Summaryupts

Acid-Base Eq (11) Buffers (2)

What is the new pH of a solution made from 0.405 M HCOOH and 0.326 M HCOONa if 1.00 mL of 0.250 M HCl is added to 50.0 mL of the buffer. K_a HCOOH = 1.8×10^{-4}.

Pen case for acid base (9) for calc. of pH.

$HCOO^{\ominus} + H_3O^{\oplus} \rightleftharpoons HCOOH + H_2O$

I	$(0.326 \times 0.05L)$	$(0.25 \times 0.001L)$	$(0.405 \times 0.05L)$
	1.63×10^{-2}	2.5×10^{-4}	2.025×10^{-2}
C	-2.5×10^{-4}	-2.5×10^{-4}	$+2.5 \times 10^{-4}$
E	0.01605 mol.	∅	0.0203 mol.

$$\{H_3O^{\oplus}\} = K_a \times \frac{\{Acid\}}{\{Base\}}$$

$$= 1.8 \times 10^{-4} \times \frac{0.0203}{0.01605}$$

$$= 2.32 \times 10^{-4}$$

$$pH = -\log 2.32 \times 10^{-4} = \boxed{3.63}$$

original pH = 4.74

Supplements

Acid-Base Eq (11) Buffers (2)

What is the new pH of a solution made from 0.405 M HCOOH and 0.326 M HCOONa if 1.00 mL of 0.250 M HCl is added to 50.0 mL of the buffer. K_a HCOOH = 1.8×10^{-4}.

Remember for acid base (9) for calc of pH.

$$HCOO^{\ominus} + H_3O^{\oplus} \rightleftharpoons HCOOH + H_2O$$

I	$(0.326 \times 0.05L)$	$(0.25 \times 0.001L)$	$(0.405 \times 0.05L)$
	1.63×10^{-2}	2.5×10^{-4}	2.025×10^{-2}
C	-2.5×10^{-4}	-2.5×10^{-4}	$+2.5 \times 10^{-4}$
E	0.01605 mol.	∅	0.0203 mol.

$$\{H_3O^{\oplus}\} = K_a \times \frac{\{Acid\}}{\{Base\}}$$

$$= 1.8 \times 10^{-4} \times \frac{0.0203}{0.01605}$$

$$= 2.32 \times 10^{-4}$$

$$pH = -\log 2.32 \times 10^{-4} = \boxed{3.63}$$

original pH = 4.74.