ANSWERS

Year 10 Science

Chemistry 2 Test: Chemical reactions

SECTION 1: MULTIPLE CHOICE (1 mark each)

Circle your answer on the multiple choice answer sheet.

1. A student mixed two clear liquids together and then observed them. Which of these observations does **not** indicate that a chemical reaction has taken place?
   a) They changed colour.
   b) They went cloudy.
   c) They made bubbles and got warm.
   d) The mass stays the same.

2. Which one of the following is NOT an example of a chemical reaction?
   a) Coating a piece of iron with copper by dipping the iron into a solution of copper sulfate.
   b) Burning a piece of magnesium ribbon.
   c) The passing of an electric current through the filament of a light bulb.
   d) Rusting of iron.

3. A student put a small amount of two white powders in a test tube, then put in a stopper and shook it vigorously for a few seconds. To his surprise, the test tube went very cold and the solids turned to liquid. This kind of reaction is
   a) a physical change.
   b) an exothermic reaction.
   c) an endothermic reaction.
   d) a precipitation reaction.

4. Hydrogen gas is produced from the reaction of magnesium metal with hydrochloric acid. Which of the following could not be used to monitor the rate of the reaction?
   a) concentration of magnesium ions in solution
   b) volume of hydrogen gas produced
   c) mass of magnesium remaining
   d) total mass of reactants and products in a closed container

5. When a complex compound is broken into simpler compounds in a reaction, the reaction type is called
   a) combination.
   b) decomposition.
   c) displacement.
   d) combustion.

6. Which of the following explains why milk "goes off" quicker if it's left out of the fridge?
   a) Chemical reactions happen faster at higher temperatures.
   b) Chemical reactions happen faster in daylight.
   c) Chemical reactions happen faster when you stir them.
   d) Chemical reactions happen faster then the ingredients are more concentrated.

7. Which of the following does **not** affect the rate of a chemical reaction?
   a) The amount of each reactant.
   b) The temperature.
   c) The concentration of reactants.
   d) The state of the reactants.

8. Which of these word equations describes a combustion reaction?
   a) Methane + oxygen → carbon dioxide + water
   b) Silver nitrate + copper → copper nitrate + silver
   c) Hydrochloric acid + zinc → hydrogen + zinc chloride
   d) Water → hydrogen + oxygen

The next 2 questions refer to the equation below:

$$2C_8H_{18(l)} + 25O_{2(g)} \rightarrow 16CO_{2(g)} + 18H_2O_{(g)}$$

9. Which of the following is a reactant?
   a) water
   b) carbon dioxide
   c) oxygen gas
   d) hydrochloric acid

10. Octane (C_8H_{18}) is a
   a) reactant
   b) product
   c) catalyst
   d) base

SECTION 2: WRITTEN

Write your answers in the spaces provided.

1. When David added some hydrochloric acid solution to some zinc metal, he noticed that the zinc bubbled and produced the flammable gas, hydrogen. Zinc chloride was also made.

   For this reaction

   a) Name the reactants (2)

   hydrochloric acid and zinc (metal).

   b) Name the products (2)

   hydrogen (gas) and zinc chloride.

   c) Write a word equation for this reaction (1)

   hydrochloric acid + zinc → hydrogen + zinc chloride.

   d) Write a balanced chemical equation for this reaction (2)

   $HCl + Zn \rightarrow H_2 + ZnCl_2$

   e) List three ways that David could speed up the rate of this reaction? (3)

   eg. • heat it
   • more concentrated HCl
   • powdered zinc / cut up zinc
   • add a catalyst.
   • stir it

2. When fuel, such as ethanol, is burned in oxygen, it releases a lot of heat and light.

Tick any that apply to this reaction (You can tick more than one) (6)

- ☑ This is classified as combustion.
- ☑ This is a type of exothermic reaction.
- ☑ Ethanol is a reactant.
- ☐ This is a type of decomposition reaction.
- ☑ The reactants contain more chemical potential energy than the products.
- ☐ This reaction would go faster if it there was less oxygen in the air.

3. Balance the following equations (2)

a) $N_2 + 3H_2 \rightarrow 2NH_3$

b) $Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2$

4. What is a catalyst? (2)

A substance that speeds up a chemical reaction, but is not a reactant or product / is not used up.

End of Test (Out of 30)