



*Rewarding Learning*

General Certificate of Secondary Education  
2025

Centre Number

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Candidate Number

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# Double Award Science: Chemistry

Unit 7 Practical Skills  
**Booklet B**  
Foundation Tier



**[GDW73]**  
**FRIDAY 13 JUNE, MORNING**

\*GDW73\*

## TIME

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 boxed area on each page or on blank pages.**

Complete questions in black ink and use a dark HB pencil for drawings and graphs.

**Do not write with a gel pen.**

Answer **all four** questions.

## INFORMATION FOR CANDIDATES

The total mark for this paper is **35**.

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

You may use a scientific calculator.

Quality of written communication will be assessed in Question **1(a)**.

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

14549



\*12GDW7301\*

- 1 (a) Group 1 metals are called the alkali metals. Two of the alkali metals are lithium and potassium. They react with water.

Describe the reactions of lithium with water and of potassium with water using the following headings:

- Give the **names** of the products of the reaction of potassium with water.
- Give three observations which are the **same** for the reactions of both lithium with water and potassium with water.
- Give two observations which are **different** for the reactions of both lithium with water and potassium with water.

**In this question you will be assessed on the quality of your written communication skills, including the use of specialist scientific terms.**

Give the **names** of the products of the reaction of potassium with water.

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Give three observations which are the **same** for the reactions of both lithium with water and potassium with water.

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Give two observations which are **different** for the reactions of both lithium with water and potassium with water.

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[6]



(b) **Circle** the answer below which gives the correct way the alkali metals are stored.

under oil

under water

under acid

[1]

(c) Apart from wearing safety glasses, give **one** other health and safety precaution that must be taken when adding an alkali metal, such as potassium, to water.

[1]

[Turn over



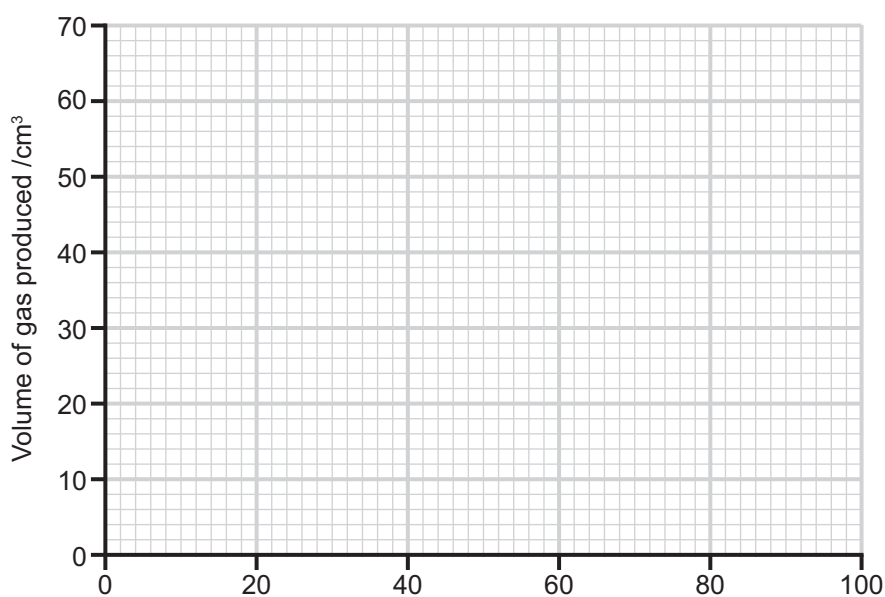
- 2 A student reacted a large piece of calcium carbonate of mass 0.5g, with an excess of dilute hydrochloric acid at room temperature (20°C). The gas produced was collected and its volume recorded every 20 seconds for 100 seconds.

The results obtained in the experiment are shown in the table below.

| Time /s                                 | 0 | 20 | 40 | 60 | 80 | 100 |
|-----------------------------------------|---|----|----|----|----|-----|
| Volume of gas produced /cm <sup>3</sup> | 0 | 30 | 48 | 56 | 60 | 60  |

- (a) Using the results in the table above, plot a graph on the grid below by completing the following:

- label the x-axis
- plot the results on the grid below
- draw a curve of best fit



[4]



(b) Using the graph you have drawn in (a), answer the following questions.

(i) What was the total volume of gas produced?

\_\_\_\_\_ [1]

(ii) At what time did the reaction finish?

\_\_\_\_\_ [1]

(c) The reaction was repeated using **powdered** calcium carbonate in place of the large piece of calcium carbonate. All other conditions were kept the same.

Complete the sentence below by circling the correct word or phrase.

When **powdered** calcium carbonate was used, the rate of reaction

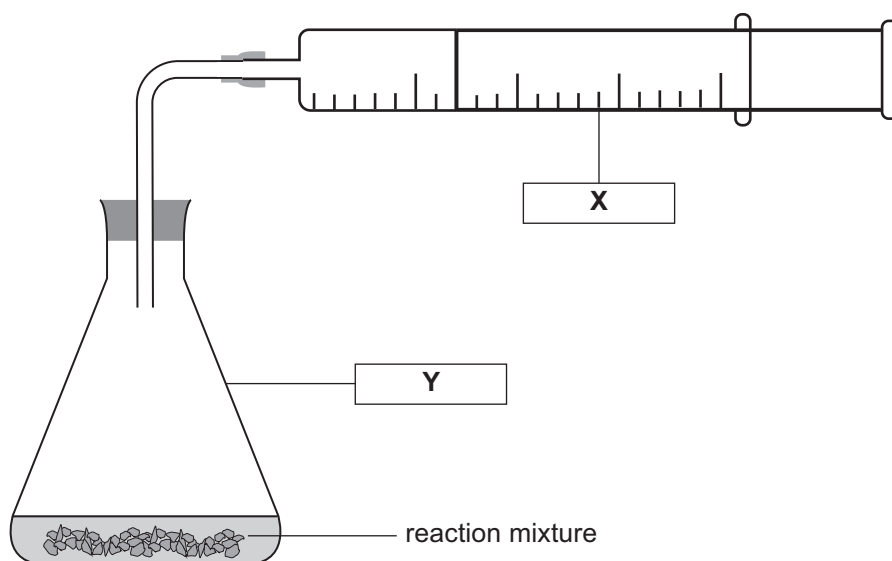
increased  
stayed the same  
decreased

[1]

[Turn over]



(d) The diagram below shows the apparatus used to carry out the experiment.



(i) What labels should be placed at **X** and **Y** on the diagram?

**X** \_\_\_\_\_

**Y** \_\_\_\_\_ [2]

(ii) Give one observation which occurs in this apparatus during the experiment.

\_\_\_\_\_ [1]

(e) Carbon dioxide gas is produced when calcium carbonate reacts with hydrochloric acid. Name the solution used to test for carbon dioxide.

\_\_\_\_\_ [1]





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**(Questions continue overleaf)**

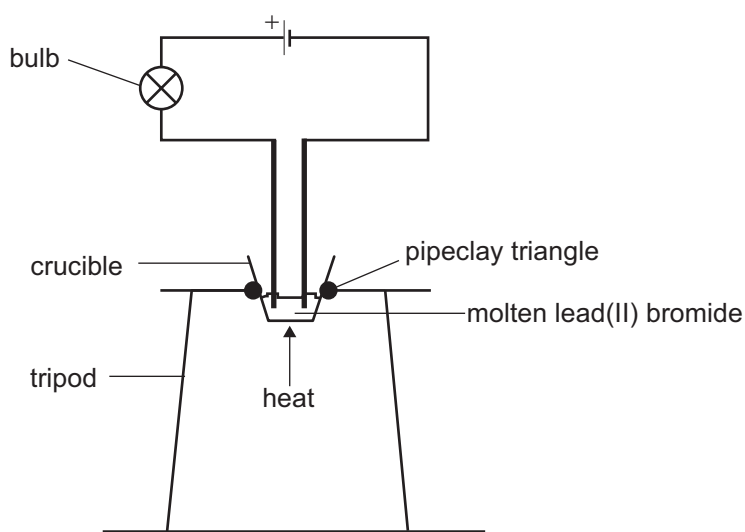
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**[Turn over**



**\*12GDW7307\***

3 The diagram shows the apparatus used for the electrolysis of molten lead(II) bromide.



(a) Complete the sentence below by **circling** the words which give the correct definition of electrolysis.

Electrolysis is the reaction  
decomposition  
formation of a solid  
liquid  
gas electrolyte using  
a direct current of electricity  
heat  
water.

[3]

(b) **Label** the anode in the diagram above.

[1]

(c) Bromine is toxic. Where should this experiment be carried out in the laboratory?

\_\_\_\_\_ [1]



(d) Complete the table below giving the observations and the names of the products formed at the anode and cathode, during the electrolysis of molten lead(II) bromide.

|                 | Cathode     | Anode |
|-----------------|-------------|-------|
| Observations    | grey liquid |       |
| Name of product |             |       |

[4]

[Turn over



- 4 Hydrated copper(II) sulfate,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ , contains water of crystallisation.

When a student heated a sample of 2.0 g of hydrated copper(II) sulfate to a constant mass, 1.28 g of anhydrous copper(II) sulfate was obtained.

- (a) (i) Calculate the mass of water lost when the sample of hydrated copper(II) sulfate was heated to a constant mass. State the correct units.

mass of water lost = \_\_\_\_\_ [2]

- (ii) Using your answer to (a)(i), calculate the number of moles of water lost.  
(Relative formula mass ( $M_r$ ):  $\text{H}_2\text{O} = 18$ )

moles of water lost = \_\_\_\_\_ [1]



- (b) Calculate the relative formula masses ( $M_r$ ) of the following compounds.  
(Relative atomic masses ( $A_r$ ): H = 1; O = 16; S = 32; Cu = 64)

anhydrous copper(II) sulfate,  $\text{CuSO}_4$

relative formula mass = \_\_\_\_\_

hydrated copper(II) sulfate,  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

relative formula mass = \_\_\_\_\_ [2]

- (c) State the colour change the student would have observed when the hydrated copper(II) sulfate was being heated.

from \_\_\_\_\_ to \_\_\_\_\_ [2]

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**THIS IS THE END OF THE QUESTION PAPER**

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| For Examiner's use only |       |
|-------------------------|-------|
| Question Number         | Marks |
| 1                       |       |
| 2                       |       |
| 3                       |       |
| 4                       |       |

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| Total Marks |  |
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Examiner Number

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