

## WS 6 - Strengths of Bases

1. Calculate the pH and pOH for each of the following:

a) 1.00 mol/L NaOH(aq)

$$pOH = 0.000 \quad pH = 14.000$$

b) 1.00 mol/L Ca(OH)<sub>2</sub>(aq)

$$pOH = -0.301 \quad pH = 14.301$$

c) 0.650 mol/L Al(OH)<sub>3</sub>(aq)

$$pOH = -0.290 \quad pH = 14.290$$

d) A solution made by dissolving 5.82 g of barium hydroxide in 2.00 L of water.

$$pOH = 1.469 \quad pH = 12.531$$

2. Calculate the K<sub>b</sub> for each of the following bases at 25°C:

a) NO<sub>2</sub><sup>-</sup>(aq)

$$1.8 \times 10^{-11}$$

b) F<sup>-</sup>(aq)

$$1.6 \times 10^{-14}$$

c) HSO<sub>3</sub><sup>-</sup>(aq)

$$7.1 \times 10^{-13}$$

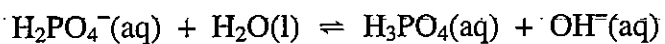
d) HCO<sub>3</sub><sup>-</sup>(aq)

$$2.2 \times 10^{-8}$$

e) O<sup>-</sup>OC<sup>-</sup>COO<sup>2-</sup>(aq)

$$6.7 \times 10^{-14}$$

3. Calculate the pH of a 13.5 mol/L solution of H<sub>2</sub>PO<sub>4</sub><sup>-</sup>(aq) using the following reaction:



$$pH = 8.646$$

## Strengths of Acids and Bases – pH Calculations

Calculate the pH for each of the following solutions. Show all work.

1. 0.32 mol/L  $\text{Mg}(\text{OH})_2(\text{aq})$

$$\text{pH} = 13.81$$

2. 6.00 mol/L  $\text{NH}_3(\text{aq})$

$$\text{pH} = 12.015$$

3.  $2.0 \times 10^{-4}$  mol/L  $\text{KHSO}_4(\text{aq})$  \*\*red with both litmus

$$\text{pH} = 2.85$$

4. 3.0 mol/L  $\text{H}_2\text{S}(\text{aq})$

$$\text{pH} = 3.29$$

5. 0.750 mol/L  $\text{KF}(\text{aq})$

$$\text{pH} = 5.462$$

6. 0.0505 mol/L  $\text{HI}(\text{aq})$

$$\text{pH} = 1.297$$

7. 16 mol/L  $\text{CH}_3\text{COOH}(\text{aq})$

$$\text{pH} = 1.77$$

8. 2.00 mol/L  $\text{NaCN}(\text{aq})$

$$\text{pH} = 11.754$$