



Cambridge IGCSE™

COMBINED SCIENCE

0653/52

Paper 5 Practical Test

May/June 2024

CONFIDENTIAL INSTRUCTIONS

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

This document has **8** pages.

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.

Specific information for this practical exam

During the exam, the supervisor (**not** the invigilator) must do the experiments in Questions 1, 2 and 4 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

Apparatus and chemicals for Question 1

Each candidate will require the following materials and apparatus. Labels do **not** need to include concentrations.

- | | | |
|-----|---|------------|
| | • 20 chickpeas in a beaker labelled peas | See Note 1 |
| [C] | • 100 cm ³ of 6% hydrogen peroxide in a beaker labelled hydrogen peroxide | |
| | • 10 cm ³ of detergent in a beaker labelled detergent | See Note 2 |
| | • 5 × boiling tubes (approximately 150 mm × 25 mm) and a means to support them | |
| | • 10 cm ³ syringe | |
| | • 1 cm ³ syringe | |
| | • 5 × paper towels | |
| | • means of labelling glassware, e.g. marker pen | |
| | • 30 cm ruler, with mm scale | |
| | • stop-clock | |
| | • stirring rod | |

Notes

1. *Peas*
Dried chickpeas should be soaked in distilled water overnight. (Tinned chickpeas should **not** be used.)
2. *Detergent*
Add 5 cm³ of detergent to 5 cm³ of distilled water and mix well. Any detergent used for handwashing dishes is suitable.

During the exam, the supervisor (**not** the invigilator) must do the experiments in Questions 1, 2 and 4 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

Apparatus and chemicals for Question 2

Each candidate will require the following materials and apparatus. Labels do **not** need to include concentrations.

- | | | |
|------------|---|-------------------|
| | <ul style="list-style-type: none"> 20 cm³ of 0.5 mol/dm³ aqueous copper(II) chloride labelled solution X | |
| low hazard | <ul style="list-style-type: none"> access to 0.1 mol/dm³ barium nitrate labelled aqueous barium nitrate supplied in a bottle with a dropper access to 0.05 mol/dm³ silver nitrate labelled aqueous silver nitrate supplied in a bottle with a dropper | See Notes 1 and 2 |
| [MH] | <ul style="list-style-type: none"> 10 cm³ of 1.0 mol/dm³ sodium carbonate labelled aqueous sodium carbonate | See Notes 1 and 2 |
| [C] | <ul style="list-style-type: none"> 10 cm³ of 1.0 mol/dm³ dilute nitric acid labelled dilute nitric acid four test-tubes (approximately 125 mm × 16 mm) labelled 1, 2, 3 and 4 and a means to support them Bunsen burner and a means to light it laboratory (heat-proof) mat 2 × wooden splints 5 × dropping pipettes access to paper towels | |

Notes

- If bottles with droppers are not used then each candidate will require 10 cm³ of each solution with a separate dropping pipette for each one.
- Aqueous barium nitrate and aqueous silver nitrate should be shared by no more than four candidates.

Apparatus and chemicals for Question 3

No apparatus or chemicals are required for this question.

During the exam, the supervisor (**not** the invigilator) must do the experiments in Questions 1, 2 and 4 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

Apparatus and chemicals for Question 4

Each candidate will require the following materials and apparatus.

- thermometer: -10°C to 110°C , graduated in 1°C intervals See Notes 1 and 6
- clamp, boss and stand See Note 1
- $2 \times 250\text{cm}^3$ beakers See Note 2
- supply of hot water See Notes 3 and 4
- a thin cardboard lid for the beaker See Notes 5 and 6
- stop-clock to take readings at 30-second intervals
- paper towels to soak up any water spills

Notes

1. The thermometer, clamp, boss and stand are to be set up for candidates as shown in Fig. 4.1.

The thermometer bulb must be below the 100cm^3 level of the beaker.

Candidates must be able to read temperatures up to 90°C and to lift the stand to move the thermometer easily and safely into and out of the beaker.

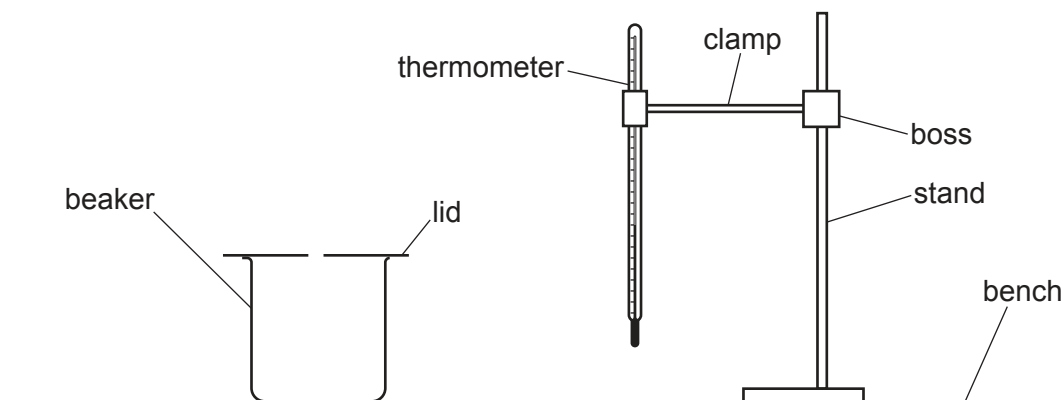


Fig. 4.1

2. If the beakers are not graduated, the 100cm^3 level must be marked on the side of the beakers.
3. Hot water is to be available for each candidate throughout the experiment. The hot water should be maintained at an approximately constant temperature of 80°C . Each candidate will require about 200cm^3 of hot water.

Candidates must be able to pour hot water into the beakers safely.

4. Candidates must be warned of the dangers of burns or scalds when using very hot water.

5. The cardboard lid should be circular, with a diameter 1 cm greater than the diameter of the 250 cm³ beaker. A small hole should be cut in the centre of the lid, large enough to allow the thermometer to pass through the lid.
6. Spare thermometers and lids must be available.

Action at changeover

Remove the lid and thermometer from the beaker.

Empty the hot water from the beakers.

Replace the lid if it has become wet.

Check that the apparatus is intact and is arranged as in Fig. 4.1.

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Supervisor's report

Syllabus and component number

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Centre number

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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.

Space for supervisor to record results, if relevant, e.g. temperature of the laboratory; results for Question 1.

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)