2/28/13 Calculate the ratio of molarities of acetate ions.

Quiz. $pH = pK_a + \log \frac{[\ ]}{[\ ]}$

$5.25 = 4.75 \log \frac{[\ ]}{[\ ]}$

3.1622. 3.2 to 1 (C)

- Given a solution containing 1M HF & 1M NaF & knowing pK_a (HF) = 3.14 The pH of solution should be:

F) 3.14

- pH > pKa more of base than acid.

Poll What is the purpose of a buffer?

One needs to keep an unusual microbial species alive in a laboratory setting. The microbe survive best in basic (alkaline) environment w/ pH > 9. The best choice of a buffering system would be equal Molar amounts of:

14 − 5.6 = 8.4 ; $-\log 5.6 \times 10^{-4}$

A. $C_2H_5NH_2$, $C_2H_5NH_3^+$ $K_b = 5.6 \times 10^{-4}$ $pK_b = 3.2$

B $C_6H_5NH_2$, $C_6H_5NH_3^+$ $K_b = 3.8 \times 10^{-10}$ pK_b 9.4

C $HClO_2$ ClO_2^- K_a 1.2×10^{-2} pK_a 1.9

D HOCl OCl^- $K_a = 3.5 \times 10^{-8}$ pK_a 7.5

Equivalence point # of moles of acid = # moles of base.

1/2 equivalent point: equal amts of acid & conj. base partner.

$pH = pK_a$

pH indicator - Bromothymol Blue $pK_a = 7.1$

neutral - green

basic - blue (deprotonated form). does not have protons

acidic - yellow. (protonated form) has protons

→ pH < pKa equilibrium shift to protonated.

pH > pKa. shift to deprotonated.

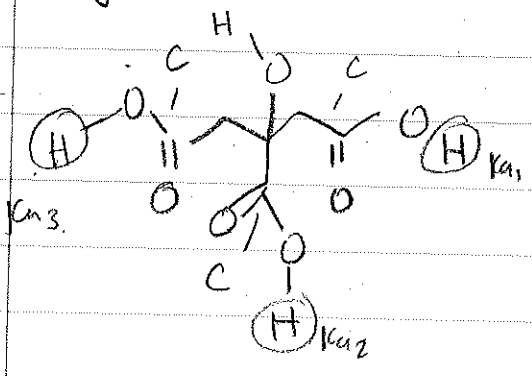
absorbs light differently.

Poll What color would it be in a solution which pH is 9?

→ blue. pH was 7

pH > pKa deprotonated.

Polyprotic Acid



3 acid protons

COOH -> carbonylic acid.

each proton has own Ka.

$K_{a_1} = 7.4 \times 10^{-4}$ → stronger acid.

$K_{a_2} = 1.7 \times 10^{-5}$

$K_{a_3} = 4.0 \times 10^{-7}$

How many protons will be on the molecules? @ pH = 2.

A 1 weak acid.

B 2

C 3

D 0

pKa	pH < pKa	pH 55. ??
3.13	pH < pKa	1
4.77	pH < pKa.	
6.40		