



Cambridge IGCSE™

CO-ORDINATED SCIENCES

0654/51

Paper 5 Practical Test

October/November 2023

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

For Question 1

Each candidate will require:

- (i) uncooked white rice in water. See note 1
- (ii) 2 test-tubes (approximately 125 mm × 16 mm) and a means to support them
- (iii) spotting tile
- (iv) approximately 5 cm³ milk in a beaker or test-tube labelled **milk**
- (v) 2 dropping pipettes
- [C] (vi) biuret solution with dropper labelled **biuret solution**
- (vii) iodine solution with dropper labelled **iodine solution**
- (viii) stirring rod
- (ix) paper towels.

Notes

1. Add half a teaspoon of uncooked white rice to a 50 cm³ beaker. Half-fill the beaker with hot water and leave to cool. This should be prepared no more than 30 minutes prior to the exam. Additional cold water may be added to ensure there is an excess of water in the beaker. Label this as **rice water**.

This should be tested prior to the exam to ensure that the rice water tests positive with iodine solution. More rice may be added in order to achieve this.

For Question 2

No apparatus required.

For Question 3

Each candidate will require:

- (i) 10 cm³ of 0.1 mol dm⁻³ potassium chloride solution, dissolve 7.5 g of KCl in each dm³ of solution, labelled **potassium chloride**
- (ii) 10 cm³ of 0.1 mol dm⁻³ potassium bromide solution, dissolve 12 g of KBr in each dm³ of solution, labelled **potassium bromide**
- (iii) 10 cm³ of 0.1 mol dm⁻³ potassium iodide solution, dissolve 16.6 g of KI in each dm³ of solution, labelled **potassium iodide**
- [MH][N] (iv) 5 cm³ of 0.05 mol dm⁻³ silver nitrate solution, dissolve 8.5 g of AgNO₃ in each dm³ of solution, labelled **silver nitrate** supplied in a bottle fitted with a dropper or with a dropping pipette. See note 1
- (v) 3 test-tubes (approximately 125 mm × 16 mm) and a means to support them
- (vi) pen suitable for labelling glassware
- (vii) stop-watch
- (viii) access to distilled water
- (ix) paper towels.

Notes

1. The silver nitrate may be shared between no more than 4 candidates.

For Question 4

Each candidate will require:

- (i) 250 cm³ glass beaker
- (ii) polystyrene (Styrofoam) cup to fit into the 250 cm³ glass beaker
- (iii) 50 cm³ of 1.0 mol dm⁻³ dilute hydrochloric acid labelled **dilute hydrochloric acid**
- [C] (iv) 50 cm³ of 1.0 mol dm⁻³ sodium hydroxide labelled **aqueous sodium hydroxide**
- (v) two 25 or 50 cm³ measuring cylinders
- (vi) stop-watch
- (vii) thermometer, -10 °C to +110 °C with 1 °C graduations, suitable for stirring
- (viii) paper towels.

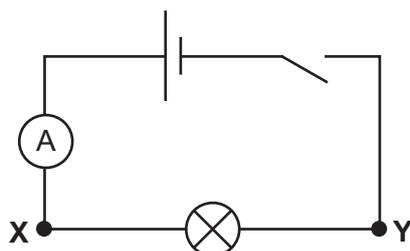
For Question 5

Each candidate will require:

- (i) power supply of approximately 2V. See notes 2 and 3
- (ii) two filament lamps 2.5V, 0.3A, or similar, in suitable holders (e.g. see www.philipharris.co.uk item B8A56728)
- (iii) switch – this may be an integral part of the power supply
- (iv) sufficient connecting leads to set up the circuit shown in Fig. 5.1.
- (v) four extra connecting leads
- (vi) ammeter capable of measuring currents up to 1.00A with a minimum resolution of 0.05A
- (vii) voltmeter capable of measuring up to 3.0V with a minimum resolution of 0.1V.

Notes

1. The circuit is to be set up for candidates as shown in Fig. 5.1. Points **X** and **Y** must be labelled.

**Fig. 5.1**

2. If candidates are supplied with a variable power supply, the voltage should be set by the supervisor and fixed (e.g. taped).
3. If dry cells are used as the power supply, they must remain adequately charged throughout the examination.
4. Spare lamps and leads should be available.
5. Candidates will be instructed to rearrange the above circuit. Four extra connecting leads will be needed.
6. Candidates will be required to rearrange and reconnect the given circuit unaided. If help is required, it may be given, but the candidate number must be noted on the Supervisor's report.

Action at Changeover

Reconnect the circuit as shown in Fig. 5.1 and disconnect the voltmeter.

For Question 6

No materials are required.

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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.

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)