**Acids and Bases and Salts Review**

1

Alice frequently uses a white cleaning powder in her home. She wants to know whether this substance is acidic, basic or neutral.

In order to determine the pH of this substance, what is the first thing she must do?

|  |  |
| --- | --- |
| A) | Put a piece of blue litmus paper on the solid. |
| B) | Put a piece of red litmus paper on the solid. |
| C) | Verify whether the solid conducts electricity. |
| D) | Dissolve a small amount of the solid in water. |

2

Sophie analyzes the reaction between two solutions she used in an experiment.

The following is a description of her work.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. | Properties Observed | | | |
|  |  | **SOLUTION 1** |  | **SOLUTION 2** |
|  | . | is a good conductor of electricity, | . | is a good conductor of electricity, |
|  | . | is colourless, | . | is colourless, |
|  | . | turns blue litmus paper red, | . | turns red litmus paper blue, |
|  | . | turns cobalt chloride paper pink. | . | turns cobalt chloride paper pink. |
| 2. | **Preparation of Solution 3**  She prepares the third solution by mixing equal amounts of solutions 1 and 2. | | | |
| 3. | **Properties of Solution 3** | | | |
|  | . | is a good conductor of electricity, | | |
|  | . | is colourless, | | |
|  | . | does not change the colour of litmus paper, | | |
|  | . | turns cobalt chloride paper pink. | | |

Identify the 3 solutions justifying your answer.

3

In neutralizing sulfuric acid, H2SO4, with caustic soda, NaOH, sodium sulfate, NA2SO4, and water are produced.

Which equation represents this chemical reaction?

|  |  |
| --- | --- |
| A) | H2SO4 + 2 NaOH → Na2SO4 + 2 H2O |
| B) | Na2SO4 + 2 H2O → H2SO4 + 2 NaOH |
| C) | H2SO4 + NaOH → Na2SO4 + 2 H2O |
| D) | Na2SO4 + H2O → H2SO4 + 2 NaOH |

4

The laboratory technician asks you to help put the laboratory in order at the end of the year. In order to prepare an inventory and for security reasons, you are asked to identify the acids, bases and salts in the following list :

NH4F, H2SO4 , Na2SO4 , HCl , HCH3COO , CH3CH2OH, NaCl , KClO3 , KOH

5

In the laboratory, you are given a white powder and asked to determine whether it is an electrolyte or not.

What procedure should you follow?

Present all of your procedure.

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, 4 and 5 are bases and solution 3 cannot be classified. |
| B) | Solution 3 is an acid and solution 5 cannot be classified. |
| C) | Solutions 1, 2, 3 and 6 are acids and solution 4 cannot be classified. |
| D) | Solutions 2, 5 and 6 are bases and solution 3 cannot be classified. |

7

A student wishes to determine the turning point of an indicator, experimentally.

The table shows the results obtained using methyl orange.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Colour** | red | red | red orange | orange | yellow | yellow | yellow | yellow | yellow |
| **pH** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

What is the turning point of methyl orange? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8

Which of the following is **not** a characteristic property of an acidic solution?

|  |  |
| --- | --- |
| A) | It conducts an electric current. |
| B) | It turns litmus paper red. |
| C) | It tastes sour. |
| D) | It produces hydrogen when it reacts with some metals. |

9

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 do not dissolve in water. |
| D) | Unlike acids and bases, salts conduct electricity in a solid state. |

10

Which statement correctly defines an electrolyte?

|  |  |
| --- | --- |
| A) | A substance that conducts an electric current |
| B) | A substance that does not conduct an electric current |
| C) | A substance that conducts an electric current when dissolved in an aqueous solution |
| D) | A substance that does not dissolve in water |

11

In the course of an experiment , you note that on dissolving Al2(SO4)3 in pure water, you obtain a solution with the following properties :

1. It conducts electricity.

2. It turns litmus paper red.

3. It neutralizes a base.

4. It liberates hydrogen in the presence of a piece of zinc.

After the experiment you conclude that the Al2(SO4)3 was...

|  |  |
| --- | --- |
| A) | an acid. |
| B) | a base. |
| C) | a non-neutral salt. |
| D) | a salt. |