



# Cambridge IGCSE™

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## PHYSICS

0625/53

Paper 5 Practical Test

May/June 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.**

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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 **8** 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) Metre rule, graduated in mm, of weight approximately 1 N to 2 N. See note 1.
- (ii) 2 loops of thread or light string. See note 2.
- (iii) Nail to act as a pivot. See note 3.
- (iv) Forcemeter capable of reading forces up to 2.5 N with a resolution of 0.05 N. See note 5.
- (v) 200 g mass, incorporating a hanger.
- (vi) 2 bosses, 2 clamps and 2 stands.
- (vii) 50 cm or 30 cm ruler graduated in mm. Candidates may use their own.
- (viii) Set square. Candidates may use their own.
- (ix) Spare loops of thread as in (ii).

### Notes

1. If the metre rule has two scales in opposite directions, one scale must be taped over.
2. The loops of thread must be looped around the metre rule so that the 200 g mass may be suspended from it in different positions and the rule may be suspended from the forcemeter.
3. The nail must be clamped securely to act as a pivot. Alternatively, the rod of the clamp would be suitable for this purpose.
4. The apparatus must be set up for the candidates as shown in Fig. 1.1, with the metre rule suspended with its scale facing upwards. The metre rule must rest on the pivot at the 10.0 cm mark and be suspended from the forcemeter at the 90.0 cm mark. When the 200 g mass is suspended at the 70.0 cm mark, the metre rule must be able to be horizontal and the mass must be clear of the bench. The 200 g mass must be placed near the centre of the metre rule. The forcemeter and loop of thread supporting the metre rule must be vertical.

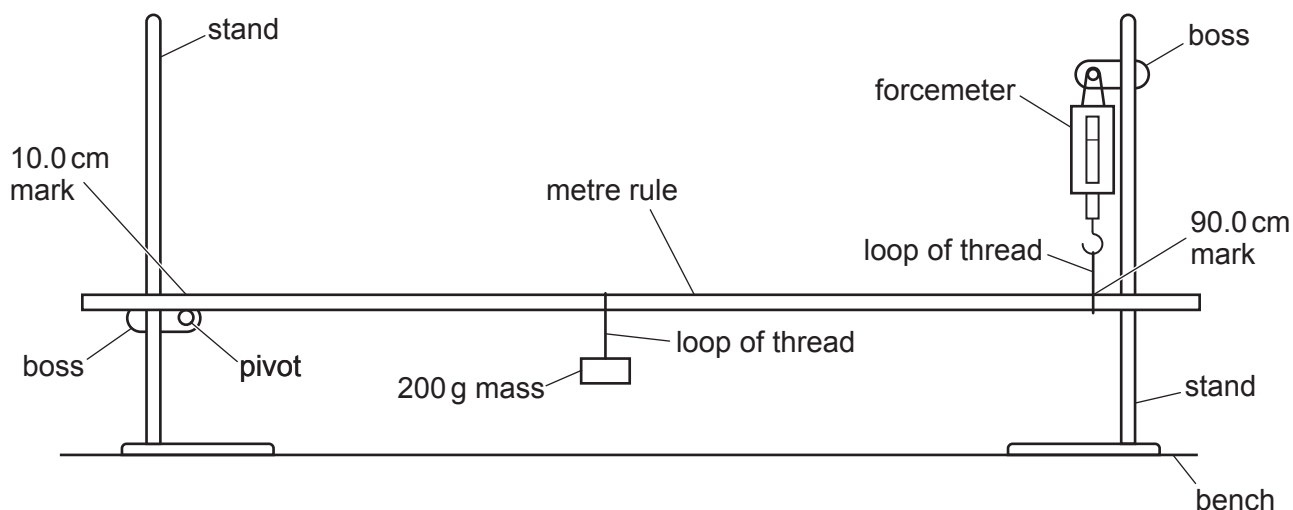


Fig. 1.1

5. The forcemeter must not exceed its full scale deflection when the 200 g mass is suspended at the 70.0 cm mark. If it does, a forcemeter capable of reading higher values must be used. The forcemeter scale must be set to zero when the forcemeter is suspended freely from the clamp before attaching the rule.

#### Action at changeover

Check that the forcemeter is set to zero as described in note 5.

Check that the apparatus is arranged as shown in Fig. 1.1 with the 200 g mass near the centre of the metre rule.

## Question 2

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

- (i) Two  $5\ \Omega$ , 3W resistors. Candidates must not be able to identify the resistance value. See note 2.
- (ii) Power supply of approximately 2V–3V. 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.
- (iii) Switch. The switch may be an integral part of the power supply.
- (iv) Sufficient connecting leads to set up the circuit shown in Fig. 2.1, with 4 spare leads.
- (v) Ammeter capable of measuring currents up to 2.00A with a resolution of at least 0.05A. See note 4.
- (vi) Voltmeter capable of measuring the supply voltage with a resolution of at least 0.1V. See note 4.

### Notes

1. The circuit is to be set up for candidates as shown in Fig. 2.1, with one of the resistors in place. Two terminals must be labelled P and Q and candidates must be able easily and quickly to connect and disconnect circuit components between them. The circuit should be switched off.

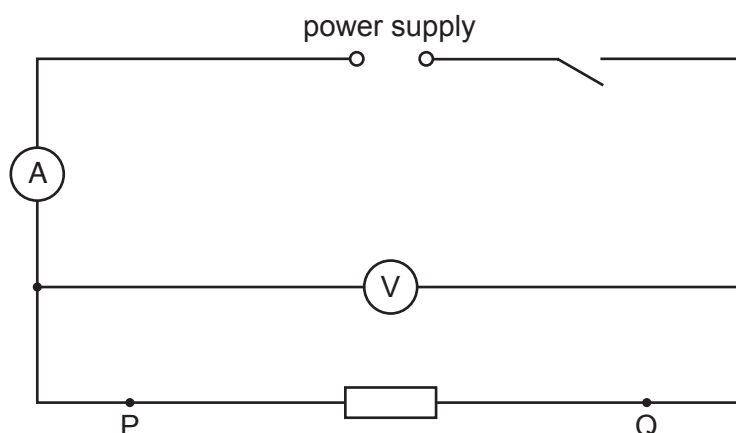


Fig. 2.1

2. The resistors must have suitable terminals so that candidates are able easily and quickly to rearrange the circuit. Spare resistors must be available.
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 should be set by the supervisor and fixed, e.g. taped. Spare meters should be available.

### Action at changeover

Connect the circuit as shown in Fig. 2.1 and check that the circuit is working.  
Switch the circuit off.

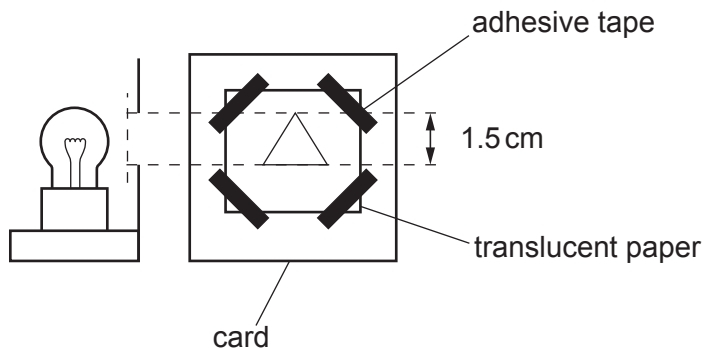
### Question 3

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

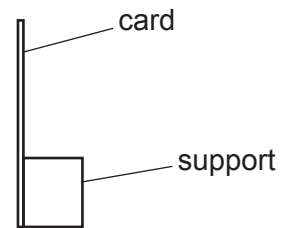
- (i) Converging lens of focal length 14 cm to 16 cm with a suitable holder. See note 2.
- (ii) Metre rule graduated in mm.
- (iii) Illuminated object consisting of rigid card with a triangular hole of height 1.5 cm (see Fig. 3.1). The hole is to be covered with thin translucent paper (e.g. tracing paper) secured with adhesive tape. See note 2.
- (iv) Screen. A white sheet of stiff card approximately 150 mm × 150 mm, fixed to a wooden support is suitable (see Fig. 3.2).
- (v) 50 cm or 30 cm ruler, graduated in mm. Candidates may use their own.

### Notes

1. The lamp used for the illuminated object should be 12 V, 24 W or greater.
2. The lamp filament, the centre of the hole which forms the object and the centre of the lens in its holder must all be the same height above the bench.
3. The apparatus should be situated away from direct sunlight.



**Fig. 3.1**



**Fig. 3.2**

### Action at changeover

Check that the apparatus is intact and that the lamp is working.

### 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) .....