



Rewarding Learning

General Certificate of Secondary Education
2013

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

Science: Chemistry

Unit C2

Foundation Tier

[GCH21]

THURSDAY 20 JUNE, AFTERNOON



GCH21

TIME

1 hour 30 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** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is **90**.

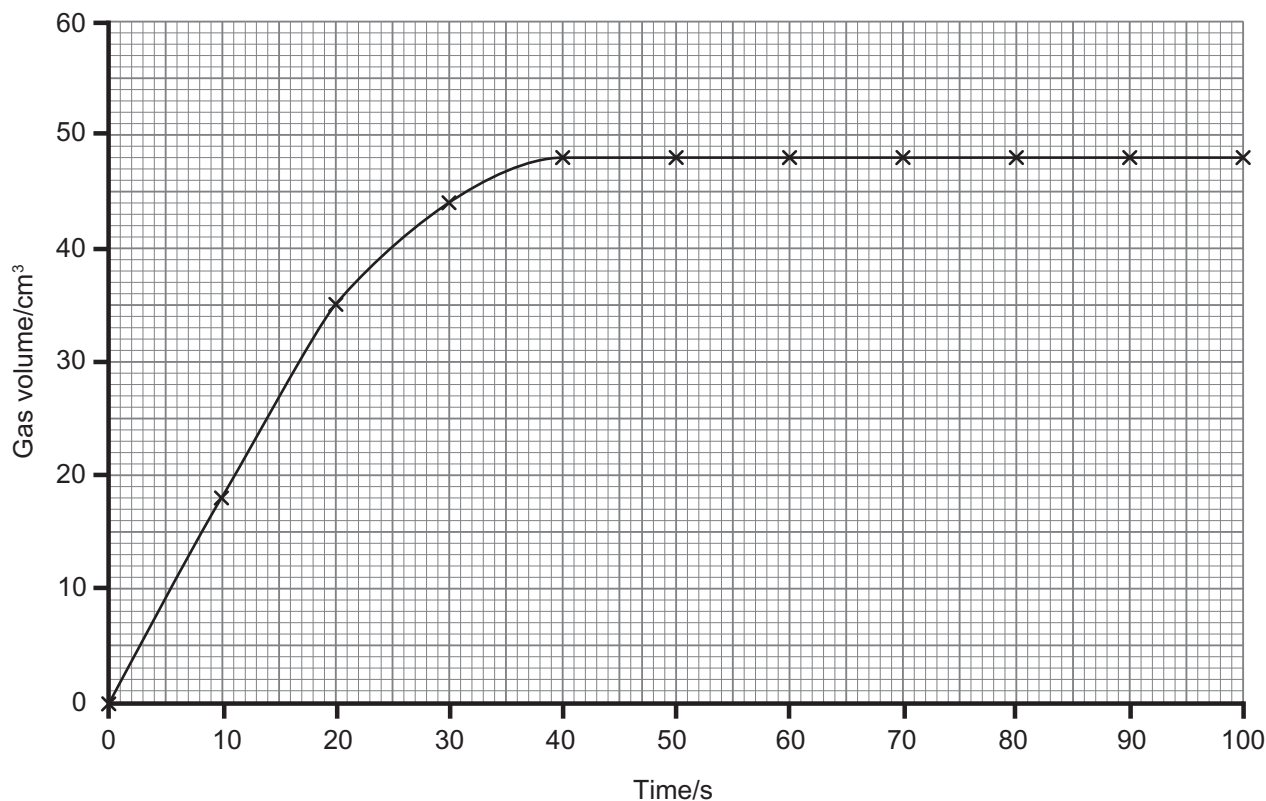
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in question **3(c)**.

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



(b) The graph below shows a set of data obtained.



(i) Apart from the apparatus shown in the diagram in part (a), name one other piece of equipment which would be required to collect the results used to draw the graph.

_____ [1]

(ii) What volume of gas was collected at 25 seconds?

_____ [1]

(iii) What was the total volume of gas collected?

_____ [1]

(iv) At what time did the reaction finish?

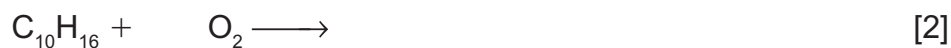
_____ [1]

Examiner Only	
Marks	Remark
Total Question 2	

[Turn over



- (iii) Like all hydrocarbons, myrcene ($C_{10}H_{16}$) undergoes combustion. Complete the balanced symbol equation for the **complete** combustion of myrcene.



- (iv) Calculate the relative molecular mass (RMM) of myrcene ($C_{10}H_{16}$).

_____ [1]

- (v) Calculate the percentage of carbon present in myrcene ($C_{10}H_{16}$).

_____ % [2]

- (b) Ethene can be used to manufacture the solvent used in perfumes. Complete the table below to give information about ethene.

Name	Molecular formula	Structural formula	State at room temperature and pressure
Ethene			

[3]

Examiner Only

Marks

Remark

[Turn over



(iv) Name a metal which does not react when heated with steam.

_____ [1]

(c) X is an unknown metal. The table below gives details of some reactions of the three metals X, sodium and zinc.

Metal	Reaction when heated in oxygen	Reaction with cold water	Reaction with dilute hydrochloric acid
X	Black coating forms on metal without burning	No reaction	No reaction
Sodium	Burns very vigorously with a yellow flame		Dangerous reaction not carried out in school laboratory
Zinc	Burns forming a yellow solid which changes to white on cooling	No reaction	Reacts steadily

(i) Suggest the name of metal X.

_____ [1]

(ii) Describe what you would observe when sodium reacts with cold water.

_____ [3]

(iii) Write a balanced symbol equation for the reaction of sodium with water.

_____ [3]

Examiner Only

Marks Remark

Total Question 5

[Turn over



6 (a) Fill in the blanks in the following sentences about water.

Water is a colourless liquid at room temperature and pressure and has a melting point of 0°C and a boiling point of _____ $^{\circ}\text{C}$.

One test for water is to use cobalt(II) chloride paper which changes colour from _____ to _____ if water is present. [3]

(b) An investigation was carried out to compare the hardness of water samples from three towns A, B and C.

25 cm^3 of each water sample were placed into three separate conical flasks and labelled A, B and C. A sample of deionised water was also tested.

Soap solution was added 1 cm^3 at a time to each conical flask with shaking until a lasting lather formed. The total volume of soap solution added to each flask was recorded.

The experiment was repeated with fresh samples of A, B and C which had been boiled and allowed to cool, before adding the soap solution.

The results are shown in the table below.

Water sample	Volume of soap solution required to form a lather	
	before boiling (cm^3)	after boiling (cm^3)
Deionised water	2	2
A	6	6
B	8	2
C	11	7

Examiner Only

Marks

Remark



DO NOT WRITE ON THIS PAGE

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

Total Marks	
--------------------	--

Examiner Number

Permission to reproduce all copyright material has been applied for.
In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA will be happy to rectify any omissions of acknowledgement in future if notified.

113115



20GCH2120