



Cambridge IGCSE™

COMBINED SCIENCE

0653/51

Paper 5 Practical Test

May/June 2021

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.

- potato cylinder, 5 to 10 mm diameter and approximately 3 cm long (see note 1)
- white tile
- scalpel
- [MH] ● 20 cm³ of 6% hydrogen peroxide in a beaker labelled **hydrogen peroxide**
- approximately 20 cm³ of distilled water labelled **water**
- three test-tubes, approximately 125 mm × 16 mm and a means to support them
- 1 dropping pipette
- [C] ● 10 cm³ of biuret solution in a small beaker labelled **biuret solution**
- paper towels
- stop-clock
- two × 10 cm³ syringes
- means of labelling glassware, e.g. marker pen
- glass rod

Notes

1. The potato cylinder should be prepared shortly before the exam and supplied to candidates on the white tile and covered with a damp paper towel.

Apparatus and chemicals for Question 2

Each candidate will require the following materials and apparatus.

- six test-tubes (approximately 125 mm × 16 mm) and a means to support them
- 5 cm³ of 1.0 mol dm⁻³ dilute hydrochloric acid labelled **F** (see note 1)
- 5 cm³ of distilled or deionised water labelled **G**

[MH]

- 5 cm³ of limewater labelled **H**
- 5 cm³ of 0.1 mol dm⁻³ sodium hydroxide labelled **J**
- 5 cm³ of 1.0 mol dm⁻³ dilute hydrochloric acid labelled **K** (see note 1)

[F]

- 2 cm³ of full-range Universal Indicator solution labelled **Universal Indicator** (see note 2)
- pH colour chart suitable for use with the Universal Indicator solution supplied

[F]

- 2 cm length of magnesium ribbon

Notes

1. Solutions **F** and **K** are identical.
2. There should be a dropping pipette available for the Universal Indicator. If a communal bottle of Universal Indicator is provided for several candidates to use then it must be fitted with an integral dropper to prevent contamination.

Apparatus and chemicals for Question 3

No apparatus or chemicals are required for this question.

Apparatus and chemicals for Question 4

Each candidate will require the following materials and apparatus.

- stand and boss
- nail (see note 1)
- one new and unstretched elastic band (see note 2)
- 100 g slotted mass hanger and an additional 4×100 g slotted masses
- 30 cm ruler graduated in mm
- safety goggles

Notes

1. The nail should be secured in the boss (sufficiently high above the bench so that when a 500 g mass is suspended from the elastic band the mass is above the level of the bench) as shown in Fig. 4.1.

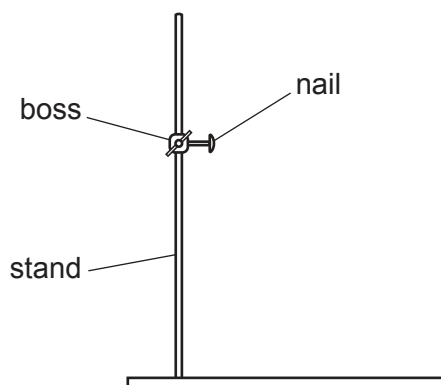


Fig. 4.1

2. An elastic band approximately $60 \text{ mm} \times 2 \text{ mm}$ is suitable. Supervisors should check that the elastic band can support a mass of 600 g without breaking. Candidates should be made aware of the risk of an elastic band breaking when stretched and advised to wear eye protection during the experiment.
3. At changeover, replace the elastic band with a new, unstretched elastic band and check that the position of the boss has not been altered.

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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)