

*Give It Some Thought* Clicker Questions

**Chapter 4** 

# REACTIONS IN AQUEOUS SOLUTION

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What dissolved species are present in a solution ofa. KCN,b. NaClO<sub>4</sub>?

#### a.

- A.  $H_2O(I)$
- B.  $K^+(aq)$  and  $H_2O(I)$
- C. CN<sup>-</sup>(aq)
- D. K<sup>+</sup>(aq) and CN<sup>-</sup>(aq)



What dissolved species are present in a solution ofa. KCN,b. NaClO<sub>4</sub>?

#### b.

- A.  $H_2O(I)$
- B.  $Na^+(aq)$  and  $H_2O(I)$
- C. CIO<sub>4</sub>-(aq)
- D. Na<sup>+</sup>(aq) and ClO<sub>4</sub><sup>-</sup>(aq)



Which solute will cause the lightbulb in Figure 4.2 to glow most brightly,  $CH_3OH$ , NaOH, or  $CH_3COOH$ ?

- A.  $CH_3OH(aq)$
- B. NaOH(aq)
- C. CH<sub>3</sub>COOH(aq)
- D. Cannot determine from Figure 4.2

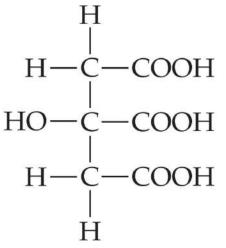


Which ions, if any, are spectator ions in the reaction  $AgNO_3(aq) + NaCl(aq) \longrightarrow AgCl(s) + NaNO_3(aq)$ ?

- A.  $Ag^+(aq)$  and  $CI^-(aq)$
- B. NO<sub>3</sub><sup>-</sup>(aq) and Cl<sup>-</sup>(aq)
- C. Na<sup>+</sup>(aq) and NO<sub>3</sub><sup>-</sup>(aq)
- D. No spectator ions are involved



The structural formula of citric acid, a main component of citrus fruits, is



How many H<sup>+</sup>(*aq*) can be generated by each citric acid molecule dissolved in water?

- A. 0
- B. 1
- C. 2
- D. 3



Why isn't Al(OH)<sub>3</sub> classified as a strong base?

- A.  $AI(OH)_3$  is not basic in water.
- B.  $AI(OH)_3$  is insoluble in water.
- C.  $AI(OH)_3$  is a strong acid in water, not basic.
- D.  $AI(OH)_3$  is a weak acid in water, not basic.



By analogy to examples given in the text, predict what gas forms when  $Na_2SO_3(s)$  reacts with HCl(aq).

- A. SO<sub>2</sub>(g)
  B. H<sub>2</sub>(g)
  C. CO<sub>2</sub>(g)
- D.  $H_2S(g)$



What is the oxidation number of nitrogen (a) in aluminum nitride, AIN, and (b) in nitric acid, HNO<sub>3</sub>?

a.

A.+1 B.-1 C.-2

D.-3



What is the oxidation number of nitrogen (a) in aluminum nitride, AIN, and (b) in nitric acid, HNO<sub>3</sub>?

b.

A.+6

B.+5

C.+4

D.-1



Does a reaction occur (a) when an aqueous solution of  $NiCl_2(aq)$  is added to a test tube containing strips of metallic zinc, and (b) when  $NiCl_2(aq)$  is added to a test tube containing  $Zn(NO_3)_2(aq)$ ?

a.

- A. Yes
- B. No



Does a reaction occur (a) when an aqueous solution of  $NiCl_2(aq)$  is added to a test tube containing strips of metallic zinc, and (b) when  $NiCl_2(aq)$  is added to a test tube containing  $Zn(NO_3)_2(aq)$ ?

b.

- A. Yes
- B. No



Which is more concentrated, a solution prepared by dissolving 21.0 g of NaF (0.500 mol) in enough water to make 500 mL of solution or a solution prepared by dissolving 10.5 g (0.250 mol) of NaF in enough water to make 100 mL of solution?

- A. 21.0 g of NaF dissolved in water to make 500 mL of solution
- B. 10.5 g of NaF dissolved in water to make 100 mL of solution



How is the molarity of a 0.50 *M* KBr solution changed when water is added to double its volume?

A. Concentration (molarity) remains the same.B.The new concentration is 0.25 M.C.The new concentration is 1.00 M.D.The new concentration is 2.50 M.

