General Chemistry II
RR # 11
Summer 2022

True or False

(T / F) The solubility of a slightly soluble salt can be expressed in units of moles per liter

(T / F) The solubility product of a slightly soluble salt is independent of the presence of a common ion

(T / F) Titrating a strong acid with a strong base can produce a solution with buffer capabilities

(T / F) In an acid/base equilibrium, the side that has the acid with the higher pK_a is the side that equilibrium favors.

(T / F) The molarity of a monoprotic strong acid is the same as its hydronium concentration**.**

(T / F) HF is a weak acid because the H-F bond is weak.

(T / F) In a 25ºC solution, it is impossible to have a negative pH.

1. A buffer contains 0.10 mol of benzoic acid and 0.13 mol of sodium benzoate in 1.00 L of solution. K_a of benzoic acid = 6.3×10^{-5}

a. What is the pH of this buffer?

b. What is the pH of the buffer after the addition of 0.03 mol of solid KOH?

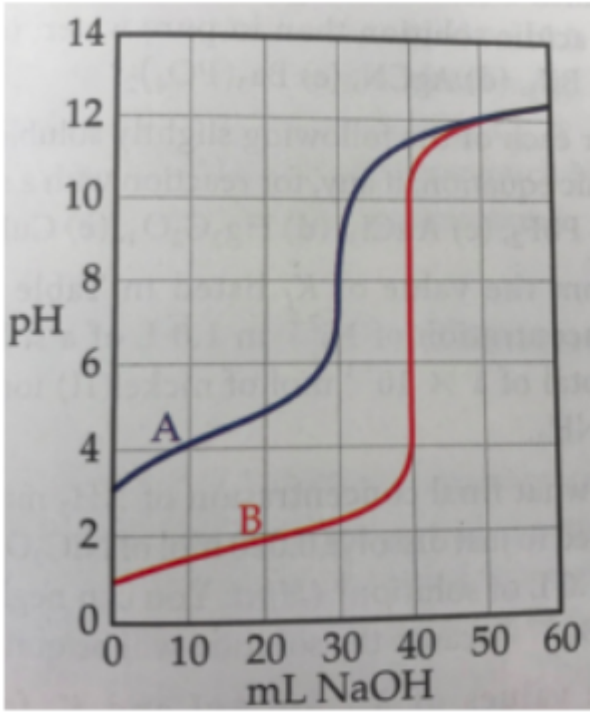
2. You titrate 182 mL of 0.45 M acetic acid with KOH solution, and you see that you used 211 mL of the KOH solution to reach the equivalence point. What is the original KOH solution's pH?

3. This graph shows the titration curves for two monoprotic acids.

a. Which curve is that of a strong acid?

b. What is the approximate pH at the equivalence point of each titration?

c. The same volume of each acid was



titrated with 0.100 M base. Which acid is more concentrated?

d. Estimate the pK_a of the weak acid.

4. **Calculate the concentration of NaOH in an aqueous solution of that compound that has a pH of 11.50.**

5. **Provide an example of a neutral salt and explain why it is neutral using K_a and K_b values (no actual numbers needed)**