

Cambridge O Level

PHYSICS**5054/31**

Paper 3 Practical Test

May/June 2026**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.

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
phone +44 1223 553554

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.

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

C	corrosive	MH	moderate hazard
HH	health hazard	T	acutely toxic
F	flammable	O	oxidising
N	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

During the exam, the supervisor (**not** the invigilator) must do the experiments in Questions 1, 2 and 3 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):

- a piece of modelling clay rolled into the shape of a cylinder (see Note 1)
- a 30 cm ruler with a millimetre scale
- two small rectangular wooden blocks (see Note 2)
- access to a top pan balance capable of measuring mass to the nearest 0.1 g
- a ballpoint pen (see Note 3).

Notes

- 1 The modelling clay should be rolled into a cylinder shape 15 cm long. The diameter should be around 2.0 cm and should vary slightly along the length of the cylinder (by around 0.2 cm from one end to the other). The ends of the cylinder should be as flat as possible and perpendicular to the length of the cylinder. **Candidates should be advised to handle the clay gently to avoid squashing it.**
- 2 The blocks should be rectangular pieces of wood of approximate dimensions 6 cm × 5 cm × 5 cm.
- 3 The ballpoint pen will be used to mark the modelling clay. The pens given to candidates must be able to make small marks on the clay without smudging.

Action at changeover

Replace the cylinder of modelling clay with a fresh, unmarked piece.

Information required by examiners

The supervisors should provide the density for the modelling clay used by the centre.

A sample set of numerical results, clearly marked 'supervisor's results', obtained out of sight of the candidates.

Question 2

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

- a power supply (see Note 1)
- a switch in the 'off' position
- a $470\ \Omega$ fixed resistor – this should be labelled 'fixed resistor' (see Note 2)
- a thermistor – this should be labelled 'thermistor' (see Note 3)
- a voltmeter with full scale deflection of 5 V and precision of 0.1 V. An analogue or digital meter is suitable
- connecting wires and crocodile clips to enable the supervisor to set up the circuit shown in Figure 2.1
- a $100\ \text{cm}^3$ beaker containing iced water
- a supply of paper towels to mop up any spillages.

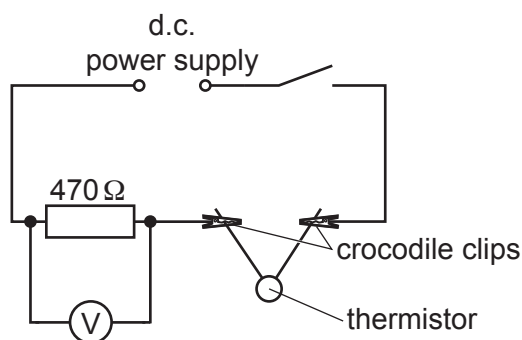


Figure 2.1

Notes

- 1 Three dry cells of 1.5 V each, mounted in holders and arranged in series are suitable as is a 4 V d.c. power supply. Alternatively, a supply of higher voltage in series with an appropriate resistor can be used, or a variable power supply with the control knob fixed at 4 V by taping over it.
- 2 RS components RS 707-7647 or similar is suitable.
- 3 RS components RS 191-2229 or similar is suitable. This is an NTC thermistor with a resistance of approximately $470\ \Omega$ at room temperature.

The thermistor should be attached into the circuit by long leads (approximately 50 cm) to two crocodile clips as shown in Figure 2.1, to enable the candidates to dip the thermistor into iced water.

Action at changeover

The thermistor should be removed from the iced water if necessary.

The supervisor should ensure that the circuit is set up correctly for the next candidate.

Information required by examiners

A sample set of numerical results, clearly marked 'supervisor's results', obtained out of sight of the candidates.

Question 3

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

- a 100 cm³ glass beaker (see Note 1)
- a piece of aluminium foil (see Note 2)
- a stirring thermometer with a range of -10°C to $+110^{\circ}\text{C}$ and 1°C graduations
- a clamp, boss and stand to enable the supervisor to set up the apparatus as shown in Figure 3.1

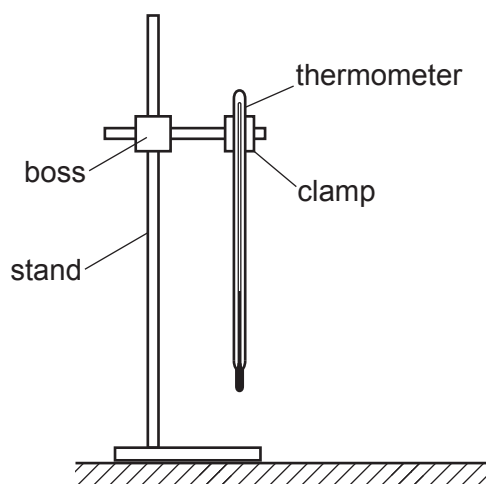


Figure 3.1

- a stopwatch reading to 0.1 s
- a supply of paper towels to mop up any spillages
- a supply of water at around 70°C (see Note 1).

Notes

- 1 The supervisor will need to fill the candidates' 100 cm³ beaker with water at around 70°C to the 100 cm³ mark on two occasions. The 100 cm³ mark should be visible inside the beaker when the outside is covered with aluminium foil. Care should be taken with the hot water.
- 2 The piece of aluminium foil (cooking foil) should be 20 cm $\times$ 20 cm.

Action at changeover

The apparatus is set up for each candidate as shown in Figure 3.1, with the beaker placed at one side of the apparatus. A fresh supply of hot water will be required.

Information required by examiners

A sample set of numerical results, clearly marked 'supervisor's results', obtained out of sight of the candidates.

Question 4

Planning question – no apparatus 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)