



Centre Number

71

Candidate Number

General Certificate of Secondary Education
2009–2010

Science: Single Award (Modular)
Chemical Patterns and our Environment
Module 3
Foundation Tier
[GSC31]



WEDNESDAY 24 FEBRUARY 2010, MORNING

TIME

45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in this question paper.
Answer **all seven** questions.

INFORMATION FOR CANDIDATES

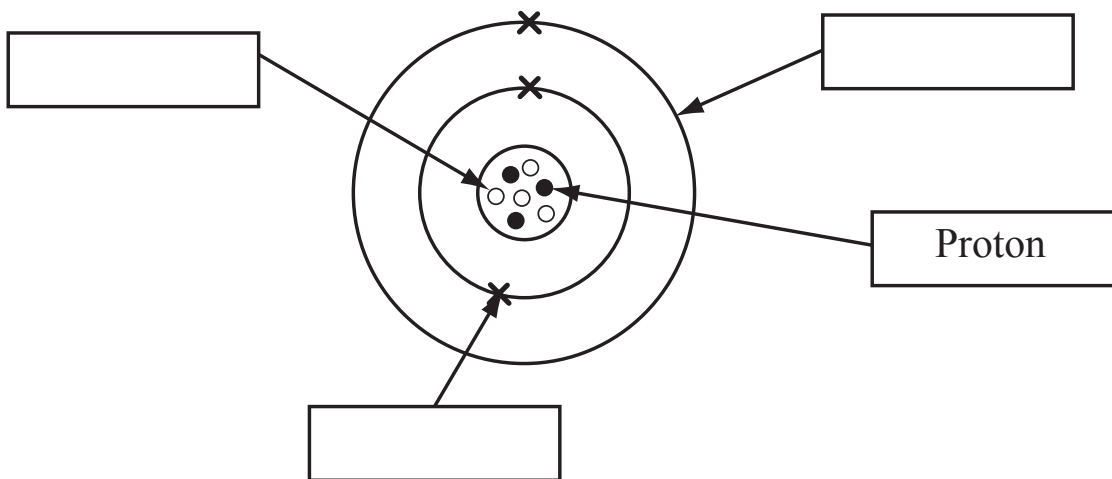
The total mark for this paper is 45.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
A Data Leaflet is provided for use with this paper.

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	

Total Marks	
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4 The diagram shows the structure of an atom.



(a) Use words from the list below to label the diagram.

electron : shell : core : neutron : cell [3]

(b) What is the **atomic number** for this atom?

Circle the correct answer.

3 4 7 10 [1]

(c) What is meant by the term **mass number**?

Choose from:

Number of protons + neutrons

Number of protons + electrons

Number of electrons + neutrons

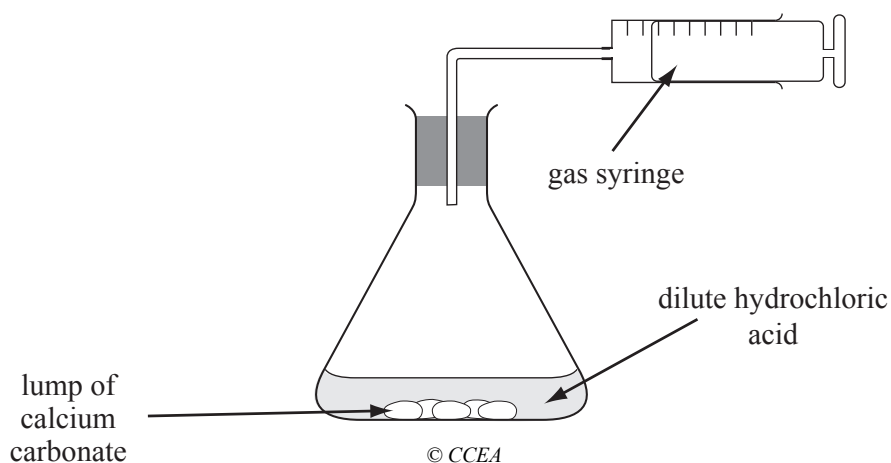
_____ [1]

(d) Use your Data Leaflet to find the name and symbol for the element in the diagram.

Name _____ Symbol _____ [2]

Examiner Only	
Marks	Remark

- 7 The diagram shows the apparatus used to investigate the reaction between a piece of calcium carbonate and dilute hydrochloric acid.



John recorded the total volume of carbon dioxide collected at intervals over 15 minutes.

At the end of the reaction there was some calcium carbonate left in the flask.

John obtained the following results:

Time/minutes	0	1	2	3	5	7	9	11	13	15
Carbon dioxide/cm³ collected	0	20	38	46	62	72	78	82	82	82

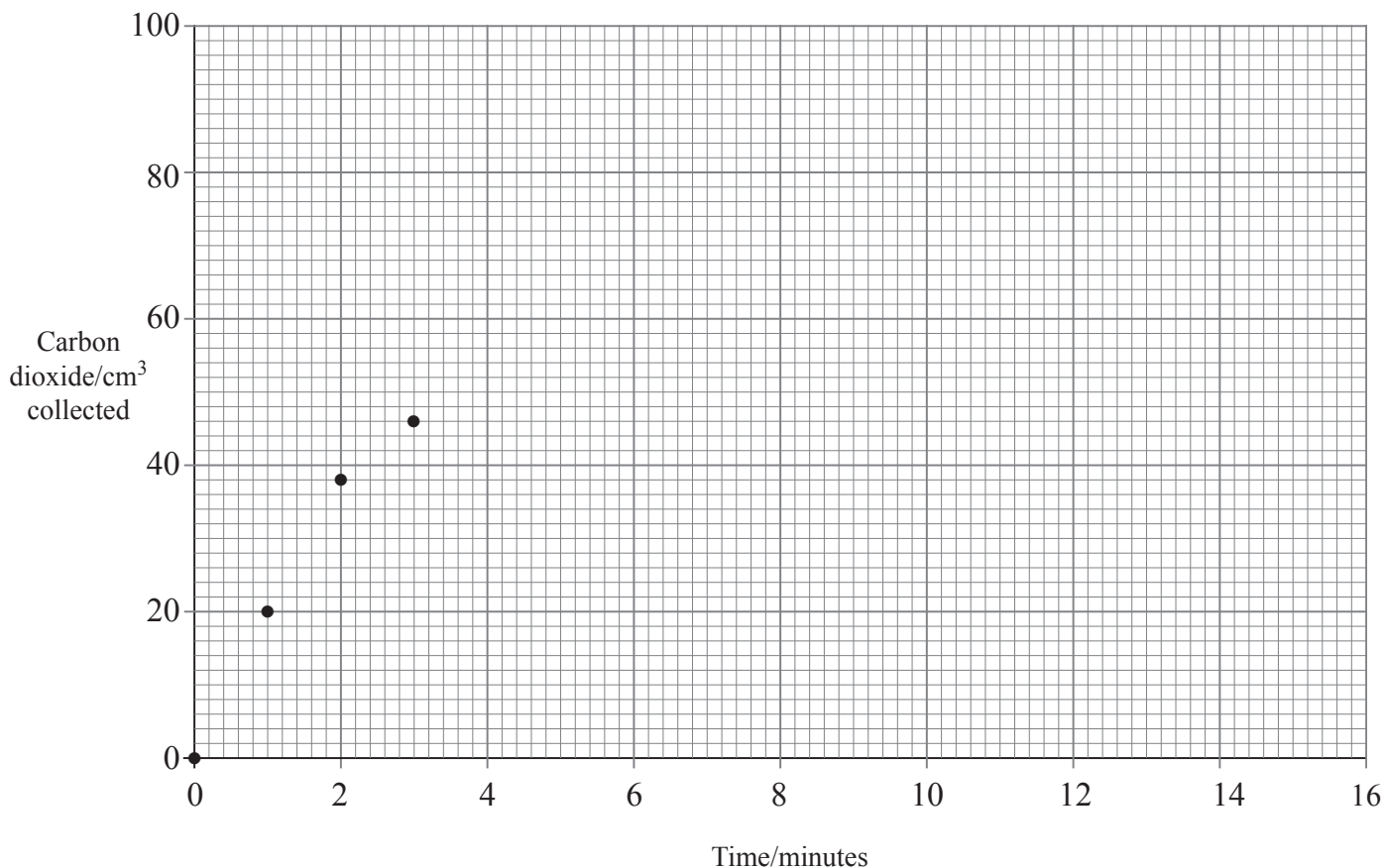
- (a) Complete the graph on the page opposite by plotting the remaining points and join these points to form a smooth curve. [3]

- (b) Describe and explain the shape of the graph over the first two minutes.

_____ [2]

Examiner Only

Marks Remark



(c) (i) At what time did the reaction finish?

_____ [1]

(ii) How do you know that calcium carbonate was in excess?

_____ [1]

(d) Which one of the following would give a more accurate result?
Tick the correct box.

Use a digital clock

Use more acid

Measure the volume of gas every 30 seconds

[1]

Examiner Only	
Marks	Remark

(e) To improve the reliability of the results John should do which of the following?

Tick the correct box.

Do the experiment for a longer period

Use stronger acid

Repeat the experiment at least once

[1]

(f) Complete the word equation for this reaction.



[2]

Examiner Only	
Marks	Remark

THIS IS THE END OF THE QUESTION PAPER

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