



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 A

Foundation Tier

[GDW71]



GDW71

TIME

1 hour.

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** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is **15**.

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

Follow all health and safety instructions.

Safety glasses must be worn at all times.

You may use a scientific calculator.

You may not have access to notes, textbooks and other material to assist you.

The apparatus and materials required to complete the task(s) are provided.

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

For Examiner's
use only

Question Number	Marks
1	
2	

Total
Marks

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- 1 You are provided with some hydrated magnesium sulfate in a labelled beaker.

(a) Describe the appearance of the hydrated magnesium sulfate.

[2]

(b) Carry out the following method to determine the mass of water of crystallisation lost when a sample of hydrated magnesium sulfate is heated in a crucible.

Record the results of the experiment in the table below.

Method

1. Ensure the mass on the balance is 0.00 g then weigh an empty crucible and record this mass to **2 decimal places** in the results table below.
2. Leave the crucible on the balance and add between 2.00 g and 2.50 g of hydrated magnesium sulfate. Record the new mass of the crucible and the hydrated magnesium sulfate, to **2 decimal places**, in the results table below.
3. Place the crucible containing the hydrated magnesium sulfate on a pipe clay triangle on a tripod. Heat **gently** with a Bunsen burner for **four** minutes, then move the Bunsen burner from underneath the crucible.
4. Allow the crucible to cool for **three** minutes. Lift the crucible using tongs and weigh the crucible and its contents. Record this mass to **2 decimal places** in the results table below.
5. Repeat steps 3 and 4 twice but instead of heating for four minutes heat for **two** minutes each time.

Results table

	Mass /g
Mass of empty crucible	
Mass of crucible + hydrated magnesium sulfate	
Mass after 1st heating	
Mass after 2nd heating	
Mass after 3rd heating	

[4]

Examiner Only

Marks

Remark

(c) From your results, calculate each of the following:

mass of the hydrated magnesium sulfate to **2 decimal places**

mass = _____ g

mass of the anhydrous magnesium sulfate to **2 decimal places**

mass = _____ g

mass of water of crystallisation to **2 decimal places**

use the formula given below:

$$\text{mass of water lost} = \text{mass of hydrated magnesium sulfate} - \text{mass of anhydrous magnesium sulfate}$$

mass = _____ g
[3]

(d) Circle the appearance of anhydrous magnesium sulfate.

yellow crystals

yellow powder

white crystals

white powder

[1]

Examiner Only	
Marks	Remark

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Rewarding Learning

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APPARATUS AND MATERIALS LIST AND CONFIDENTIAL INSTRUCTIONS

To be accessed by Head of Department only

It is the responsibility of the centre to ensure that appropriate risk assessments are carried out for all practical skills assessments.

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Advice for centres

- All chemicals used should be at least laboratory reagent specification and labelled with appropriate hazard symbols, e.g. flammable
- For centres running multiple sessions – candidates for the later session should be supplied with clean, dry glassware or other apparatus. If it is not possible then glassware from the first session should be thoroughly washed, rinsed with deionised water and allowed to drain
- **Ensure all chemicals are in date**
- **For this particular examination it is recommended that candidates carry out the practical tasks in pairs where possible and where resources are available**
- **All candidates must be provided with safety glasses**

Question 1

Each group of candidates will require:

- Approximately 3g of hydrated magnesium sulfate, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$, in a beaker labelled **hydrated magnesium sulfate** and with the hazard symbol for **caution (exclamation mark)**
- 1 × spatula
- 1 × crucible
- 1 × Bunsen burner
- 1 × tripod
- 1 × pipe clay triangle
- 1 × heat proof mat
- 1 × pair of metal tongs
- 1 × stop clock
- Access to Bunsen lighter
- Access to an electronic balance or mini electronic scales accurate to 2 decimal places

Question 2

Each group of candidates will require:

- Copper(II) sulfate solution (20cm^3) (0.5mol/dm^3) in a suitable container labelled **copper(II) sulfate** and with the hazard symbols for **caution (exclamation mark)** and **harmful to environment**
- 1 × 10cm^3 measuring cylinder
- 1 × thermometer (-10 to 110°C spirit thermometer)
- 1 × stop clock
- 1 × boiling tube
- 1 × boiling tube rack
- 3cm strip of magnesium ribbon in a suitable container labelled **magnesium ribbon** and with the hazard symbol for **flammable**

