

## Acid & Base Questions **ANSWERS**

1. What happens to acids in water? **Yields  $H^+$  ions.**
2. What happens to bases in water? **Yields  $OH^-$  ions.**
3. Why are solutions of acids & bases often good conductors? **Because when they are dissolved they contain ions.**
4. What part of an acid's chemical formula is responsible for its acidic properties? **H**
5. What polyatomic ion most commonly appears in bases?  **$OH^-$**
6. Identify each of the following substances as an acid or a base:
  - a. Calcium hydroxide = **Base**
  - b.  $NaHCO_3$  = **Base**
  - c.  $H_3PO_4$  = **Acid**
  - d.  $KOH$  = **Base**
  - e.  $H_2SO_4$  = **Acid**
  - f.  $NaOH$  = **Base**
7. Water can dissociate into the hydrogen ion and the hydroxide ion according to the following reaction:  
 $H_2O \rightarrow H^+ + OH^-$ 
  - a. What would you classify water as (acidic, basic or other)? **Neutral, has even proportion of  $H^+$  (acid) and  $OH^-$  (base).**
  - b. Why is water considered a conductor of electricity? **Ions are easily dissolved in it.**
8. Do you agree with the following statements? Explain.
  - a. Stomach acid can dissolve metals. (ie if you swallow a penny your stomach acid can dissolve it)  
**Agree, acid + metal  $\rightarrow$  salt + water, although it doesn't stay in your stomach long enough**
  - b. All acids are dangerous.  
**False, acids with pH close to 7 are not, they are weak acids, such as orange juice & vinegar**
  - c. We all contribute to the production of acid rain  
**Agree, non-metal oxides such as  $CO_2$  + water in the air combine to make acids, we all produce  $CO_2$  so we are all responsible for making some acid rain**
  - d. Medications for heartburn work by cooling the stomach.  
**Disagree, they work by decreasing the acidity of the stomach. They don't completely neutralize it either.**
9. Teeth can be damaged by acid erosion. What foods could contribute to this problem? How can it be avoided?  
**Pop, citrus fruits, tomatoes...**
10. The fluid inside an alkaline battery can be corrosive.
  - a. Describe a chemical test that you could perform to determine if the substance is an acid or a base.  
**Litmus paper test – if it turns blue it is a base.**
  - b. What safety precautions must you take when conducting this test?  
**Wear gloves & goggles because they break down proteins and could damage your eyes & skin.**
11. The ingredient list for Coke contains: water, sugar, colour, phosphoric acid, flavor and caffeine. Why must they add so much sugar (about 12 teaspoons per can)?  
**Acids are sour, so the sugar is needed to offset the taste.**