



# 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](mailto: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:

<b>C</b>	corrosive	<b>MH</b>	moderate hazard
<b>HH</b>	health hazard	<b>T</b>	acutely toxic
<b>F</b>	flammable	<b>O</b>	oxidising
<b>N</b>	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 cm<sup>3</sup> of 6% hydrogen peroxide in a beaker labelled **hydrogen peroxide**
- approximately 20 cm<sup>3</sup> of distilled water labelled **water**
- three test-tubes, approximately 125 mm × 16 mm and a means to support them
- 1 dropping pipette
- [C] ● 10 cm<sup>3</sup> of biuret solution in a small beaker labelled **biuret solution**
- paper towels
- stop-clock
- two × 10 cm<sup>3</sup> 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 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> dilute hydrochloric acid labelled **F** (see note 1)
- 5 cm<sup>3</sup> of distilled or deionised water labelled **G**

**[MH]**

- 5 cm<sup>3</sup> of limewater labelled **H**
- 5 cm<sup>3</sup> of 0.1 mol dm<sup>-3</sup> sodium hydroxide labelled **J**
- 5 cm<sup>3</sup> of 1.0 mol dm<sup>-3</sup> dilute hydrochloric acid labelled **K** (see note 1)

**[F]**

- 2 cm<sup>3</sup> 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.

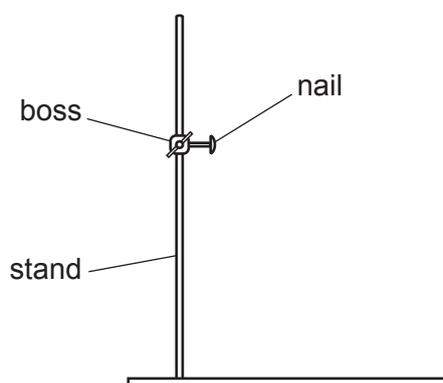
### Apparatus and chemicals for Question 4

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  $4 \times 100$  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.

**BLANK PAGE**

---

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at [www.cambridgeinternational.org](http://www.cambridgeinternational.org) after the live examination series.

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.

**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.

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) .....