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Cambridge Assessment International Education

Cambridge O Level

PHYSICS **5054/32**

Paper 3 Practical Test **October/November 2025**

CONFIDENTIAL INSTRUCTIONS

7693204870

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

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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.

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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 3 V power supply (see Note 2)
- a switch or plug key
- a voltmeter capable of measuring a potential difference of up to 3 V with a minimum precision of 0.1 V, with two connecting leads (see Note 3)
- a light dependent resistor (LDR) (see Notes 4 and 7)
- a 560 Ω resistor (see Notes 5 and 7)
- a piece of opaque card 10 cm × 10 cm (see Note 6)
- sufficient connecting leads to assemble the circuit shown in Fig. 1.1.
- a metre or half-metre rule.

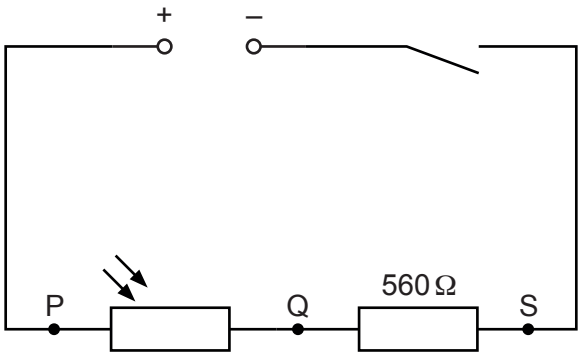


Fig. 1.1

Notes

1 The supervisor must assemble the circuit shown in Fig. 1.1 for the candidates in advance of the examination.

Terminals P, Q and S must be labelled and must be suitable for connection with the leads used for the voltmeter.

2 The following are suitable power supplies:

- two 1.5 V dry cells in suitable holders connected in series
- three 1.2 V rechargeable cells in suitable holders connected in series
- 3 V d.c. power supply.

Where candidates are supplied with a power supply with a variable output voltage, the voltage setting should be set by the supervisor and fixed (e.g., taped).

The positive terminal of the power supply must be labelled.

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3 The voltmeter must have two connecting leads that can be connected between various points in the circuit. The positive (+) terminal of the voltmeter must be marked with a '+' sign. The ends of the leads connected to the voltmeter must be taped in place securely so that they cannot be removed. The voltmeter, with its connecting leads attached, must be placed by the side of the circuit.

4 A NORPS-12 LDR is suitable. The RS component code of a suitable LDR is RS 914-6714 or RS 914-6710.

5 The resistor must be labelled 560 Ω. The RS component code of a suitable resistor is RS 707-7644.

6 A piece of card approximately 10 cm × 10 cm is suitable. The thickness of the card should be such that the potential difference across the LDR increases significantly when the LDR is covered by the card.

7 The resistor and the LDR must have suitable terminals so that the candidate can connect the voltmeter in parallel with either of these components. The LDR must be mounted or arranged so that it is facing upwards.

Action at changeover

The circuit must be restored to its original state as shown in Fig. 1.1, with the switch open, and the voltmeter removed and placed by the side of the circuit.

Information required by examiners

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 12 V, 24 W lamp in a holder with a suitable power supply connected to it
- 2 thermometers, –10 °C to 110 °C, graduated in 1 °C intervals (see Note 3)
- a clamp, boss and stand (see Note 1)
- a piece of white card and a piece of black card (see Notes 2 and 3)
- a stopwatch
- a 30 cm ruler.

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Notes

1 The clamp, boss and stand must be set up for candidates with the thermometer clamped securely as shown in Fig. 2.1. The clamp must not obscure the graduations on the thermometer. The bulb of the thermometer must be level with the filament of the lamp. The white card must face the lamp.

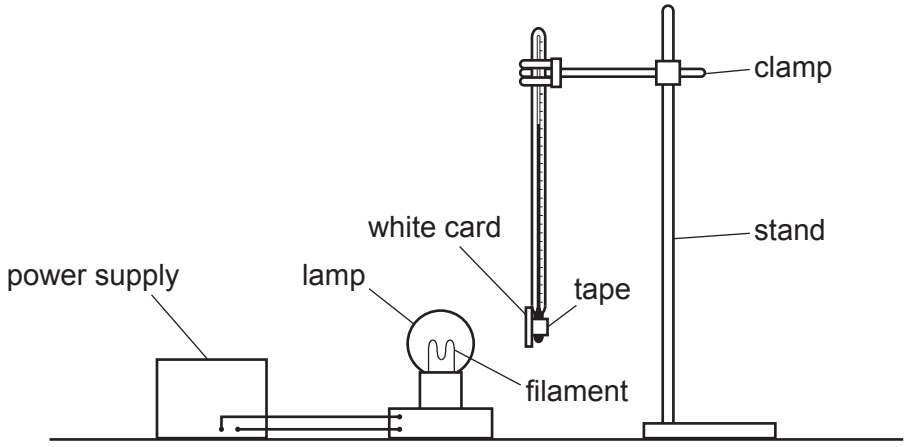


Fig. 2.1

2 Each piece of card must be of the same thickness, and measure approximately 2 cm × 2 cm. The black card should be made by colouring both sides of a piece of white card using a permanent black marker so that the black colour is solid but the two pieces of card are otherwise identical.

3 One card must be attached to the bulb of each thermometer with adhesive tape. The card must touch the thermometer bulb, and the adhesive tape attached to the card must go behind the bulb on the side opposite to the card. The card must completely cover the side of the thermometer bulb that faces the lamp. There must be no adhesive tape between the card and the thermometer bulb. The tape should **not** obscure the front of the card.

Adhesive putty **must not** be used.

The two thermometers for each candidate should be as similar as possible.

Action at changeover

Restore the apparatus to the state shown in Fig. 2.1, with the white card attached to the thermometer bulb, and switch off the lamp.

Information required by examiners

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

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Question 3

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

- a metre rule graduated in centimetres and millimetres
- a triangular block to act as a pivot for the metre rule (see Note 1)
- slotted masses, either $5 \times 20\,g$ masses or $10 \times 10\,g$ masses including a mass hanger, to create masses of 20 g, 40 g, 60 g, 80 g and 100 g (see Note 2).

Notes

1 A triangular glass or plastic prism used in optics experiments is suitable if a triangular wooden block is not available.

2 Masses of 20 g, 40 g, 60 g, 80 g and 100 g will be required by candidates.
Each mass must be able to stand on the metre rule.

Action at changeover

Check that the metre rule, triangular block and the masses stand separately on the bench.

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 is required for this question.

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Supervisor's report

Syllabus and component number | | | | | / | | |

Centre number | | | | | |

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.

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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) .....

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