



Cambridge IGCSE™

CO-ORDINATED SCIENCES

0654/05

Paper 5 Practical Test

For examination from 2025

SPECIMEN 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 **10** 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, 3, 4 and 5 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

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
	3% (10 vol) hydrogen peroxide, labelled hydrogen peroxide (see note 1.1)	20 cm ³
	5 cm ³ syringe	1
	fresh celery stem (see note 1.2)	1
	white tile	1
	knife / scalpel	1
	stirring rod	1
	boiling tube and means to support it (see note 1.3)	1
	detergent with a dropping pipette, labelled detergent (see note 1.4)	10 cm ³
	30 cm ruler, graduated in mm	1
	stop-watch or stop-clock	1
	paper towels	5

Notes

- 1.1** 3% (10 vol) hydrogen peroxide should be made up fresh for the exam and provided in a container that can be accessed by a syringe.
- 1.2** Freshly prepare a celery stem of approximately 3 cm in length and no wider than 1.5 cm, discarding any dry ends.
- 1.3** The boiling tube should be approximately 150 mm × 25 mm and be supported in a test-tube rack or appropriately sized beaker.
- 1.4** A liquid detergent used for washing dishes is suitable. This should be diluted 50 : 50 with distilled water.

Pre-test

Before the exam, the supervisor should add 4 cm³ of 3% hydrogen peroxide and a drop of detergent to a finely chopped 2 cm piece of celery stalk in a boiling tube. The foam and liquid should reach at least half the height of the boiling tube in 10 minutes without overflowing. The strength of the hydrogen peroxide solution can be adjusted to achieve this.

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
	fresh celery stem (see note 2.1)	1
	white tile	1
	knife / scalpel	1
	30 cm ruler, graduated in mm	1
	boiling tubes and a means to support them (see note 2.2)	3
[MH]	Benedict's solution, labelled Benedict's solution	approx. 10 cm ³
[C]	biuret solution, labelled biuret solution	approx. 10 cm ³
	iodine solution with dropper, labelled iodine solution	approx. 5 cm ³
	means of labelling glassware	1
	access to a water-bath at approximately 80 °C	
	stop-watch or stop-clock	1

Notes

- 2.1** Freshly prepare a celery stem of approximately 5 cm in length and no wider than 1.5 cm, discarding any dry ends.
- 2.2** The boiling tubes should be approximately 150 mm × 25 mm and be supported in a test-tube rack or appropriately sized beaker.

Question 3

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

hazard	materials and apparatus	quantity per candidate
[F]	magnesium powder in a sealed tube labelled magnesium	3 spatula loads
[F] [N]	zinc powder in a sealed tube labelled zinc	3 spatula loads
	copper powder in a sealed tube labelled copper	3 spatula loads
	1.0 mol dm ⁻³ hydrochloric acid labelled hydrochloric acid	50 cm ³
	boiling tubes and a means to support them (see note 3.1)	3
	10 cm ³ or 25 cm ³ measuring cylinder	1
	stirring thermometer, -10 °C to +110 °C with 1 °C graduations	1
	spatula	1
	access to paper towels	
	stop-clock or sight of a clock with a second hand	1

Notes

3.1 The boiling tubes should be approximately 150 mm × 25 mm and be supported in a test-tube rack or appropriately sized beaker.

Question 4

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

hazard	materials and apparatus	quantity per candidate
[MH] [N]	0.5 mol dm ⁻³ copper(II) chloride labelled H	25 cm ³
	0.5 mol dm ⁻³ aqueous ammonia labelled aqueous ammonia	20 cm ³
[MH]	0.4 mol dm ⁻³ aqueous sodium hydroxide labelled sodium hydroxide	20 cm ³
[C]	1 mol dm ⁻³ nitric acid labelled nitric acid	10 cm ³
[MH] [N]	access to 0.05 mol dm ⁻³ silver nitrate in a bottle with a dropper or supplied with a dropper labelled silver nitrate	
	access to 0.1 mol dm ⁻³ barium nitrate in a bottle with a dropper or supplied with a dropper labelled barium nitrate	
	test-tubes and a means to support them (see note 4.1)	5
	dropping pipettes	2
	splints	2
	Bunsen burner and a means to light it	1

Notes

4.1 The test-tubes should be approximately 125 mm × 16 mm and be supported in a test-tube rack or appropriately sized beaker.

Question 5

Each candidate will require the following materials and apparatus.

hazard	materials and apparatus	quantity per candidate
	retort stand, boss and clamp (see note 5.1 and note 5.2)	1
	pendulum bob attached to approximately 100 cm of thread	1
	split cork or similar to hold the thread in the clamp	1
	metre ruler with a millimetre scale	1
	a stop-watch capable of reading to 0.1 s or better	1

Notes

5.1 The apparatus should be assembled as shown in Fig. 5.1. The pendulum must be set up for the candidates with a length of 40.0 cm from the bottom of the split cork to the middle of the pendulum bob.

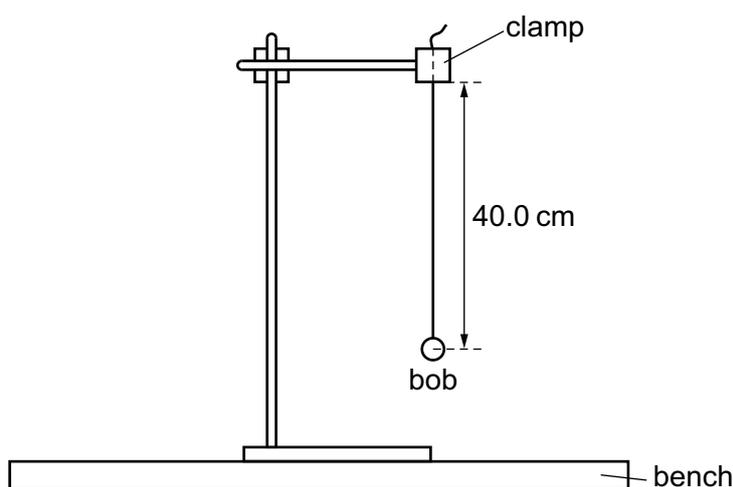


Fig. 5.1

5.2 Candidates must be able to adjust the length of the pendulum easily up to a length of 80.0 cm. Retort stands of 80 cm or less in height may be used if the retort stand is positioned so that the pendulum hangs below the level of the bench. The base of the stand would need to be secured with a G-clamp and/or a heavy weight. Supervisors may need to warn candidates of the difference between the diagram in Fig. 5.1 and the set-up of their experiments.

Action at changeover

The pendulum is to be restored to the state described in note 5.1.

Question 6

No materials or apparatus are required for this question.

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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 that practical session.
- 3 I have included details of difficulties relating to this 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)