



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS

0625/51

Paper 5 Practical Test

October/November 2014

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: info@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.

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 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 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.'

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

- (i) Plastic or cardboard drinks cup with volume approximately 200 cm^3 .
- (ii) 30 cm ruler graduated in mm.
- (iii) Metre rule.
- (iv) 50 cm of thin, inextensible string.
- (v) 250 cm^3 measuring cylinder. A smaller measuring cylinder may be used if a 250 cm^3 measuring cylinder is not available.
- (vi) Supply of water at room temperature. Approximately 400 cm^3 is required by each candidate.
- (vii) A low-sided container that the cup can be placed into whilst water is poured into the cup. The purpose of the container is to catch any spilled water.
- (viii) Paper towels or cloths to wipe up any spilled water.
- (ix) Spare cups and string should be available.

Action at changeover

Empty water from the measuring cylinder, cup and container.

Check the supply of water.

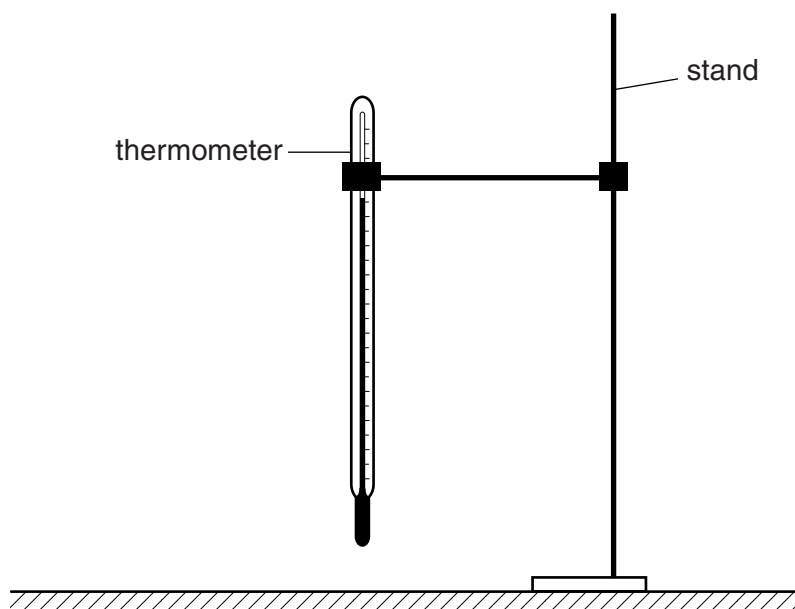
Check that the cup and string are undamaged. Replace if necessary.

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

- (i) Thermometer: -10°C to 110°C , graduated in 1°C intervals.
- (ii) 250 cm^3 beaker labelled **A**.
- (iii) 250 cm^3 beaker insulated around the outside, but not on the top or the bottom, with cotton wool.
- (iv) Clamp, boss and stand.
- (v) Stopclock, stopwatch or wall-mounted clock showing seconds. Candidates will be required to take readings at 30s intervals. They may use their own wristwatch facility if they wish. The question will refer to a stopclock.
- (vi) Supply of hot water. Each candidate will require approximately 400 cm^3 .
- (vii) Supply of paper towels to mop up any spillages of water.
- (viii) Spare thermometers should be available.

Notes

1. The thermometer, clamp, boss, and stand are to be set up for the candidate as shown in Fig. 2.1.

**Fig. 2.1**

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 and scalds when using very hot water.
4. The candidates must be able easily and safely to move the thermometer in and out of the beakers.

Action at changeover

Check the supply of hot water.

Check that the thermometer is arranged as shown in Fig. 2.1.

Check that the cotton wool is dry. Replace if necessary.

Check that the thermometer is reading room temperature. Replace if necessary.

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

- (i) Power supply of approximately 1.5V – 2V. Where candidates are provided with a power supply 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 0.1V. See note 2.
- (iii) Ammeter capable of measuring the current with a minimum precision of 0.02A. See note 2.
- (iv) Switch. The switch may be an integral part of the power supply.
- (v) Approximately 105 cm of straight, bare constantan (Eureka) wire, diameter 0.45 mm (26 swg) or 0.38 mm (28 swg) or 0.32 mm (30 swg), taped to a metre rule only between the 3 cm and 7 cm marks and between the 93 cm and 97 cm marks. The end of the wire at the zero end of the rule is to be labelled **A**, the other end is to be labelled **B**.
- (vi) Two suitable terminals (e.g. crocodile clips) attached to the constantan wire at the ends of the metre rule so that connections can be made to the circuit shown in Fig. 3.1.
- (vii) Sliding contact, labelled **C**. This may be a jockey or a small screwdriver connected to a lead by means of a crocodile clip.
- (viii) Sufficient connecting leads to set up the circuit shown in Fig. 3.1.

Notes

1. The circuit is to be set up for the candidates as shown in Fig. 3.1.

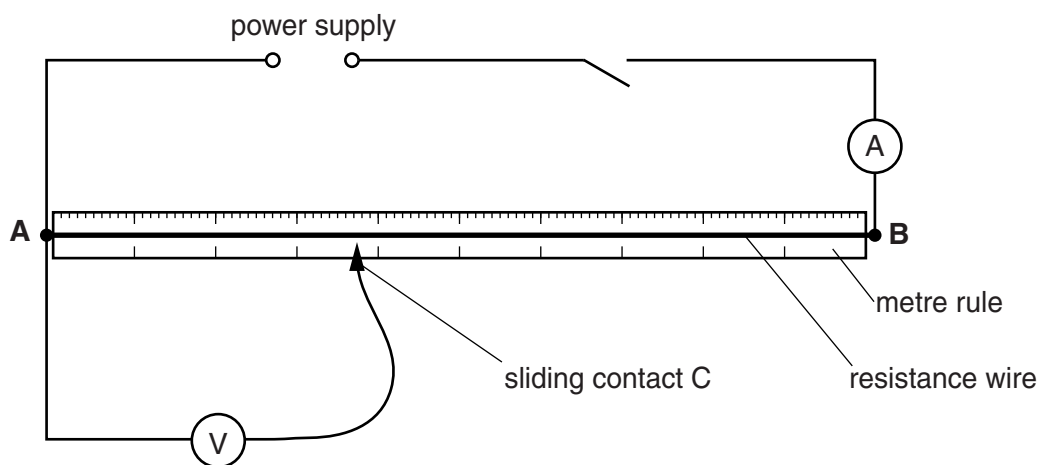


Fig. 3.1.

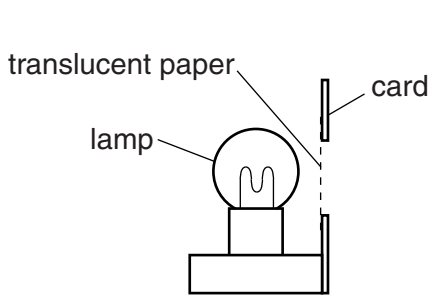
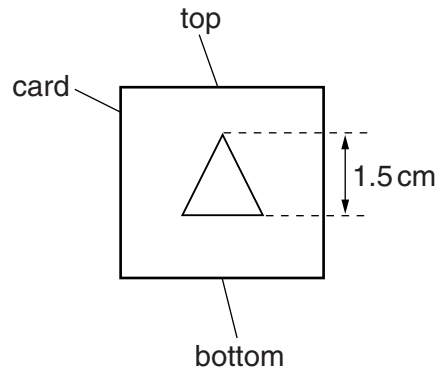
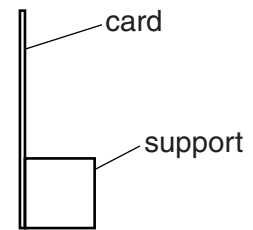
2. Either analogue or digital meters are suitable. Any variable settings should be set by the Supervisor and fixed (e.g. taped).
3. As an alternative to (v) and (vi) a standard 100 cm potentiometer with ends labelled **A** and **B** is acceptable.
4. If cells are to be used as the power supply, they must remain adequately charged throughout the examination. Spare cells should be available.

Action at changeover

Check that the circuit is set up as shown in Fig. 3.1 and it is working. Switch off the circuit.

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

- (i) Converging lens, focal length approximately 15 cm, with a suitable holder.
- (ii) Illuminated object with a triangular hole of height 1.5 cm (see Figs. 4.1 and 4.2). The hole is to be covered with thin translucent paper (e.g. tracing paper). See note 2.
- (iii) Metre rule.
- (iv) Screen. A white sheet of stiff card approximately 15 cm × 15 cm, fixed to a wooden support is suitable. See Fig. 4.3.
- (v) Spare lamps should be available.
- (vii) 30 cm ruler graduated in mm. Candidates may use their own.

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

1. The lamp for the illuminated object should be a low voltage lamp, approximately 24W or higher power, with a suitable power supply. Candidates must be able easily and safely to switch the lamp on and off.
2. The apex of the triangle must be towards the top of the card, as shown in Fig. 4.2.
3. 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.
4. The apparatus is to be situated away from direct sunlight.

Action at changeover

Check that the apparatus is ready for the next candidate.

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This form must be completed and returned with the scripts.

REPORT ON PRACTICAL PHYSICS

(IGCSE OCTOBER/NOVEMBER 2014)

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

