

Name: _____ Due Date: Friday March 8, 2019

Show all work. **You are only allowed to work alone, but may see me.**

1. (4 Pts) Determine the pH of the solution that results from the mixing of 60.0 mL of 0.100 M NaOH, 94.0 mL of 0.0500 M KOH, 62.5 mL of 0.075 M HCl, 37.0 mL of 0.065 M HNO₃, and 3.00 quarts of distilled water.

2. Calculate the pH of a titration of 50.00 mL of 0.100 M Phenylacetic acid, $K_a = 4.9 \times 10^{-5}$, with 0.100 M NaOH at the following points:

SHOW ALL WORK IN NEAT DETAIL ON A SEPARATE PAGE.

(Be sure to write chemical equations and K_a or K_b expressions when needed.)

- a. (4 Pts) Before any NaOH is added.
- b. (4 Pts) After 18.7 mL of NaOH are added.
- c. (4 Pts) After 25.00 mL of NaOH are added.
- d. (4 Pts) After 50.00 mL of NaOH are added.
- e. (4 Pts) After 53.00 mL of NaOH are added.
- f. (1 Pt) What is the pK_a of the acid (show calculation)?