



Rewarding Learning

General Certificate of Secondary Education
2013

Centre Number

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Candidate Number

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Science: Chemistry

Unit C1

Foundation Tier

[GCH11]

MONDAY 10 JUNE, AFTERNOON



GCH11

TIME

1 hour 15 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided. Do not write outside the box, around each page or on blank pages.

Complete in blue or black ink only. **Do not write with a gel pen.**

Answer **all six** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is **80**.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in question **2(b)(iv)**.

A Data Leaflet, which includes a Periodic Table of the Elements, is included in this question paper.



(vii) Name one element which sublimes on heating.

_____ [1]

(b) The element chlorine reacts with all Group 1 elements. Chlorine is found in Group 7 of the Periodic Table.

(i) What is the colour and physical state of chlorine at room temperature and pressure?

Colour: _____

State: _____ [2]

(ii) Name the compound formed when lithium reacts with chlorine.

_____ [1]

(iii) Explain why chlorine should be used in a fume cupboard.

_____ [1]

(iv) Potassium reacts with chlorine according to the word equation:



Write a balanced symbol equation for the reaction of potassium with chlorine.

_____ [3]

(v) What name is given to Group 7 of the Periodic Table?

_____ [1]

Examiner Only

Marks Remark

Total Question 1

[Turn over



- 2 Ski resorts use artificial snow to supplement natural snow. Artificial snow is made by forcing water and pressurised air through a snow cannon into cold air. The water droplets crystallise to form artificial snow.



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(a) Water contains the elements hydrogen and oxygen.

(i) Complete the table below to give information about atoms of hydrogen and oxygen.

Atom	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons
${}^1_1\text{H}$					
${}^{16}_8\text{O}$					

[2]

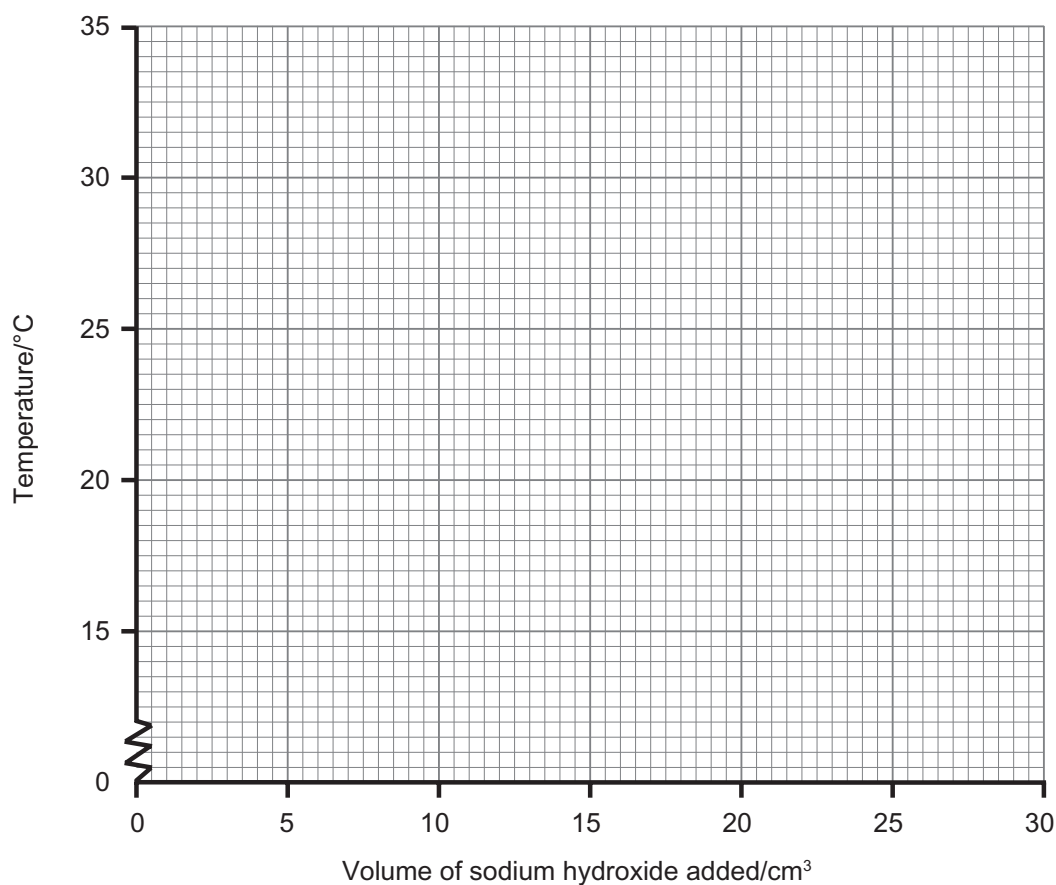
Examiner Only	
Marks	Remark



The temperature of the reaction mixture was recorded and the results are shown in the table below.

Volume of sodium hydroxide added/cm³	0	5	10	15	20	25
Temperature of reaction mixture/°C	20.5	21.5	22.5	23.5	25.5	28.0

- (i) Use the results in the table to plot a graph of temperature against volume of sodium hydroxide added.



[3]

- (ii) How does your graph prove that this reaction is exothermic?

_____ [1]

Examiner Only

Marks Remark

[Turn over





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(Questions continue overleaf)



6 Hydrochloric acid, hydrobromic acid and hydroiodic acid each contain a Group 7 ion.

(a) (i) Name the ion present in all acid solutions.

_____ [1]

(ii) Complete the table to give the colour observed when hydrochloric acid is tested with red and blue litmus paper.

	Hydrochloric acid
Colour of red litmus paper	
Colour of blue litmus paper	

[2]

(iii) These three acids are all **strong acids**. Describe how you would experimentally determine which of these acids is the strongest.

_____ [2]

(b) In an experiment to determine which Group 7 ion was present in each of the acids, a few drops of silver nitrate solution were added to a sample of each acid solution. Complete the table below to show the results of these tests.

	Hydrochloric acid	Hydrobromic acid	Hydroiodic acid
Observation on addition of a few drops of silver nitrate solution.			

[4]

Examiner Only	
Marks	Remark



(c) Each of the acids reacts with bases to produce salts.

- (i) To identify the metal ion present in a salt a flame test can be carried out. Complete the table below to give the flame colour for each of the metal ions listed.

Metal ion	Flame colour
Potassium	
Calcium	
Copper	

[3]

- (ii) The metal ion in a salt can also be identified using sodium hydroxide solution. Use the results in the table below to identify the metal ion present in salt A and salt B.

Salt	Observation on adding a few drops of sodium hydroxide solution	Observation on adding an excess of sodium hydroxide solution
A	Blue precipitate	Blue precipitate remains
B	White precipitate	White precipitate remains

Metal ion in salt A _____

Metal ion in salt B _____ [2]

THIS IS THE END OF THE QUESTION PAPER

Examiner Only

Marks Remark

Total Question 6



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Question Number	Marks
1	
2	
3	
4	
5	
6	
QWC	

Total Marks	
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Examiner Number

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