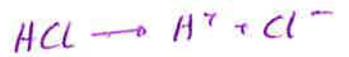


Buffers

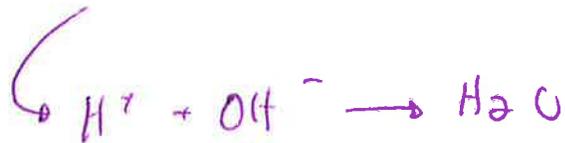
EQUILIBRIUM



ADD
ACID



ADD
BASE



$$K_a = \frac{[H_3O^+][A^-]}{[HA]}$$

$$pH = pK_a + \log \frac{[Base]}{[Acid]}$$

Henderson–Hasselbalch Equation

What is the pH of a buffer that is 0.12 *M* in lactic acid, $\text{CH}_3\text{CH}(\text{OH})\text{COOH}$, and 0.10 *M* in sodium lactate? K_a for lactic acid is 1.4×10^{-4} .

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Aqueous
Equilibria

Henderson–Hasselbalch Equation

$$\text{pH} = \text{p}K_a + \log \frac{[\text{base}]}{[\text{acid}]}$$

$$\text{pH} = -\log (1.4 \times 10^{-4}) + \log \frac{(0.10)}{(0.12)}$$

$$\text{pH} = 3.85 + (-0.08)$$

$$\text{pH} = 3.77$$

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Aqueous
Equilibria