



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**PHYSICS**

**0625/05**

Paper 5 Practical Test

**October/November 2008**

**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](mailto: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 **9** printed pages and **3** 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) Expendable spring, 55 mm  $\times$  15 mm diameter, capable of supporting at least 500 g without overstretching (e.g. Philip Harris expendable steel spring B8A41397).
- (ii) 100 g mass. (See note 2).
- (iii) Small S-hook (for example made from a paper clip).
- (iv) Stand, two clamps and two bosses.
- (v) 250 cm<sup>3</sup> beaker containing approximately 200 cm<sup>3</sup> of cold water.
- (vi) Metre rule.
- (vii) Cloth or tissues in case of spillages.

#### Notes

1. The apparatus is to be set up as shown in Fig. 1.1. The zero end of the rule must be touching the bench.
2. The mass should be attached to the S-hook with a light thread as shown in Fig. 1.2.
3. It must be possible for the mass to be completely submerged within the water in the beaker without touching the base or sides of the beaker.

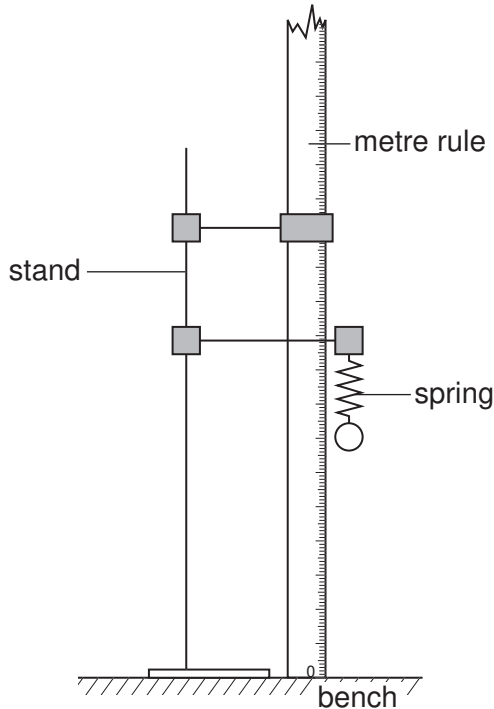


Fig. 1.1

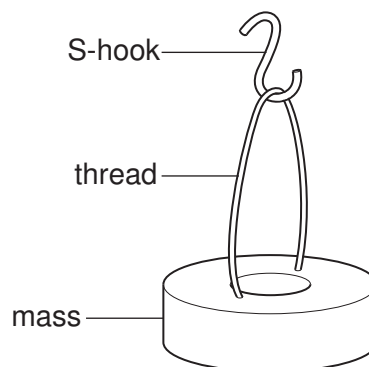


Fig. 1.2

#### Action at changeover

Check that the beaker contains approximately 200 cm<sup>3</sup> of cold water.

Remove the mass from the spring.

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

- (i) Power source of approximately 1.5 – 2.0V. Where candidates are supplied with a power 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 reading up to 1.0 A with a minimum precision of 0.05 A.
- (iv) Two lengths of approximately 105cm of straight, bare wire, taped to a metre rule. The wire should be constantan (diameter 0.45 mm (26 swg) or 0.38 mm (28 swg)) or nichrome (diameter 0.45mm (26 swg)). The taping must allow connection to be made on wire **AB** at the 50.0cm mark on the rule.
- (v) Approximately 50 cm lead ending in a crocodile clip. The crocodile clip is to be labelled **Z**.
- (vi) Sufficient connecting leads to set up the circuit shown in Fig. 2.1.
- (vii) Two additional leads one of which is to be about 1.2m long.
- (viii) Switch (this can be an integral part of the power supply).

**Notes**

1. The circuit is to be set up for the candidates as shown in Fig. 2.1.
2. If cells are used as the power source they must remain adequately charged throughout the Examination.
3. The ends of the wires should be connected to suitable terminals labelled **A**, **B**, **C** and **D** which should be chosen so that reliable connections can be made to the circuit.

4. It must be possible for the candidates easily and quickly to change the connections in the circuit.

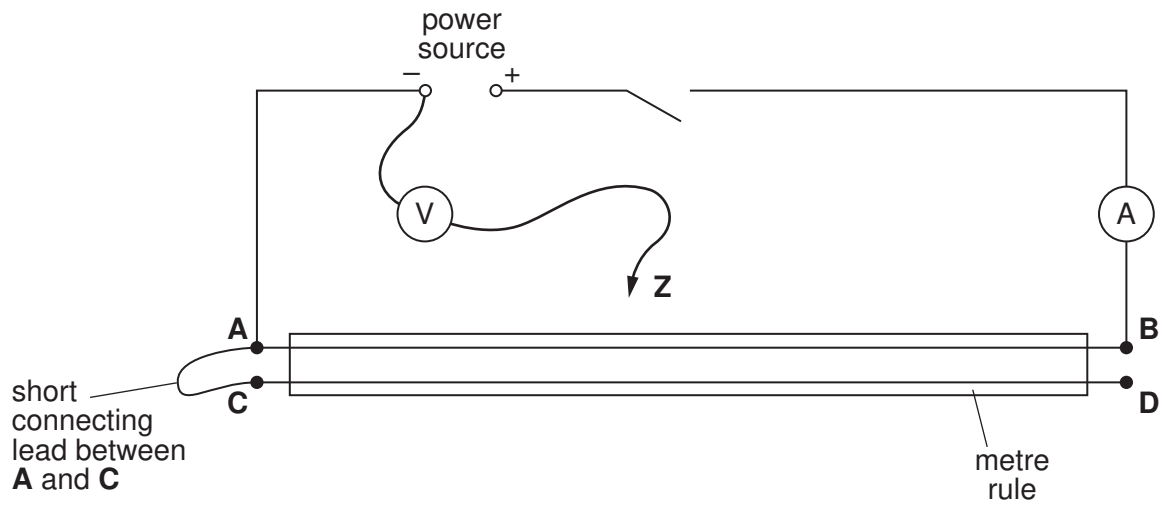


Fig. 2.1

#### Action at changeover

Reconnect the circuit as shown in Fig. 2.1. Check that the output of the power source is close to its original value.

**Question 3****Items to be supplied by the Centre (per set of apparatus unless otherwise specified)**

- (i) Thermometer,  $-10^{\circ}\text{C}$  to  $110^{\circ}\text{C}$  capable of being read to the nearest  $1^{\circ}\text{C}$ .
- (ii)  $250\text{ cm}^3$  beaker, labelled **A**, containing approximately  $100\text{ cm}^3$  of hot water.
- (iii) A supply of water at room temperature. Each candidate will require about  $150\text{ cm}^3$ .
- (iv)  $100\text{ cm}^3$  measuring cylinder.
- (v) A stirrer (for example a teaspoon).

**Notes**

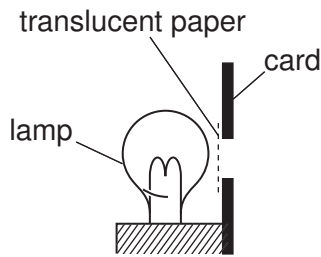
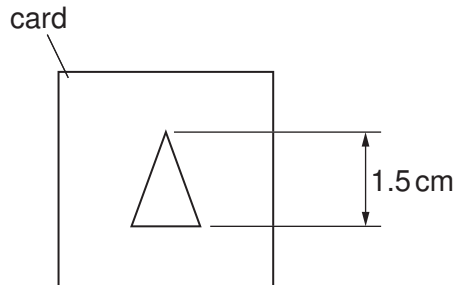
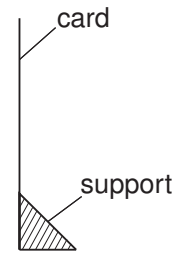
1. The hot water is to be supplied for each candidate by the Supervisor. The water temperature should be between  $80^{\circ}\text{C}$  and  $100^{\circ}\text{C}$ .
2. Candidates should be warned of the dangers of burns or scalds when using very hot water.
3. Cloths or tissues should be available in case of spillages.

**Action at changeover**

Empty beaker **A** and refill it with approximately  $100\text{ cm}^3$  of hot water. Replenish the supply of water at room temperature.

**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.).
- (v) Plane mirror fixed to a support such that it can stand vertically on the bench close to the lens.

**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.
4. The mirror must be at least as wide as the lens and stand on the bench to reach at least to the top of the lens in its holder.

**Action at changeover**

Place the mirror next to the screen.





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**This form must be completed and returned with the scripts.**

**REPORT ON PRACTICAL PHYSICS**

(IGCSE OCTOBER/NOVEMBER 2008)

*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 scripts.



*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

