

General Certificate of Education Advanced Subsidiary

UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE

PHYSICS

8702/3

PAPER 3 Practical Test

INSTRUCTIONS

OCTOBER/NOVEMBER SESSION 2001

1 hour 15 minutes

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

These instructions consist of 6 printed pages and 2 blank pages.

Instructions for preparing apparatus

These instructions detail the apparatus required for the experiment in this paper. A summary of the questions that will be presented to the candidates is included, to allow the Physics teacher to test the apparatus appropriately. No access is permitted to the question paper in advance of the examination session.

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

Instructions for the Practical Physics Supervisor

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.

The Supervisor should complete the questionnaire form on pages 7 and 8 and enclose it in the envelope containing the answers of the candidates. A note of any help given to, or any particular difficulties experienced by, a candidate should also be enclosed, especially if the Examiner would be unable to discover these from the written answers.

It is assumed that candidates will provide themselves with such standard items as a 30 cm ruler, a pair of compasses, a 0° to 180° protractor, a set square and a calculator.

Squared paper should be available.

Whenever a stopwatch or stopclock is specified, candidates should be advised, in advance, that they may, if they wish, use quartz wristwatches with stopwatch facilities.

Question 1**Items required (per set of apparatus, unless otherwise stated)**

A semicircular card of radius 145 mm and approximate thickness 0.22 mm (see note 1)

A pair of scissors

A 30 cm ruler

An optical pin

A cork

A retort stand, boss and clamp

A thin thread of approximate length 500 mm with a loop at one end and a mass of 10 g attached to the other end

A protractor

Note

- 1 The semicircular card should be cut out of card of A4 size. Spare semicircular cards must be available. Candidates will be informed that these are available, if necessary.

Procedure to be followed by candidates

Candidates will be required to measure the radius r of the card. Using the pin, clamped in the cork, candidates will suspend the card freely from a hole at A, see Fig. 1.1.

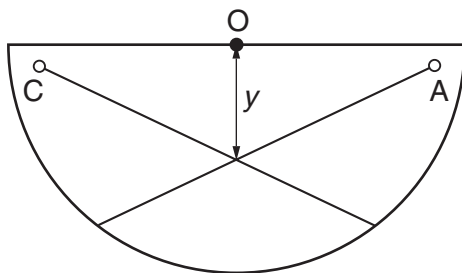


Fig. 1.1

The 10 g mass will be suspended from the pin to allow the line from A to be drawn. The procedure is repeated from any hole near C. The distance y is measured and recorded.

The card is now cut as shown in Fig. 1.2.

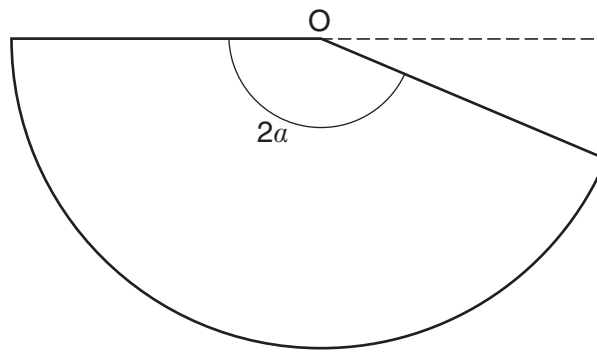


Fig. 1.2

For six values of $2a$ in the range $80^\circ \leq 2a \leq 180^\circ$ in 20° steps, corresponding values of y are obtained. A graph of y (y -axis) against $\frac{\sin a}{a}$ (x -axis) is plotted: a is in degrees.

A straight line graph is obtained.

Information required by Examiners

Sample set of results and graph

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

REPORT ON PRACTICAL PHYSICS

General Certificate of Education Advanced Subsidiary

November Session 2001

General

The Supervisor is invited to give details, on the reverse of this form, of any difficulties experienced by particular candidates, giving names and index numbers. These should include reference to:

- (a) accidents to apparatus or materials;
- (b) any other information that is likely to assist the examiner, especially if this cannot be discovered in the scripts;
- (c) any help given to a candidate.

Other cases of individual hardship, e.g. illness, disability, should be reported direct to CIE on the normal 'Special Consideration Form'.

In cases of faulty apparatus (not arising from a candidate's mishandling) which prevent the required readings being taken, the following action is permissible.

The Invigilator – in consultation with the Physics teacher responsible for preparing the examination – may allow extra time to give the candidate a fair opportunity of performing 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. The Invigilator is asked to provide CIE with details of such cases of time compensation (a copy being enclosed with the scripts), especially

- (i) the candidate's name and index number,
- (ii) the extra time allowed,
- (iii) notes on the nature of the fault, the action taken to rectify the difficulty and any other comments which would be helpful to the Examiner in making a fair assessment of the candidate's work during the practical examination.



A list, by name and index number, of candidates requiring help, with details of help provided

Declaration (to be signed by the Principal)

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

Signed

Centre Number

Name of Centre

