



Cambridge IGCSE™

PHYSICS

0625/52

Paper 5 Practical Test

February/March 2021

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. 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.

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) Metre rule, graduated in mm. See notes 1 and 2.
- (ii) 2 pieces of thread or light string, each approximately 50 cm in length. See notes 2 and 3.
- (iii) 2 bosses, 2 clamps and 2 stands. See note 3.
- (iv) stop-watch with a resolution of 0.01 s.
- (v) Set-square. Candidates may use their own.
- (vi) 50 cm or 30 cm ruler, graduated in mm. Candidates may use their own.

Notes

1. If the metre rule has two scales in opposite directions, one scale must be taped over.
2. The threads must be tied securely to the metre rule so that the metre rule hangs with its scale vertical and facing the candidate as shown in Fig. 1.1.
Candidates must be able easily to slide the loops of thread to different positions along the scale of the metre rule.

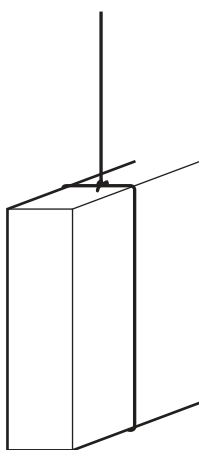


Fig. 1.1

3. The apparatus must be set up for the candidates as shown in Fig. 1.2, with the metre rule suspended from the two threads, placed symmetrically about the 50 cm mark. The distance between the threads is not important. The threads must be vertical and the length l of the threads should be between 35 cm and 40 cm. Both threads must have the same length. The metre rule must be horizontal and there must be a horizontal distance between the metre rule and the stands of 8 cm as shown in Fig. 1.3.

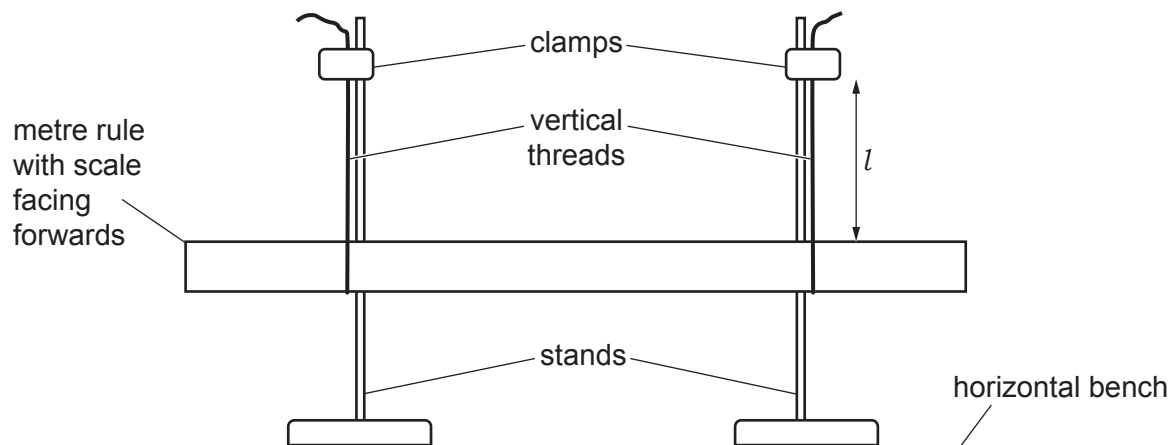


Fig. 1.2

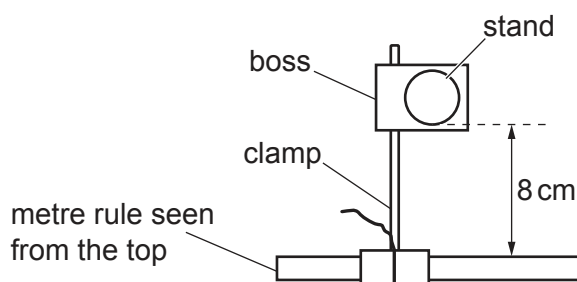


Fig. 1.3

Action at changeover

- Check that the apparatus is arranged as shown in Fig. 1.2.
 Check that the threads are secure, are vertical and are the same length l .
 Check that the metre rule is horizontal.

Question 2

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

- (i) 2 cups labelled A and B, each capable of holding 75 cm^3 of hot water safely. See note 1.
- (ii) Thick card lids for each cup, with a hole to pass a thermometer through.
- (iii) Thermometer: -10°C to 110°C , graduated in 1°C intervals. See note 2.
- (iv) Clamp, boss and stand. See note 2.
- (v) 100 cm^3 measuring cylinder.
- (vi) Supply of hot water. See notes 3 and 4.
- (vii) Stop-clock or stop-watch or wall-mounted clock showing seconds. Candidates will be required to take readings at 30-second intervals. The question will refer to a stop-clock.
- (viii) Paper towels to soak up any water spills.

Notes

1. Cup A must be of a type more suitable for cold drinks, made from plastic or thin card. However, it must be capable of containing very hot water without distorting. Cup B must be of a type used for hot drinks, made from expanded polystyrene or corrugated card. The two cups must be slightly different sizes, with cup B clearly having a larger height and inside diameter at the top than cup A.
2. The thermometer, clamp, boss and stand must be set up for candidates as shown in Fig. 2.1. The thermometer bulb must be well below the 75 cm^3 level of the cups. Candidates must be able easily and safely to read temperatures up to 100°C and to move the thermometer in and out of the cups.

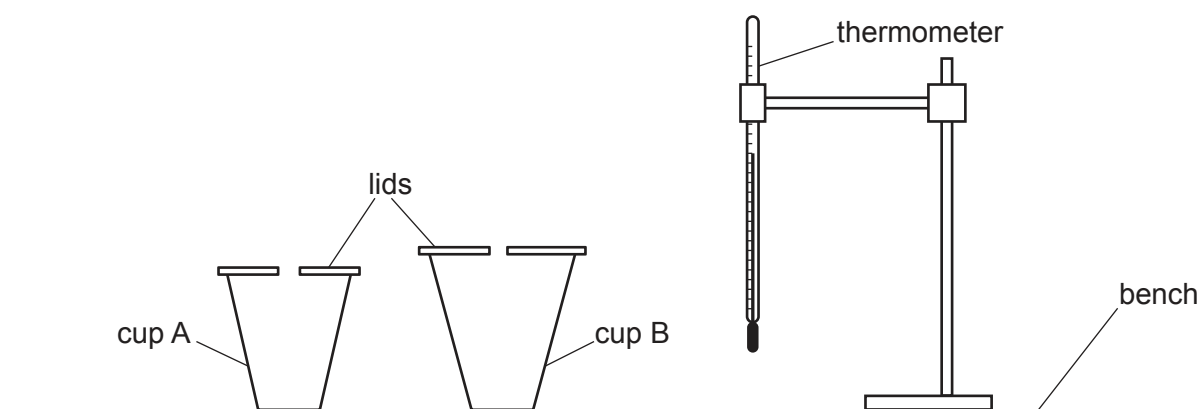


Fig. 2.1

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 200 cm^3 of hot water. Candidates must be able to pour hot water safely.

4. Candidates must be warned of the dangers of burns or scalds when using very hot water.
5. Spare lids and thermometers must be available.

Action at changeover

Empty the water from the cups.

Replace the lids if they have become wet.

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 or strip of wood. See note 1.
- (iii) Power supply of approximately 3 V to 4 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.
- (iv) Filament lamp, 2.5 V, 0.2 A (or similar) in holder.
- (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) Crocodile clip.
- (ix) Ammeter capable of measuring up to 1.00 A with a minimum resolution of 0.02 A. See note 4.
- (x) Voltmeter capable of measuring up to 4.0 V with a minimum resolution of 0.1 V. See notes 4 and 5.

Notes

1. The wire is to be fixed to the metre rule/strip of wood in such a way as to allow candidates to connect a crocodile clip to obtain a range of potential differences across the lamp from 0.5V to 2.0V. 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. The position of the crocodile clip is not important.

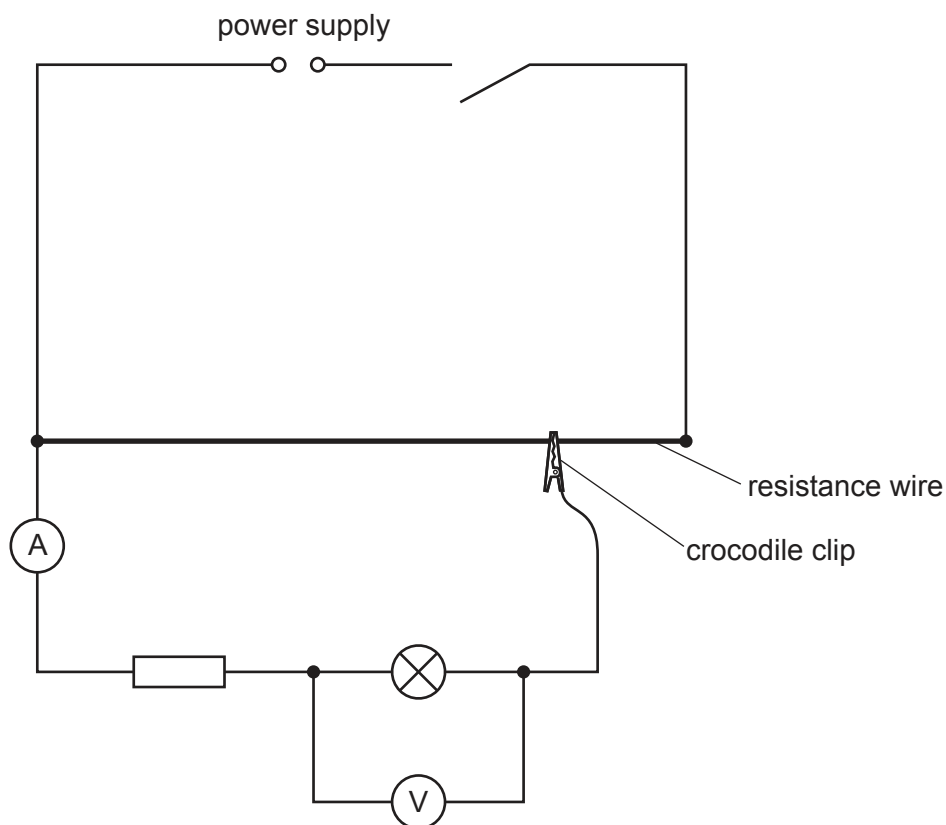


Fig. 3.1

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.
5. Candidates must be able easily and quickly to reconnect the voltmeter across different parts of the circuit.
6. Spare lamps must be available.

Action at changeover

Ensure that the circuit is connected as shown in Fig. 3.1.
 Check that the circuit and the lamp are working.
 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 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)