

Answers

1) Acetic acid ($\text{CH}_3\text{CO}_2\text{H}$, 2.00 g) and sodium acetate ($\text{NaC}_2\text{H}_3\text{O}_2$, 2.00 g) are dissolved in enough water to make 1.00 L of solution. Calculate the pH of the solution ($K_a = 1.80 \times 10^{-5}$) (6 points)

pH = 4.609

2) 50.0 mL of 0.150 M acetic acid is being titrated with 0.250 M LiOH. What is the pH at the half-equivalence point? How many mL of LiOH are required to reach the half equivalence point? ($K_a = 1.80 \times 10^{-5}$) (4 points)

pH = 4.745

V (LiOH) = 15.0 mL

3) A solution contains 20.0 mL of 0.150 M HNO_3 . (10 points)

a) What is the pH of the HNO_3 solution?

pH = 0.824

b) What is the pH after 10.0 mL of 0.250 M NaOH has been added?

pH = 1.78

c) What is the pH at the equivalence point? How many mL of 0.250 M NaOH need to be added to reach the equivalence point?

pH = 7

V (NaOH) = 12.0 mL

d) What is the pH after 30.0 mL of 0.250 M NaOH have been added?

pH = 12.954