

PHYSICS

9702/34

Paper 3 Advanced Practical Skills 2

May/June 2015

CONFIDENTIAL INSTRUCTIONS

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

No access to the Question Paper is permitted in advance of the examination.



If you have any problems or queries regarding these Instructions, please contact Cambridge
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.

This document consists of **6** printed pages and **2** blank pages.

Preparing apparatus

These Instructions detail the apparatus required for the experiments in the Question Paper. It is essential that absolute confidentiality is maintained in advance of the examination: the contents of these Instructions must not be revealed either directly or indirectly to candidates.

No access is permitted to the Question Paper in advance of the examination.

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by e-mail: info@cie.org.uk,
or by telephone: +44 1223 553554,
or by fax: +44 1223 553558,

stating the nature of the query and quoting the syllabus and paper numbers (9702/34).

It is assumed that the ordinary apparatus of a Physics laboratory will be available.

Number of sets of apparatus

The number of sets of apparatus provided for each experiment should be $\frac{1}{2}N$, where N is the number of candidates taking the examination. There should, in addition, be a few spare sets of apparatus available in case problems arise during the examination.

Organisation of the examination

Candidates should be allowed access to the apparatus for each experiment for one hour only. After spending one hour on one experiment, candidates should change over to the other experiment. The order in which a candidate attempts the two experiments is immaterial.

Assistance to Candidates

Candidates should be informed that, if they find themselves in real difficulty, they may ask the Supervisor for practical assistance, but that the extent of this assistance will be reported to the Examiner, who may make a deduction of marks.

Assistance should only be given:

when it is asked for by a candidate,
or as directed in the Notes sections of these Instructions,
or where apparatus is seen to have developed a fault.

Assistance should be restricted to enabling candidates to make observations and measurements. Observations and measurements must not be made for candidates, and no help should be given with data analysis or evaluation.

All assistance given to candidates must be reported on the Supervisor's Report Form.

Faulty apparatus

In cases of faulty apparatus (not arising from a candidate's mishandling) that prevent the required measurements being taken, the Supervisor may allow extra time to give the candidate a fair opportunity to perform the experiment as if the fault had not been present. The candidate should use a spare copy of the Question Paper when the fault has been rectified or when working with a second set of apparatus.

Supervisor's Report

The Supervisor should complete the Supervisor's Report Form on pages 7 and 8 and enclose it in the envelope containing the answers of the candidates. If more than one envelope is used, a copy of the report must be enclosed in each envelope.

Question 1**Apparatus requirements (per set of apparatus unless otherwise specified)**

Metre rule with a millimetre scale.

180° protractor with 1° divisions.

Two 100 g slotted masses.

Beaker of approximate diameter 10 cm. See Note 1.

50 g of modelling clay (e.g. Plasticine).

Stopwatch measuring to 0.1 s or better.

Flat-topped object of height approximately 3 cm less than the beaker diameter, and with a top surface approximately 5 cm × 5 cm or 5 cm diameter. See Note 2.

Notes

- 1 If a beaker of approximate diameter 10 cm is not available, any cylinder with this diameter could be used. In this case the candidate should be told to use the cylinder in place of the beaker.
- 2 The flat-topped object could be an inverted jar or beaker, or a block of wood. It should be labelled 'A' on its side, and its flat top should be labelled 'TOP'.
- 3 The apparatus should be laid out on the bench. If it is to be used by a second candidate, then it should be restored to its original state.

Information required by Examiners

Sample set of numerical results, clearly labelled "Supervisor's Results" and obtained out of sight of the candidates.

Question 2

Apparatus requirements (per set of apparatus unless otherwise specified)

Unmounted biconvex glass lens of focal length 15 cm and approximate diameter 4–5 cm (e.g. Timstar product number OP11510).

Unmounted biconvex glass lens of focal length 30 cm and approximate diameter 4–5 cm (e.g. Timstar product number OP11565).

A4 sheet of squared paper with 5 mm × 5 mm squares.

Stand, boss and clamp.

Thin white board with approximate dimensions 20 cm × 15 cm.

Small card. See Note 1.

Vernier or digital calipers. See Note 2.

Metre rule with a millimetre scale.

Notes

- 1 The card should name a light source that can be used by the candidate. The candidate will focus an image of this source on the white board using each lens. This light source could be a window or a bright lamp, and should be at least 2 m from the candidate. Fig. 2.1 shows an example of the card.

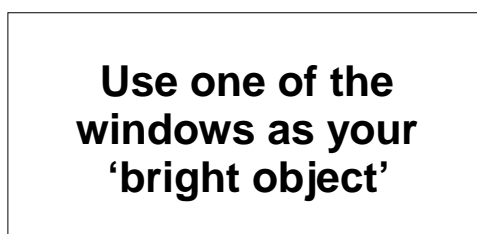


Fig. 2.1

- 2 The calipers could be shared between, at most, two candidates.
- 3 The apparatus should be laid out on the bench. If it is to be used by a second candidate, then it should be restored to its original state.

Information required by Examiners

Sample set of numerical results, clearly labelled "Supervisor's Results", and obtained out of sight of the candidates.

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This form should be completed and sent to the Examiner with the scripts.

SUPERVISOR'S REPORT FORM

The Supervisor's Report should give full details of:

- (a)** any help given to a candidate (including the nature of the help given and the name and candidate number of the candidate);
- (b)** any cases of faulty apparatus (including the nature of the problem, the action taken to rectify it, any additional time allowed, and the name and candidate number of the candidate);
- (c)** any accidents that occurred during the examination;
- (d)** any other difficulties experienced by candidates, or any other information that is likely to assist the Examiner, especially if this information cannot be discovered in the scripts.

Cases of individual hardship, such as illness, bereavement or disability, should be reported direct to Cambridge on the normal Special Consideration form.

Information required by Examiners

For each question, please enclose a sample set of numerical results, obtained out of sight of the candidates and clearly labelled "Supervisor's Results".

Supervisor's Report



Supervisor's Report (continued)

Declaration

(to be signed by the Supervisor)

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

Signed

Name

Centre number

Name of Centre

