Kirkcaldy High School

Chemistry
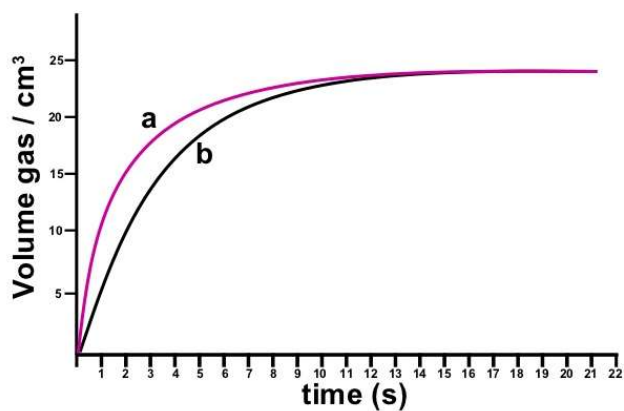
National 4

Unit 1 – Chemical Changes and Structure

TUTORIAL QUESTIONS

(a) Reaction Rates

1. Write down four ways to speed up a chemical reaction.
2. Which is the faster reaction from the graph below, a or b?

3. How could you speed up reaction b?
4. How could you slow down reaction a?
5. What time did the reaction stop?
6. What is the formula for average rate?

(b) Atomic Structure and Bonding

1. Where are metals and non-metals found in the periodic table?
2. Draw an atom and explain why it is neutral.
3. How can we calculate the mass number of an element?
4. If an element has 3 protons and 4 neutrons what is the mass number?
5. What element is described in Q4?
6. What is a covalent bond?
7. What is an ionic bond?
8. Write the chemical formulae for sodium oxide and magnesium chloride.

(c) Energy Changes of Chemical Reactions

1. What is the difference between an exothermic and an endothermic chemical reaction?

2. Write the state symbols for

    (a) Solid

    (b) Liquid

    (c) Gas

    (d) Solution

3. What is meant by "reactants" and "products" in a chemical reaction

4. Write these statements as chemical word equations.

    (a) Oxygen gas and solid Iron react together to make solid iron oxide

    (b) Solid Silver and Chlorine gas react together to make solid silver chloride

    (c) hydrochloric acid and sodium hydroxide solutions react together to make sodium chloride solution and water

(d) Acids and Bases

1. What pH range is an acid ?

2. What pH range is an alkali?

3. What pH is a neutral substance?

4. Name 3 common lab acids?

5. What is a neutralisation reaction?

6. Name the products formed in a neutralisation reaction.

7. How can you recognise a salt formed in a neutralisation reaction?

8. Write the word equation for the following reactions:

   (a) Sodium hydroxide + Hydrochloric acid

   (b) Potassium hydroxide + sulfuric acid

   (c) Magnesium hydroxide + nitric acid

9. Circle the salts in the above reactions.