



# Cambridge IGCSE™

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**PHYSICS**

**0625/53**

Paper 5 Practical Test

**May/June 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.**

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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

### Question 1

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

- (i) Steel spring. See note 1.
- (ii) Clamp, boss and stand. See note 2.
- (iii) Mass of 200g labelled '**2.0N**'. See note 3.
- (iv) Ball of modelling clay of mass approximately 120g, labelled '**U**'. See note 4.
- (v) 250 cm<sup>3</sup> beaker containing 150 cm<sup>3</sup> of water at room temperature. See note 6.
- (vi) 50 cm or 30 cm ruler, graduated in mm. Candidates may use their own.
- (vii) Set square.
- (viii) Paper towels to soak up any water spills.

#### Notes

1. An expendable steel spring is suitable, for example a spring with a diameter of 16 mm and a length of 20 mm across the unextended coils (e.g. Philip Harris expendable steel spring B8G87194, [www.philipharris.co.uk](http://www.philipharris.co.uk)). The spring must be able to support a load of at least 5 N without overstretching.
2. The clamp, boss and stand must be set up with the spring suspended from the clamp. The stand must be sufficiently tall to support the spring with the 2.0 N load, without the load touching the bench.
3. The mass must include a hanger so that it can be suspended from the spring.
4. The object **U** must include a wire hanger. It must be made up in such a way that candidates cannot easily detect its mass.
5. Spare springs must be available.
6. Candidates must have access to water in case of needing to refill the beaker.

#### Action at changeover

- Remove the load from the spring if necessary.
- Check that the spring has not been deformed by overstretching and replace if necessary.
- Check that the beaker contains sufficient water and refill if necessary.

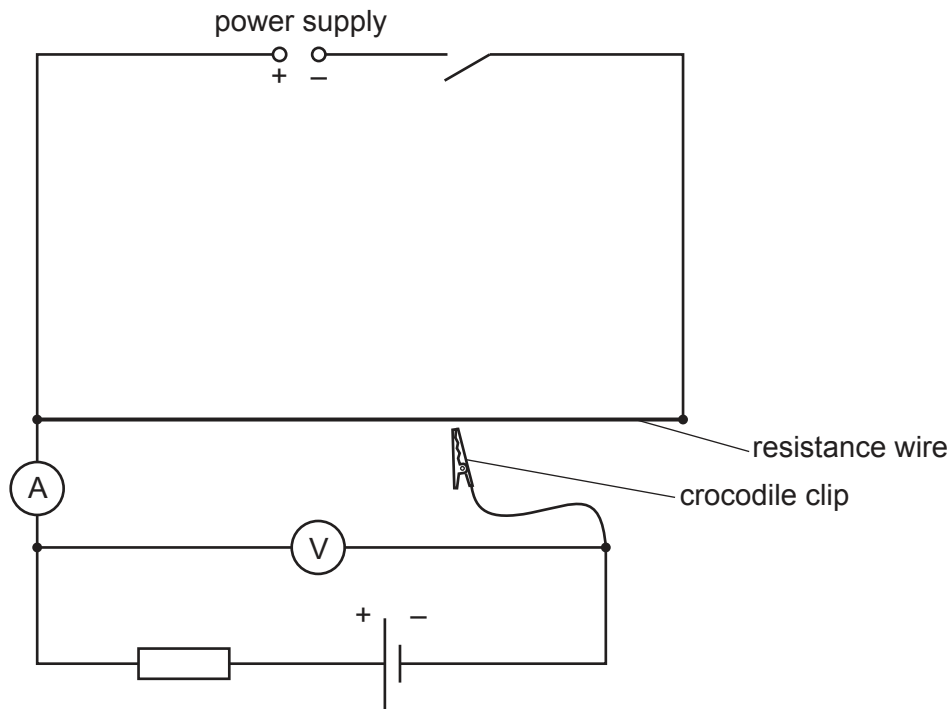
## Question 2

### 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 at least  $8\ \Omega/\text{m}$  is suitable. See note 1.
- (ii) Metre rule or strip of wood. See note 1.
- (iii) Power supply of approximately 6 V. See notes 2 and 3.  
Where candidates are provided with a variable power supply, the voltage should be set by the supervisor and fixed, e.g. taped.
- (iv) 1.5 V dry cell. See note 2.
- (v)  $5\ \Omega$ , 3 W resistor. Candidates must **not** be able to detect the resistance value.
- (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. 2.1.
- (viii) Crocodile clip.
- (ix) Ammeter capable of measuring currents up to 1.00 A with a minimum resolution of 0.05 A.  
See note 4.
- (x) Voltmeter capable of measuring up to 6.0 V with a minimum resolution of 0.1 V. See note 4.

### 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 cell and series resistor from 3.0 V to 5.0 V. Alternatively, a potentiometer fitted with an appropriate wire is suitable.
2. The circuit is to be set up for candidates as shown in Fig. 2.1.  
It is important that the **polarity of the cell** and the **polarity of the power supply** are as shown in Fig. 2.1.  
The crocodile clip must be supplied unattached to the resistance wire.



**Fig. 2.1**

3. If cells are used as the power supply, 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.

**Action at changeover**

Ensure that the circuit is connected as shown in Fig. 2.1.

Check that the circuit is working.

Detach the crocodile clip from the resistance wire and switch the circuit off.

**Question 3****Items to be supplied by the centre (per set of apparatus unless otherwise specified)**

- (i) Sheet of plain A4 paper (per candidate) with a hole in one corner so that it can be tied into the question paper.
- (ii) Rectangular, transparent glass or Perspex block, 10 cm × 6 cm × 1.5 cm or similar size.
- (iii) 4 optics pins.
- (iv) Pin board (e.g. cork mat), A4 size or larger.
- (v) 50 cm or 30 cm ruler, graduated in mm. Candidates may use their own.
- (vi) Protractor. Candidates may use their own.
- (vii) String or treasury tag (per candidate) to tie the ray-trace sheet, (i) above, into the question paper.

**Notes**

1. Spare sheets of plain paper, as in (i) above, and pins should be available.

**Action at changeover**

Supply a sheet of plain A4 paper, as in (i) above, and string or treasury tag, as in (vii) above.

**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) .....