

## Electrolytes Worksheet

1. What is an electrolyte? Give an example.

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2. Classify the following substances by type of electrolyte (acid, base or salt).

KOH	_____	Ba(NO <sub>3</sub> ) <sub>2</sub>	_____	KF	_____
H <sub>2</sub> SO <sub>3</sub>	_____	HNO <sub>3</sub>	_____	Na <sub>2</sub> CO <sub>3</sub>	_____
Mg(OH) <sub>2</sub>	_____	NH <sub>4</sub> OH	_____	Fe(OH) <sub>3</sub>	_____
HCl	_____	MgCl <sub>2</sub>	_____	Ca(OH) <sub>2</sub>	_____

3. Write the equation for the electrolytic dissociation of the following compounds:  
HCl

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NaOH

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H<sub>2</sub>SO<sub>4</sub>

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Mg(OH)<sub>2</sub>

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BeCl<sub>2</sub>

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4. To check the electrical conductivity of certain substances, a student used a conductivity apparatus equipped with a light bulb. Her observations are listed in the following table.  
**Which one of the following groups of substances contains only electrolytes?**

Substances	Observations
HCl	Bright light
CH <sub>3</sub> OH	No light
MgCl <sub>2</sub>	Faint light
NaOH	Bright light
CH <sub>3</sub> COOH	Faint light
CCl <sub>4</sub>	No light

A) CH<sub>3</sub>OH and CCl<sub>4</sub>

B) HCl, MgCl<sub>2</sub> and CCl<sub>4</sub>

C) CH<sub>3</sub>OH NaOH and CH<sub>3</sub>COOH

D) HCl, MgCl<sub>2</sub>, NaOH and CH<sub>3</sub>COOH

5. Four chemical substances are given below.

1.  $\text{H}_2\text{SO}_4$                       2.  $\text{Ca}(\text{OH})_2$                       3.  $\text{MgCl}_2$                       4.  $\text{C}_2\text{H}_5\text{OH}$

**Which of these substances is a base?**

- A) Substance 1                      B) Substance 2                      C) Substance 3                      D) Substance 4

6. A student must classify six aqueous solutions.

The student knows that all except one of the solutions must be an ACID, a BASE, or a NEUTRAL SALT. The student writes a procedure and carries out certain tests.

The table shows the results that were obtained.

Solution	Litmus paper	Electrical conductivity
1	No effect	Good
2	Turned blue	Good
3	Turned red	Good
4	No effect	None
5	Turned blue	Weak
6	Turned blue	Good

Based on these results, which conclusion is the most appropriate?

- A) Solutions 2, 5 and 6 are bases, solution 3 is an acid and solutions 1 and 4 are salts  
B) Solutions 2, 5 and 6 are bases, solution 3 is an acid and solutions 1 and 4 are distilled water  
C) Solutions 2, 5 and 6 are bases, solution 3 is an acid, solution 1 is a salt and solution 4 can not be classified  
D) Solution 3 is a base, solutions 2, 5 and 6 are acids and solutions 1 and 4 are salts

7. How does a solution conduct electricity?

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8. Explain what a non-electrolyte is.

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9. If you are given a molecular formula, how can you determine if it is a non-electrolyte?

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10. Which of the following is a non-electrolyte?

- Mg(OH)<sub>2</sub>      B) H<sub>2</sub>SO<sub>4</sub>      C) P<sub>2</sub>S<sub>3</sub>      D) CaCl<sub>2</sub>

11. What am I?

- a- I allow electric current to flow through water. \_\_\_\_\_  
b- When dissolved in water, I do not allow electric current to flow through it. \_\_\_\_\_  
c- My electrolytic dissociation provides ions other than H<sup>+</sup> and OH<sup>-</sup> ions. \_\_\_\_\_  
d- I am an electrolyte that turns blue Litmus paper red. \_\_\_\_\_

12. Are the following equations of electrolytic dissociation written correctly? Explain your answers.



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13. Three light bulbs are put into three different solutions. Solution A causes the light bulb to be very bright, solution B's light bulb does not come on and solution C's light bulb produces a very dim light.

- A- Which solution(s) is an (are) electrolytes? \_\_\_\_\_  
B- Which solution(s) is an (are) non-electrolytes? \_\_\_\_\_  
C- Which solution produces the strongest ionic dissolution? \_\_\_\_\_

14. What characteristic is common to acids, bases and salts that are in a solution?

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