Henderson-Hasselbalch Equation

$$pH = pK_a + \log \frac{[A^-]}{[HA]}$$

best buffering

$[A^-] \cong [HA]$

$[A^-] = [HA]$ $pH = pK_a$

10:1 maximum

adjust pH by changing $\frac{[A^-]}{[HA]}$

$pH = pK_a \pm 1$

$HC \leftrightarrows H^+ + C^-$

If you want a buffer at pH = 8.60

$10^{-8.6} = 2.5 \times 10^{-9}$

$8.60 = 8.59 + \log \frac{[C^-]}{[HC]}$

a) HA $K_a = 2.7 \times 10^{-3}$

b) HB $K_a = 4.4 \times 10^{-6}$

c) HC $K_a = 2.6 \times 10^{-9}$

$8.59 \quad \frac{[C^-]}{[HC]} = 1.02$