

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

PHYSICS

0625/05

Paper 5 Practical Test

October/November 2003

CONFIDENTIAL INSTRUCTIONS

Great care should be taken that any confidential information given does not reach the candidates either directly or indirectly.

This document consists of **8** printed pages.



Instructions for preparing apparatus

The Supervisor is **not** allowed to consult the Question Paper before the examination. This teacher should, as a part of the preparation of the examination, test the apparatus in order to satisfy themselves that it is satisfactory.

The Supervisor is asked to give (and attach to the Report form printed on pages 7 and 8) a *brief* description of the apparatus supplied, mentioning any points that are likely to be of importance to the Examiner in marking the answers. The Supervisor should also report any assistance given to candidates. All reports should be signed by the Supervisor and by the person responsible for preparing the apparatus.

In addition to the usual equipment of a physics laboratory, each candidate will require the apparatus specified in these Instructions. If a candidate breaks any of the apparatus, or loses any of the material supplied, the matter should be rectified and a note made in the Report.

Number of sets of apparatus

As a *minimum*, the number of sets of apparatus provided should be $N/4$, where N is the number of candidates (per session): a few spare sets should, preferably, be available to avoid any candidate being delayed when moving to another question.

Centres may find it more convenient and easier to administer if $N/3$ sets (plus one or two 'spares') of apparatus are provided.

The order in which a given candidate attempts the four questions is immaterial.

Assistance to Candidates

The purpose of the Practical Physics test is to find out whether the candidates can carry out simple practical work themselves. The Examiners are aware that candidates may sometimes be unable to show their practical ability through failure to understand some point in the theory of the experiment. If Examiners were present in the laboratory, they would be willing to give a hint to enable such a candidate to get on with an experiment. In order to overcome this difficulty, the Supervisor is asked to co-operate with the Examiners to the extent of being ready to give (or allow the Physics teacher to give) a hint to a candidate who is unable to proceed.

The following regulations must be strictly adhered to.

- (i) No hint may be announced to the candidates as a whole.
- (ii) A candidate who is unable to proceed and requires assistance must come up to the Supervisor and state the difficulty. Candidates should be told that the Examiners will be informed of any assistance given in this way.
- (iii) A report must be made of any assistance given to the candidate, with the name and index number of the candidate.

It is suggested that the following announcement be made to the candidates.

'The Examiners do not want you to waste time through inability to get on with an experiment. Any candidate, therefore, who is unable to get on with the experiment after spending 5 minutes at it may come to me and ask for help. I shall report to the Examiners any help given in this way, and some marks may be lost for the help given. You may ask me for additional apparatus which you think would improve the accuracy of your experiments, and you should say, on your script, how you use any such apparatus supplied.'

Question 1

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

- (i) 2 thermometers, -10°C to 110°C , capable of being read to the nearest 1°C .
- (ii) Clamp, boss and stand.
- (iii) 250 ml beaker containing approximately 150 ml of hot water.
- (iv) Test-tube approximately $\frac{2}{3}$ full of hot water (at the same temperature as the water in (iii) above).
- (v) Stopclock or stopwatch or wall-mounted clock with a suitable seconds sweep hand. Candidates will be required to take readings at 30 s intervals. They may use their own wrist-watch facility if they wish. The question will refer to a stopclock.

Notes

1. The test-tube is to be set up for the candidates as shown in Fig. 1.1.

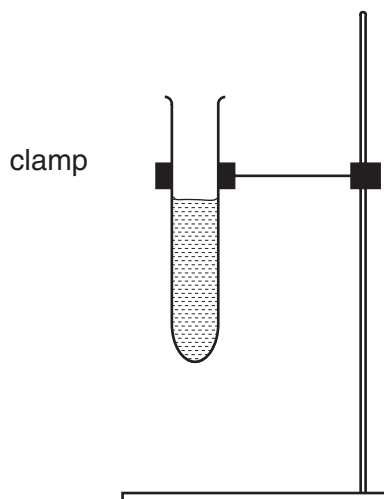


Fig. 1.1

2. The hot water is to be supplied for each candidate by the Supervisor. The water temperature should be between 80°C and 100°C .
3. Candidates should be warned of the dangers of burns or scalds when using very hot water.
4. Cloths or tissues should be available in case of spillages.

Action at changeover

Remove the thermometers from the beaker and the test-tube. Replace the hot water in the beaker and the test-tube.

Question 2

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

- (i) Metre rule (see note 1 below).
- (ii) Triangular block to act as a pivot for the metre rule. This block is to stand on the bench.
- (iii) 50 g mass.
- (iv) Lump of plasticine, mass 40 g (see note 2 below).

Notes

1. The metre rule should balance on the pivot when the 50 cm mark is directly over the pivot. It may be necessary to tape a small mass (e.g. plasticine) to one end of the rule to achieve this.
2. The lump of plasticine is to be moulded so that it is wedge-shaped (see Fig. 2.1). A strip of sellotape should be stuck along the bottom face of the wedge to enable it to slide easily along the metre rule.

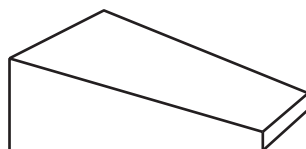


Fig. 2.1

3. Spare wedges of plasticine should be available in case candidates change the shape.

Action at changeover

Dismantle the apparatus. Check the shape of the plasticine.

Question 3

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

- (i) Sheet of plain A4-sized paper with a hole in one corner so that it can be tied into the Answer Booklet (provide one per candidate).
- (ii) Plane mirror, approximately 10 cm × 5 cm or larger.
- (iii) A suitable holder for the mirror so that it can stand with one of its longer edges on the table and its reflecting surface vertical.
- (iv) 4 optics pins.
- (v) Pin board (e.g. a cork mat), 300 mm × 210 mm or larger.
- (vi) 50 cm or 30 cm rule, graduated in mm (candidates may use their own).
- (vii) String to tie ray trace sheet ((i) above) into the Answer Booklet (provide one per candidate).

Action at changeover

Supply a clean sheet of paper and a piece of string.

Question 4

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

- (i) Voltage source of approximately 1.5 – 2.0 V. Where candidates are supplied with a voltage source with a variable output voltage, the voltage setting should be set by the Supervisor and fixed (e.g. taped).
- (ii) Voltmeter capable of measuring the supply p.d. with a minimum precision of ± 0.1 V.
- (iii) Sufficient connecting leads to set up the circuit shown in Fig. 4.1.
- (iv) Switch (the switch may be an integral part of the power supply).
- (v) Approximately 105 cm of straight, bare constantan wire, diameter 0.45 mm (26 swg) or 0.40 mm (28 swg) or 0.31 mm (30 swg), taped to a metre rule.
- (vi) Two suitable terminals attached to the constantan wire at the ends of the metre rule so that connections can be made to the circuit shown in Fig. 4.1.
- (vii) Jockey or other sliding contact suitable for making contact at different points along the constantan wire.

Note

The circuit shown in Fig. 4.1 must be set up for the candidates.

Action at changeover

Check that the circuit is connected correctly.

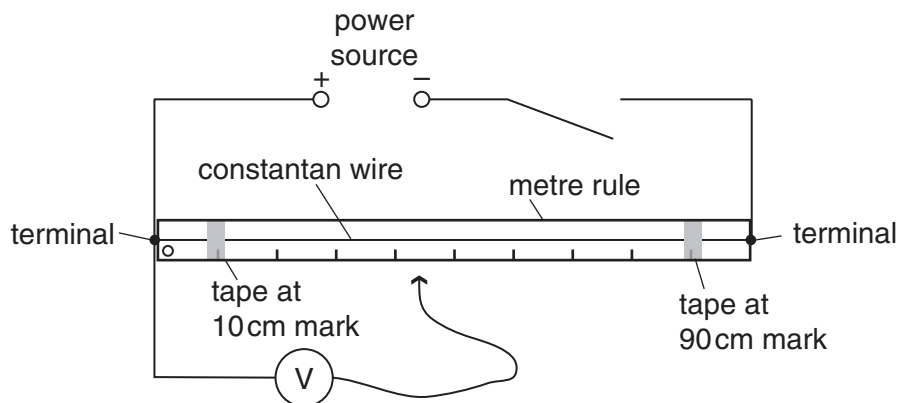


Fig. 4.1

This form must be completed and returned with the scripts.

REPORT ON PRACTICAL PHYSICS

(IGCSE OCTOBER/NOVEMBER 2003)

General

The Supervisor is invited to give details of any difficulties experienced by particular candidates, giving their names and candidate numbers. These should include reference to:

- (a) difficulties due to faulty apparatus;
- (b) accidents to apparatus or materials;
- (c) any other information that is likely to assist the Examiner, especially if this cannot be discovered in the scripts;
- (d) any help given to a candidate.

Information required

A plan of workbenches, giving details by index number of the places occupied by the candidates for each experiment for each session, must be enclosed with the Answer Booklets.



Information required (cont.)

A list by name and index number of candidates requiring help, with details of the help provided

CENTRE NO.

NAME OF CENTRE

Declaration (to be signed by the Principal)

The preparation of the practical examination has been carried out so as to maintain fully the security of the examination.

SIGNED