



# Cambridge IGCSE™ (9–1)

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**PHYSICS****0972/51**

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. Any 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) Clamp, boss and stand.
- (ii) Pendulum bob attached to approximately 110 cm of thin inextensible string.
- (iii) Metre rule, graduated in mm.
- (iv) Stop-watch with a minimum precision of 0.01 s.
- (v) Split cork to hold the string of the pendulum between the jaws of the clamp.

### Notes

1. The pendulum, with a length of approximately 60 cm, should be set up for the candidates, as shown in Fig. 1.1. The distance from the bottom of the split cork to the floor must be 100.0 cm.

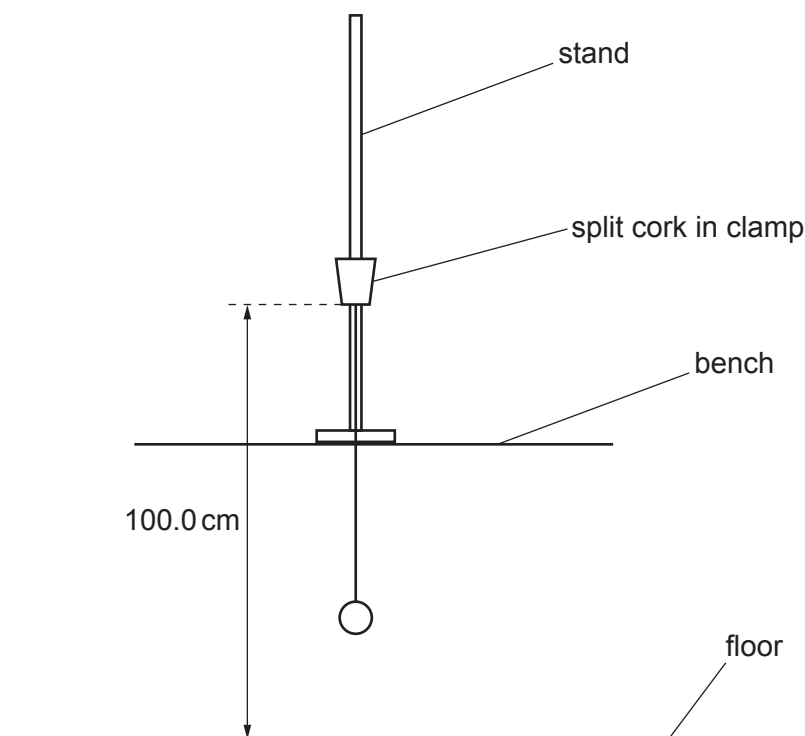


Fig. 1.1

2. Candidates must be able to easily adjust the length of the pendulum up to a length of 85 cm.
3. The pendulum must be set up with the pendulum bob below the level of the bench. It may be necessary to increase the stability of the clamp stand (for example, using a G-clamp or by placing a weight on the base).

### Action at changeover

Arrange the pendulum as described in note 1.

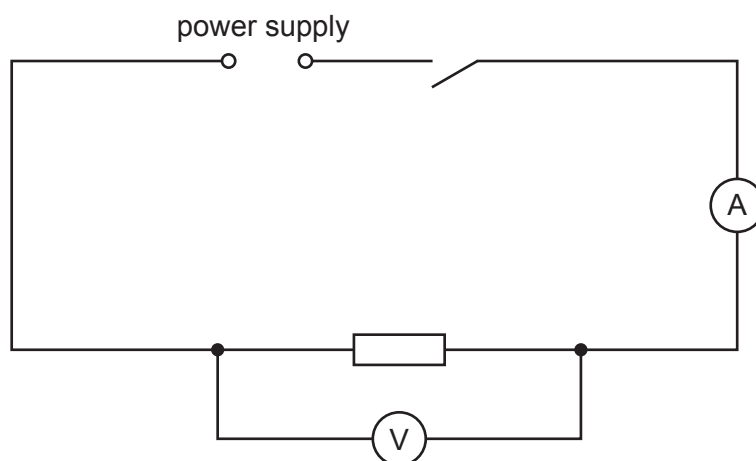
## Question 2

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

- (i) Power supply of approximately 1.5V–3V. 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) Two resistors of nominal value  $4.7\ \Omega$  with a power rating of at least 2W. See note 3.
- (iv) Ammeter capable of measuring currents up to 1.00A with a minimum resolution of 0.05A. See note 4.
- (v) Voltmeter capable of measuring the supply potential difference (p.d.) with a resolution of at least 0.1V. See note 4.
- (vi) Sufficient connecting leads to set up the circuit shown in Fig. 2.1 plus two additional leads.

### Notes

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



**Fig. 2.1**

2. If cells are to be used, they must remain adequately charged throughout the examination. Spare cells must be available.
3. The values of resistance must **not** be visible to the candidates. The resistors must have suitable terminals so that candidates are able to easily and quickly rearrange the circuit.
4. Either analogue or digital meters are suitable. Any variable settings should be set by the supervisor and fixed, e.g. taped.

### Action at changeover

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

Check that the circuit works. Open the switch.

**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) Four optics pins.
- (iv) Pin board (e.g. cork mat), A4 size or larger.
- (v) Protractor (candidates may use their own).
- (vi) 50 cm or 30 cm ruler, graduated in mm. 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 should be available.
2. Spare pins should be available.

**Action at changeover**

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