

NAME \_\_\_\_\_ SECTION \_\_\_\_\_

DATE \_\_\_\_\_

### PERFORMANCE TASK #4

**You will work on the following activities alone without consulting classmates, outside personnel or the instructor. Be sure to record all information, unknown numbers, calculations, and/or explanations on the sheets provided. You must hand in all of these sheets before leaving class on the day of the task. This activity is worth 50 points.**

**NOTE: You DO NOT need to do these parts in the order listed**

1. Select one of the unknowns marked A. Determine the following information about Unknown A. You must explain what you did to make the determination and provide explanations for your conclusions. (8)
  - a) electrolyte or non-electrolyte?
  - b) contains ionic or covalent bonding?

Unknown A # \_\_\_\_\_

2. Containers marked B contain an acid or base. Select one of the B unknowns and determine the following information. Provide explanations for the procedure(s) you used and justification for your conclusions. (8)
  - a) Acid or base?
  - b) pH of unknown

Unknown B # \_\_\_\_\_

3. The containers marked C hold aqueous solutions with the solute labeled on the container. Select one of the C solutions. You must determine the molarity and % by mass concentrations of this solution. Answers will not be accepted without explanations about how you arrived at the answer along with all data organized appropriately. (12)

Unknown C # \_\_\_\_\_

4. The containers marked D holds solids. Select one of the D unknowns. Thoroughly mix one level teaspoon of the solid in 10 mL of water in a test tube. Make as many observations as you can about the process using all senses except taste and explain each observation. Be sure to include the type of solution formed and information about the relative solubility of the solute. (10)

Unknown D # \_\_\_\_\_

5. Containers marked E hold solutions of various concentrations of vinegar (acetic acid in water). You must determine the % acetic acid by mass in one of the samples. A standardized NaOH solution is provided. Do the analysis on a microscale by making NaOH volume measurements with the Berol pipets (plastic) provided and doing the titration in 10 mL beakers or very small Erlenmeyer flasks. Do the analysis with about 2 mL of vinegar sample. You must do the analysis of the same unknown at least two times. Show all data and calculations.

1 pipet drop = 0.050 mL

(12)

Unknown E # \_\_\_\_\_

