



# Cambridge IGCSE™

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## PHYSICS

0625/53

Paper 5 Practical Test

October/November 2024

### 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.**

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### 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

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This document has **12** 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:

|           |                                      |           |                 |
|-----------|--------------------------------------|-----------|-----------------|
| <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 each experiment out of sight of the candidates and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

### Question 1

#### Items to be supplied by the centre (per set of apparatus unless otherwise specified)

- (i) 100 cm<sup>3</sup> beaker labelled 'A'. See note 1.
- (ii) a larger beaker labelled 'B', capacity approximately 400 cm<sup>3</sup>. See notes 1 and 2.
- (iii) thermometer: –10 °C to 110 °C, graduated in 1 °C intervals.
- (iv) Clamp, boss and stand. See note 2.
- (v) Stop-watch or stop-clock or wall-mounted clock showing seconds.  
The question will refer to a stop-watch.
- (vi) Supply of hot water. See notes 3 and 4.
- (vii) Paper towels to soak up any water spillages.

#### Notes

1. If the beakers are not graduated, the 100 cm<sup>3</sup> level must be marked on the side of each beaker.
2. The thermometer, clamp, boss and stand are to be set up for candidates as shown in Fig. 1.1.  
The thermometer bulb must be below the estimated 75 cm<sup>3</sup> level of the larger beaker.  
Candidates must be able to easily and safely read temperatures up to 100 °C and to move the thermometer into and out of the beakers.

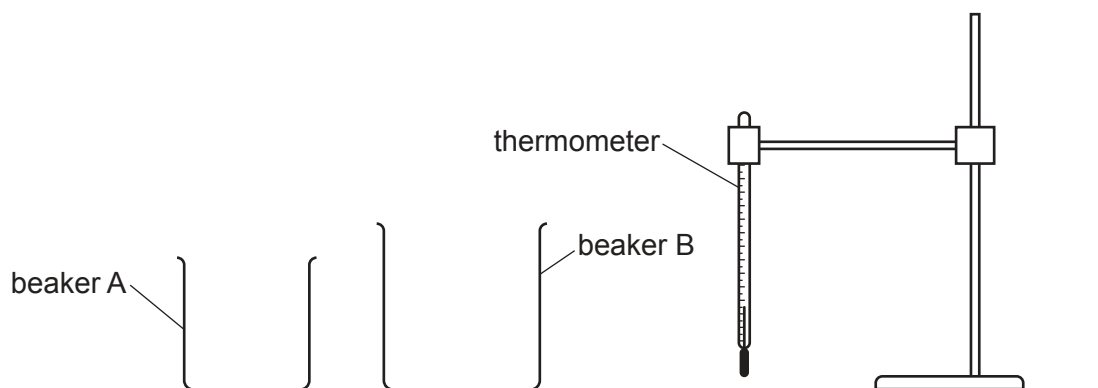


Fig. 1.1

3. Hot water is to be available for each candidate throughout the experiment. The hot water should be maintained at an approximately constant temperature of at least 80 °C. Each candidate will require about 250 cm<sup>3</sup> of hot water.  
Candidates must be able to pour hot water into and out of the beaker safely.
4. Candidates must be warned of the dangers of burns or scalds when using very hot water.
5. Spare thermometers must be available.

**Action at changeover**

Empty the water from the beakers.

Check that the apparatus is intact and is arranged as in Fig. 1.1.

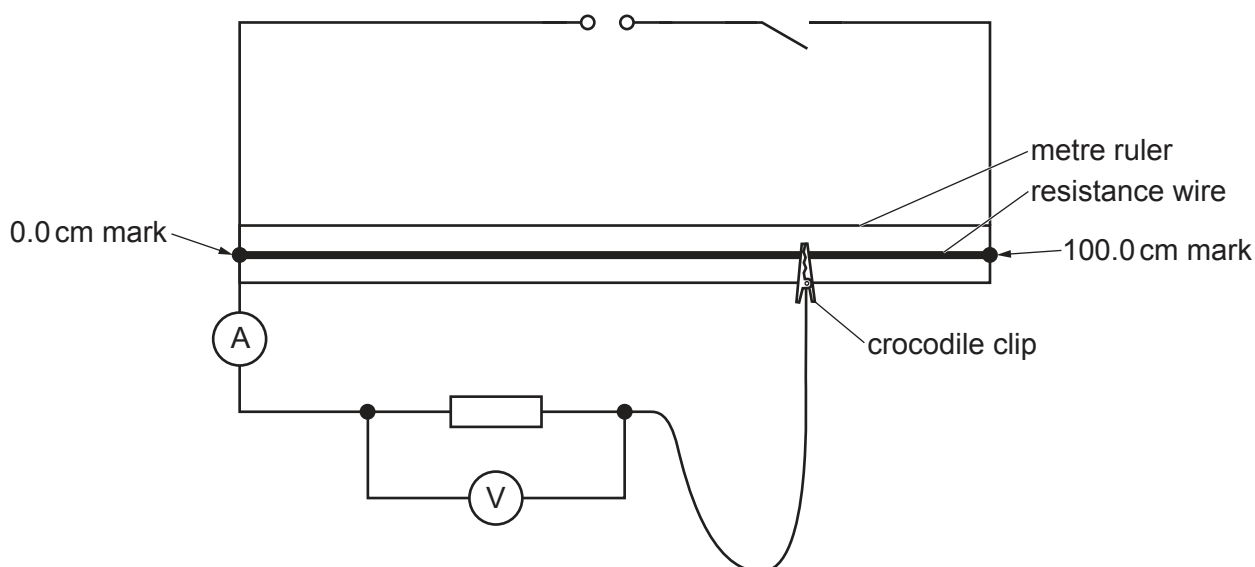
## Question 2

### Items to be supplied by the centre (per set of apparatus unless otherwise specified)

- (i) A bare resistance wire about 105 cm in length. 32 swg (0.274 mm diameter) constantan (Eureka) or any other wire with a resistance of approximately  $8\ \Omega\text{m}^{-1}$  is suitable. See note 1.
- (ii) Resistor, approximately  $5\ \Omega$ , 2W. Candidates must not be able to detect the value of the resistor.
- (iii) Metre ruler. See note 1.
- (iv) Power supply of 2–3V. See note 3.  
Where candidates are provided with a variable power supply, the voltage must be set by the supervisor and fixed, e.g. taped.
- (v) Switch. The switch may be an integral part of the power supply.
- (vi) Sufficient connecting leads to set up the circuit shown in Fig. 2.1.
- (vii) Crocodile clip.
- (viii) Ammeter capable of measuring currents up to 1.00A with a resolution of 0.05A or better. See note 4.
- (ix) Voltmeter capable of measuring up to 3.0V with a resolution of 0.1V or better. See note 4.

### Notes

1. The resistance wire is to be fixed to the metre ruler in such a way as to allow candidates to connect a crocodile clip to points between 10 cm and 90 cm from the left-hand end of the wire and to a point at the 100.0 cm mark.  
The connection at the left-hand end of the wire must be at the 0.0 cm mark.
2. The circuit is to be set up for candidates as shown in Fig. 2.1, with the crocodile clip connected to the resistance wire. The position of the crocodile clip is not important.  
The switch must be open.



**Fig. 2.1**

3. If cells are used, they must remain adequately charged throughout the examination. Spare cells must be available.
4. Either analogue or digital meters are suitable. Any variable settings must be set by the supervisor and fixed, e.g. taped.
5. Spare resistors must be available.

**Action at changeover**

Ensure that the circuit is connected as shown in Fig. 2.1 and check that the circuit is working. Open the switch.

**Question 3****Items to be supplied by the centre (per set of apparatus unless otherwise specified)**

- (i) Sheet of plain A4 paper (per candidate) with a hole in one corner so that it can be tied into the Question Paper.
- (ii) Rectangular, transparent glass or Perspex block, 10 cm × 6 cm × 1.5 cm or similar size.
- (iii) 4 optics pins.
- (iv) Pin board (e.g. cork mat), A4 size or larger.
- (v) 50 cm or 30 cm ruler, graduated in mm. Candidates may use their own.
- (vi) Protractor. Candidates may use their own.
- (vii) String or treasury tag (per candidate) to tie the ray-trace sheet, (i) above, into the Question Paper.

**Notes**

1. Spare sheets of plain paper, as in (i) above, and spare pins must be available.

**Action at changeover**

Supply a sheet of plain A4 paper, as in (i) above, and string or treasury tag, as in (vii) above.

**Question 4**

No apparatus is 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.

### 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) .....