



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**PHYSICS**

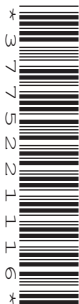
**0625/52**

Paper 5 Practical Test

**October/November 2017**

**CONFIDENTIAL INSTRUCTIONS**

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



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If you have any queries regarding these Confidential Instructions, please contact Cambridge stating the Centre number, the nature of the query and the syllabus number quoted above.

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The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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 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 Supervisor's Report 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.

In addition to the usual equipment of a physics laboratory, each candidate will require the apparatus specified in these Confidential 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 Supervisor's Report.

### Number of sets of apparatus

As a *minimum*, the number of sets of apparatus provided should be  $N/3$ , 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.

The order in which a given candidate attempts the four questions is immaterial. It is suggested that candidates spend **about 20 minutes on each of questions 1 to 3, and about 15 minutes on question 4.**

### Assistance to candidates

The purpose of the Physics Practical 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 candidate 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) Clamp, boss and stand.
- (ii) 2 pendulum bobs. See notes 1, 2 and 3.
- (iii) 2 lengths of thin string, each of length approximately 60 cm. See note 1.
- (iv) Metre rule, graduated in mm.
- (v) Set-square.
- (vi) Stopwatch with a resolution of at least 0.1 s.
- (vii) Split cork, or similar device, to hold the string of a pendulum between the jaws of the clamp. See notes 1, 2 and 3.

#### Notes

1. One bob must be made from modelling clay, rolled into a spherical shape with diameter approximately 2.0 cm. This pendulum must be set up for the candidates with length approximately 55 cm from the bottom of the split cork to the bottom of the pendulum bob. The pendulum string must be embedded within the bob so that the pendulum can swing without the bob slipping from the string. See Fig. 1.1.

The second bob must be made from approximately the same mass of the modelling clay as the first bob. This is to be rolled into a cylinder of length approximately 5.0 cm, with the string embedded within the bob so that the pendulum can swing without the bob slipping from the string. See Fig. 1.1.

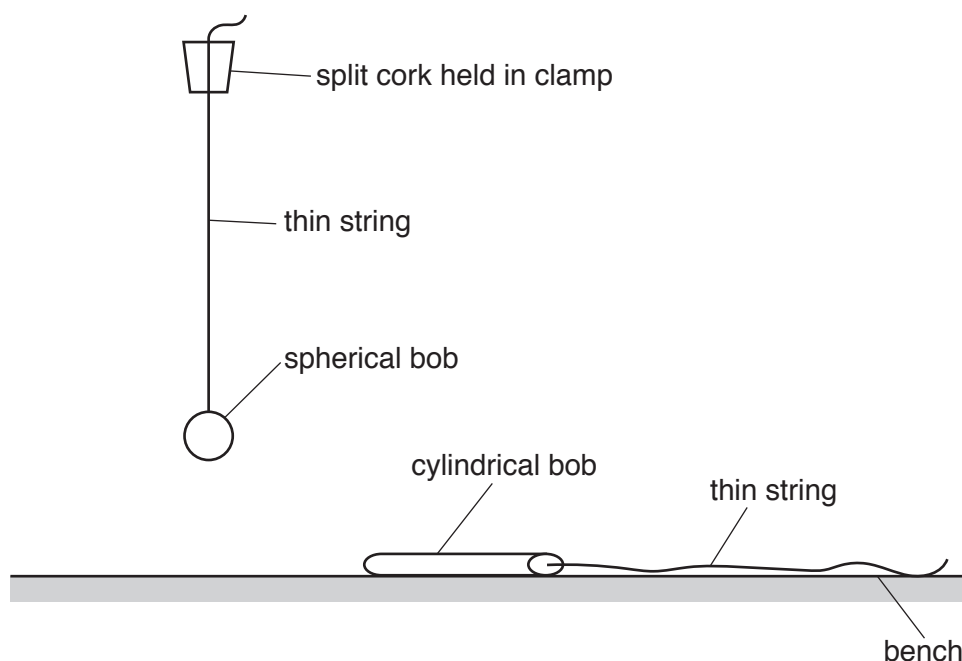


Fig. 1.1

2. Candidates must be able easily to exchange one pendulum for the other pendulum.
3. Candidates must be able easily to adjust the length of a pendulum when it is supported from the split cork.
4. It may be necessary to increase the stability of the clamp stand, for example, by using a G-clamp or by placing a weight on the base.
5. Spare pendulum bobs as described in note 1 must be available.

**Action at changeover**

Check that the apparatus is set up as described in note 1.

Check that the bobs are the correct shape.

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

- (i) Thermometer,  $-10^{\circ}\text{C}$  to  $110^{\circ}\text{C}$ , graduated in  $1^{\circ}\text{C}$  intervals.
- (ii)  $250\text{ cm}^3$  beaker, labelled **A**.
- (iii)  $100\text{ cm}^3$  or  $250\text{ cm}^3$  measuring cylinder.
- (iv) Supply of hot water. See notes 1 and 2.
- (v) Supply of water at room temperature. See note 3.
- (vi) Supply of paper towels to mop up any spills of water.
- (vii) Stirrer.

**Notes**

1. Hot water is to be available for each candidate throughout the experiment. The water should be maintained at an approximately constant temperature between  $75^{\circ}\text{C}$  and  $85^{\circ}\text{C}$ . Each candidate will require about  $300\text{ cm}^3$  of hot water in total. Candidates must be able to pour hot water into the measuring cylinder and beaker safely.
2. Candidates should be warned of the dangers of burns or scalds when using very hot water.
3. Water at room temperature is to be available for each candidate throughout the experiment. The supply of water must be labelled '**cold water**'. Each candidate will require about  $300\text{ cm}^3$  of cold water in total.

**Action at changeover**

Empty the beaker and measuring cylinder.

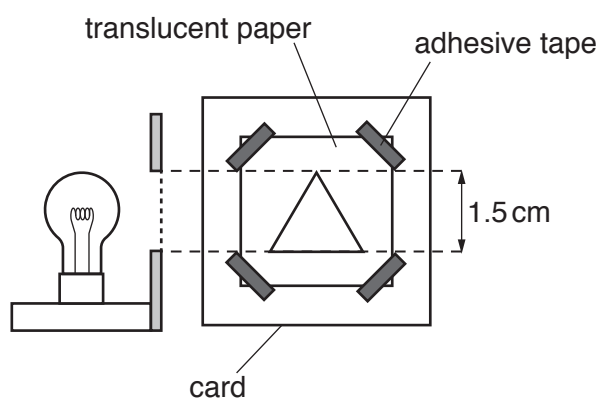
Check the supply of hot water.

Check the supply of water at room temperature.

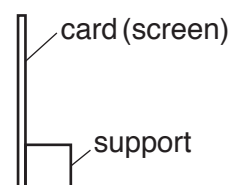
### Question 3

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

- (i) Converging lens, focal length between 14.0 cm and 16.0 cm, with a suitable holder.
- (ii) Illuminated object with a triangular hole of height 1.5 cm (see Fig. 3.1). The hole is to be covered with thin translucent paper (e.g. tracing paper). See note 2.
- (iii) Metre rule, graduated in mm.
- (iv) Screen. A white sheet of stiff card approximately 15 cm × 15 cm, fixed to a wooden support is suitable. See Fig. 3.2.
- (v) Spare lamps should be available.



**Fig. 3.1**



**Fig. 3.2**

#### Notes

1. The lamp for the illuminated object should be a low voltage lamp, approximately 24 W or higher power (a car headlamp bulb is suitable), with a suitable power supply.
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 is to be situated away from direct sunlight.

#### Action at changeover

Check that the apparatus is ready for the next candidate.

### Question 4

No apparatus is required for this question.

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

### **SUPERVISOR'S REPORT**

#### *General*

The Supervisor is required 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.

The space below can be used for this, or it may be on separate paper.

*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)*

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

SIGNED .....  
Supervisor