

## Carbonates – 2021 IGCSE 0620

### 1. June/2021/Paper\_11&21/No.32

A white solid Z reacts with dilute hydrochloric acid to produce a gas.

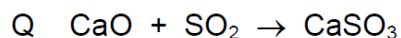
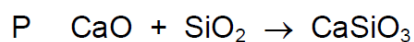
The same gas is produced when compound Z is heated strongly.

What is Z?

- A calcium
- B calcium carbonate
- C calcium hydroxide
- D calcium oxide

### 2. June/2021/Paper\_12/No.33

The equations represent two reactions, P and Q, of lime (calcium oxide).



In which processes do the reactions occur?

	P	Q
A	extraction of iron	extraction of iron
B	extraction of iron	flue gas desulfurisation
C	flue gas desulfurisation	extraction of iron
D	flue gas desulfurisation	flue gas desulfurisation

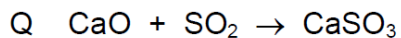
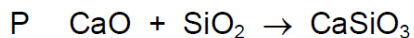
### 3. June/2021/Paper\_13&23/No.33

Which statement about calcium carbonate is correct?

- A It is made by the thermal decomposition of limestone.
- B It is used to neutralise alkaline soils.
- C It is a reactant in the test for carbon dioxide.
- D It is used to remove impurities in iron extraction.

4. June/2021/Paper\_22/No.33

The equations represent two reactions, P and Q, of lime (calcium oxide).



In which processes do the reactions occur?

	P	Q
A	extraction of iron	extraction of iron
B	extraction of iron	flue gas desulfurisation
C	flue gas desulfurisation	extraction of iron
D	flue gas desulfurisation	flue gas desulfurisation

5. March/2021/Paper\_12&22/No.33

What is an industrial use of calcium carbonate?

- A cracking of hydrocarbons
- B manufacture of aluminium
- C manufacture of cement
- D purification of water

6. March/2021/Paper\_12/No.34

Which product is formed when calcium carbonate undergoes thermal decomposition?

- A calcium
- B calcium hydroxide
- C calcium oxide
- D calcium silicate

(a) Cement is made by heating a mixture of calcium carbonate and powdered clay.

(i) Choose from the list the name of the substance which contains calcium carbonate.

Draw a circle around the correct answer.

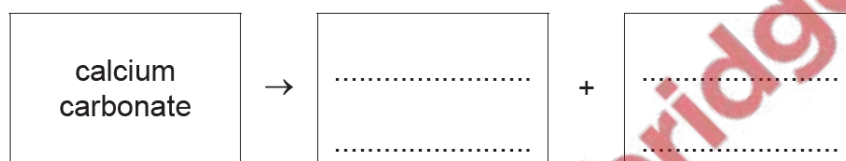
**bauxite      hematite      limestone      slaked lime** [1]

(ii) The heat for this process is provided by burning natural gas.

Name the main constituent of natural gas.

..... [1]

(b) Complete the word equation for the thermal decomposition of calcium carbonate.

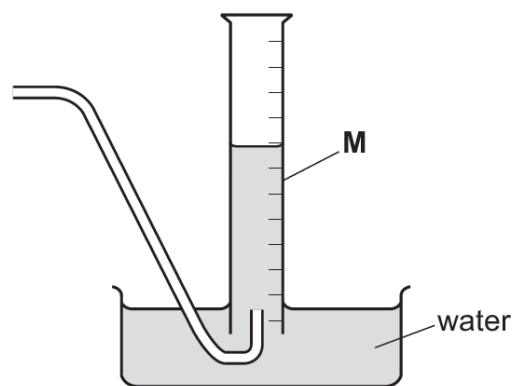


[2]

(c) Carbon dioxide is produced when dilute hydrochloric acid reacts with powdered calcium carbonate.



(i) Complete the diagram to show the apparatus used to investigate the volume of carbon dioxide produced during this reaction.



[2]

(ii) Name the piece of apparatus labelled **M** in the diagram.

..... [1]

(iii) Suggest the name of another piece of apparatus that can be used to measure the volume of carbon dioxide produced.

..... [1]

(iv) Describe the effect of each of the following on the rate of reaction of dilute hydrochloric acid with calcium carbonate.

- Large pieces of calcium carbonate are used instead of powdered calcium carbonate.

All other conditions stay the same.

.....

- The temperature is decreased.

All other conditions stay the same.

.....

[2]

(d) Explain how carbon dioxide contributes to climate change.

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..... [2]

[Total: 12]

