction in which water is one of the sextants is called a hydrolysis reaction. Salts are generally formed from the naturalization reaction between an acid and a base. A salt formed from a strong acid and a strong base will not hydrology (react with water). When placed in water, these salts dissociate completely, and their ions remain uncombined in solution. An example of such a salt is NCAA, formed from a strong acid (HCI) and a strong base (Noah). Salts formed from a strong acid and a weak base hydrology to form a solution that is slightly acidic.

In this kind of hydrolysis, the water molecules actually react with the action from the weak base. For example, when ammonium chloride, Munch, hydrolysis, water molecules react with the NH+ ion: NH+ + EH NH + HUH+ The formation of the HUH+ (hydration) ion from this reaction makes the solution acidic. Salts formed from a weak acid and a strong base hydrology to form a solution that is slightly basic. In this kind of hydrolysis, it is the anion from the weak acid that actually reacts with the water.

For example, when sodium acetate, Anaconda, hydrolysis, water molecules react with the acetate ion: CHICHI- + H2O – HACHURE + OH- The formation of the OH- ion from this reaction makes the solution basic. Salts formed from

a week acid and a weak base produce solutions that may be slightly acidic, slightly basic, or neutral, depending on how strongly the ions of the salt are hydrolysis. In this experiment you will test several different salt solutions with pH paper and phenolphthalein solution to determine their acidity or basilica.

Purpose Determine the relative acidity or basilica of various salt solutions. Of these solutions. Materials 1 Contemplate Determine the pH Stock solutions of Cupric sulfate, Calcium nitrate, Potassium phosphate, Potassium hollered, Sodium bromide, Sodium sulfide, Ammonium carbonate, Sodium chromate, Magnesium bromide and Sodium chloride. Universal pH indicator paper, range 0-14 Phenolphthalein indicator solution Procedure 1. Obtain a clean, dry Contemplate. 2. To wells 1 through 10 of the Contemplate, add eight to ten drops of the following solutions.

Lowell 1: Cupric sulfate Lowell 6: Sodium sulfide I Lowell 2: Calcium nitrate I Well 7: Ammonium carbonate I Lowell 3: Potassium phosphate Lowell 8: Sodium chromate I Lowell 4: Potassium chloride Lowell 9: Magnesium bromide I Lowell 5: Sodium bromide Lowell 10: Sodium chloride . Add two drops of phenolphthalein solution to each of the nine occupied wells of the Contemplate. Record your observations in the data table. 4. Test each solution with pH paper and record your results.

Observations and Data I Data Table I salt acid I Parent base I Effect on Indicator I I Strength of base I Lowell # I Parent acid I (formula) I Strength of NOTE: How do you determine the “ Parent acid” and “ Parent base” for a particular salt? Here’s how… 1. Divide the salt into its constituent action and

anion. 2. Combine the action from the salt with an OH- ion, in the proper ratio to create a auteur formula. This formula represents the parent base. Record the formula in the “ Parent base” column of the data table. 3.

Combine an H+ ion with the anion from the salt, in the proper ratio to create a neutral formula. This formula represents the parent acid. Record the formula in the “ Parent acid” column of the data table. Equations 1. Write dissociation equations for the following salts: a) Cupric sulfate b) Calcium nitrate c) Potassium phosphate d) Potassium chloride e) Sodium bromide f) Sodium sulfide g) Ammonium carbonate h) Sodium chromate I) Magnesium bromide J) Sodium chloride . Complete each ionic equation. Beneath each equation, write the net ionic equation by eliminating all spectator ions.

CUE +2 + ca+2 K+1 An+l Ana+1 NH+1 MGM+2 SIS-2 NINE-1 PAP-3 CLC-l ar-l CA-3 cry-2 + BRB-1 EH – EH – EH – H2O – CLC_l Conclusions and Questions 1. How do your observations and pH readings compare with the expected results based on the equations for the hydrolysis reactions? 2. What is a spectator ion? Name the spectator ions present in each hydrolysis reaction in this experiment. 3. A salt formed from a strong acid and a strong base produces a neutral solution. A alt of a weak acid and a weak base may or may not produce a neutral solution.

Please explain. 4. Commercial baking soda is Enhance (sodium hydrogen carbonate, or sodium bicarbonate). It often is used to counteract excess acidity in the stomach. Explain why baking soda is an effective antacid, using what you have learned in this hydrolysis lab. Write a chemical equation to substantiate your ideas. 5. What are two significant chemistry concepts that

were learned or reinforced for you through this lab exercise? 6. What are two are two questions you have about hydrolysis reactions or the general behavior of acids and bases?