

Ion Product of Water

① $K_w = [H_3O^+][OH^-]$

$$1 \times 10^{-14} = 4.5 \times 10^{-7} [OH^-]$$

$$[OH^-] = 2.2 \times 10^{-8} \text{ mol/L}$$

Acidic

② $K_w = [H_3O^+][OH^-]$

$$1 \times 10^{-14} = [H_3O^+] \cdot 1.3 \times 10^{-9}$$

$$[H_3O^+] = 7.7 \times 10^{-6}$$

Acidic

③ $K_w = [H_3O^+][OH^-]$

$$1 \times 10^{-14} = 3.98 \times 10^{-13} [OH^-]$$

$$[OH^-] = 0.025 \text{ mol/L}$$

Basic

④ $K_w = [H_3O^+][OH^-]$

$$1 \times 10^{-14} = [H_3O^+] \cdot 1 \times 10^{-8}$$

$$[H_3O^+] = 1 \times 10^{-6}$$

Acidic

⑤ $[H_3O^+] \quad [OH^-]$

A, B, Neutral?

$$1 \times 10^{-9}$$

$$1 \times 10^{-5}$$

Basic

$$2.5 \times 10^{-6}$$

$$4 \times 10^{-9}$$

Acidic

$$1.2 \times 10^{-8}$$

$$8.3 \times 10^{-7}$$

Basic