

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

**PHYSICS**

**9702/03**

Paper 3 Practical Test

October/November 2005

**1 hour 15 minutes**

CONFIDENTIAL INSTRUCTIONS

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

This document consists of **5** printed pages and **3** blank pages.



**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.

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****Apparatus requirements (per candidate)**

Two stands. The stands should be at least 70 cm tall. If stands of this height are not available, it may be necessary to place blocks under the stands.

Two bosses.

Two clamps.

Metre rule. The mass of the rule should be between about 80 g and 120 g, although the value is not critical. Small holes should be drilled at distances of 1 cm from each end of the rule.

Half-metre rule.

90° set square.

50 g mass holder, or four 10 g slotted masses with 10 g mass holder (to give a total mass of 50 g). Candidates must not be able to adjust the size of the mass. If slotted masses are used they must be taped together so that candidates are not able to separate them.

Three pieces of string, each about 20 cm in length. Two of the pieces will be used to support the rule at each end and the third will be used to suspend the mass. The string should be thin enough so that candidates may pass it through the holes in the rule without difficulty.

Newton-meter, range 0 to 1.00 N in 0.01 N steps (e.g. Philip Harris catalogue number 40253 or 40290). It is perfectly acceptable for Centres to use other newton-meters that may be more readily available, in which case it may be necessary to use a different mass. See Note below.

The equipment should be laid out on the bench ready for the candidates to use and should **not** be assembled prior to use by the candidates.

If the apparatus is to be used by a second candidate then it must be dismantled and the equipment laid out on the bench ready for the next candidate to use. Supervisors may need scissors to cut the strings. Fresh pieces of string will need to be supplied.

**Note**

It may be that in certain Centres sufficient numbers of 0 to 1 N newton-meters are not available. It is possible to use alternative newton-meters with different ranges. For example, if newton-meters with a range of 0 to 2 N are available, then it will be necessary to use a 100 g mass instead of a 50 g mass in order to make full use of the range of the meter. If a 0 to 10 N newton-meter is used, then the mass supplied will need to be 500 g.

**Information required by the Examiners**

Range of newton-meter.

Mass supplied.

Mass of metre rule.

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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 2005

### 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 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**

Range of newton-meter =

Mass supplied =

Mass of metre rule =

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 .....

