



Cambridge IGCSE™

PHYSICS

0625/52

Paper 5 Practical Test

October/November 2024

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 each experiment out of sight of the candidates 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)

- (i) 12 microscope slides, each of approximate dimensions $7.5\text{ cm} \times 2.5\text{ cm} \times 0.1\text{ cm}$. See Note 1.
- (ii) Masking tape. See Note 1.
- (iii) A 30 cm ruler with a millimetre scale.
- (iv) A card on which the mass and thickness of a single microscope slide is written. See Note 2.
- (v) Access to a top-pan balance capable of recording mass to 0.1 g. See Note 3.

Notes

- 1 The 12 slides must be stacked together. Masking tape must be secured around the edges of the stack so that candidates cannot count the number of slides in the stack. See Fig. 1.1.



Fig. 1.1

- 2 The mass m and the thickness t of a **single** microscope slide must be written on a piece of card and the card placed close to the stack of slides.

The mass m must be measured to 0.1 g and the thickness t must be measured to 0.01 cm and displayed on the card as shown in Fig. 1.2.

mass of a single slide $m = \dots\dots\dots$ g

thickness of a single slide $t = \dots\dots\dots$ cm

Fig. 1.2

- 3 There must be sufficient top-pan balances available so that candidates do not suffer undue delay when measuring the mass of the stack of microscope slides.

Action at Changeover

Ensure that the information card is placed close to the stack of slides.

Question 2

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

- (i) Power source of 4.5 V to 5 V. See Note 1.
- (ii) Switch.
- (iii) Voltmeter capable of measuring a potential difference of up to 3 V with a resolution of 0.1 V, or better. See Note 2.
- (iv) Red light-emitting diode (LED). See Notes 3 and 6.
- (v) Two resistors of nominal value $220\ \Omega$ and $330\ \Omega$. See Notes 4 and 6.
- (vi) Sufficient connecting leads to set up the circuit shown in Fig. 2.1. See Note 5.

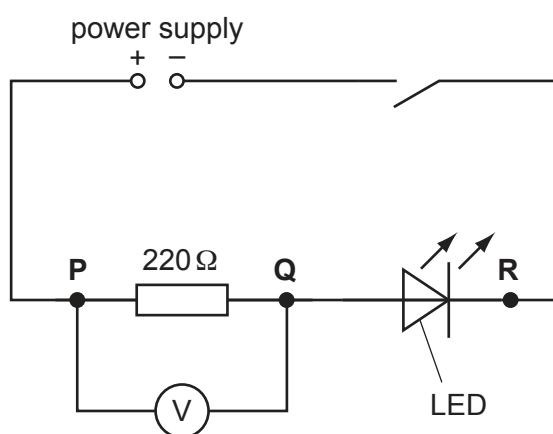


Fig. 2.1

Notes

1 The following are suitable power sources:

- three 1.5 V dry cells in suitable holders connected in series
- four 1.2 V rechargeable cells in suitable holders connected in series
- d.c. power supply of 4.5 to 5 V.

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 source must be labelled.

- 2 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 where they are connected to the voltmeter must be taped in place securely, so that they cannot be removed.
- 3 The RS component code of a suitable red LED is RS 228-5988. Any LED with a working p.d. of 2V, and current 50 mA is suitable.
- 4 The resistors should be labelled $220\ \Omega$ and $330\ \Omega$. The $330\ \Omega$ resistor must be placed by the side of the circuit shown in Fig. 2.1. The RS component codes of suitable resistors are:

 $220\ \Omega$: RS 707-7612
 $330\ \Omega$: RS 707-7622
- 5 The supervisor must set up the circuit as shown in Fig. 2.1. When the switch is closed, the LED should light if it is connected the right way around. Terminals P, Q and R must be labelled.
- 6 The resistors and the LED must have suitable terminals so that the candidate can connect the voltmeter in parallel with these components.

Action at Changeover

The circuit must be restored to its original state as shown in Fig. 2.1, with the switch open.

Question 3

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

- (i) A converging lens of focal length f between 14 cm and 16 cm, with a suitable holder.
- (ii) A metre ruler with a millimetre scale.
- (iii) An illuminated object consisting of a piece of white card with a triangular hole cut in it (see Note 1).
- (iv) A white screen (see Note 2).

Notes

- 1 The object is made by cutting a hole in the shape of an equilateral triangle of side 2.0 cm in the card (see Fig. 3.1). The triangular hole must be covered with translucent paper (e.g. tracing paper). The orientation of the triangle must be as shown in Fig. 3.1.
The illumination can be provided by a low-voltage filament lamp, approximately 24 W with a suitable power supply. An LED lamp of equivalent brightness can be used.

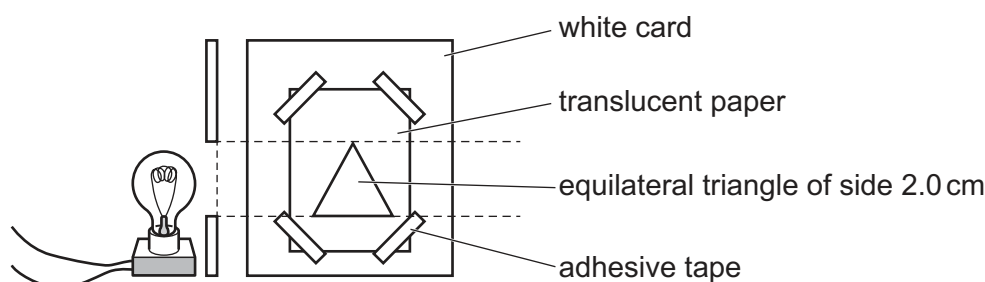


Fig. 3.1

- 2 The screen can be made from a sheet of white card, approximately $15\text{ cm} \times 15\text{ cm}$. Some means of supporting the screen vertically must be provided (e.g. fixing the white card to a small block of wood – see Fig. 3.2)

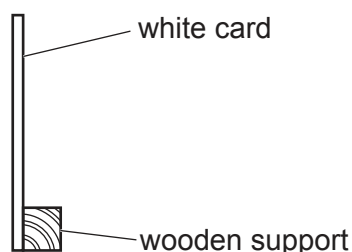


Fig. 3.2

- 3 The light source, the centre of the triangular hole in the object card and the centre of the lens in its holder must be arranged to be the same height above the bench.
- 4 The apparatus is to be situated away from direct sunlight.

Action at Changeover

Check that the apparatus is intact and still working.
 Replace the screen if it has been marked.
 Switch off the lamp.

Question 4

Planning question – 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 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)