



# Cambridge IGCSE™ (9–1)

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**PHYSICS**

**0972/51**

Paper 5 Practical Test

**October/November 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.

The following hazard codes are used in these confidential instructions, where relevant:

<b>C</b>	corrosive	<b>MH</b>	moderate hazard
<b>HH</b>	health hazard	<b>T</b>	acutely toxic
<b>F</b>	flammable	<b>O</b>	oxidising
<b>N</b>	hazardous to the aquatic environment		

Hazard data sheets relating to substances used in this exam should be available from your chemical supplier.

### 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) A sample of modelling clay of mass between 59g and 61g, moulded into an approximate cube. See note 1.
- (ii) 30 cm ruler, graduated in mm. Candidates may use their own.
- (iii) 100 cm<sup>3</sup> measuring cylinder with smallest division 2 cm<sup>3</sup> or less.
- (iv) A sample of modelling clay of mass between 39g and 41g, moulded into an approximate cylinder. See note 2.
- (v) A supply of water at room temperature. Each candidate will require about 100 cm<sup>3</sup> of water.
- (vi) Electronic balance capable of measuring masses up to 100 g to the nearest g. See note 3.

#### Notes

1. The sample of modelling clay referred to in (i) is to be placed on a sheet of paper, clearly labelled **Sample A**.
2. The sample of modelling clay referred to in (iv) must have a thin thread attached so that it can be lowered into the measuring cylinder. The sample must easily fit into the measuring cylinder. The sample of modelling clay is to be placed on a sheet of paper, clearly labelled **Sample B**.
3. It is not necessary to provide a balance for each candidate, but candidates must have convenient access to a balance without delay.
4. Spare samples of modelling clay must be available.

#### Action at changeover

Check the shapes of the samples of modelling clay and check that they are placed on the correct sheets of paper.

Empty the measuring cylinder.

Check the supply of water at room temperature.

## Question 2

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

- (i) Clamp, boss and stand.
- (ii) Thermometer, with a range  $-10^{\circ}\text{C}$  to  $110^{\circ}\text{C}$ , graduated in  $1^{\circ}\text{C}$  intervals.
- (iii)  $250\text{ cm}^3$  beaker.
- (iv)  $100\text{ cm}^3$  or  $250\text{ cm}^3$  measuring cylinder, graduated in  $1\text{ cm}^3$  or  $2\text{ cm}^3$  intervals.
- (v) Stopclock or stopwatch or wall-mounted clock showing seconds. The question will refer to a stopclock.
- (vi) Supply of hot water. See notes 2 and 3.
- (vii) Supply of water at room temperature, labelled **cold water**. See note 4.
- (viii) Supply of paper towels to mop up any spills of water.

### Notes

1. The thermometer should be held in the clamp, as shown in Fig. 2.1.

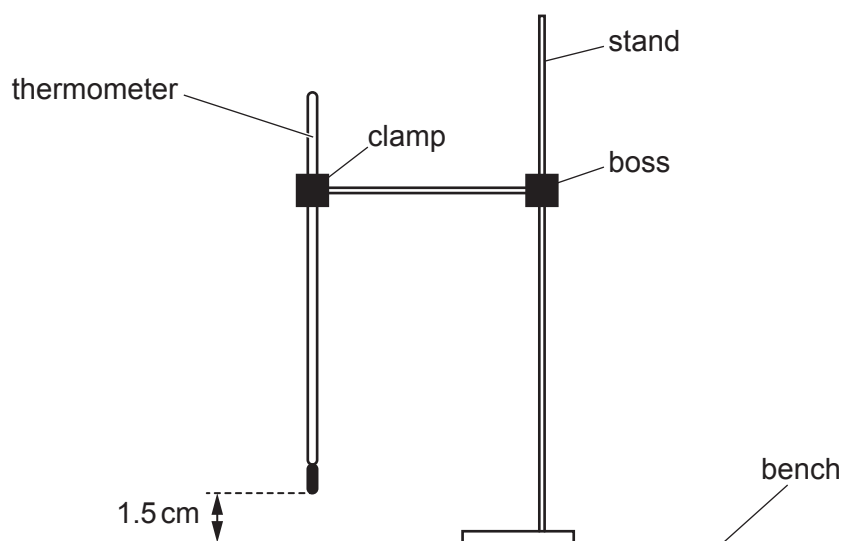


Fig. 2.1

2. The hot water is to be supplied for each candidate by the supervisor. The water should be maintained at a temperature as hot as is reasonably and safely possible. Each candidate will require about  $400\text{ cm}^3$  of hot water.
3. Candidates should be warned of the dangers of burns or scalds when using very hot water.
4. Each candidate will require about  $100\text{ cm}^3$  of cold water.
5. Spare thermometers should be available.

**Action at changeover**

Empty the beaker and measuring cylinder.

Dry the thermometer.

Check that the thermometer is set up, as shown in Fig. 2.1.

Check the supply of hot water.

Check the supply of water at room temperature.

The bottom of the thermometer should be 1.5 cm above the surface of the bench.

### Question 3

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

- (i) Converging lens, 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 rule, graduated in mm.
- (iv) Screen. A white sheet of stiff card approximately 15 cm × 15 cm, fixed to a wooden support is suitable. See Fig. 3.3.

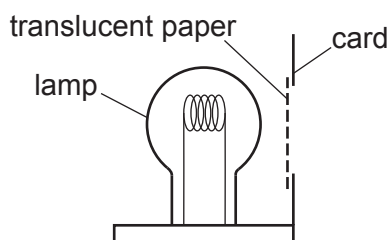


Fig. 3.1

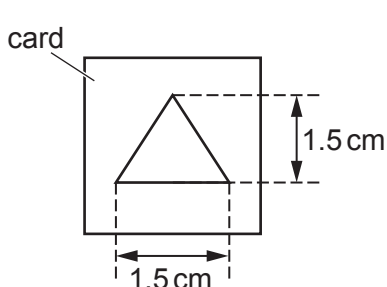


Fig. 3.2

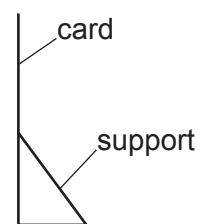


Fig. 3.3

### Notes

1. The lamp for the illuminated object should be a low voltage lamp, approximately 24 W or higher power (a car headlamp bulb is suitable), with a suitable power supply.
2. The centre of the hole which forms the object, the lamp filament and the centre of the lens in its holder are all to be at the same height above the bench.
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

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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) .....