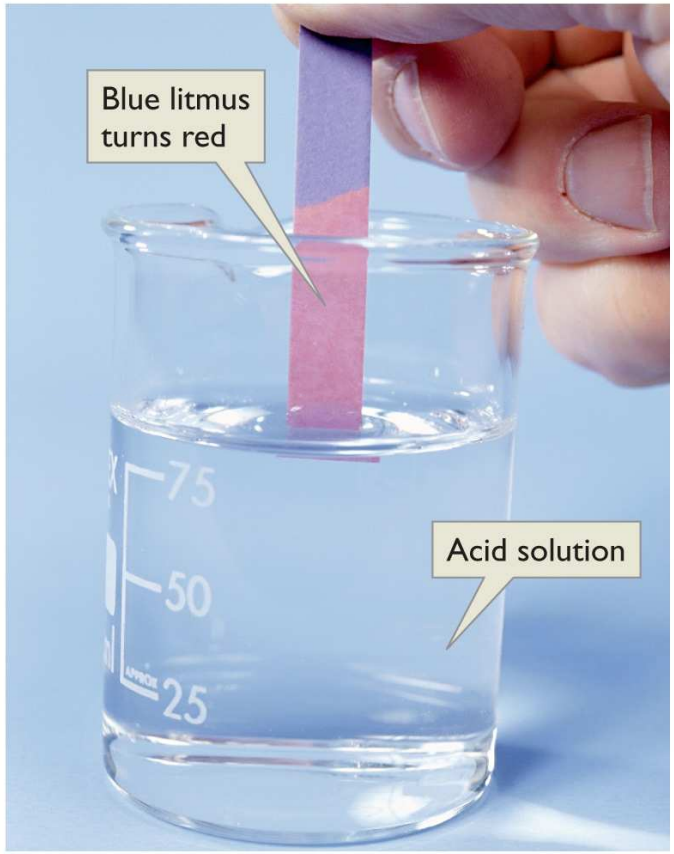
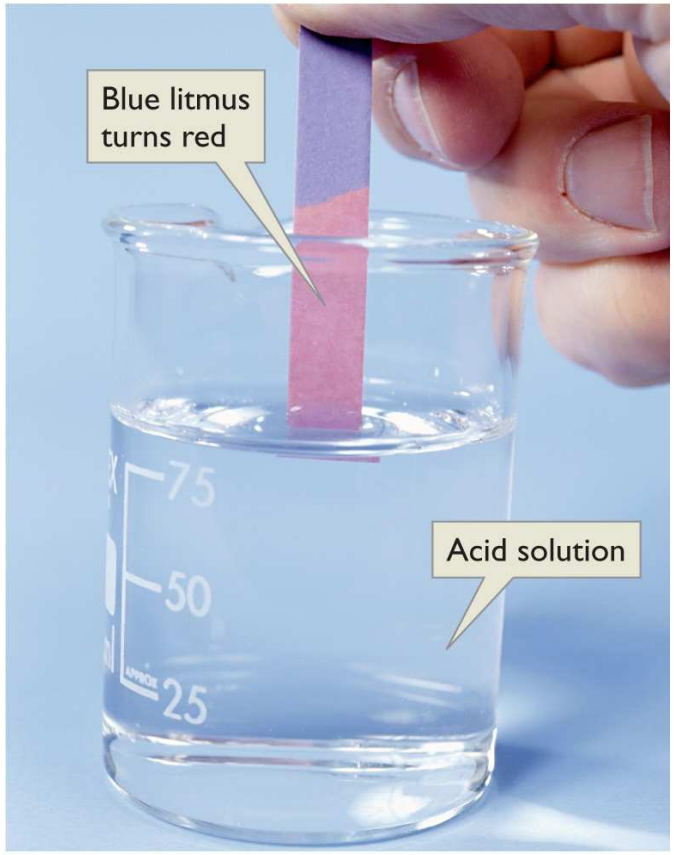
Chapter 7
Acids and Bases: Please Pass the Protons

According to the Arrhenius theory, an ***acid*** is any substance that dissolves in water to produce:



a. H_3O^+
b. OH^-
c. Salts
d. Ions
e. A bitter taste

According to the Arrhenius theory, an ***acid*** is any substance that dissolves in water to produce:



a. H_3O^+
b. OH^-
c. Salts
d. Ions
e. A bitter taste

Many metal oxides, such as Na_2O, dissolve in water to produce:

$$Na_2O + H_2O \rightarrow ?$$

a. Acids
b. Bases
c. Neutral salts
d. Covalent compounds
e. A sour taste

Many metal oxides, such as Na_2O, dissolve in water to produce:

$$Na_2O + H_2O \rightarrow 2\ NaOH$$

Sodium hydroxide–A strong base

a. Acids
b. Bases
c. Neutral salts
d. Covalent compounds
e. A sour taste

What is the product when selenium dioxide reacts with water?

Selenium dioxide + Water $\rightarrow$?

$SeO_2 + H_2O \rightarrow ?$

a. $Se(OH)_2$
b. SeH_2O_2
c. $Se + H_2O_3$
d. H_2SeO_3
e. $H_2SeO_2 + O$

What is the product when selenium dioxide reacts with water?

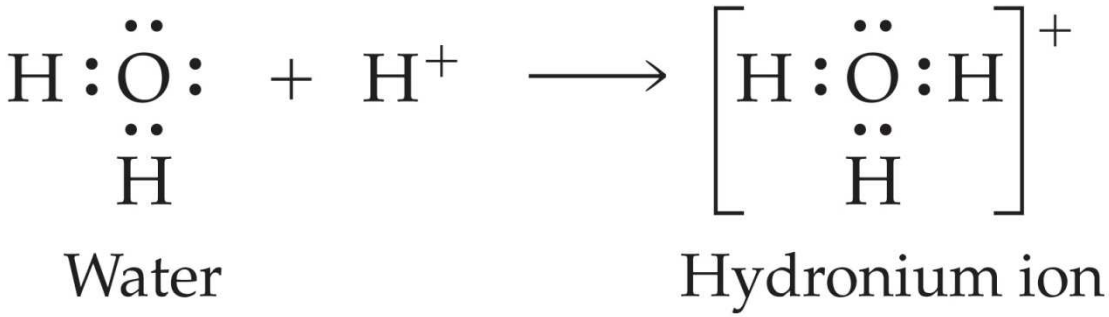
Selenium dioxide + Water $\rightarrow$?

$SeO_2 + H_2O \rightarrow ?$

a. $Se(OH)_2$
b. SeH_2O_2
c. $Se + H_2O_3$
d. H_2SeO_3
e. $H_2SeO_2 + O$

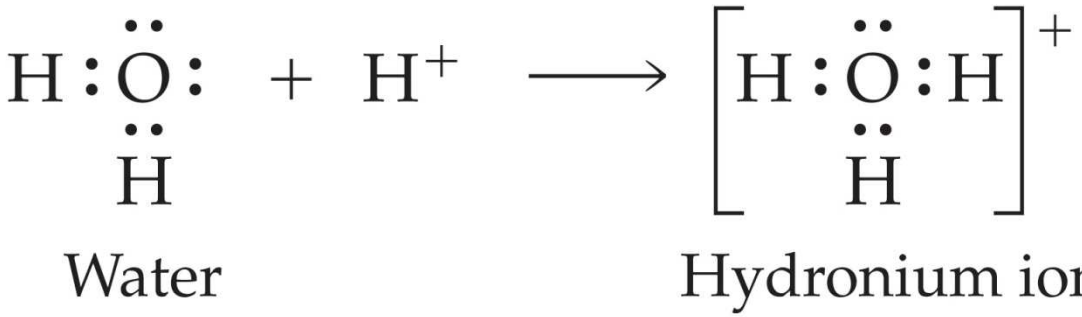
Nonmetal oxides are acidic anhydrides and form their corresponding acid when they interact with water.

Which of the following compounds is a *strong* acid?



a. HNO_3
b. H_3PO_4
c. H_2CO_3
d. CH_3COOH
e. H_3BO_3

Which of the following compounds is a *strong* acid?



a. HNO_3
b. H_3PO_4
c. H_2CO_3
d. CH_3COOH
e. H_3BO_3

Strong acids ionize essentially 100% in water.

What would be the products of the following reaction?

$$H_3PO_4 + 3\,KOH \rightarrow ? \; ? \; ?$$

a. $KO + H_2O + PO_3$

b. $KPO_4 + 3\,H_2O$

c. $K_3P + H_2O + 2\,O_2$

d. $K_3PO_4 + H_2O + 2\,O_2$

e. $K_3PO_4 + 3\,H_2O$

What would be the products of the following reaction?

$H_3PO_4 + 3\ KOH \rightarrow K_3PO_4 + 3\ H_2O$

A salt + water

a. $KO + H_2O + PO_3$

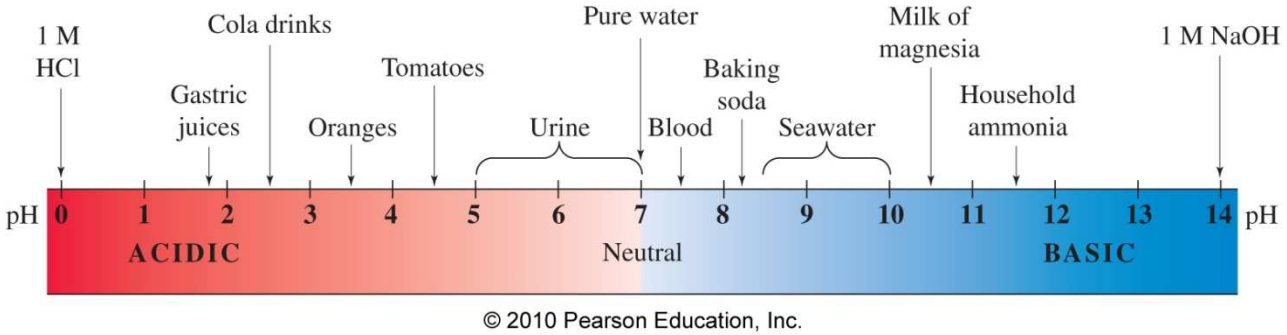
b. $KPO_4 + 3\ H_2O$

c. $K_3P + H_2O + 2\ O_2$

d. $K_3PO_4 + H_2O + 2\ O_2$

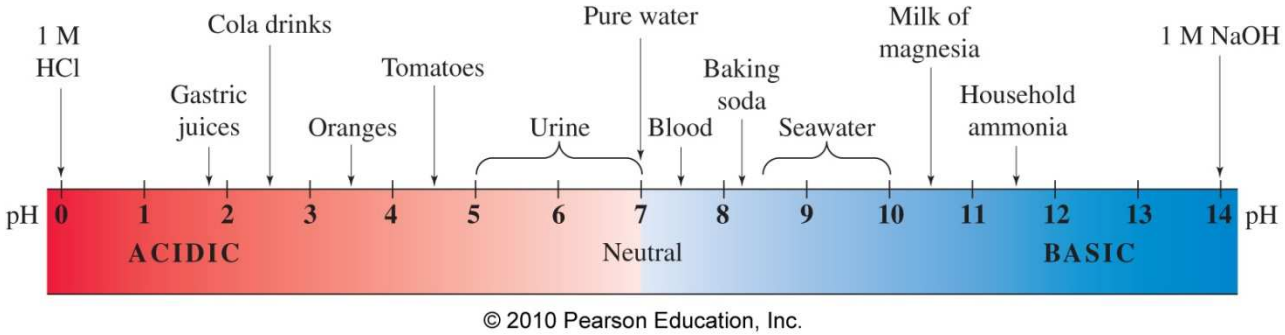
e. $K_3PO_4 + 3\ H_2O$

A solution with a $[H_3O^+]$ of 1×10^{-8} M would be considered:



a. Very acidic
b. Slightly acidic
c. Neutral
d. Slightly basic
e. Very basic

A solution with a $[H_3O^+]$ of 1×10^{-8} M would be considered:



a. Very acidic
b. Slightly acidic
c. Neutral
d. Slightly basic (pH = 8)
e. Very basic