



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

PHYSICS

0625/05

Paper 5 Practical Test

May/June 2007

CONFIDENTIAL INSTRUCTIONS

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



If you have any problems or queries regarding these Instructions, please contact CIE
by e-mail: International@cie.org.uk,
by phone: +44 1223 553554,
by fax: +44 1223 553558,
stating the Centre number, the nature of the query and the syllabus number quoted above.

This document consists of **10** printed pages and **2** blank pages.



Instructions for preparing apparatus

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

The Supervisor is asked to give (and attach to the Report form printed on pages 11 and 12) 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 an Examiner were present in the laboratory, he/she 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 five 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) Thermometer, -10°C to 110°C , capable of being read to the nearest 1°C .
- (ii) Two 250 cm^3 beakers, one labelled **A** the other labelled **B**.
- (iii) A supply of hot water, labelled '**hot water**'.
- (iv) A supply of water at room temperature, labelled '**water at room temperature**'.
- (v) 100 cm^3 measuring cylinder.
- (vi) Paper towels in case of spillages.

Notes

1. The hot water is to be supplied for each candidate by the Supervisor. The water temperature should be between 80°C and 100°C .
2. Candidates should be warned of the dangers of burns or scalds when using very hot water.

Action at changeover

Discard the water in beaker **A**. Replace the hot water. Replenish the supply of water at room temperature.

Question 2**Items to be supplied by the Centre (per set of apparatus unless otherwise specified)**

- (i) A sheet of stiff A4 sized card.
- (ii) Two bosses, two clamps, two stands.
- (iii) An optics pin or thin nail to act as a pivot.
- (iv) 50 g mass with a hook to hang it from the card as shown in Fig. 2.1 (a 10 g mass hanger with four 10 g slotted masses is suitable).
- (v) Drinking straw or wooden skewer to act as a pointer.
- (vi) Metre rule.
- (vii) Set square.

Notes

1. The apparatus is to be set up for the candidates as shown in Fig. 2.1.
2. The holes in the card are to be labelled **1 – 6** and are to be 15 mm, 30 mm, 45 mm, 60 mm, 75 mm and 90 mm respectively from the point on the edge of the card labelled **A** as shown in Fig. 2.1.
3. The pointer is to be stuck near the top edge of the card as shown in Fig. 2.1.
4. The hole for the pivot should be positioned so that the card hangs approximately horizontally as shown in Fig. 2.1. The hole should be just large enough to allow the card to pass easily over the end of the pivot.
5. Some spare cards prepared as described in Notes 2 – 4 above should be available.

6. The apparatus should be arranged so that there is no danger of a candidate being injured by the point of the pivot.
7. The zero end of the metre rule is to be on the bench.

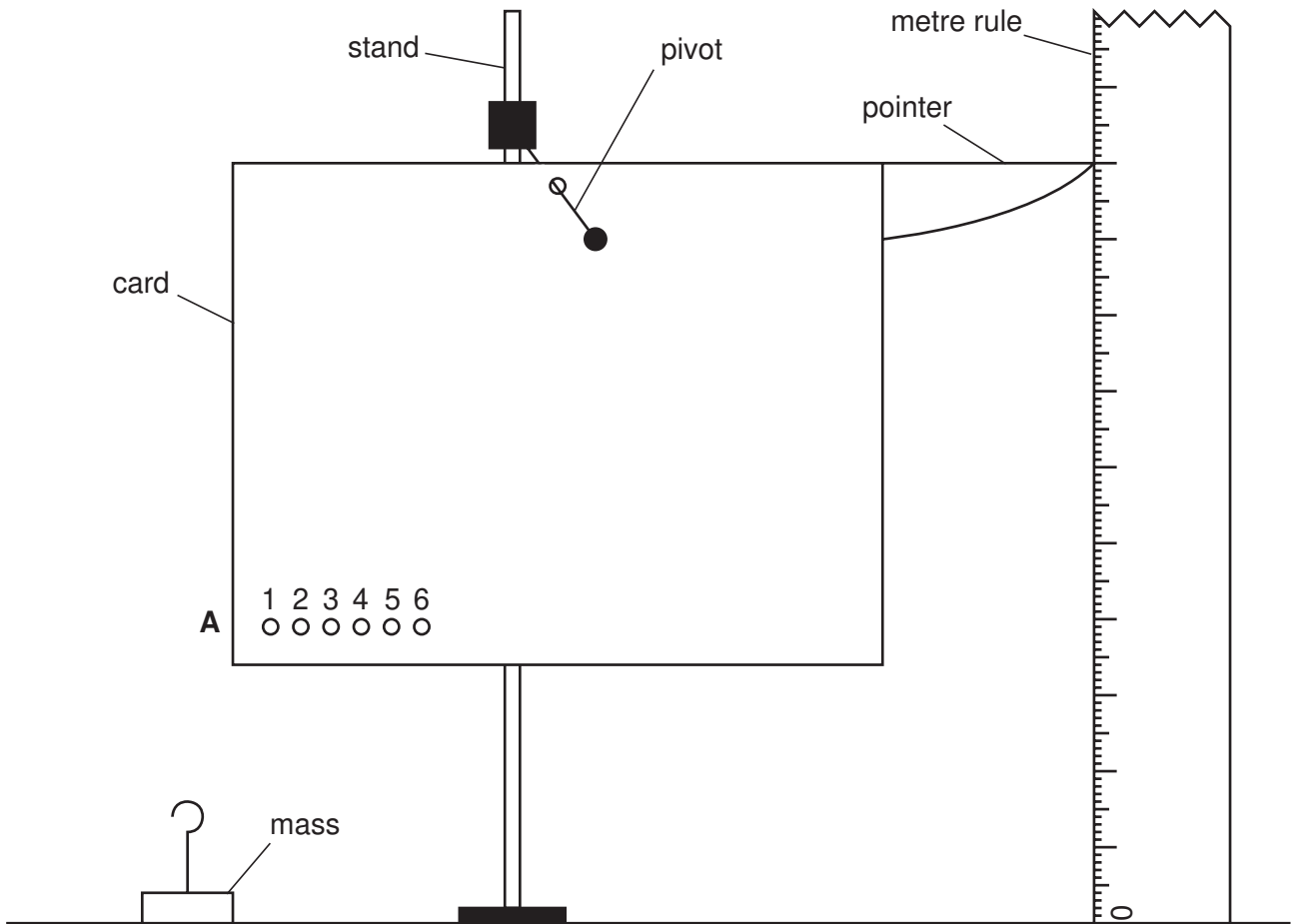


Fig. 2.1

Action at changeover

Arrange the apparatus as shown in Fig. 2.1.

Question 3

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

- (i) Voltage source of approximately 1.5 – 2.5V. 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) Ammeter capable of measuring current up to 1.0 A with a minimum precision of 0.01 A.
- (iv) Switch. (The switch can be an integral part of the power supply.)
- (v) Two lengths of bare resistance wire taped to a metre rule and labelled as shown in Fig. 3.1 (see note 1).
- (vi) Sufficient connecting leads to set up the circuit shown in Fig. 3.2.
- (vii) Two crocodile clips connected as shown in Fig. 3.2.

Notes

1. The two pieces of resistance wire should

- be approximately 105 cm long,
- be of the same material,
- have resistances in the range $3\ \Omega$ to $30\ \Omega$,
- be chosen in such a way that the diameter of **CD** is approximately twice that of **AB**.

Suitable pairs of wires are shown in the table below.

| AB | CD |
|---------------------------------------|---------------------------------------|
| 34 swg (diameter 0.234 mm) constantan | 26 swg (diameter 0.457 mm) constantan |
| 32 swg (diameter 0.274 mm) constantan | 24 swg (diameter 0.559 mm) constantan |

2. The apparatus must be set out for the candidates as shown in Fig. 3.2.
3. The candidates must be able quickly and easily to change the connections in the circuit.

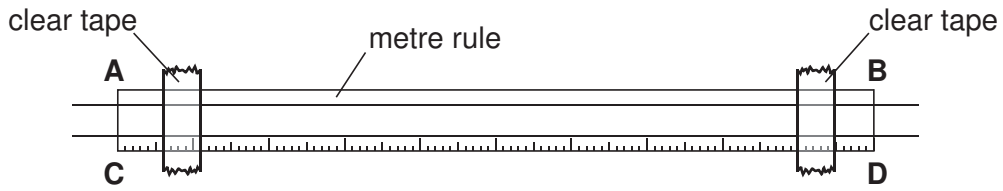


Fig. 3.1

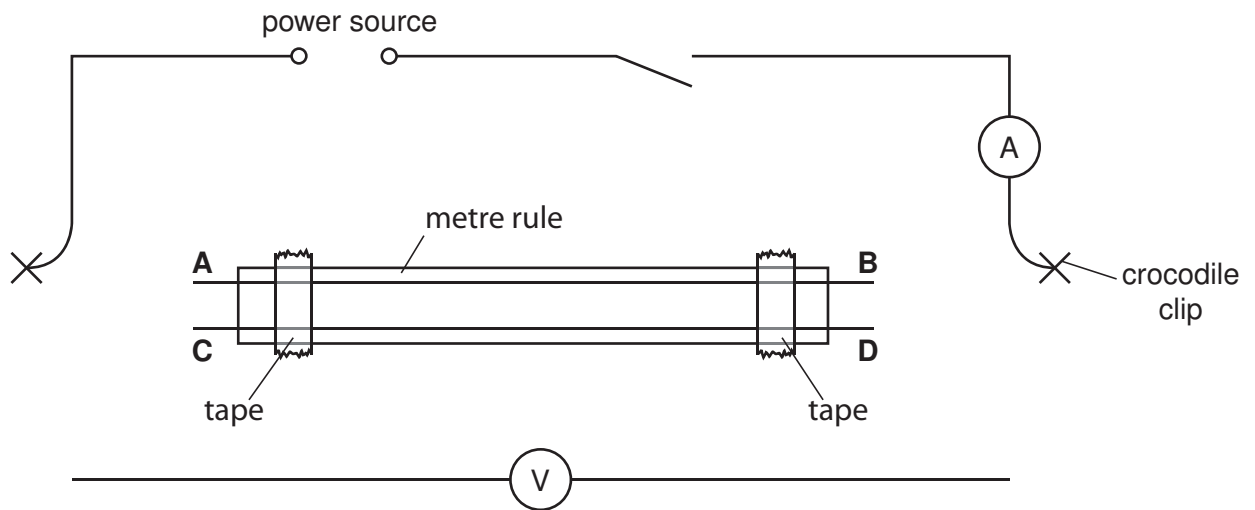


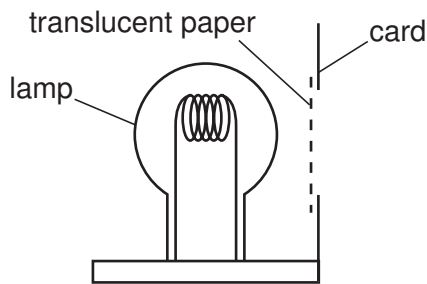
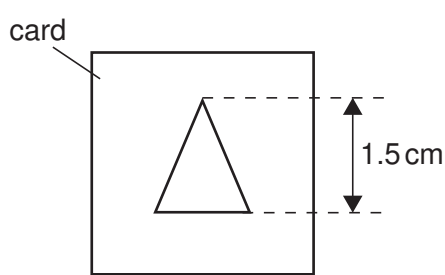
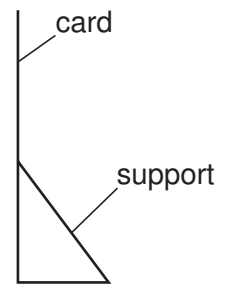
Fig. 3.2

Action at changeover

Check that the apparatus is set out as shown in Fig. 3.2.

Question 4**Items to be supplied by the Centre (per set of apparatus unless otherwise specified)**

- (i) Converging lens, focal length 150 mm, with a suitable holder.
- (ii) Illuminated object with a triangular hole of height approximately 1.5 cm (see Fig. 4.1 and Fig 4.2). The hole is to be covered with thin translucent paper (e.g. tracing paper).
- (iii) Metre rule.
- (iv) Screen. (A white sheet of stiff card approximately 150 mm × 150 mm, fixed to a wooden support is suitable. See Fig. 4.3.)

**Fig. 4.1****Fig. 4.2****Fig. 4.3****Notes**

1. The lamp for the illuminated object should be a low voltage lamp, 24W or higher power (a car headlamp bulb is suitable), with a suitable power source.
2. The centre of the hole which forms the object, the lamp filament and the centre of the lens in its holder are all to be at the same height above the bench.
3. The apparatus should be situated away from direct sunlight.

Action at changeover

None.

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This form must be completed and returned with the scripts.

REPORT ON PRACTICAL PHYSICS

(IGCSE MAY/JUNE 2007)

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 candidate 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 candidate number of candidates requiring help, with details of the help provided.

CENTRE NO.

NAME OF CENTRE

Declaration (to be signed by the Supervisor and the person responsible for preparing the apparatus)

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

SIGNED
Supervisor

SIGNED
Person responsible for preparing the apparatus

