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Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/51**

Paper 5 Practical Test **May/June 2024**

CONFIDENTIAL INSTRUCTIONS

9584563645

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

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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

During the exam, the supervisor (NOT the invigilator) must do the experiments in Questions 1, 2 and 3 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) Clamp, boss and stand.

(ii) Expendable spring capable of supporting at least 600 g without overstretching (e.g. Philip Harris expendable steel spring, www.philipharris.co.uk). Spare springs should be available.

(iii) Metre ruler, graduated in mm. See note 3.

(iv) A 100 g mass hanger and four 100 g slotted masses. See note 1.

(v) Set square.

Notes

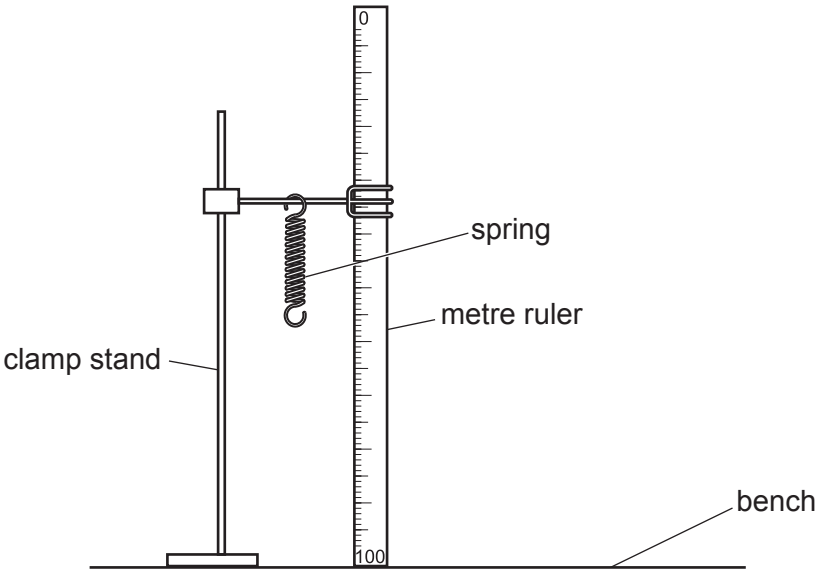


Fig. 1.1

1. The four 100 g slotted masses and the 100 g mass hanger should each be labelled '1.00 N'. An alternative to individually labelling the masses is to provide a card with the words 'the mass hanger and each mass has a weight of 1.00 N'. If slotted masses are not available, a light hook must be provided so that up to five 100 g masses each labelled '1.00 N' can be suspended from the spring.

2. The apparatus is to be set up for the candidates as shown in Fig. 1.1. The spring is to be suspended from the clamp, supported by a boss and stand. The spring must be sufficiently high above the laboratory bench so that when a 5.00 N load is suspended from the spring, the bottom of the load is above the surface of the bench.

3. The metre ruler (supported by the clamp, boss and stand) must be near to, but not touching, the spring. The 100 cm end of the metre ruler must be touching the bench.

If the metre ruler has two scales in opposite directions, one scale must be taped over.

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Action at changeover

Check that the apparatus is set up ready for the next candidate, as shown in Fig. 1.1, with the spring near to the metre ruler.

Replace the spring if it has been overstretched.

Question 2

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

(i) Power supply of approximately 1.5–3 V. Where candidates are provided with a power supply with a variable output voltage, the voltage must be set by the supervisor and fixed (e.g. taped). See note 2.

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

(iii) Ammeter capable of reading up to 1.00 A with a resolution of at least 0.05 A. See note 3.

(iv) Voltmeter capable of measuring the supply p.d. with a resolution of at least 0.1 V. See note 3.

(v) Approximately 105 cm of straight, bare constantan (Eureka) wire, diameter 0.28 mm (32 swg) or similar resistance wire with resistance of approximately 8 Ω / m, taped to a metre ruler only between the 3 cm and 7 cm marks and between the 93 cm and 97 cm marks. See note 4.

(vi) Two suitable terminals (e.g. crocodile clips) attached to the constantan wire at the ends of the metre ruler so that connections can be made to the circuit (see Fig. 2.1 and Fig. 2.2). The terminal at the zero end of the ruler is to be labelled ‘B’. The terminal at the 100 cm end of the ruler is to be labelled ‘C’.

(vii) Sliding contact, labelled ‘S’. This may be a jockey or a small screwdriver connected to a lead by means of a crocodile clip.

(viii) Sufficient connecting leads to set up the circuit shown in Fig. 2.1.

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Notes

1. The circuit is to be set up for the candidates as shown in Fig. 2.1.

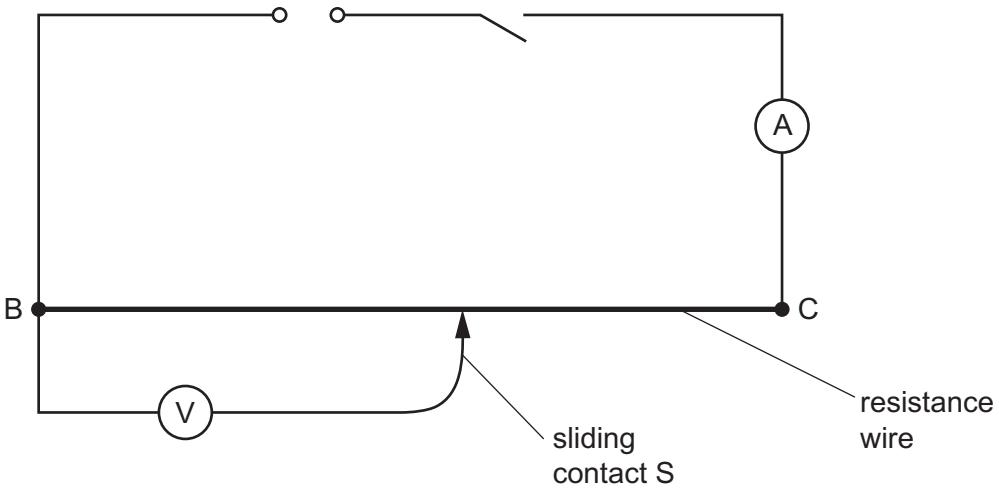


Fig. 2.1

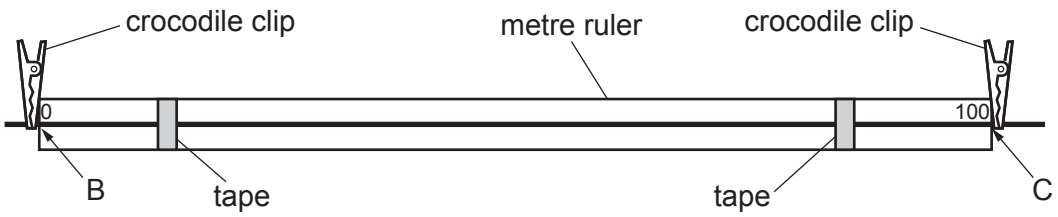


Fig. 2.2

2. If cells are to be used, they must remain adequately charged throughout the examination. Spare cells must be available.

3. Either analogue or digital meters are suitable. Any variable settings should be set by the supervisor and fixed (e.g. taped). Spare meters must be available.

4. The wire must be attached to the metre ruler as shown in Fig. 2.2.

Action at changeover

Check that the circuit is arranged as shown in Fig. 2.1.

Check that the circuit works.

Open the switch.

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Question 3

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

(i) Converging lens, of focal length between 14 cm and 16 cm, with a suitable holder.

(ii) Illuminated object with a triangular hole of height 1.5 cm (see Fig. 3.1 and Fig. 3.2). The hole is to be covered with thin translucent paper (e.g. tracing paper). See note 2.

(iii) Metre ruler, graduated in mm.

(iv) Screen. A white sheet of stiff card, approximately 15 cm × 15 cm and fixed to a wooden support, is suitable. See Fig. 3.3.

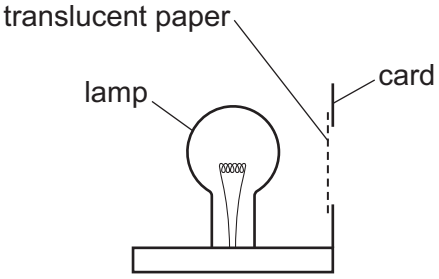


Fig. 3.1

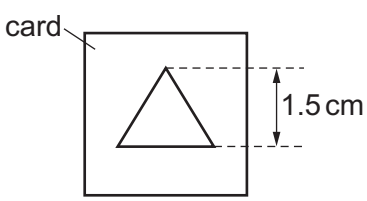


Fig. 3.2

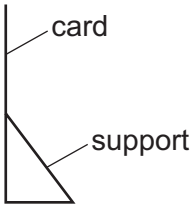


Fig. 3.3

Notes

1. The filament lamp for the illuminated object should be a low voltage lamp, 24 W or greater, with a suitable power supply. An LED lamp with equivalent brightness can be used.

2. The centre of the triangular hole which forms the object must be at the same height above the bench as the centre of the lens in its holder.

3. The apparatus is to be situated away from direct sunlight.

4. Spare lamps must be available.

Action at changeover

Check that the apparatus is ready for the next candidate.

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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