Quiz 4. Take Home. Due March 30 by 4:00 p.m.
No Late Quizzes Will Be Accepted!
Must Show Work or NO credit given!
Attach Work and Circle Answers!

1. a) Calculate the pH of a buffer solution prepared by adding 2.58 g of NH_4Cl to 125.0 mL of 0.225 M NH_3. For NH_3, $K_b = 1.8 \times 10^{-5}$ *(5 pts)*

   b) Calculate the pH after adding 25.0 mL of 0.215 M HBr to the 125.0 mL buffer solution in part a. *(6 pts)*

   c) Calculate the pH after adding 35.0 mL of 0.175 M NaOH to the 125.0 mL buffer solution in part a. *(6 pts)*

2. Calculate the pH when 275.0 mL of 0.114 M HNO_3 is titrated with 245.0 mL of 0.315 M KOH. *(4 pts)*

3. A 12.5 mL sample of 0.400 M $HC_3H_5O_3$, lactic acid, is titrated with 0.200 M KOH. For lactic acid, $K_a = 1.4 \times 10^{-4}$.

   a) What is the initial pH of the acid solution? *(3 pts)*

   b) What is the pH after the addition of 25.0 mL of 0.200 M KOH? *(6 pts)*