FLINN SCIENTIFIC

Name_____

Post-Laboratory Review Questions

1. Fill in the chart below with the formula of the missing conjugate acid or base.

Conjugate Acid	Conjugate Base
$HC_2H_3O_2$	
	CN^-
HSO_4^-	
	CO_3^{2-}

2. A buffer is prepared using the conjugate acid–base pair acetic acid and acetate ions. Write chemical equations showing the reactions that take place when H^+ and when OH^- are added to the buffer.

The approximate concentration of a hydrochloric acid solution is 0.5 *M*. The exact concentration of this solution is to be determined by titration with 0.215 *M* sodium hydroxide solution.

3. A 10.00-mL sample of the HCl solution was transferred by pipet to an Erlenmeyer flask and then diluted by adding about 40 mL of distilled water. What is the approximate H_3O^+ concentration and pH of the solution in the flask before the titration begins?

4. Phenolphthalein indicator was added, and the solution in the flask was titrated with 0.215 *M* NaOH until the indicator just turned pink (pH = 8–9). The exact volume of NaOH required was 22.75 mL. Calculate the concentration of HCl in the original 10.00-mL sample.

5. One student accidentally "overshot" the endpoint and added 23.90 mL of 0.215 *M* NaOH. Is the calculated concentration of HCl likely to be too high or too low as a result of this error?