

Identification of Common Gases

Question Paper

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Chemistry
Exam Board	AQA
Topic	5.8 Chemical Analysis
Sub-Topic	Identification of Common Gases
Difficulty Level	Bronze Level
Booklet	Question Paper

Time Allowed: 27 minutes

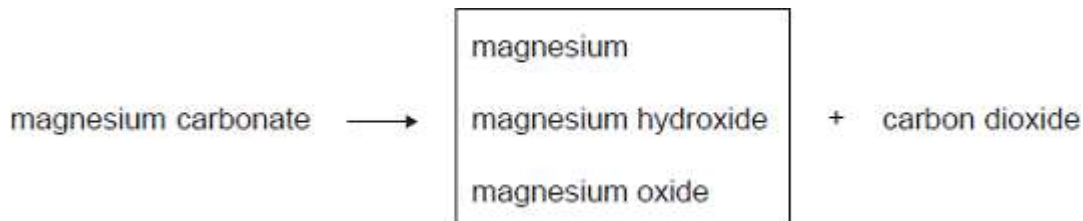
Score: /27

Percentage: /100

Grade Boundaries:

Q1. Carbon dioxide is produced when metal carbonates are heated.

- (a) (i) Draw a ring around the correct answer to complete the word equation.



(1)

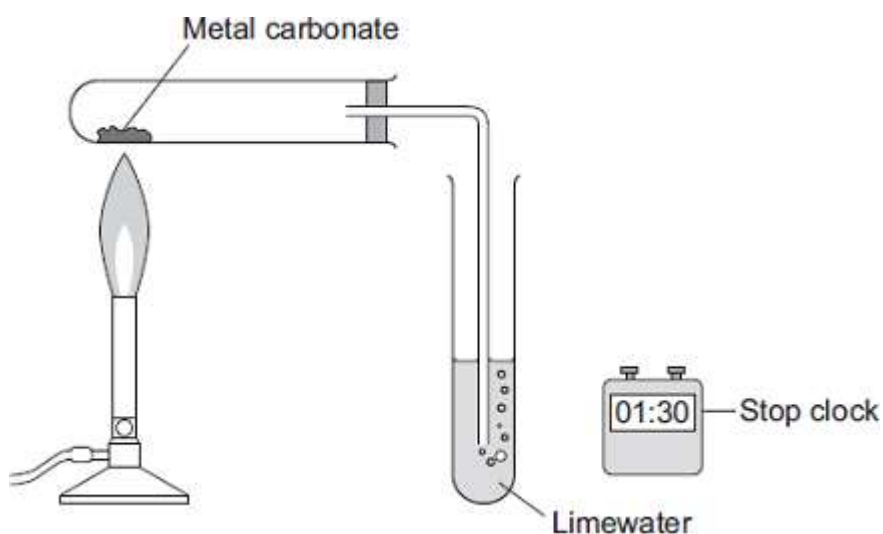
- (ii) Draw a ring around the correct answer to complete the sentence.

The reaction to produce carbon dioxide from magnesium carbonate is

combustion.
decomposition
fermentation.

(1)

- (b) A student investigated what happens when metal carbonates are heated.



The student:

- used the apparatus to investigate heating four metal carbonates

- started the stop clock at the same time as he began to heat the metal carbonate
- stopped the stop clock when carbon dioxide was produced.

The student's results are shown in the table.

Metal carbonate	Time taken for the production of carbon dioxide to start in seconds
Calcium carbonate	163
Copper carbonate	24
Magnesium carbonate	92
Zinc carbonate	67

- (i) Tick (✓) the type of graph the student should draw from these results.

Type of graph	Tick (✓)
Bar chart	
Line graph	
Scatter graph	

(1)

- (ii) Use the Chemistry Data Sheet to help you to answer this question.

Draw a ring around the correct answer to complete the sentence.

The more reactive the metal in the carbonate the

less	time is taken for the
more	
same	

production of carbon dioxide to start.

(1)

- (iii) How did the student know that carbon dioxide was produced?

Use the diagram of the apparatus to help you to answer this question.

.....

.....

.....

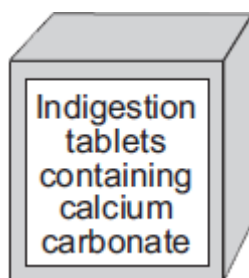
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(2)
(Total 6 marks)

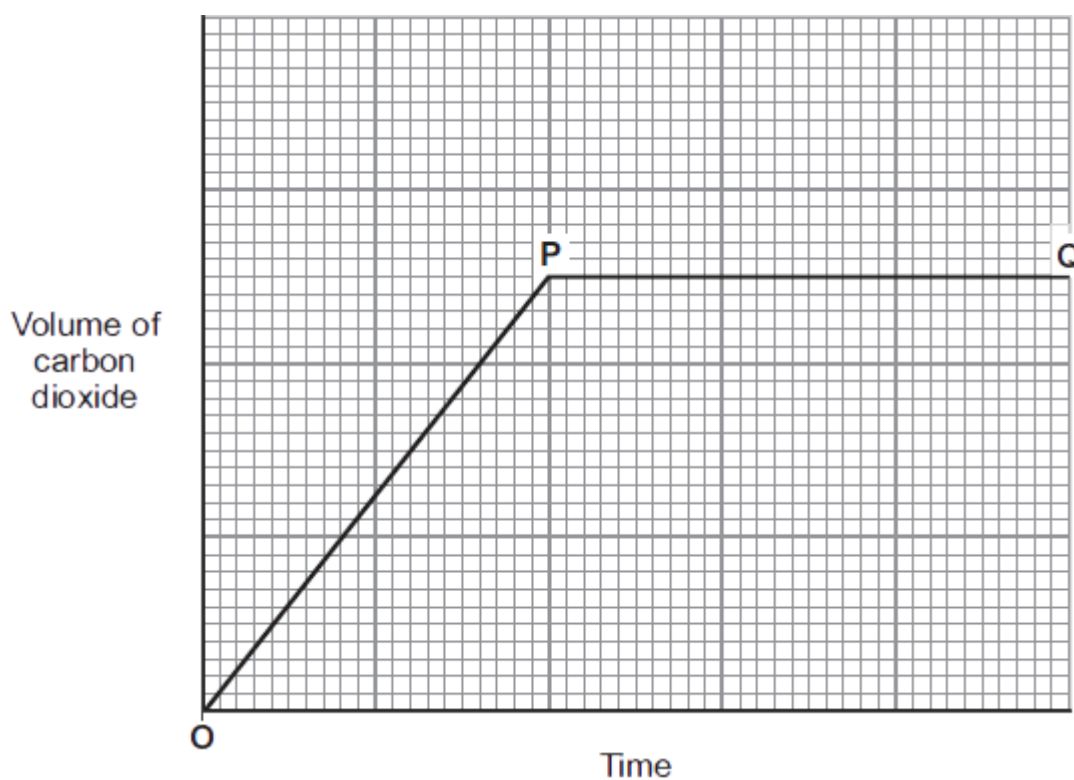
Q2. Human stomachs contain hydrochloric acid.

Stomach ache can be caused by too much acid in the stomach.

Indigestion tablets can be used to reduce the amount of acid in the stomach.



- (a) The graph shows how the volume of carbon dioxide produced changes with time, after some calcium carbonate is added to hydrochloric acid.



- (i) Complete the sentence to explain what happens between **O** and **P**.

Between **O** and **P** the calcium carbonate and hydrochloric acid

(1)

- (ii) Complete the sentence to explain what happens at **P**.

At **P** the calcium carbonate and hydrochloric acid

because

(2)

- (iii) Describe the test for carbon dioxide gas.

Test

Result of the test

(2)

- (b) Calcium carbonate is found in limestone.
Limestone is removed from the ground by quarrying.



Photograph supplied by Stockbyte/Thinkstock

Tick (✓) **one** advantage and tick (✓) **one** disadvantage of quarrying limestone.

(2)
(Total 7 marks)

[illegible]

.....

(b) is a metal which floats on water and reacts violently to make an alkaline solution and hydrogen gas;

.....

(1)

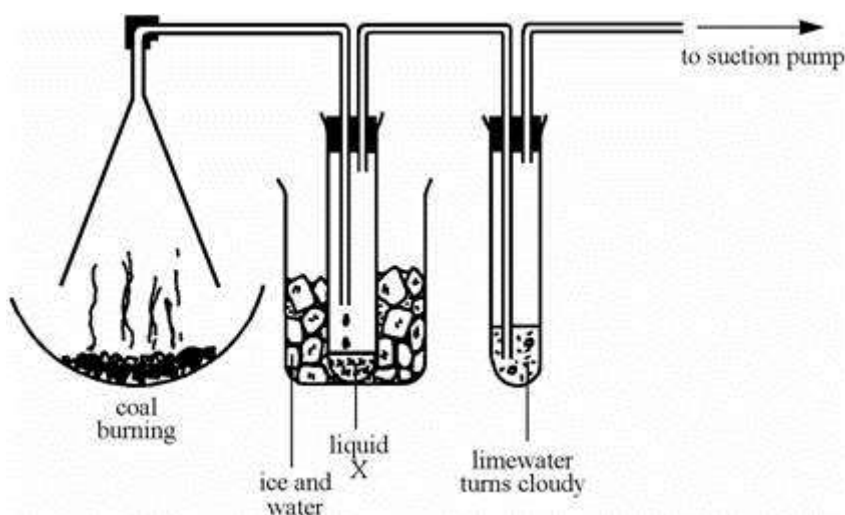
- (c) is a gas which burns with a squeaky pop?

.....

(1)

(Total 3 marks)

- Q4.** The gases produced when coal burns are cooled by ice and then bubbled through limewater.



- (a) Complete these sentences.
- (i) The coal is reacting with when it burns.
- (ii) During burning, elements in the coal are converted to compounds called

(2)

- (b) Choose words from this list to complete the sentences.

carbon

carbon dioxide

sulphur

sulphur dioxide

sodium

water

- (i) Liquid X is a compound made from hydrogen and oxygen.

It is called

- (ii) Sulphur dioxide is an acidic gas. It is given off when coal burns, because coal contains the element

- (iii) Most fuels are compounds of hydrogen and

(3)

- (c) Burning coal is an exothermic reaction.

Explain what “exothermic” means.

.....
.....

(1)

- (d) (i) Which gas turns limewater cloudy?

.....

- (ii) Which element in the coal is oxidised to form this gas?

.....

(2)

(Total 8 marks)

Q5. Choose words from this list to complete the sentences,

ammonia

carbon dioxide

hydrogen

nitrogen

electrical

heat

solar

sound

- (a) In air, the two most common gases are oxygen and
- (b) When natural gas burns, energy is released mainly as
- (c) When natural gas burns, a gas is produced which turns limewater milky.

The gas is

(Total 3 marks)