

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education  
Advanced Subsidiary Level and Advanced Level

**PHYSICS**

**9702/03**

Paper 3 Practical Test

October/November 2004

CONFIDENTIAL INSTRUCTIONS

**1 hour 15 minutes**

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

This document consists of 7 printed pages and 1 blank page.



**Instructions for preparing apparatus**

These instructions detail the apparatus required for the experiment in this paper. A summary of the question 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 report 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 rule, a pair of compasses, a  $0^\circ$  to  $180^\circ$  protractor, a set square and a calculator.

Graph 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 wrist-watches with stopwatch facilities.

**Question 1****Apparatus requirements (per candidate)**

Pendulum bob attached to approximately 65 cm of twine. The mass of the bob should be approximately 100 g. It may be necessary to make a plasticine (modelling clay) bob if metal bobs are not available.

Hacksaw blade of length about 30 cm. The serrated edge should be covered with tape. The blade should have a small hole at each end.

G-clamp.

Two bolts of approximate length 4 cm.

Two wing nuts to fit the bolts.

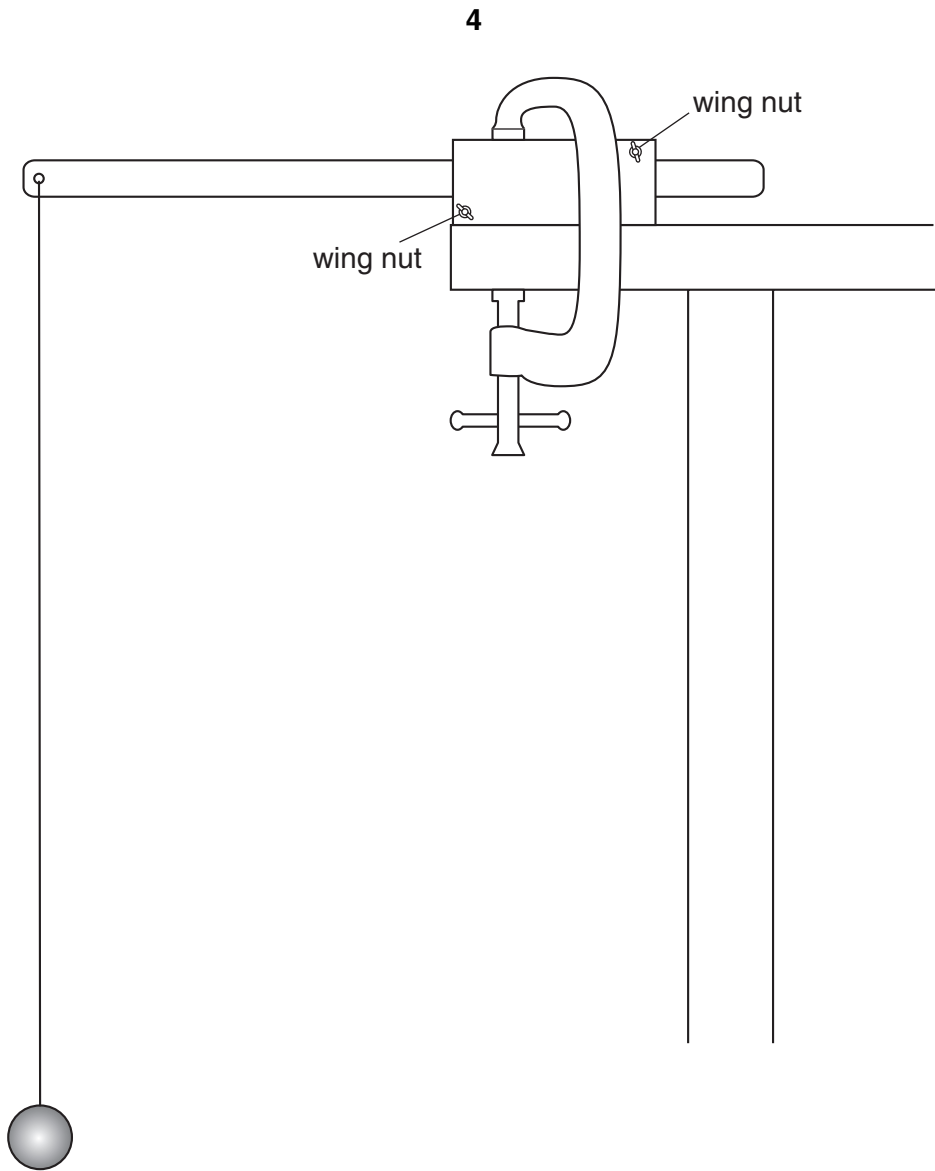
Two blocks of wood to be used to clamp the blade. The dimensions of the blocks are not critical. 6 cm 4 cm 1 cm blocks have been found to be suitable. Two small holes should be drilled at diagonally opposite corners of the blocks. The bolts are to be inserted in these holes and the wing nuts tightened so that the blocks grip the blade.

Half-metre and metre rule.

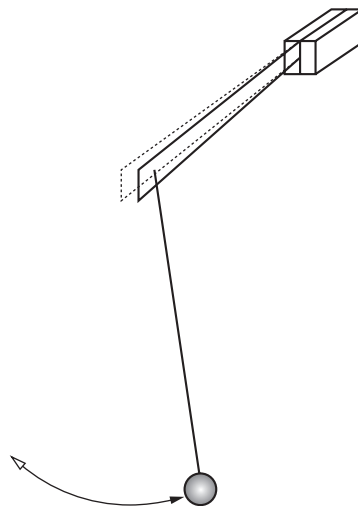
Stopwatch reading to 0.1 s or better.

**Notes**

- 1 The bolts should be passed through the holes in the blocks of wood and the wing nuts should be loosely attached. The remainder of the apparatus should not be assembled.
- 2 Candidates will be required to investigate the oscillations of a pendulum with a yielding support. They will set up the apparatus as shown in Fig. 1.1.



- 3 Supervisors must be vigilant in ensuring that candidates are using the correct oscillatory mode as shown in Fig. 1.2.



Candidates will not be penalised if they have to be shown which oscillatory mode to use.

**Information required by the Examiners**

None.

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

**REPORT ON PRACTICAL PHYSICS**

**General Certificate of Education Advanced Subsidiary Level and Advanced Level**

**October/November Session 2004**

**General**

The Supervisor is invited to give details, on the reverse of this form, of any difficulties experienced by particular candidates, giving names and candidate 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 information cannot be discovered in the scripts;
- (c) any help given to a candidate.

Other cases of individual hardship, e.g. illness or 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) that 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 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. 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 candidate 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 that would be helpful to the Examiner in making a fair assessment of the candidate's work during the practical examination.



**Information required**

A list, by name and candidate 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 .....

