



Cambridge IGCSE™

PHYSICS

0625/52

Paper 5 Practical Test

February/March 2020

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 **12** pages. 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.

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

Question 1

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

- (i) Hardwood rod, approximately 3 cm length and 2 cm diameter. See note 1.
- (ii) Thread or light string. See notes 1 and 2.
- (iii) Piece of non-porous modelling clay, or other suitable dense material, with mass of approximately 20 g. The question will refer to modelling clay. See note 2.
- (iv) Wire to form a hook. See note 2.
- (v) Balance capable of measuring masses up to 50 g with a resolution of at least 0.1 g. This item may be shared, but enough should be available so that candidates have easy, individual access.
- (vi) 250 cm³ measuring cylinder with graduations of 2 cm³. See note 1.
- (vii) 50 cm or 30 cm ruler, graduated in mm. Candidates may use their own.
- (viii) Supply of cold water. See note 3.
- (ix) Paper towels to soak up any water spills.

Notes

1. Thread must be securely tied to the rod as shown in Fig. 1.1. The thread must have a small loop below the rod and there should be approximately 30 cm of thread above the rod. The rod must be able to float freely in water in the measuring cylinder.

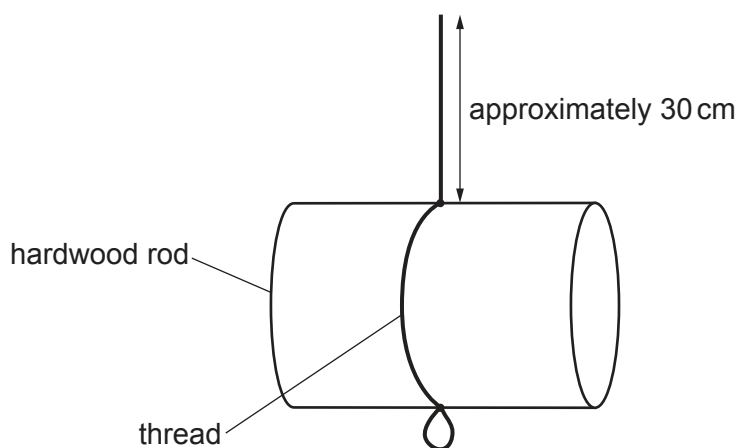


Fig. 1.1

2. The modelling clay must have a wire hook, or similar, as shown in Fig. 1.2. The hook may be formed from wire wrapped around the modelling clay or may be embedded in the clay. The hook must be rigid enough to support the modelling clay when suspended from a length of thread (approximately 30 cm long) as shown in Fig. 1.2. The piece of modelling clay must have sufficient mass so that, when connected to the rod by means of the hook and thread loop, the rod and clay sink in water.

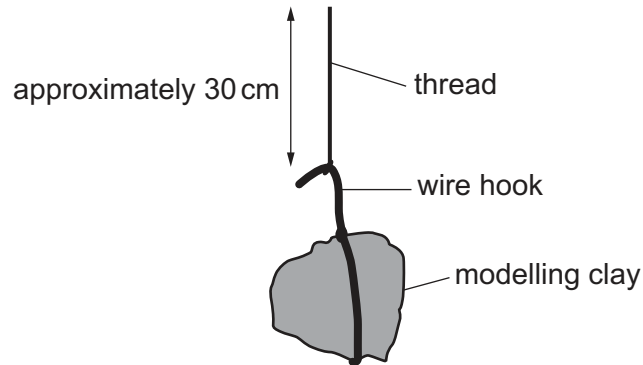


Fig. 1.2

3. Each candidate will require approximately 200 cm^3 of water. The temperature of the water is not critical.
4. Spare rods, with thread attached, should be available.

Action at changeover

Pour the water from the measuring cylinder if necessary.
Separate the rod from the modelling clay if necessary.
Ensure that the wooden rod is dry.

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-clock or stop-watch or wall-mounted clock showing seconds. Candidates will be required to take readings at 30-second intervals. They may use their own wrist-watches. The question will refer to a stop-clock.
- (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 150 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 in and out of the beaker.

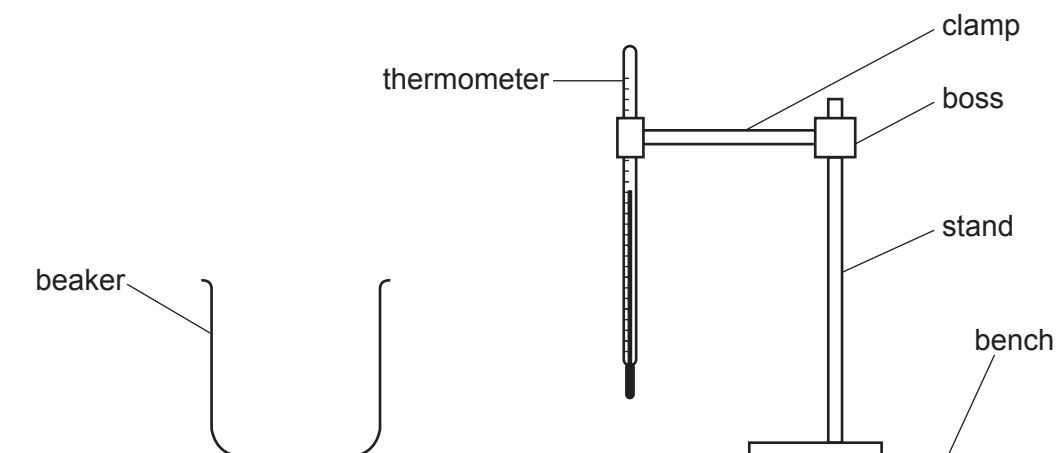


Fig. 2.1

2. If the beaker is not graduated, the 150 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 200 cm^3 of hot water. Candidates must be able to pour hot water into the beaker safely.
4. Candidates must be warned of the dangers of burns or scalds when using very hot water.

Action at changeover

Empty the water from the beaker.

Check that the apparatus is intact and is arranged as in Fig. 2.1.

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 $8\ \Omega/\text{m}$ is suitable. See note 1.
- (ii) Metre rule 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) $2\ \Omega$, 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.

Notes

1. The wire is to be fixed to the metre rule in such a way as to allow candidates to connect a crocodile clip to points between the 25.0 cm and 75.0 cm marks and at the 100.0 cm mark. Alternatively, a potentiometer fitted with an appropriate wire is suitable. Transparent tape must be used to tape over the wire between the 0.0 cm and 25.0 cm marks to prevent connection to this section.
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.

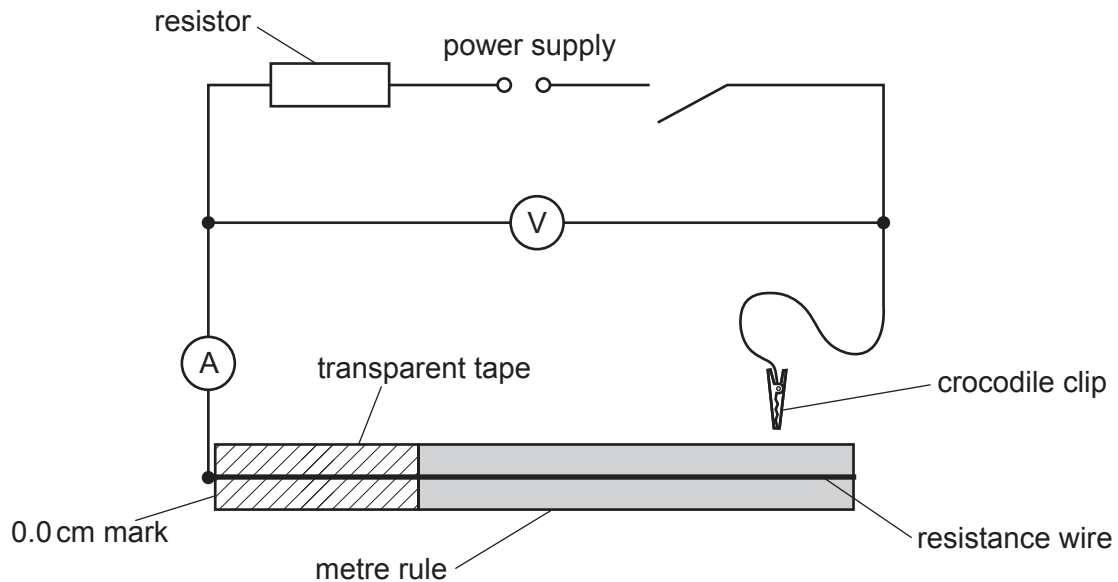


Fig. 3.1

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. Switch the circuit off.

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 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)