**Year 10 Chemical Science Part 2**

**Revision – Chemical Reactions**

**Acids and Bases**

1. Complete the following paragraphs

Acids are substances that contain **\_\_\_\_\_\_\_\_\_\_\_\_\_** and when dissolved in water they release hydrogen ions (**\_\_\_\_\_**). For example, HCl forms the \_\_\_\_\_\_\_ and the \_\_\_\_\_\_ ions.

The pH is a measure of the \_\_\_\_\_\_\_\_\_\_\_\_ of a substance and pH stands for potential hydrogen. Acidic substances have a pH less than \_\_\_\_ and greater than or equal to \_\_\_\_.

A Base is a substance that releases the **\_\_\_\_\_\_\_\_\_\_\_** ion (**\_\_\_\_\_**) when dissolved in water. A base that is dissolved in water is called an alkali. Metal hydroxides such as sodium hydroxide (NaOH) and metal oxides such as magnesium oxide (MgO) are bases as they release **\_\_\_\_\_\_\_** ions in solution.

**Acid Reactions**

1. Complete the following general acid reactions

Acid + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ → salt + water

Acid + metal → salt + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Acid + metal carbonate → salt + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + water

Acid + metal hydrogen carbonate → \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + carbon dioxide + water

1. Complete the following table

|  |  |  |  |
| --- | --- | --- | --- |
| **Acid** | **Chemical formula** | **Ions present** | **Type of Salt formed** |
| Hydrochloric |  | H+, Cl- | chloride |
|  | H2SO4 | H+, SO4 2- |  |
| Nitric |  | H+, NO3 - |  |
| Ethanoic (acetic) | CH3COOH |  |  |
|  | H3PO4 | H+ , PO4 3- |  |
| Carbonic |  | H+ , CO3 2- |  |

**Decomposition Reactions**

1. Complete the sentence and general reactions below.

When metal carbonates and metal hydrogen carbonates are \_\_\_\_\_\_\_\_\_\_\_\_\_**\_** they decompose.

Metal hydrogen carbonate metal carbonate + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + carbon dioxide

Metal carbonate \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + carbon dioxide

**Balancing Equations**

1. Balance the following equations

\_\_\_\_\_C3H8 + \_\_\_\_\_ O2 → \_\_\_\_\_CO2 + \_\_\_\_\_ H2O

\_\_\_\_\_Al + \_\_\_\_\_HCl → \_\_\_\_\_AlCl3 + \_\_\_\_\_H2

\_\_\_\_\_\_Ca(OH)2 + \_\_\_\_\_\_H3PO4 → \_\_\_\_\_\_Ca3(PO4)2 + \_\_\_\_\_\_H2O

1. Write balanced chemical equations from the following word equations

Ammonium carbonate + nitric acid → ammonium nitrate + carbon dioxide + water

Sodium + sulfuric acid → sodium sulfate + hydrogen gas

Zinc carbonate zinc oxide + carbon dioxide

1. Predict the products and write balanced chemical equations from the given reactants

Hydrochloric acid and zinc →

Sodium carbonate and hydrochloric acid →

Magnesium hydrogen carbonate is heated

1. Predict the reactants and write balanced chemical equations from the following products.

→ calcium chloride and water

→ copper (II) phosphate and hydrogen gas

→ zinc ethanoate and carbon dioxide and water