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Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/52**

Paper 5 Practical Test **February/March 2023**

CONFIDENTIAL INSTRUCTIONS

1448055725

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 **12** pages. Any blank pages are indicated.

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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.

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.

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Specific information for this practical exam

Question 1

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

(i) 5 marbles all of approximately the same diameter between 1.5 cm and 2.0 cm. See note 1.

(ii) 50 cm^3 plastic measuring cylinder with graduations of 1 cm^3. See note 2.

(iii) Metre ruler, graduated in mm.

(iv) 30 cm ruler, graduated in mm. Candidates may use their own.

(v) 2 rectangular wooden blocks, each approximately 3 cm × 3 cm × 10 cm.

(vi) Top pan balance to measure up to 500 g with a minimum resolution of 0.1 g. See note 3.

(vii) Supply of cold water. See note 4.

(viii) Paper towels to soak up any water spills.

Notes

1. The marbles must sink in water and be non-porous. Ball bearings are a suitable alternative.

2. 100 cm^3 or 250 cm^3 measuring cylinder with graduations of no larger than 2 cm^3 are acceptable alternatives. Marbles must be able to fit inside the measuring cylinder and be easily and safely removable by pouring.

3. The top pan balance may be shared but candidates must have quick and easy access to a balance throughout the experiment.
Candidates must be able to measure the mass of the marbles without them rolling off the balance.

4. Each candidate will require approximately 30 cm^3 of water. The temperature of the water is not critical.

5. Spare marbles must be available.

Action at changeover

Pour the water and marbles from the measuring cylinder if necessary.
Ensure that the marbles are dry.

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Question 2

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

(i) Thermometer: –10 °C to 110 °C, graduated in 1 °C intervals. See note 1.

(ii) Clamp, boss and stand. See note 1.

(iii) 250 cm^3 beaker. See note 2.

(iv) Supply of hot water. See notes 3 and 4.

(v) Stop-watch or stop-clock or wall-mounted clock showing seconds. Candidates will be required to take readings at 30-second intervals.
The question will refer to a stop-watch.

(vi) Paper towels to soak up any water spills.

Notes

1. The thermometer, clamp, boss and stand are to be set up for candidates as shown in Fig. 2.1.
The thermometer bulb must be well below the 100 cm^3 level of the beaker.
Candidates must be able easily and safely to read temperatures up to 100 °C and to move the thermometer into and out of the beaker.

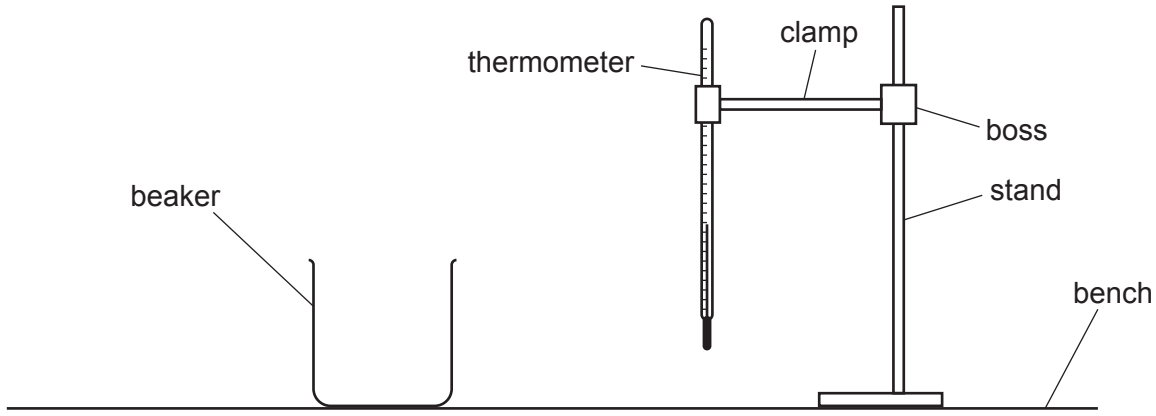


Fig. 2.1

2. If the beaker is not graduated, the 100 cm^3 level must be marked on the side of the beaker.

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^3 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.

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Action at changeover

Remove the thermometer from the beaker.
Empty the water from the beaker.
Check that the apparatus is intact and is arranged as in Fig. 2.1.

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Question 3

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

(i) A resistance wire between 1.05 m and 1.10 m in length, labelled 'resistance wire'. 32 swg (0.274 mm diameter) constantan (Eureka) or any other wire with a resistance of approximately 8 Ω / m is suitable. See note 1.

(ii) Metre ruler graduated in mm. See note 1.

(iii) Crocodile clip.

(iv) Power supply of approximately 2 to 3 V. See note 3.
Where candidates are provided with a variable power supply, the voltage should be set by the supervisor and fixed, e.g. taped.

(v) 3 Ω 2 W resistor.

(vi) Switch. The switch may be an integral part of the power supply.

(vii) Sufficient connecting leads to set up the circuit shown in Fig. 3.1.

(viii) Ammeter capable of measuring currents up to 1.00 A with a minimum resolution of 0.05 A. See note 4.

(ix) Voltmeter capable of measuring up to 3.0 V with a minimum resolution of 0.1 V. See note 4.

(x) Spare leads and crocodile clips.

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Notes

1. The wire is to be fixed to the metre ruler in such a way as to allow candidates to connect a crocodile clip to points at the 10.0 cm intervals of the ruler. Alternatively, a potentiometer fitted with an appropriate wire is suitable.

2. The circuit is to be set up for candidates as shown in Fig. 3.1, with the crocodile clip not connected to the resistance wire.

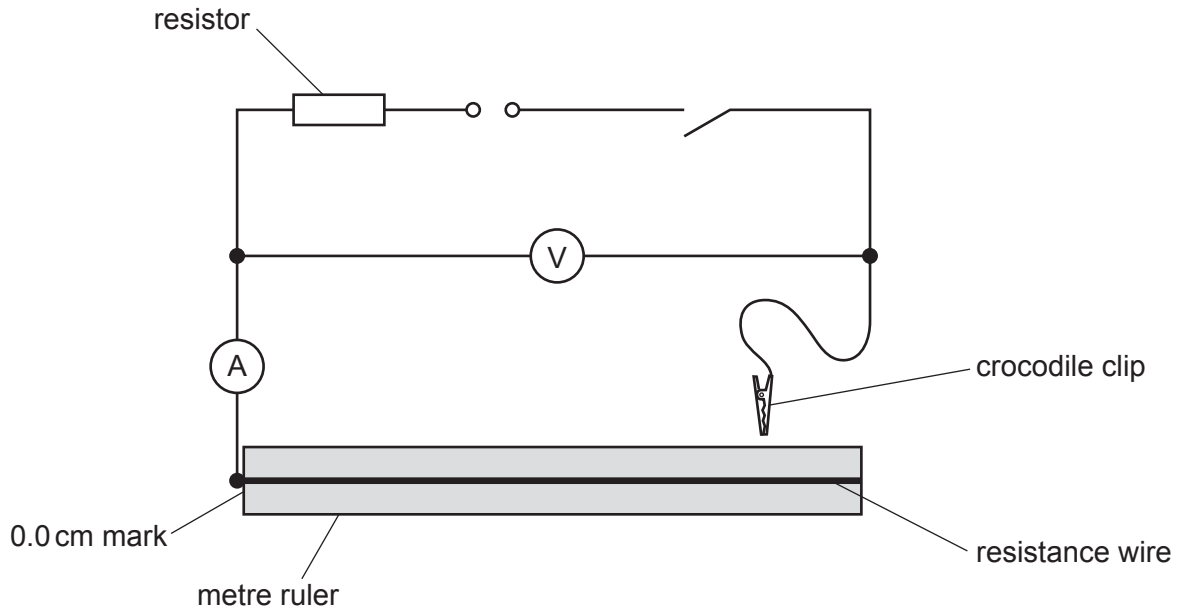


Fig. 3.1

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. Spare meters must be available.

Action at changeover

Ensure that the circuit is connected as shown in Fig. 3.1. Check that the circuit is working and disconnect the crocodile clip from the resistance wire.
Open the switch.

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Question 4

No apparatus is required for this question.

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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.

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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) .....

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