

Solutions

Each answer shows the steps, then the **result**.

2.1

- $\text{pH} = \text{p}K_a + \log \frac{[\text{A}^-]}{[\text{HA}]}$

2.2

- $\text{pH} = 4.7$

2.3

- $\text{pH} = 5.0 + \log 10 = 5.0 + 1 = 6.0$

3.1 C

- $\text{pH} = \text{p}K_a$

3.2

(a)

- $\frac{0.15}{0.30} = 0.5$

(b)

- $\text{pH} = 4.74 + \log(0.5) = 4.74 - 0.30 = 4.44$

3.3

- $\log \frac{[\text{A}^-]}{[\text{HA}]} = 5.0 - 4.7 = 0.3$; ratio = $10^{0.3} = 2.0$