Cambridge Assessment International Education

Cambridge IGCSE™

COMBINED SCIENCE **0653/51**

Paper 5 Practical Test **October/November 2025**

CONFIDENTIAL INSTRUCTIONS

8912277453

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'.

Materials and apparatus for Question 1

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

hazard	materials and apparatus	quantity per candidate
	potato cylinders (see note 1.1)	5
[MH]	6% hydrogen peroxide solution, labelled **aqueous hydrogen peroxide** (see note 1.2)	at least 70 cm^3
	10 cm^3 syringe	1
	white tile	1
	knife or scalpel	1
	boiling tubes (approximately 150 mm × 25 mm)	5
	means to label the boiling tubes, e.g. wax pencils or water-resistant markers	
	test-tube rack or means of support for 5 boiling tubes	1
	stop-clock	1
	ruler, with mm scale	1

Notes

1.1 The potato cylinders should be produced using a 10 mm to 15 mm diameter cork borer. Five pieces, each with a length of between 5 cm and 6 cm should be presented to candidates on the white tile.

1.2 It is important that the aqueous hydrogen peroxide is recently purchased.

Action at changeover

Replace potato cylinders, hydrogen peroxide and used apparatus.

Question 2

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

hazard	materials and apparatus	quantity per candidate
low hazard	0.25 mol dm^{-3} sodium sulfate labelled **aqueous H** (see note 2.1)	35 cm^3
low hazard	0.25 mol dm^{-3} barium nitrate labelled **aqueous barium nitrate**	15 cm^3
	conical flask with stopper (see note 2.2)	1
	test-tube attached to a thread (see note 2.2)	1
	test-tube rack	1
	access to a balance to measure up to 500 g with a precision of at least 0.1 g (see note 2.3)	1
	25 cm^3 measuring cylinder	1
	paper towels	5
	teat pipettes	2

Notes

2.1 If sodium sulfate is not available, any colourless aqueous sulfate can be used including dilute sulfuric acid. This should be supplied in a small beaker.

2.2 The test-tube and conical flask must be of the appropriate size so that the apparatus shown in Fig. 2.1 can be assembled by the candidate, with the thread held between the stopper and the conical flask. **The stopper must fit in the flask such that no liquid can leak when the assembled apparatus is inverted.**

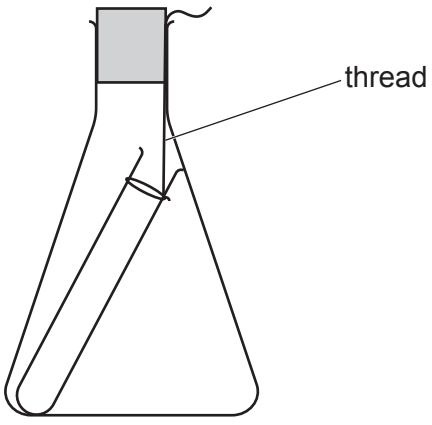

Fig. 2.1

2.3 Each candidate will need to make two mass readings on the balance.

Action at changeover

Replace the flask and test-tube with a thread with clean and dry apparatus. Replace all chemicals to avoid contamination.

Question 3

No materials or apparatus are required for this question.

Question 4

Each candidate will require the following materials and apparatus.

hazard	materials and apparatus	quantity per candidate
	1.5 V dry cell with terminals (see note 4.1)	1
	switch (see note 4.1)	1
	voltmeter capable of measuring voltage up to 2.0 V with a precision of at least 0.1 V (see note 4.2)	1
	ammeter capable of measuring current up to 1.00 A with a precision of at least 0.01 A (see note 4.2)	1
	metre rule (see note 4.3)	1
	1.05 m of bare constantan wire of diameter 0.32 mm (30 swg) (see note 4.3)	1
	resistor with resistance 15 Ω in holder labelled **W**	1
	resistor with resistance 22 Ω in holder labelled **22 Ω**	1
	sufficient ● leads ● crocodile clips to set up the circuit shown in Fig. 4.1. (see note 4.4)	 8 3

Notes

4.1 If dry cells are used as the power source, a separate switch will be needed. Check that the cells remain adequately charged during the examination. Spare cells should be available.

A d.c. power supply set to 1.5 V can be used instead of a dry cell. If candidates are supplied a power source of variable voltage output, the voltage should be set by the supervisor and fixed, e.g. taped. If a power supply is used, then the switch may be an integral part.

4.2 Either analogue or digital meters are suitable. Any variable settings should be set by the supervisor and fixed, e.g. taped.

4.3 The constantan wire should be taped to the metre rule in two places (between the 0.0–5.0 cm marks and between the 95.0–100.0 cm marks). It should be possible to connect crocodile clips to each end of the constantan wire.

4.4 The circuit should be assembled for the candidate as shown in Fig. 4.1.

Check that the voltmeter gives a positive reading when the switch is closed and crocodile clip **C** is connected to the resistance wire at the 70 cm mark on the metre rule.

The switch should be open and crocodile clip **C** disconnected from the resistance wire when the candidate starts Question 4.

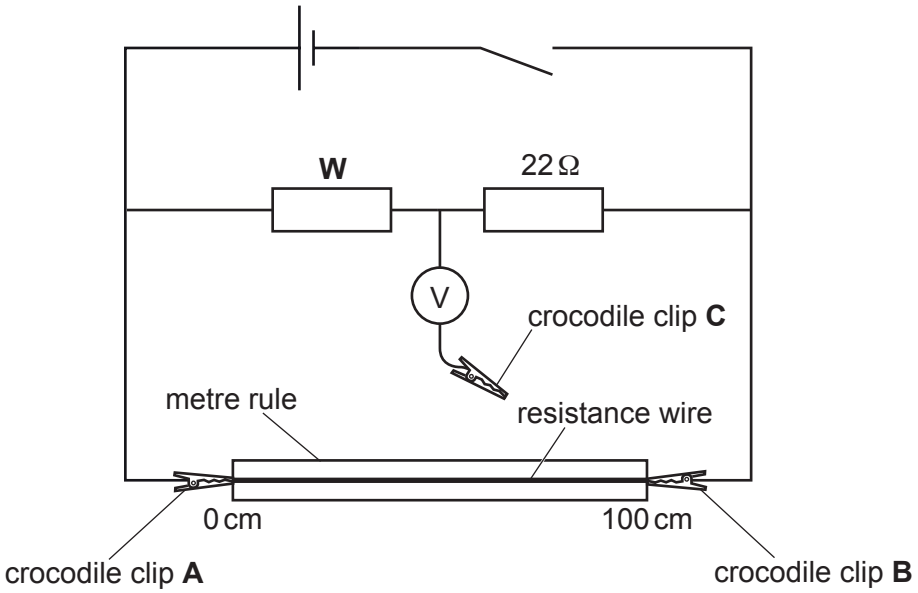

Fig. 4.1

Action at Changeover

Ensure circuit is assembled as shown in Fig. 4.1. Check that the switch is open. Disconnect crocodile clip **C** from the resistance wire if necessary. Check that the cell is still 1.5 V.

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) .....