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Cambridge Assessment International Education

# Cambridge O Level

**CHEMISTRY** **5070/31**

Paper 3 Practical Test **May/June 2024**

CONFIDENTIAL INSTRUCTIONS

*5828263923*

**This document gives details of how to prepare for and administer the practical exam.**

**The information in this document and the identity of any materials supplied by Cambridge International are confidential and must NOT reach candidates either directly or indirectly.**

**The supervisor must complete the report at the end of this document and return it with the scripts.**

## INSTRUCTIONS

- If you have any queries regarding these confidential instructions, contact Cambridge International stating the centre number, the syllabus and component number and the nature of the query.
  email info@cambridgeinternational.org
  phone +44 1223 553554



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# General information about practical exams

Centres must follow the guidance on science practical exams given in the *Cambridge Handbook*.

## Safety

Supervisors must follow national and local regulations relating to safety and first aid.

Only those procedures described in the question paper should be attempted.

Supervisors must inform candidates that materials and apparatus used in the exam should be treated with caution. Suitable eye protection should be used where necessary.

The following hazard codes are used in these confidential instructions, where relevant:

| | | | |
|---|---|---|---|
| **C** | corrosive | **MH** | moderate hazard |
| **HH** | health hazard | **T** | acutely toxic |
| **F** | flammable | **O** | oxidising |
| **N** | hazardous to the aquatic environment | | |

Hazard data sheets relating to substances used in this exam should be available from your chemical supplier.

## Before the exam

- The packets containing the question papers must **not** be opened before the exam.
- It is assumed that standard school laboratory facilities, as indicated in the *Guide to Planning Practical Science*, will be available.
- Spare materials and apparatus for the tasks set must be available for candidates, if required.

## During the exam

- It must be made clear to candidates at the start of the exam that they may request spare materials and apparatus for the tasks set.
- Where specified, the supervisor **must** perform the experiments and record the results as instructed. This must be done **out of sight** of the candidates, using the same materials and apparatus as the candidates.
- Any assistance provided to candidates must be recorded in the supervisor's report.
- If any materials or apparatus need to be replaced, for example, in the event of breakage or loss, this must be recorded in the supervisor's report.

## After the exam

- The supervisor must complete a report for each practical session held and each laboratory used.
- Each packet of scripts returned to Cambridge International must contain the following items:
  - the scripts of the candidates specified on the bar code label provided
  - the supervisor's results relevant to these candidates
  - the supervisor's reports relevant to these candidates
  - seating plans for each practical session, referring to each candidate by candidate number
  - the attendance register.

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## Specific information for this practical exam

During the exam, the supervisor (**not** the invigilator) must do the experiments in Questions 1 and 2 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

### Apparatus

The apparatus listed must be provided to each candidate.

**Question 1**

3 × 100 $cm^3$ beaker
1 × 25 $cm^3$ measuring cylinder
1 × stirring rod
1 × spatula
1 × thermometer, –10 °C to +110 °C with 1 °C graduations
1 × teat pipette
access to distilled water

**Question 2**

4 × test-tubes
1 × test-tube rack
1 × boiling tube
1 × test-tube holder (to hold a boiling tube)
1 × wash bottle containing distilled water
1 × Bunsen burner and means to light it
wooden splints
a supply of teat/dropping pipettes
1 × beaker (for washing teat/dropping pipettes)
paper towels
red and blue litmus papers
apparatus normally used in the centre to test for carbon dioxide with limewater*

*If the apparatus normally used in the centre is a delivery tube and stopper, this equipment should be provided to fit both test-tubes and boiling tubes.

Candidates are expected to rinse and reuse test-tubes and boiling tubes where necessary. Additional tubes should be available.

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## Materials

The materials listed in the table must be provided to each candidate. An excess of at least 10% of each material must be prepared to cover accidental loss.

**Warning:** small amounts of $NH_3$ **[C][T][N]**, which can cause respiratory distress in some people, may be produced. **The laboratory must be well ventilated.**

| label | | per candidate | identity | notes |
|---|---|---|---|---|
| **Question 1** | | | | |
| **[C][N]** | **aqueous copper(II) sulfate** | 100 $cm^3$ | 0.50 $mol/dm^3$ copper(II) sulfate | |
| **[F][N]** | **X** | 2.0 g | powdered zinc | |
| **[F]** | **Y** | 1.0 g | powdered magnesium | or magnesium turnings |
| **[F]** | **Z** | 2.0 g | powdered iron | or fine iron filings |
| **[MH]** | **dilute sulfuric acid** | 30 $cm^3$ | 0.5 $mol/dm^3$ $H_2SO_4$ | See preparation instructions in the 2023–25 syllabus. |
| **Question 2** | | | | |
| **[MH]** | **R** | 20 $cm^3$ | aqueous mixture of calcium chloride and ammonium chloride | A mixture of 10 g of calcium chloride and 10 g of ammonium chloride dissolved in 1 $dm^3$ of distilled water. |
| | **aqueous sodium carbonate** | 5 $cm^3$ | 0.1 $mol/dm^3$ sodium carbonate | Dissolve 28.6 g of $Na_2CO_3 \cdot 10H_2O$ in 500 $cm^3$ of distilled water, then make the volume up to 1 $dm^3$ with distilled water. |

**Note:** at the end of the experiment one beaker from Question 1 will contain excess magnesium. This should be disposed of in a safe manner according to local regulations.



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| label | | per candidate | identity | notes |
|---|---|---|---|---|
| **[C]** | dilute nitric acid | 20 $cm^3$ | 1.0 $mol/dm^3$ $HNO_3$ | See preparation instructions in the 2023–25 syllabus.<br><br>If necessary, each of these reagents can be provided as a communal supply for groups of up to 6 candidates.<br><br>Invigilators must be alert to the risk of contamination and the opportunity for malpractice when using a communal supply. |
| **[C]** | aqueous sodium hydroxide | 20 $cm^3$ | 1.0 $mol/dm^3$ NaOH | |
| | aqueous silver nitrate | 10 $cm^3$ | 0.05 $mol/dm^3$ $AgNO_3$ | |
| | aqueous barium nitrate | 5 $cm^3$ | 0.1 $mol/dm^3$ $Ba(NO_3)_2$ | |
| **[MH]** | limewater | 10 $cm^3$ | saturated aqueous calcium hydroxide, $Ca(OH)_2$ | |

- All solutions must be thoroughly mixed.
- If you are unable to source any of these chemicals, you must contact Cambridge International as far as possible in advance of the exam for advice.
- Materials must be labelled only as specified in the 'label' column. The identities of chemicals labelled with letter codes, e.g. **P**, may be different from their descriptions in the question paper. Candidates must use the descriptions given in the question paper.
- If chemicals are prepared in more than one batch, clearly labelled supervisor's results **must** be provided for each batch. The candidates using each batch must be listed on the supervisor's report.





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## Supervisor's report

Syllabus and component number | | | | | / | | |

Centre number | | | | | |

Centre name .....

Time of the practical session .....

Laboratory name/number .....

**Give details of any difficulties experienced by the centre or by candidates (include the relevant candidate names and candidate numbers).**

You must include:

- any difficulties experienced by the centre in the preparation of materials
- any difficulties experienced by candidates, e.g. due to faulty materials or apparatus
- any specific assistance given to candidates.

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**If chemicals have been prepared in more than one batch, list the candidates using each batch. Supervisor's results must be prepared and submitted using each batch of chemicals.**

**Declaration**

1 Each packet that I am returning to Cambridge International contains all of the following items:
- the scripts of the candidates specified on the bar code label provided
- the supervisor's results relevant to these candidates
- the supervisor's reports relevant to these candidates
- seating plans for each practical session, referring to each candidate by candidate number
- the attendance register.

2 Where the practical exam has taken place in more than one practical session, I have clearly labelled the supervisor's results, supervisor's reports and seating plans with the time and laboratory name/number for each practical session.

3 I have included details of difficulties relating to each practical session experienced by the centre or by candidates.

4 I have reported any other adverse circumstances affecting candidates, e.g. illness, bereavement or temporary injury, directly to Cambridge International on a *special consideration form*.

Signed ..... (supervisor)

Name (in block capitals) .....

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