

N5 Chemistry
Unit 1: Chemical Changes & Structure
Homework 1.2

1. A student adds 1 gram of a catalyst to a reaction mixture.

Which line in the table shows what happens when the 1 gram of catalyst is added to the mixture?

Answer _____

	Speed of reaction	Mass of catalyst left at end in grams
A	unchanged	1
B	faster	1
C	unchanged	0
D	faster	0

2. Which gas burns with a "pop"?

- A Carbon dioxide
- B Hydrogen
- C Nitrogen
- D Oxygen

Answer _____

3. Which of the following compounds contains oxygen?

- A Calcium chloride
- B Lithium sulfide
- C Potassium nitrate
- D Sodium chloride

Answer _____

4. In an exothermic reaction

- A There is no energy change
- B Energy is released to the surroundings
- C Energy is absorbed from the surroundings
- D The energy of the products is greater than the energy of the reactants.

Answer _____

5. Which of the following pairs of reactants would produce hydrogen most slowly?

- A Magnesium powder and 4 mol l⁻¹ acid
- B Magnesium powder and 2 mol l⁻¹ acid
- C Magnesium ribbon and 4 mol l⁻¹ acid
- D Magnesium ribbon and 2 mol l⁻¹ acid

Answer _____

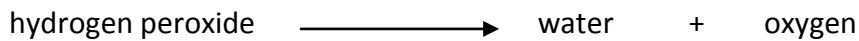
6. Which of the following is an example of a chemical reaction?

- A Petrol burning
- B Nail varnish drying
- C An ice cube melting
- D Sugar dissolving in tea

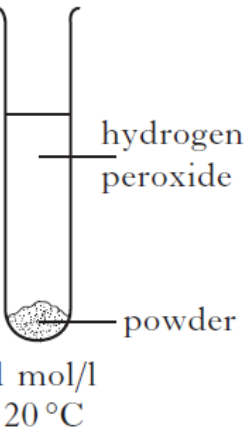
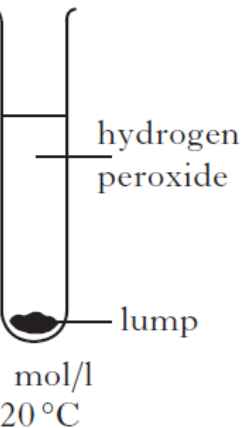
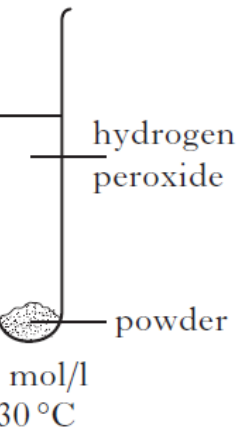
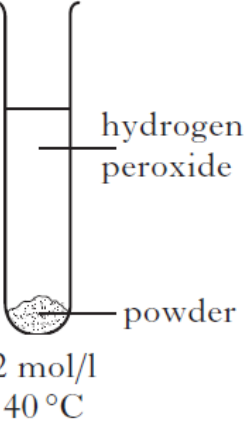
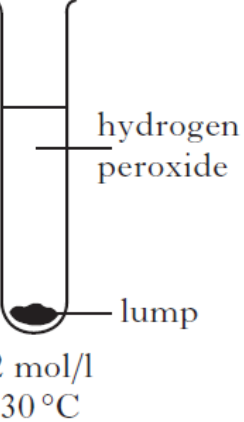
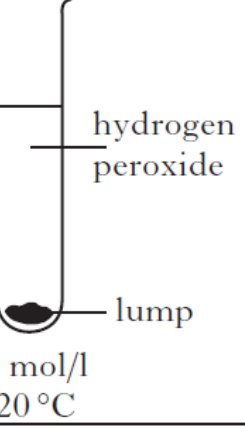
Answer _____

6

7. A catalyst speeds up the following reaction:



The grid shows reactions carried out using the **same** mass of catalyst with two different concentrations of hydrogen peroxide.

<p>A</p>  <p>hydrogen peroxide</p> <p>powder</p> <p>1 mol/l 20 °C</p>	<p>B</p>  <p>hydrogen peroxide</p> <p>lump</p> <p>1 mol/l 20 °C</p>	<p>C</p>  <p>hydrogen peroxide</p> <p>powder</p> <p>1 mol/l 30 °C</p>
<p>D</p>  <p>hydrogen peroxide</p> <p>powder</p> <p>2 mol/l 40 °C</p>	<p>E</p>  <p>hydrogen peroxide</p> <p>lump</p> <p>2 mol/l 30 °C</p>	<p>F</p>  <p>hydrogen peroxide</p> <p>lump</p> <p>2 mol/l 20 °C</p>

a) Identify the **two** experiments which could be used to show the effect of concentration on the speed of reaction.

Answer _____ & _____

1

b) Identify the experiment with the fastest speed of reaction.

Answer _____

1

8.

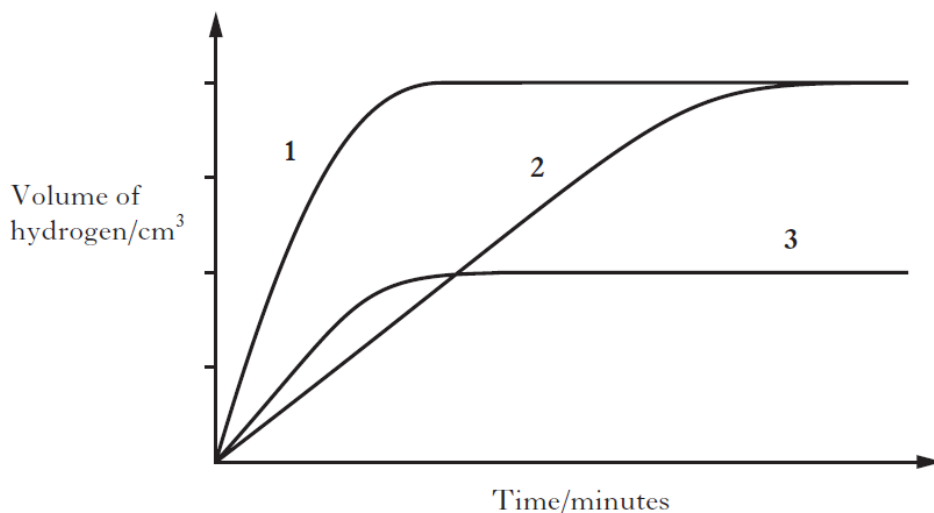
<p>A</p> <p>butter melting</p>	<p>B</p> <p>distillation of crude oil</p>
<p>C</p> <p>wood burning</p>	<p>D</p> <p>water evaporating</p>

Identify the chemical reaction.

Answer _____

1

9. A student carried out some experiments between zinc and excess 1 mol l^{-1} hydrochloric acid. The graph below shows the results of each experiment.



- a) In which experiment did the reaction take the longest to finish, **1**, **2** or **3**?

Answer _____

1

- b) In all three experiments she kept the temperature the same and used the same volume of 1 mol l^{-1} hydrochloric acid.

- i) Suggest one factor that could have been changed from experiment **1** to produce the results in experiment **2**.

1

- ii) 1 g of zinc was used in experiment **1**. What mass of zinc was used in experiment **3**?

_____ g

1

10. Explain in some detail each of the following statements.

- a) Small sticks of wood burn faster than logs.

1

- b) Plants grow faster in a green-house than in the open air.

1

- c) When bellows are used to blow air on to a fire, the fire burns brighter.

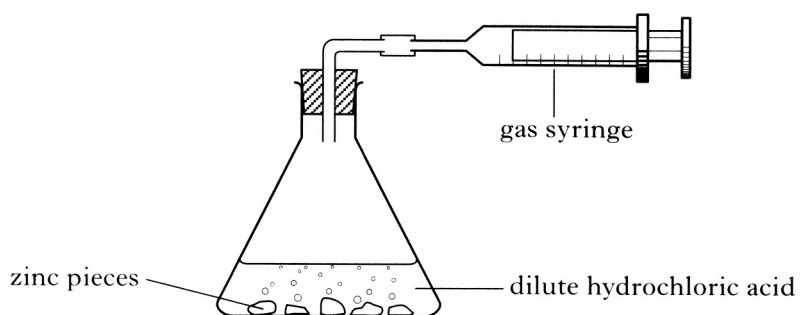
1

11. Zinc reacts with dilute hydrochloric acid to produce zinc chloride and hydrogen gas.

- a) During the experiment, the test tube becomes warm. What term is used to describe a reaction which gives out heat?

1

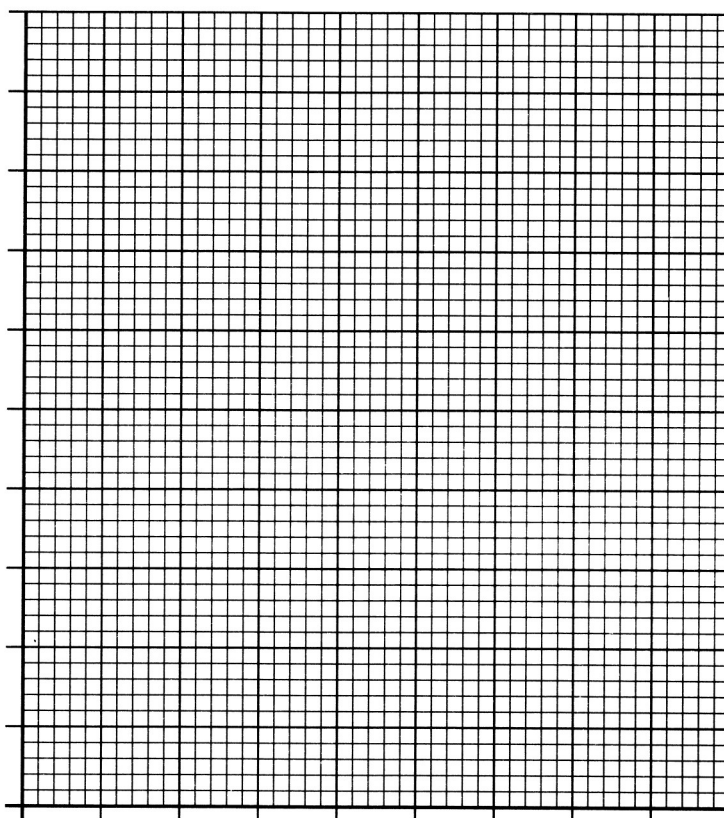
- b) The rate of reaction between zinc and excess dilute hydrochloric acid can be followed by measuring the volume of gas given off during the reaction.



Results

Time (seconds)	Volume of gas (cm ³)
0	0
10	20
20	40
30	58
40	72
50	80
60	

- i) Plot a line graph for the results for the reaction. (Label axis's)



3

- ii) What volume of gas had been given off after 60 seconds? _____ cm³ 1
- iii) How long does it take to produce 30 cm³ of hydrogen gas? _____ seconds 1

Total Marks 21