Electrolytes Worksheet

1. What is an electrolyte? Give an example.

_____

_____

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

KOH _____	$Ba(NO_3)_2$ _____	KF _____
H_2SO_3 _____	HNO_3 _____	Na_2CO_3 _____
$Mg(OH)_2$ _____	NH_4OH _____	$Fe(OH)_3$ _____
HCl _____	$MgCl_2$ _____	$Ca(OH)_2$ _____

3. State whether each example would or would not do electrolytic dissociation.

HCl	N_2S_3	CO_2	Al_2S_3	$BeCl_2$	CH_3OH	BF_3

4. How does a solution conduct electricity?

5. Explain what a non-electrolyte is.

6. 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- I am an electrolyte that turns blue Litmus paper red. _____

7. 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? _____

8. Which of the following are **acids**?

1.	NaCl	5.	HI
2.	HCl	6.	HCH_3CO_2
3.	LiF	7.	KOH
4.	NH_4OH	8.	$CaCl_2$

A) 1, 5 and 8 C) 5, 6 and 8

B) 2, 5 and 6 D) 3, 4 and 7

9. Which of the following are **bases**?

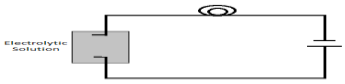
1.	NaOH	5.	BeO
2.	HCl	6.	HI
3.	LiF	7.	KOH
4.	NH_4OH	8.	$CaCl_2$

A) 1, 4 and 7 C) 3, 5 and 6
B) 2, 3 and 8 D) 1, 3 and 7

10. Which of the following describes a neutral salt solution?

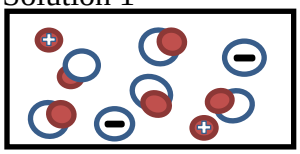
A) A solution that does not conduct electricity and that does not change the colour of litmus paper
B) A solution that conducts electricity and that does not change the colour of litmus paper
C) A solution that conducts electricity and that turns litmus paper red
D) A solution that conducts electricity and that turns litmus paper blue

11. A student is designing a circuit with a light and an electrolytic solution as seen below.

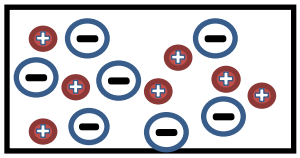


The student notices that the brightness of the light varies according to which of the three solutions below is used to complete the circuit.

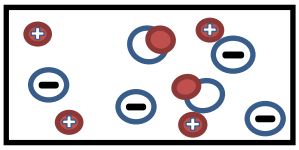
Solution 1



Solution 2



Solution 3



Which of the following ranks the brightness of the light, from dimmest to the brightest, when using the electrolytic solutions?

A) 1, 2, 3 B) 1, 3, 2 C) 2, 3, 1 D) 2, 1, 3

12. Which of the following statements describes a situation in which the substance involved conducts electricity?

A) Distilled water in a beaker, because it contains mineral salts.
B) Lemon juice in a bottle, because of the presence of mobile ions.
C) Sugar water in a cup, because it is an aqueous solution.
D) Salt in a saltshaker, because it contains charges.

13. Five chemical compounds are listed below:

1- NF_3 2- $CaCl_2$ 3- NaOH 4- PCl_3 5- HBr

When dissolved in water, which of these compounds **do not** conduct electricity?

A) 1 and 4 B) 1 and 5 C) 2, 3 and 5 D) 3, 4 and 5

14. One of the properties of bases is that they dissolve fats. Which of the following substances could be used to clear the grease that accumulates in the drain of a kitchen sink?

A) Na_2SO_4 B) MnO_2 C) H_3PO_4 D) LiOH

15. In the laboratory, you are given a sample of the six following substances :

HCl	$Ca(OH)_2$	KCl
NaOH	H_2SO_4	NaCl

You perform various experiments on these substances and observe that both of them

1. turn red litmus paper blue
2. conduct electricity

Which two substances are they?

A) HCl and H_2SO_4
B) KCl and NaCl
C) HCl and KCl
D) NaOH and $Ca(OH)_2$

16. Which of the following statements is **false?**

A) Like acids and bases, salts conduct an electric current in an aqueous solution.
B) Unlike acids and bases, salts do not affect neutral litmus paper in an aqueous solution.
C) Like acids and bases, salts are considered electrolytes.
D) Unlike acids and bases, salts conduct electricity in a solid state

17. 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_3OH	No light
$MgCl_2$	Faint light
NaOH	Bright light
CH_3COOH	Faint light
CCl_4	No light

A) CH_3OH and CCl_4
B) HCl, $MgC1_2$ and CCl_4
C) CH_3OH NaOH and CH_3COOH
D) HCl, $MgC1_2$, NaOH and CH_3COOH

18. Four chemical substances are given below.

1. H_2SO4 2. $Ca(OH)_2$ 3. $MgC1_2$ 4. C_2H_5OH

Which of these substances is a base?

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

19. Which of the following is a non-electrolyte?
$Mg(OH)_2$ B) H_2SO_4 C) P_2S_3 D) $CaCl_2$

20. 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