



Cambridge IGCSE™

COMBINED SCIENCE

0653/52

Paper 5 Practical Test

February/March 2022

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. Any blank pages are indicated.

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.

- 3 × potato cylinders, 4 cm long with a diameter of approximately 5 mm to 10 mm, in a small beaker and covered with a damp paper towel (see note 1)

[MH]

- 50 cm³ of 6% hydrogen peroxide, labelled **hydrogen peroxide solution**
- 4 × test-tubes (Pyrex or hard glass), approximately 125 mm × 16 mm, and a means to support them
- access to tap water for filling one test-tube
- delivery tube with bung attached, to fit 16 mm test-tubes
- 1 × 10 cm³ syringe
- white tile
- stop-clock (or wall-clock or wrist-watch), to measure to an accuracy of 1 s
- 1 pair of gloves
- eye protection
- 5 × paper towels
- means of cutting potato cylinders, such as scalpels, solid edged razor blades or knives
- means of writing on glassware

Note

1. Preparation of materials – The potato cylinders should be freshly prepared using a 5 mm to 10 mm cork borer just before the exam. They should be kept damp until given to candidates.

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.

- 2 × test-tubes (Pyrex or hard glass), approximately 125 mm × 16 mm, and a means to support them
- 1 × boiling tube, approximately 150 mm × 25 mm, and a means to support it
- 1 × test-tube holder to fit boiling tube
- 1 × spatula

[MH] ● 3 g of ammonium carbonate labelled **H**

[F] ● 1 cm³ of universal indicator and a colour chart (see note 1)

● 2 × teat pipette or dropper

● 10 cm³ of 1.0 mol dm⁻³ hydrochloric acid labelled **dilute hydrochloric acid**

[C] ● 10 cm³ of 1.0 mol dm⁻³ sodium hydroxide labelled **aqueous sodium hydroxide**

● 2 × pieces of red litmus paper

● access to distilled water or deionised water

● paper towels

● 1 × glass stirring rod

● 1 × Bunsen burner and a means to light it

Note

1. The universal indicator can be supplied as a communal reagent but there must be no more than four candidates using the same bottle. The bottle will need a pipette or dropper.

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.

- wooden ramp, approximately 1.5 m in length (see note 1)
- supports (e.g. bricks or similar) to raise one end of the ramp above the bench (see note 1)
- metre rule
- an object, with mass approximately 50 g to 100 g, labelled **O** (see notes 1 and 2)
- access to a balance with minimum resolution of 0.1 g
- timer/stop-watch that records to the nearest 0.01 s

Notes

1. The slope must be set up for candidates as shown in Fig. 4.1. It should be steep enough for the object **O** to slide down the ramp when it is released from the top of the ramp. The ramp should be long enough for the object to take approximately 2 s to 4 s to slide from the top to the bottom of the slope.

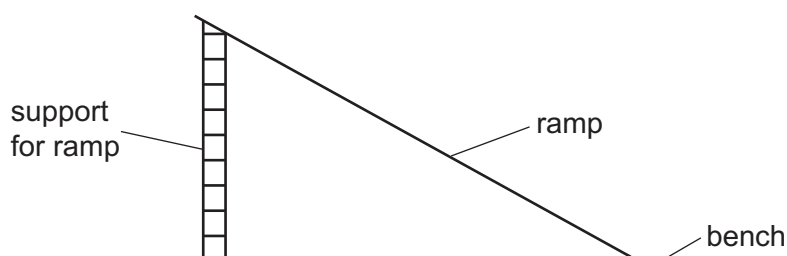


Fig. 4.1

2. The object can be a wooden or metal block. A 100 g mass usually used with slotted mass hangers may be used. It must **not** be a spherical object (or any object that will roll rather than slide).

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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)