



# Cambridge IGCSE™

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**PHYSICS**

**0625/53**

Paper 5 Practical Test

**May/June 2022**

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.

## 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

During the exam, the supervisor (NOT the invigilator) must do the experiment in Question 1 and record the results on a spare copy of the question paper, clearly labelled 'supervisor's results'.

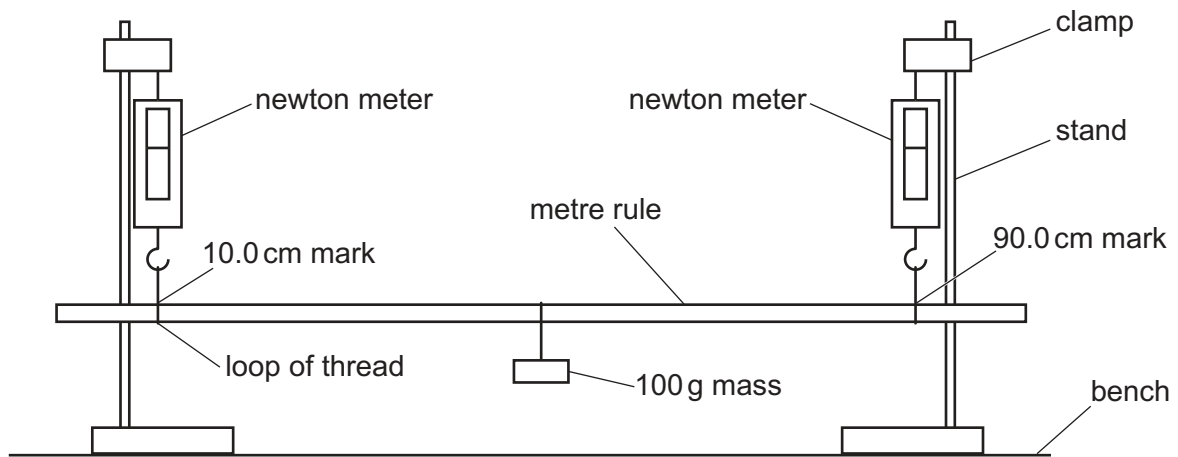
### Question 1

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

- (i) Metre rule, graduated in mm, of weight approximately 1 to 2 N. See note 1.
- (ii) 3 loops of thread or light string. See note 2.
- (iii) 2 newton meters capable of reading forces up to 2.5 N with a resolution of 0.05 N. See note 4.
- (iv) 100 g mass, incorporating a hanger and labelled '1.00 N load'.
- (v) 2 bosses, 2 clamps and 2 stands.
- (vi) Set square.
- (vii) 50 cm or 30 cm ruler, graduated in mm. Candidates may use their own.
- (viii) 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. One loop of thread must be looped around the metre rule so that the 100 g mass, as in (iv), may be suspended from it in different positions.  
The other loops must be looped at the 10.0 cm and 90.0 cm marks so that the rule may be suspended from the newton meters as shown in Fig. 1.1. These loops must be taped to the metre rule to prevent them moving during the experiment.
3. 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. When the 100 g mass is suspended at various points between the 10.0 cm and 90.0 cm marks, the mass must be clear of the bench.  
The newton meters and loops of thread supporting the metre rule must be vertical. Candidates must be able to move at least one stand slightly so that the newton meters remain vertical during the experiment.



**Fig. 1.1**

4. The newton meters must not exceed their full-scale deflection when the 100 g mass is suspended at the 10.0 cm or 90.0 cm marks. If they do, newton meters capable of reading higher values must be used.  
Each newton meter scale must be set to zero when the newton meters are suspended freely from the clamps before attaching the rule.

**Action at changeover**

Check that the newton meters are set to zero as described in note 4.  
Check that the apparatus is arranged as shown in Fig. 1.1 with the 100 g mass near the centre of the rule.

## Question 2

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

- (i) Thermometer:  $-10^{\circ}\text{C}$  to  $110^{\circ}\text{C}$ , graduated in  $1^{\circ}\text{C}$  intervals. See note 1.
- (ii) Clamp, boss and stand. See note 1.
- (iii)  $250\text{ cm}^3$  beaker. See note 1.
- (iv)  $250\text{ cm}^3$  measuring cylinder.
- (v) Supply of hot water. See notes 2 & 3.
- (vi) 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.
- (vii) 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  $50\text{ cm}^3$  level of the beaker. Candidates must be able easily and safely to read temperatures up to  $100^{\circ}\text{C}$  and to move the thermometer in and out of the beaker.

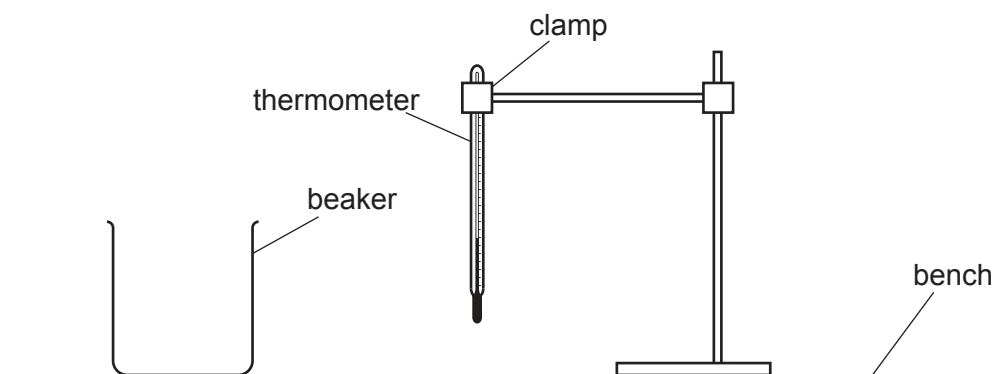


Fig. 2.1

2. Hot water is to be available for each candidate throughout the experiment. The hot water should be maintained at an approximately constant temperature between  $80^{\circ}\text{C}$  and  $100^{\circ}\text{C}$ . Each candidate will require about  $250\text{ cm}^3$  of hot water in total. Candidates must be able to pour hot water into and out of the beaker and measuring cylinder safely.
3. Candidates must be warned of the dangers of burns or scalds when using very hot water.
4. Spare thermometers must be available.

### 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) 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 a 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) Plane mirror capable of standing upright, to the height of the top of the lens in its holder.
- (v) Screen. A white sheet of stiff card, approximately 150 mm × 150 mm and fixed to a wooden support, is suitable (see Fig. 3.2).
- (vi) 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.

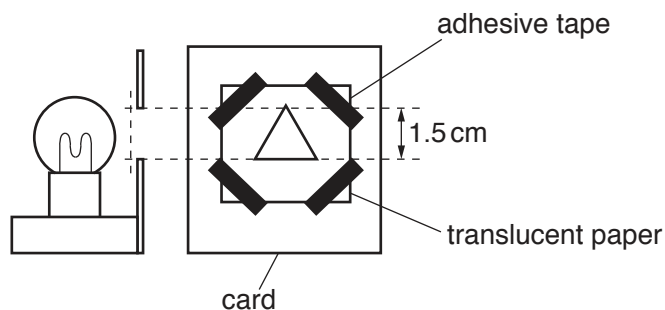


Fig. 3.1

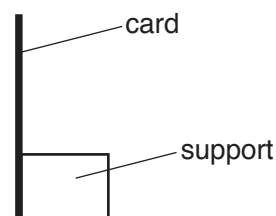


Fig. 3.2

### 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 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) .....